PART-B
Major Component (Civil Work)

General Conditions

1 The order of preference in case of any discrepancy shall be as under:-

i) Nomenclature of items as per schedule of quantities.
ii) Particular specification and special condition, if any.
iii) Architectural Drawings
iv) CPWD specifications.
v) Indian standard specifications of B.I.S.
vi) Sound Engineering Practice as approved by the Engineer-in-charge.

2. In case there is any discrepancy between English Version and corresponding Hindi version, if provided, then the provisions in English Version will prevail.

3. The contractor shall quote their rates inclusive of all taxes, cartage, royalties etc. complete.

4. The contractors are advised to visit the site of work to have and acquaint himself with the site condition an idea of the execution of the work; failure to do so will not absolve their responsibility to do the work as specified in agreement.

5. Before bringing any material at site, the agency will intimate the source of material by submitting the invoice and will get approved the sample first and all the material to be used shall be got approved from the Engineer-in-Charge before Installation at site.

6. The bad workmanship will not be accepted and defects shall be rectified at contractor's risk and cost to the satisfaction of the Engineer-in-Charge. The electrical works are to be executed in coordination with the building work and no claim for idle labour will be entertained.

7. All the debris of the works should be removed and the site should be cleared by the contractor immediately after accumulating of debris. Similarly, any rejected material should be immediately cleared off from the site by the contractor.

8. The contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the user and to the public in general and to prevent any damage to such properties and any pollution of smoke, streams and waterways. He shall make good at his cost and to the satisfaction of the Engineer-in-Charge, any damage to roads, paths, cross drainage works or public or private property whatsoever caused by the execution of the work or by traffic brought thereon by the contractor. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants/users of adjoining buildings.

9. Any damage caused to the fittings/switch gears/installation/machinery as a result of negligent execution of the work, shall be replaced/to be made good by the contractor at his own cost.

10. The Contractor will submit all the credentials of Staff to be deputed at site as per requirement of Agreement within 7 days from the start of Works to the Engineer-in-Charge. The deployed manpower will be police verified by the agency. Manpower once deployed will not be frequently changed. However, if necessary, the replacement of any staff will subject to approval of JE/AE in-charge and obtaining of police verification.

11. The character and antecedents of staff employed by the contractor shall be got verified from the police by the contractor. The contractor shall have to apply before concerned police station within 10 days from the date of start of work.

12. The staff engaged by the contractor should be well behaved, polite and courteous. Any complaints against staff misbehaviour should be taken very seriously and such staff should be removed by the contractor immediately from the site and arrange replacement for the same failing which the Engineer-in-charge has the power to cancel the contract and the contractor shall have no right to claim of loss/compensation.

13. The contractor has to work in restricted / occupied campus area and in restricted time (odd hours) due to security reasons. He shall be bound by the instructions of security staff and Engineer-in-Charge on the working and for moment of labour , material etc. and agency shall plan the worked to be carried out in such a manner so that the occupants are not inconvenienced in this respect.

14. Contractor shall provide name, father's name, residential address and other details i/c photo as may be required by the security staff or issue of photo pass to the labour engaged on work.

15. The Department shall arrange entry passes for site Complex.

16. The main/associated contractor shall have registration with Employee Provident Fund Commissioner and Employee's State Insurance Corporation for safe guarding the interest of his workmen. The contractor shall obtain all necessary approval from state/Local Body as per law in vogue.

17. The contractors shall pay the wages & allowances as applicable and revised time to time by the Govt. and the Contractor shall submit the proof of increased wages paid wages register and bank statement to the workers deployed with for re-imbursement/claim under Clause10 C of agreement.

18. No claim for idle establishment & labour, machinery & equipment, tools & plants and the like, for any reason whatsoever, shall be admissible during the execution of work as well as after its completion.

19. ESI & EPF shall be reimbursed to the firm on actual basis paid by the firm on production of proper documentary evidence.

20. The contractor will hire separate labour for Civil & Electrical works and deposit ESI and EPF contribution(vide separate ECR and Challans) deducted from the employee and contribution on the part of employer paid by the contractor to the concerned authorities. For reimbursement of ESI & EPFO from the department the contractor shall submit an affidavit on stamp paper of Rs. 10 along with the duly paid challans stating "I have not claimed the reimbursement of this bill from anywhere else. I shall also not claim this from any other of office in future''

21. Safety of staff will be the responsibility of the contractor as per labour law. The department will not be a party in such litigation.

22. After the expiry of the contract, the firm shall have to hand over complete installation to the department in proper working order. All defects and deficiencies shall have to be rectified by the firm to the entire satisfaction of Engineer-in-charge failing which, the work shall be got done at the risk and cost of the firm.

23. The contractor shall have to arrange for issue of identity cards as per directions from the department for all staff engaged within two week of start of work at his own cost and also submit two extra photographs of each workers for record. If he fails to do so, the department shall recover Rs. 25/- per person per day for this default from the monthly bills.

24. Any Renovation Works carried out separately by any Agency during the currency of the Contract shall be maintained under the Scope of this Works but any major defects in the said works during the guaranty period is the responsibility of concerned agency who executed the work.

25. The contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.

26. Unless otherwise provided in the Schedule of Quantities/Specifications, the rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the work and nothing extra shall be payable to him on account of the same. Rates quoted will be applicable for the centering/shuttering up to height of 3.5 metres on all floors and nothing extra will be payable. Extra payment for centering /shuttering, if required to be done for floor heights greater than 3.5 m shall however be admissible at the rates arrived at in accordance with clause12 of the agreement, if not already specified.

27. The contractor (s) shall give to the Municipality, Police and other authorities all necessary notices etc. that may be required by law and obtain all requisite Licenses for temporary obstructions, enclosures etc. and pay all fee, taxes and charges which may be leviable on account of these operations in executing the contract nothing extra shall be paid / reimburse for the same. He shall make good any damage to the adjoining property whether public or private and shall supply and maintain light and other illumination on for cautioning the public at night.

28. The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night speed limit boards red flags, red lights and providing barriers. He shall be responsible for all dangers and incidents caused to existing / new work due to negligence on his part. No hindrances shall be caused to traffic during the execution of the work.

29. **The contractor shall make his own arrangement for obtaining water and electric connection(s) if required and make necessary payments directly to the department concerned**.

30. If as per local Municipal regulations or any due to any other restriction, the huts for labourers are not to be erected at the site of work, the contractor shall be required to provide such accommodation at a place outside the campus as is acceptable to the local body and nothing extra shall be paid on this account.

31. It shall be ensured by the contractor that no electric live wire is left exposed or unattended to avoid any accidents in this regard.

32. The contractor shall maintain in perfect condition, all portions executed till completion of the entire work allotted to him. Where however phased delivery of work is contemplated these provisions shall apply separately to each phase.

33. The entire royalty at the prevalent rates shall have to be paid by the contractor on all the boulders, metals, sand etc. Collected by him for execution of the work, directly to the Revenue authority or authorized agents of the State Government concerned or the Central Government, as the case may be.

34. If the work is carried out in more than one shift or during night no claim on this account shall be entertained.

35. Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. The contractor shall not store materials or

otherwise occupy any part of the site in a manner likely to hinder the operation of such services.

36. The contractor shall bear all incidental charges for cartage, storage and safe custody of materials issued by department.

37. In the event of prolongation of agreement due to delay or reduction in the scope of work, no claim on account of reduction in the scope of work, loss of business, loss of profit consequently, overheads and any type of interest etc. will be entertained.

38. The contractor shall protect and indemnify the CPWD and its officials & employees against any claim and/or liability arising out of violations of any such laws, ordinances, orders, decrees, by himself or by his employees or his authorized representatives. Nothing extra shall be payable on these accounts

39. The Contractor shall assume all liability, financial or otherwise in connection with this contract and shall protect and indemnify the CPWD from any and all damages and claims that may arise on any account. The Contractor shall indemnify the Department CPWD against all claims in respect of patent rights, royalties, design, trademarks- of name or other protected rights, damages to adjacent buildings, roads or members of public, in course of execution of work or any other reasons whatsoever, and shall himself defend all actions arising from such claims and shall indemnify the Department in all respect from such actions, costs and expenses. Nothing extra shall be payable on this account.

40. The contractor shall also comply with the provisions of Sexual Harassment of Women at Workplace (Prevention Prohibition and Redressal) Act, 2013 and amendment thereafter time to time. Any failure to fulfil these requirements shall attract the penal provisions of the relevant act and in this contract.

41. The contractor as soon as possible but within 7 (seven) days of issue of letter of award of work shall submit a time and Progress chart to the Engineer-in-Charge.

42. Wherever any reference to any Indian Standard Specifications/ International standard occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued there-to or revisions thereof, if any, up to the date of receipt of tenders.

43. Samples for particular items of work shall be prepared, where so specifically desired by Engineer-in- charge, for prior approval of the Engineer-in-charge, before taking up the same on mass scale and nothing shall be payable on this account.

44. Wherever desired by Engineer-in-charge, the contractor shall also construct a sample unit complete in all respect within time specified by the Engineer-in-charge & this sample unit shall be got approved from the Engineer-in-charge before mass construction is taken up. No extra claim, whatsoever beyond the payment due at agreement rates, will be entertained to the contractor on this account.

45. In case of deliberate delay of recording and submission of measurements, MBs and RA bills as per clause 6 of the GCC. The Engineer-in-charge shall act and ascertain to record the measurements, MB and RA bills after issue of 7 days' notice in this regard since Engineer-in-Charge has the responsibility to engineer the contract agreement and record the measurements during progress of work.

46. Unless otherwise specified in the schedule of quantities, the rate of all items of the work shall be considered as inclusive of pumping out or bailing out water, if required, for which no extra payment will be made .This will include water encountered from any source such as rains, floods, sub-soil water table being high or due to any other cause whatsoever.

47. The working drawings shall mean to include both architectural and structural drawings respectively. The structural and architectural drawings shall be properly correlated before executing the work. In case of any difference noticed between architectural and structural drawings, final decision, in writing of the Engineer-in-charge shall be obtained by the contractor before proceeding further.

48. The words “Equivalent”, “Approval” and authorized” in these specifications shall imply and require written approval of the Engineer-in-Charge.

49. Income Tax, Labour cess, GST and other taxes shall be recovered on the gross amount of the bills as per prevailing rules and direction of concern authority.

50. The contractor will have to store material at a designated place in the Campus away from work site and thereafter bring material to work site as per requirement.

51. It is mandatory for the Agency to submit work program within one week of the award of Work failing which action may be taken as per terms and condition of the agreement.

52. Hindrance, if any, must be recorded through ERP only. Any entry through physical register will not be accepted.

53. RFI must be recorded/uploaded on daily basis/date of execution. RFI for older period will not be accepted. For older RFIs department will not be responsible for payment.

54. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants/users of building.

55. The contractor will intimate the Engineer-in-charge or his representative through RFI in ERP module in sufficient time before the covering of hidden items, so that joint measurement can be taken up jointly.

56. SAFETY MEASURES

a. Temporary Barricading

(a) Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.

b. Warning / Caution Boards

All temporary warning / caution boards / glow signage display such as "Construction Work in Progress", "Keep Away", “No Parking”, Diversions & protective Barricades etc. shall be provided and displayed during day time by the Contractor, wherever required and as directed by the Engineer-in-Charge. These glow signage and red lights shall be suitably

illuminated during night also. The Contractor shall be solely responsible for damage and accident caused, if any, due to negligence on his part. Also he shall ensure that no hindrance, as far as possible, is caused to general traffic during execution of the work. This signage shall be dismantled & taken away by the Contractor after the completion of work, only after approval of the Engineer – in – Charge. Nothing extra shall be payable on this account.

c. Sign Boards

The Contractor shall provide and erect a display board of size and shape as required and paint over it, in a legible and workman like manner, the details about the salient features of the project, as required by the Engineer-in-Charge. The Contractor shall fabricate and put up a sign board in an approved location and to an approved design indicating name of the project, client / owner, architects, structural consultants, Department etc. besides providing space for names of other Contractors, Sub-Contractors and specialized agencies. Nothing extra shall be payable on this account.

d. Necessary protective and safety equipment's shall be provided to the Site Engineer, Supervisory staff, labour and technical staff of the contractor by the Contractor at his own cost and used at site.

e. No inflammable materials including P.O.L shall be allowed to be stored in huge quantity at site. Only limited quantity of P.O.L may be allowed to be stored at site subject to the compliance of all rules / instructions issued by the relevant authorities and as per the direction of Engineer -in- Charge in this regard. Also all precautions and safety measures shall be taken by the Contractor for safe handling of the P.O.L products stored at site. All consequences on account of unsafe handling of P.O.L shall be borne by the Contractor.

57. SETTING OUT

a. The Contractor shall carry out survey of the work area, at his own cost, setting out the layout and fixing of alignment of the pile work, building in consultation with the Engineer-in-Charge & proceed further. Any discrepancy between the architectural drawings and actual layout at site shall be brought to the notice of the Engineer-in-charge. It shall be responsibility of the Contractor to ensure correct setting out of alignment. Total station survey instruments only shall be allowed to be used for layout, fixing boundaries, centre lines, etc., along with theodolites. Nothing extra shall be payable on this account.

b. The Contractor shall establish, maintain and assume responsibility for grades, lines, levels and benchmarks. He shall report any errors or inconsistencies regarding grades, lines, levels, dimensions etc. to the Engineer-in-Charge before commencing work. Commencement of work shall be regarded as the Contractor's acceptance of such grades, lines, levels, and dimensions and no claim shall be entertained at a later date for any errors found.

c. If at any time, any error in this regard appears during the progress of the work, the Contractor shall, at his own expense rectify such error, if so required, to the satisfaction of the Engineer-in-Charge. Nothing extra shall be payable on this account.

d. Though the site levels are indicated in the drawings the Contractor shall ascertain and confirm by him, the site levels with respect to benchmark from the concerned authorities. The Contractor shall protect and maintain temporary/permanent benchmarks at the site of work throughout the execution of work. These benchmarks shall be got checked by the Engineer-in-Charge or his authorized representatives. Nothing extra shall be payable on this account.

The work at different stages shall be checked with reference to bench marks maintained for the said purpose. The cost of carrying out lay outs at all stages including marking of reference points, centre lines of the building etc. including construction/

ADDITIONAL CONDITIONS

1.1 The contractor shall take instructions from the Engineer-in-charge for stacking of materials at site. No excavated earth or building materials shall be stacked on areas where the buildings, roads, services or compound walls or any other structure are to be constructed.

1.1.1 If ISI marked products are available, the contractor shall use only ISI marked products. In other cases, the materials shall conform to CPWD specifications. In case a materials/product is neither covered by ISI nor by CPWD specification, the work shall be carried out as per sound engineering practice, in such case, the decisions of the Engineer-in-charge shall be final & binding. In such cases Engineer-in-charge shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified as first quality by the manufacturers shall be used, unless otherwise specified. All materials not bearing ISI mark shall be tested as per relevant ISI specifications. The Engineer-in-charge may relax the condition regarding testing if the quantity of the materials required for the work is small. In all cases of use of ISI marked materials, proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the entire satisfaction of Engineer-in-charge.

1.2 Other agencies doing works related with this project will also simultaneously execute the work and the contractor shall afford necessary facilities for the same. The contractor shall leave such necessary holes, opening etc., for laying/burying in the work pipes, cables, conduits, clamps, boxes and hooks for fan clamps etc. as maybe required for other agencies. Conduits for electrical wiring/cables will be laid in such a way that they leave enough space for concreting and do not adversely affect the structural members. Nothing extra over the agreement rates shall be paid for the same. The contractor shall extend necessary co-operation to other such agencies without any claim on this account.

1.3 Any cement slurry, required to be added over base surface for bond or for continuation of concreting, its cost shall be deemed to have been included in the respective items, unless specified otherwise and nothing extra shall be payable nor extra cement shall be considered in the cement consumption on this account.

1.4 Stacking of materials and excavated earth including its disposal shall be done as per the directions of the Engineer-in-Charge. Double handling of materials or excavated earth, if required, shall have to be done by the contractor at his own cost.

1.5 The building work will be carried out in the manner complying in all respect with the requirements of relevant bylaws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-charge and nothing extra will be paid on this account.

1.6 The contractor shall give a performance test of the entire installation(s), as per standing specifications, before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.

1.7 The work pertaining to the items of internal finishing should be started in consultation and with prior approval of Engineer-in-Charge as soon as the structure of two floors is completed.

1.8 Any damage to work resulting from weathering conditions, defacing or from any other cause such as negligent act on the part of contractor, until the work is taken over by the Department after completion of work, shall be made good by the contractor at his own cost.

1.9 Dismantling of cement concrete floors shall be done with the help of mechanized vibratory hammer, drills etc. The work shall be carried out in such a way that there should be least disturbance to the occupants and work should be completed within least possible time. The contractor must ensure that there should be no damage to the supporting RCC members.

1.10 Any damage to the building, furniture, fittings of any other articles etc. done by the contractor or his workmen during the execution of work, shall be made good by the contractor, failing which the same shall be made good by the Engineer-in-charge or his authorized representative at the risk and cost of the contractor.

1.11 All doors, windows, floors, furniture, electrical fittings and other articles shall be protected from dust, splashes & damages sufficient covering for the day's work shall be shown to the representative of the Engineer-in-charge before the contractor is allowed to proceed with the work, splashes & droppings from whitewashing, colour washing, distempering painting etc. on walls, floors, doors and window, down take pipes, furniture shall be removed by the contractor at his own cost and surface cleaned simultaneously after the completion of the day's work is done, without waiting for the actual completion of the other items of work of the contract. In case the contractor fails to comply with this requirement the Engineer-in-charge or his authorized representative shall be the right to get this work done at the risk and cost of the contractor either departmentally or through another agency without issue of any notice to the contractor, departmentally or through another agency without issue of any notice to the contractor, on his account. The representatives of the Engineer-in-charge will however, mention about it in the site order Book employing the labour on the job at the contractor's cost.

1.12 **Full quantity of material such as paint plastic emulsion paint, oil bound distemper etc. shall be deposited in sealed container in advance and get it checked by Engineer-in-charge before use.**

1.13 Shifting of furniture such as sofa table, chairs, glass etc. and making necessary arrangements to protect the furniture, carpets, and floors etc. from any spillage during the execution of work shall be done by the contractor. Any damage if done, shall be made good by the contractor at his own cost, nothing shall be paid extra in this regard.

1.14 No labour huts shall be allowed inside the campus of above said work. The contractors shall arrange for the stay of labours outside the campus including transport and nothing extra shall be payable on this account.

1.15 **TESTING OF MATERIALS**

a. Samples of various material required for testing shall be provide free of cost by the contractor. **All expenditure to be incurred for testing of samples e.g. packaging, sealing, transportation, loading, unloading etc. including testing charges shall be borne by the contractor**. **The NIT shall have list of approved laboratories for testing as approved by ADG/SDG.**

b. The contractor shall produce all the materials in advance so that there is sufficient time for testing and approval of the materials and clearance before use in work. The Engineer in charge shall be at liberty to test representative sample(s) of each item of schedule of quantity in any approved laboratory as decided by him. In case of any sample of particular lot fails in testing the contractor shall be bound to replace the entire lot with fresh material of prescribed specifications. The rejected lot shall be returned to the contractor only after fresh lot is supplied.

c. With a view to avoid controversy about quality of cement concrete as revealed in the test results of 7 days cubes falling short of the prescribed standards by over 10% to20% and pending testing of balance 3 cubes for 28 days as final confirmatory acceptance tests, crushed samples of cement concrete from the failed 7 days cubes should be preserved in a sealed bag.

d. In case of concrete and reinforced concrete work, the contractor shall be required to make arrangement for carrying out crushing strength tests at his own cost. He shall render all assistance for the preparation of cubes, safe custody of the same, proper curing and carriage upto the laboratory where the test is to be performed. The cube test can be performed at any laboratory approved by the Engineer-in-charge.

1.16 Malba received from site shall be removed to designated site (fixed by Engineer in charge) on same day, otherwise it will be removed and a penalty of Rs. 1,000/- shall be imposed on the contractor for each day of default.

1.17 Before dismantling the structure / item the contractor shall bring the entire material required for particular job at site after getting the sample approved from the Engineer in charge.

1.18 For mixing of mortar, M.S. sheet must be used over the brick platform. Mortar should not be mixed on road or floor or on garden. In case mortar / concrete is mixed on floor or on road etc., a recovery of Rs.1000/-shall be made for each default. Malba should not be dumped over green grass /plants.

1.19 Splashes on the floors, walls, glasses &other places must be removed after completion of work. Glass panes must be cleaned after completion of works. In the event of failure to clean splashes the work of cleaning will be got done at the risk and cost of the agency.

1.20 Before starting the work the contractor shall chalk out a programme in consultation with the Junior Engineer/Assistant Engineer in charge so as to inform the occupants in advance. The contractor shall have to adhere this programme, failing which he shall be held responsible for any inconvenience caused to the occupants. In order to ensure that the work is carried out according to the programme drawn up, the contractor shall ensure adequate supply of the material and employ required labour strength for execution of work. In case contractor fails to arrange / employ adequate labour and stick to the programme, the Engineer in charge may supplement the labour at the risk and cost of the contractor after issue of one day's notice to the contractor through site order book. No claim for idle labour shall been entertained. The contractor shall put his representative daily on site of work. His name & signature shall be attested by the contractor on the record for the department.

1.21 The contractor shall prepare one sample quarter of all items which should be got approved from the Engineer in charge. Only after acceptance of sample work, contractor will be allowed to commence the work and sample is to be preserved by contractor till the whole work is completed. The quality of work should confirm to the approved samples.

1.22 The contractor should note that the items of work in any room shall be undertaken at one time, one after the other and completed at one stretch in reasonable time allotted for the same by Engineer in charge and got noted by the Junior Engineer in charge. Any item left over in any building will be got done at his risk and cost without any further notice (other than one entry in the site order book) to the contractor after one day from the date of entry in the site order book.

1.23 Any damage done to the existing structure shall be made good by the contractor at his own risk and cost.

1.24 The contractor shall be responsible for behaviour and conduct of his worker. No worker with doubtful integrity or having a bad record shall be engaged by the contractor.

1.25 Anti termite chemical treatment – The work / job of anti-termite treatment shall be got done through the specialized firms.

1.26 Other agencies may also be simultaneously executing some other work entrusted to them by the Engineer-in-charge and the contractor shall offer necessary co-operation wherever required to these agencies so as not to interfere with or hinder the progress or completion of the work being performed by other contractor (s). He shall as far as possible arrange his work and shall place and dispose off the materials being used or removed, so as not to interfere with the operations of other contractors, or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of Engineer-in-charge. The contractor shall leave such necessary holes, openings etc. for laying/burying in the work, pipes cables, conduits, clamps, boxes and hooks for fan clamps etc. as may be required for the other agencies. Nothing extra over the Agreement rates shall be paid for doing these.

1.27 Water shall be arranged by the contractor at his own cost and shall be tested as per frequency mentioned in the CPWD specifications. The Agency will have to make arrangement for storage of water at stie under renovation/upgradation, by keeping suitable size PVC tanks at appropriate place. The contractor must submit a written proposal along with the water source details and sample of water for testing prior to commencement of work. Upon receiving approval from Engineer-in-Charge, the agency must provide GST paid vouchers with each Running Account (R/A) & Final Bill as proof of water procurement. In case of failure of Agency to produce the same, a non-refundable deduction of 1% water charge will be applied to the gross work done. The Agency will be responsible for the storage & transportation of water at the site, and no extra payment will be made for these arrangements. The Engineer-in-Charge's decision regarding the approval of water source and procurement of water at site will conclusive and binding on the contractor.

1.28 Samples of all materials and fittings to be used in the work in respect of brand manufacturer and quality shall be got approved from the Engineer-in-Charge, well in advance of actual execution and shall be preserved till the completion of the work. Articles bearing BIS certifications mark shall only be used unless no manufacturer has got BIS mark for the particular material. Any material/fitting whose sample has not been approved in advance and any other unapproved material brought by the contractor shall be immediately removed as soon as directed. Unless otherwise specified in the schedule of quantities the rates for all items shall be considered as inclusive of pumping/baling out water, if necessary, for which no extra payment shall be made. Those conditions shall be considered to include water from any source such as inflow of flood, surface and sub-soil water etc. and shall apply to the execution in any season.

1.29 Letter for submitting sample(s) for testing of material shall be sent through e-mail to the Lab by authorized representative of Engineer-in-Charge or Engineer-in Charge of the work along with name(s) of test(s) to be done on the material'. The contractor shall collect the sample(s) from the site and submit it to the lab; make necessary Payment for the testing charges. He will inform on the same day through email to authorized representative of Engineer-in-Charge and Engineer-in-charge regarding submission of sample (s) and payment made to the lab. if he either fails to collect or submit the

sample(s) to the lab within 03 days or in time as prescribed in the specifications, whichever is earlier, the Engineer-in-Charge shall collect and submit the sample(s) and make necessary payment for testing charges to the lab, ln such case, Engineer-in-Charge shall make recovery on account of collection and submission of sample(s) to the lab and paid testing charges etc. from the next R/A bill / Final bill of the contractor. This action of Engineer-in-Charge shall be final and binding.

1.30 There shall be no deviation beyond contract amount without written communication from Engineer-in-Charge to the contractor.

1.31 The malba/building rubbish collected from dismantling and demolishing from any floor and for all lead and lift will be collected at designated malba Bin on daily basis. Nothing extra will be paid. If failed to do so, Rs. 1000/day recovery will be made from the bill. Collected Malba/Debris should be cleared timely from Designated malba bin as per scheduled item as per direction of the Engineer-in-charge. The Contractor is advised to quote his rates accordingly. Noting extra will be paid on this account.

1.32 All waste or superfluous materials shall be carried away by the contractor without any reservation entirely to the satisfaction of the Engineer-in- Charge.

1.33 In case of occurrence of Non Schedule Extra ltem(s) , The contractor, shall within fifteen days of the receipt of order to execute extra item(s) or occurrence of the item(s), submit analysis of rate of extra item(s) based on the rate(s) of material(s) available in basic rate of Standard Schedule of Rate mentioned in schedule F and rate(s) of the material(s) based on tax paid bills which are not available in standard Schedule of Rate mentioned in schedule F. For this purpose, the basic rate of material(s) available in Schedule of Rate(s) mentioned in Schedule F will be enhanced or reduced by the applicable cost index, as the case may be. The rate(s) of the material(s) which are not available in Standard Schedule of Rates, mentioned in Schedule F, shall be based on, tax paid bill(s) for the material(s) as defined in manufacturer's specification. Material rate(s) from Standard Schedules of Rate(s) shall be given priority in the analysis of rate(s).

1.34 However provisional rate(s) on the basis of invoice will be allowed by the Engineer-in-Charge. lnvoice shall be accepted only for material(s) not available in the Standard Schedule of Rates mentioned in Schedule F. The contractor while submitting the tax paid bill of purchased material(s) shall ensure that rate(s) of the materials are reasonable and lowest available in the market. lf Engineer-in-Charge feels rates in tax paid bill(s) submitted by contractor are not reasonable then he can modify the rate(s) after giving a notice to the contractor. Engineer-in-Charge is the final authority to decide applicable rate(s) of material(s).

SPECIAL CONDITIONS

1. The contractor (s) shall make his own arrangements for electricity required for the execution of work.

2. Cement & Steel Reinforcement shall be arranged by the contractor himself.

3. All the malba or rubbish obtained from dismantling or otherwise during the execution of the work shall be brought down through the stair case. Lifts shall not be used for this purpose and shall not be thrown to the ground directly from first floor or second floor etc. Malba/ rubbish generated due to any operation from the building and there upon whatsoever shall be disposed off on daily basis by the contractor to the specified common disposal point. After the collection of full truck load of the said malba/rubbish (approx 4.5 cubic metres), the same shall be disposed off on same day by the contractor to the to "C & D waste management site nearest Municipal approved **(Payment of removal of malba/building rubbish etc. shall be made only on the basis of Local Civic Body receipt submitted by the agency & production of receipt of payment made to local body at dumping ground).** Failing which the same shall be got removed by the Engineer-in-charge and the cost so incurred on the removal of the same shall be recovered from the contractor's bill.

4. No residential accommodation shall be provided to any of the staff engaged by the contractor. The contractor shall also not be allowed to erect any temporary structure for staff/ store in the campus.

5. Contractor shall be fully responsible for any damages caused to govt. property by his or his labour in carrying out the work and shall be rectified by the contractor at his own cost.

6. All the materials, fixtures, fixtures, fittings etc. shall be of the best quality and shall be of approved make and manufacture (wherever specified) as defined in the item of work or defined anywhere in this document otherwise shall be of ISI mark as mentioned in the CPWD specifications duly approved by the Engineer-In-Charge.

7. All materials brought by the Contractor for use in work shall be got approved from the Engineer-in-charge of Civil work or his authorized representative of the work.

8. The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and clearance of the same before use in the work.

9. All the materials shall be got checked by the Engineer-in-charge or by his representative of the work on receipt of the same at site before use.

10. The contractor shall provide at his own cost suitable weighing and measuring arrangements at site for checking the weight /dimensions as may be necessary for execution of work. The sealed samples are to be handed over to the testing lab by contractor in the presence of Junior Engineer-in-charge of work.

11. Samples for particular items of work shall be prepared, where so specifically desired by Engineer-in- charge, for prior approval of the Engineer-in-charge, before taking up the same on mass scale and nothing shall be payable on this account.

12. Sample of building materials, fittings and other articles required for execution of work shall be got approved from the Engineer-in-Charge before use in the work. The quality of samples brought by the contractor shall be judged by standards laid down in the CPWD Specifications or the relevant BIS code. All materials and articles brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. The list of approved makes of material is given for guidance.

13. BIS marked materials except otherwise specified shall be subjected to quality test at the discretion of the Engineer-in-Charge besides testing of other materials as per the specifications described for the item/material. Wherever BIS marked materials are brought to the site of work, the contractor shall, if required, by the Engineer-in-Charge, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material / procured by the contractor for incorporation in the work satisfies the provisions of specifications/ BIS codes relevant to the material and / or the work done.

14. Factory made shutter, as specified shall be obtained from factories to be approved by the Engineer-in-charge & shall conform to relevant Indian Standards. The contractor shall inform well in advance to the Engineer-in-charge, the names and address of the factory from which the contractor intends to get the shutters manufactured. The contractor will place order for manufacture of shutters only after written approval of the Engineer-in-charge in this regard is given. The contractor is bound to abide by the decision of the Engineer-in-charge & recommend a name of another factory from the approved list in case the factory already proposed by the contractor is not found competent to manufacture quality shutters. Shutters will, however, be accepted only if this meet the specified tests. The contractor will also arrange stage wise inspection of the shutters at factory to the Engineer-in-charge or his authorized representative. Contractor will have no claim if the shutters brought at site are rejected by Engineer-in-charge in part or in full lot due to bad workmanship and quality. Such shutters will not be measured & paid and the contractor shall remove the same from the site of work within 7 days after the written instruction in this regard are issued by Engineer-in-charge or his authorized representative.

15. **Condition for cement:-**

18.1 Cement required for the work shall be procured by the contractor.

18.2 The contractor shall procure 43 grade OPC conforming to IS: 8112-1989 or PPC conforming to IS: 1489 as required in the work from reputed manufacturers of cement having a production capacity of One million tones per annum as per approved make list. Supply of cement shall be taken in 50-kg bags bearing manufacturer's name, or his registered trade marks if any and grade and type of cement as well as ISI marking. The packing of the cement bags shall be as per CPWD specifications 2019.

18.3 Every delivery of cement shall be accompanied by producer's certificate confirming that the supplied cement confirms to relevant specifications. These certificates shall be endorsed to the engineer in charge for his record.

18.4 The cement shall be brought at site in supply of approximately 5 tonnes or more as decided by the Engineer-in-charge.

18.5 Cement store shall be provided with a single door with two locks. The keys of one lock shall remain with CPWD Engineer-in-charge or his authorized person and that of other lock with the authorized agent of the contractor at the site of work so that the cement is issued from godown according to the daily requirement with the knowledge of both the parties. The account of daily receipt and issue of cement shall be maintained in a register in the prescribed Proforma and signed daily by the contractor or his authorized agent in token of its correctness.

18.6 The contractor shall be responsible for the watch and ward and safety of the cement go down. The contractor shall facilitate the inspection of the cement go down by the Engineer-in-Charge at any time.

18.7 Samples of cement arranged by the contractor shall be taken by the Engineer-in charge and got tested in accordance with provisions of relevant BIS codes as and when testing required by Engineer-in- Charge. In case test results indicate that the cement arranged by the contractor does not confirm to the relevant BIS codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer-in-charge to do so.

18.8 The contractor shall supply free of charge cement required testing. The cost of tests shall be borne by the contractor and test result should confirm to BIS code.

18.9 The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract

18.10 The theoretical, consumption of cement shall be worked out as per procedure prescribed in clause **38** of the contract and shall be governed by conditions laid therein. No payment for excess consumption of cement will be allowed.

18.11 Cement / steel brought to site and remaining unused after completion of work shall not be removed from site without written permission of the Engineer-in-charge.

19 The contractor shall get the source of various raw materials namely aggregate, cement, sand, water etc. to be used on the work, approved from the Engineer-in-Charge and trial mixes for controlled concrete shall be done using the approved materials. The contractor shall stick to the approved source unless it is absolutely unavoidable. Any change shall be done with the prior approval of the Engineer-in-Charge for which tests etc. shall be done by the contractor at his own cost.

20 **Sand to be used for cement concrete work, mortar for masonry and plaster work shall be of standard quality and shall be obtained from the source approved by the Engineer-in-charge and screened, if required. The same shall consist of hard siliceous material. It shall be clean sand.**

21 Royalty at the prevalent rates shall have to be paid by the contractor on all the building metals, shingle, sand and bajari etc. collected by him for the execution of the work, directly to the Revenue authority or authorized agent of the state Govt. concerned or Central Govt.

22 All sub-standard material rejected shall be removed from the site immediately and department will not be responsible for the safe custody of the same. In case of failure the same will removed from the site of work at the cost of the contractor. **Nothing extra shall be payable for using extra mortar for achieving smooth and even surface for plaster**

work and extra cement shall not be considered for cement consumption on this account.

23 **Nothing extra shall be payable for using combination of marble, granite, kota, sand stone slabs & ceramic tiles etc. in the required pattern at various locations.**

24 **Nothing extra will be paid for the additional thickness of bed mortar that will be required to achieve uniform finished surfaces on account of difference in specified thickness of marble, granite, Kota stone, sand stone & ceramic tiles etc.**

25 Any cement slurry, required to be added over base surface for bond or for continuation of concreting, its cost shall be deemed to have been included in the respective items, unless specified otherwise and nothing extra shall be payable nor extra cement shall be considered in the cement consumption on this account.

26 Flooring in toilets, verandah, kitchen, courtyard etc. shall be laid to the required slope/gradient as per the directions of the Engineer-in-Charge.

27 The pattern, spacing and locations of joints shall be as per drawings and direction of the Engineer-in-Charge.

28 **The water proofing items shall be got done through the firms approved by the Engineer –In- Charge**.

29 The SCI/CI pipes and G.I. pipes, wherever necessary, shall be fixed to RCC columns, beams etc. with rawl plugs, or appropriate fasteners as approved by Engineer-in-Charge, and nothing shall be payable on this account.

30 No claim for idle establishment & labour, machinery & equipments, tools & plants and the like, for any reason whatsoever, shall be admissible during the execution of work as well as after its completion.

31 The contractor shall have to carry out the work according to approved programme duly approved by the competent authority. The contractor shall not carry out any work in any building without permission of the Engineer-in-Charge. The contractor shall have to adhere this programme failing which he shall be wholly responsible for any inconveniences caused to the occupants. No claim for idle labour on any account shall be entertained. The contractor shall depute his representative daily to the site of work. His name and signature shall be attested by the contractor for record in the department.

32 The contractor shall prepare one sample of item which shall be got approved from the Engineer-in-charge. Only on acceptance of sample, contractor will be allowed to commence the work and sample is to be preserved by the contractor till the whole work is completed. The quality of entire work should confirm to the approved sample.

33 Any damage to the building structure, fittings or any other articles etc. done by the contractor or his workman during the execution of the work shall be made good by the contractor at his own cost and nothing extra will be paid on this account. However, if contractor fails to attend the same, the same will be made good by the Engineer-in-Charge at the risk & cost of the contractor.

34 Any damage to work resulting from weathering conditions, defacing or from any other cause such as negligent act on the part of contractor, until the work is taken over by the Department after completion of work, shall be made good by the contractor at his own cost.

35 The paints/ other materials shall be issued by the Junior Engineer/ Assistant Engineer to the contractors after breaking the seal of the containers/ packing and quantity to be issued shall be as per the daily requirement at the site. After days use balance quantity of paints etc., if any left will be returned by the contractor to the Deptt. After use, the empty container shall have to be returned to the Department, and these shall be the property of Department. The empty container shall be preserved by JE of site-In-charge and will not be disposed of till the completion of the work.

36 Nothing extra shall be paid to the contractor for excess consumption of material.

37 **The contractor and/ or his authorized agent should see the site order book every day and get the compliance noted by the Junior Engineer/ Assistant Engineer/ Engineer-in-Charge.**

38 The theoretical consumption of materials like satna lime, distemper, paint, water proof cement paint etc. shall be computed, as per the consumption of co-efficient of DAR 2023. In case of variation between the actual and the theoretical calculations action shall be taken as below:

(a) For the materials to be arranged by the contractor: - In case the materials used other than mentioned Schedule F under clause 12 is less than theoretical requirements the cost for the material used less shall be recovered from the contractor at the basic rate as given in D.S.R. 2023 plus carriage plus 1% W.C. plus 15% contractor profit and over heads plus contractor's enhancement/abatement as per clause 12 of the agreement. For all excess use of materials over the theoretical consumption no extra payment shall be made to the contractor:

39 The contractor shall give a performance test of the entire installation(s), as per standing specifications, before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.

40 The work pertaining to the items of internal finishing should be started in consultation and with prior approval of Engineer-in-Charge as soon as the structure/other items of work are completed.

41 Before taking up demolition work, contractor has to arrange materials in advance and thereafter permission for dismantling/demolition work will be given.

42 **All materials required for work i.e. Floor tiles, Wall tiles, cement, sanitary items etc shall be brought at site in full quantity by the agency and the bills/vouchers will be submitted by the Agency at the same time.**

43 **The contractor shall make all the wooden & steel door/windows functional in all areas wherever work is carried out, by checking & repairing of all existing doors, windows, ventilation cupboard etc. including fitting required for its smooth functioning. (only fittings like handle, tower bolt, sliding door bolt, hinges, glass panes, beading, if required/replaced shall be paid separately as per BOQ provision).**

44 **The contractor is required to submit all the purchase voucher/invoice, indicating the amount of GST paid, duly signed by him of all the materials like Cement, Steel, Paint, Putty, Distemper, C.I/G.I pipes, Granite, Flush door, Boards/Ply, Structural Steel, Tiles, Sanitary Installations, CPVC/PVC pipes etc. during the submission of R.A./Final bill or as directed by the Engineer-in-charge.**

45. **NGT guidelines during execution of work should be followed. Nothing extra shall be payable for this.**

List of Specialised Items (Civil) & Criteria for approval of Specialised Agencies

1. Structural repairs and rehabilitation/retrofitting work.
2. Items as decided by Engineer-in-charge

Procedure for Execution of the Specialised Items:

Such items should be got executed only through associated agencies specialised in these fields. The contractor shall indicate the name(s) of his associated specialised agencies those fulfilling the below mentioned eligibility conditions as early as possible and within 15 days of award of work to Engineer-in-Charge for approval of competent authority.

Specialised Agencies for relevant works shall be approved by the competent authority. The contractor shall quote the rates after careful study of contract conditions, specifications, drawings & schedule of quantities.

It shall be the responsibility of main contractor to sort out any dispute / litigation with the Specialised Agencies without any time & cost overrun to the Department. The main contractor shall be solely responsible for settling any dispute/ litigation arising out of his agreement with the Specialised Agencies. The contractor shall ensure that the work shall not suffer on account of litigation / dispute between him and the specialised agencies. No claim of hindrance in the work shall be entertained from the Contractor on this account. No extension of time shall be granted and no claim what so ever, of any kind, shall be entertained from the Contractor on account of delay attributable to the selection/rejection of the Specialised Agencies.

The Criteria for approval of specialised agencies will be as under in respect of the relevant specialisation.

The specialised firms should satisfy the following eligibility criteria:

Experience of having successfully completed similar works during the last seven years ending last day of month previous to the one in which tenders are invited.

a) Three similar completed works each costing not less than 40% of the estimated cost put to tender of the relevant specialised item / items, or
b) Two similar completed works each costing not less than 60% of the estimated cost put to tender of the relevant specialised item/ items, or
c) One similar completed work costing not less than 80% of the estimated cost put to tender of the relevant specialised item / items.

CONDITIONS FOR CEMENT & STEEL

1 The contractor shall procure Ordinary Portland cement 43 grade conforming to IS: 8112 or PPC conforming to IS: 1489 to require in the work as specified in the approved make list. Supply of cement shall be taken in 50 kg bags bearing manufacturer's name and ISI marking except for concrete from RMC producer where bulk cement can be procured. Samples of cement arranged by the contractor shall be taken by the Engineer in Charge and got tested in accordance with provisions of relevant BIS Codes. In case test results indicate that the cement arranged by the contractor does not conform to the relevant BIS Codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer in Charge to do so. Only the cement with satisfactory test results shall be allowed to be used in the work.

2 The cement shall be brought at site in bulk supply of **5 tonnes** or as decided by the Engineer in Charge.

3 **The contractor shall make his own arrangement for storage of cement and will store the cement as per CPWD Specifications**. Double lock provision shall be made to the door of the cement go-down. The key of one lock shall remain with the Engineer in Charge or his authorized representative and the key of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement go-down.

4 The contractor shall supply free of charge the cement required for testing and shall also bear the packing, sealing, transportation & other incidental charges. The testing charges of approved laboratory shall be borne by the contractor.

5 The cement shall be got tested by the Engineer-in-Charge and shall be used on the work only after satisfactory test result have been received.

6 The day to day actual issue/receipt and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per the procedure prescribed in clause 38 of the contract and shall be governed by conditions laid therein.

7 Cement brought to site and cement remaining unused after completion of work shall not be removed from site without written permission of the Engineer in Charge.

8 The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract.

9 OPC 43 Grade cement should be used for integral water proofing work and separate entry in MAS / Cement Register should be maintained on different pages to regulate the actual issue and consumption of cement for work as provided in clause 10 of the contract.

STEEL REINFORCEMENT:

1. The agency shall procure and use Fe 550D CRS grade reinforcement steel bars confirming to relevant IS codes as presently applicable and any further amendments issued during & upto the period of execution/completion in compliance with relevant provisions contained in CPWD OM No. CSQ/SE(TAS)/Steel/2024/262-H dated 14.08.2024 (Appendix -VIII) – " Guidelines for use of TMT steel / Low Alloy Steel reinforcement Bars in CPWD works and enlistment of the steel manufacturers in respect of TMT steal / Low Alloy / Corrosion resistant Steel Reinforcement bars in CPWD". The producers of such Steel reinforcement bars shall be as per "Preferred makes of the

materials given in this tender document. For lapping of steel reinforcement bars above 12 mm diameter, mechanical couplers of appropriate make and design shall be used.

2. For reinforced cement concrete or pre-stressed concrete works, the reinforcement bars shall consist of the following grades conforming to IS: 1786 : 2008 (Indian Standard specification for high strength deformed steel bars and wires for concrete reinforcement of grade Fe 550D.

3. The contractor shall obtain manufacture's certificate stating the process of manufacture, chemical composition and test sheet giving result of each mechanical test applicable to the material purchased and submit it to the Engineer in charge. Each test certificate shall indicate the number of the cast to which it applies, corresponding to the number or identification mark to be found on the material.

4. The Engineer in charge or his authorized officer shall get each consignment tested for both chemical composition and physical properties (including bend and re-bend test) as specified in IS:1786 from NABL accredited laboratory or any Government Laboratory.

5. The contractor shall have to obtain and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work.

6. Samples shall also be taken and got tested by the Engineer-in-Charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to the specifications, the same shall stand rejected, and it shall be removed from the site of work by the contractor at his cost within a week time or written orders from the Engineer-in- Charge to do so.

7. The steel reinforcement shall be brought to the site in bulk from manufacturers along with test certificate of each lot supply of 10 MT or more or as decided by the Engineer-in-Charge.

8. The steel reinforcement shall be stored by the contractor at site of work in such a way as to prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

9. For checking nominal mass, tensile strength, bend test, re-bend test etc. specimen of sufficient length shall be cut from each size of the bar at random at frequency not less than that specified below:

Size of bar	For consignment below 100 tonnes	For consignment above 100 tonnes
Under 10 mm dia bars	One sample for each 25 tonnes or part thereof	One sample for each 40 tonnes or part thereof
10 mm to 16 mm dia bars	One sample for each 35 tonnes or part thereof	One sample for each 45 tonnes or part thereof
Over 16 mm dia bars	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

10. All expenditure to be incurred for testing of samples e.g. supply of material, packaging,

sealing, transportation, loading, unloading, etc. including testing charges shall be borne by the contractor.

11. The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in the format provided in this document of the contract. The theoretical consumption of steel shall be worked out as procedure prescribed in clause 38 of the contract and shall be governed by conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate so prescribed shall be made. In case of excess consumption, no adjustment need to be made.
12. Steel brought to site and steel remaining unused shall not be removed from site without the written permission of the Engineer-in-charge.
13. The contractor shall submit original vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be used in the work. All consignment received at the work site shall be inspected by the Site staff along with the relevant documents before acceptance. The contractor shall obtain Original Vouchers and Test Certificates and furnish the same to the Engineer-in-Charge in respect of all the lots of steel brought by him from approved supplier to the site of work. The original vouchers and test certificates shall be defaced by the Site staff and kept on record in the site office.
14. The standard sectional weights referred to as in Table 5.4 in para 5.3.4 in CPWD Specifications will be considered for conversion of length of various sizes of M.S. Bars, Steel Bars and T.M.T. bars into Standard Weight.
15. Records of actual Sectional weights shall also be kept dia-wise and lot-wise. The average sectional weight for each diameter shall be arrived at from samples from each lot of steel received at site. The decision of the Engineer-in-Charge shall be final for the procedure to be followed for determining the average sectional weight of each lot. Quantity of each diameter of steel received at site of work each day will constitute one single lot for the purpose. The weight of steel by conversion of length of various sizes of bars based on the actual weighted average sectional weight shall be termed as Derived Actual Weight. However, for the stipulated issue of steel reinforcement up to and including 10mm diameter bars, the actual weight of steel issued shall be modified to take into account the variation between the actual and the standard coefficients and the contractors' accounts will be debited by the cost of modified quantity.
16. (a) If the Derived Weight as in sub-para above is less than the Standard Weight as in Sub-para above then the Derived Actual Weight shall be taken for payment provided, if it is within the following tolerances specified in IS1786-2008, otherwise whole lot will be rejected.

Tolerances on Nominal Mass

Nominal Size in mm	**Batch**	**Tolerance Nominal mass Percent**	
		on Individual Sample*	**Individual sample for coil****
Upto and including 10	±7 %	-8 %	±8 %
Over 10 upto and Including 16	±5 %	-6 %	±6 %
Over 16	±3 %	-4 %	±4 %

* For individual sample plus tolerance is not specified.

** For coils batch tolerance is not specified.

(b) If the Derived Actual Weight is found more than the Standard Weight, the Standard Weight as per in sub-para above shall be taken for payment. In such case nothing extra shall be paid for the difference between the Derived Actual Weight and the Standard Weight.

17. The contractor shall procure all the steel well in advance so that there is sufficient time to testing and approving of the materials and clearance of the same before use in work.

18. All materials brought by the contractor for use in the work shall be got checked from the Engineer-in-Charge or his authorized representative of the work on receipt of the same at site before use.

19. The contractor shall also employ necessary watch and ward establishment for the safe custody of materials at his own cost.

20. Contractor has to produce manufacturers test certificate for each lot of steel procured at site.

21. The following procedure shall be followed in case of removal of rejected/sub- standard materials from the site of work.

i) Whenever any material brought by the contractor to the site of work is rejected, entry thereof should invariably be made in the site order book under the signature of the JE/AE/AEE giving approximate quantity of such materials.

ii) As soon as the material is removed, a certificate to that effect may be recorded by the JE/AE/AEE against the original entry, giving the date of removal a mode of removal i.e. whether by truck, carts or by manual labour. If removal is by truck, the registration number of the truck should be recorded.

iii) When it is not possible for the JE/AE/AEE to be present at the site of work at the time of actual removal of the rejected/sub-standard materials from the site the required certificate should be recorded by the Junior Engineer and the AE/AEE should countersign the certificate recorded by the Junior Engineer.

PARTICULAR SPECIFICATIONS FOR REPAIR WORK

1. Adequate care should be taken by the contractor while dismantling, chiseling, demolishing work, drilling etc. that impact/vibrations are minimum for considerations of structural safety and also for inconvenience caused to the users of the building. Perimeter of unsound concrete area shall be marked by making shallow cut on cover concrete with cutter machine to reduce the impact of chiseling. Rates shall cover cost of all inputs of material, labour; T&P etc. involved all the operations in the work.
2. Dismantling and repair work of any type like plaster, flooring, concrete, RCC, Brick work, GI/CI pipes, water proofing etc. shall be for all heights and all levels unless specifically mentioned in the item and no claim for extra cost shall be entertained on this account.
3. Sequence of strengthening work shall be as under:
   a. Strengthening of beams of first floor and columns from top of grade beams/foundations up to middle of second floor.
   b. Strengthening of beams of second floor and column from middle of second floor to middle of third floor.
   c. Strengthening of beams of third floor and columns from middle of third floor to middle of the fourth floor.
   d. Strengthening of beams of fourth floor and terrace beams and columns from middle of the fourth floor up to terrace level.
   e. Gunited repaired structural members shall be allowed to attain at least 7 days strength before any load is transferred to that member.

1 For removal of all type of loose / delaminated / damaged / weak cement plaster from the surface of masonry or concrete, a cut normal to the surface all along the boundaries, in regular shape shall be made not to exceed plaster thickness. Then plaster shall be removed completely to expose the parent masonry or concrete surface so as not to have any traces of such plaster left. For brick work, the joins have be properly raked and cleaned as per CPWD specifications. The plaster should be dismantled without causing any damage to brick work.

5 CHIPPING/ DISMANTLING OF UNSOUND/ WEAK CONCRETE & PREPARATION OF SUBSTRATE:

5.1 The perimeter of unsound / weak concrete / delaminated layer of guniting shall be sawcut to a minimum depth of 12 mm in square/rectangular shape at normal (orthogonal) to the surface of member. Then concrete shall be removed by chipping with standard power-driven percussion type or pneumatic chisel of standard make from the demarked area including tapering all edges, making square shoulders of cavities etc. complete (after properly supporting the member with false works). The chipping shall be done in regular shape, with sides parallel or normal to the direction of the reinforcement and minimum 50mm beyond the perimeter of the spall for single spall, the repair area should have a minimum width of 100 mm in direction. If a number of spalls are closely located to each other, these should be included in a single area marked for repair.

5.1.1 **Exposing of rusted/corroded reinforcement:**

Reinforcing bar must be further exposed if the remaining concrete is debonded from the reinforcing bar. Chipping around the reinforcing bar shall be continued to completely expose it, if more than half of reinforcing bar perimeter has been exposed. Concrete shall be removed from all around reinforcement including from behind the reinforcing bars to give an average 25 mm (but not less than 15 mm clear air gap) by using standard power-driven percussion type or pneumatic chisel of standard make.

5.2 Adequate care is to be taken not to cut the reinforcement steel and a cover meter could be used to estimate the depth of cover, for which nothing extra shall be paid.

5.3 Chipping should be done up to the required depth as decided by the' Engineer-in-Charge to reach sound concrete substrate to a near uniform depth for the repair areas.

5.4 Dimensions of area chipped off for RCC slabs, beams, columns etc. shall be measured in centimeters after the chipping / dismantling operation is completed. The area of the chipped / exposed RCC surface shall be measured in sq. m. correct to second place of decimal.

5.5 For the RCC members to be completely dismantled, pre-measurement of the dimensions of RCC member to be dismantled shall be recorded before taking up the dismantling operation and volume of concrete dismantled shall be worked out in cubic meters correct to second place of decimal.

5.6 Removal of concrete should begin at the interior of the repair areas and progress towards the boundaries. All edges and cavities shall be square shouldered.

6 CUTTING OF EXISTING REINFORCEMENT

6.1 The existing reinforcement bars to be cut shall be identified and approved for cutting by the Engineer-in-Charge.

6.2 The reinforcement shall be carefully cut with electrical cutter machine to minimize excessive vibrations or damaging the structure and the recovered reinforcement should be straightened, cleaned of concrete by wire brush scrapped and stacked properly with in a lead of 50 meters as directed by the Engineer-in-Charge.

7 CLEANING OF EXISTING REINFORCEMENT

7.1 Before re-casting/ jacketing of members or repairs to members with polymer modified mortar, the reinforcement has to be cleaned properly, as specified.

7.2 At first rust shall be removed from the surface of the reinforcement manually using chisels, wire brush, emery paper etc. as directed by Engineer-in-Charge at no extra cost, till the steel surface is cleaned off loose rust.

7.3 Then sulphate and chloride free chemical rust remover, as approved by the Engineer-in-Charge shall be applied with paint brush over the reinforcement surface thoroughly along the full length of rusted reinforcement. After 24 hours of its application the surface shall be cleaned with wire brush to remove all loose particles.

7.4 Rates shall include cost of all materials, labour, T&P etc. involved in all the operations.

8 ADDITIONAL REINFORCEMENT BARS: -

For introducing additional reinforcement bars for new structural connections or supplementing additional steel area to the existing RCC member, the cross-sectional area (diameter and no. of bars) and length required shall be approved by the Engineer-in-Charge. Also, the depth of embedment of reinforcement bar shall be approved by the Engineer-in-Charge. The holes of specified diameter and depth have to be bored with diamond or hammer drill machine in RCC. Diameter of the hole shall be 4mm larger than dia of dowel bar. The bored hole in dry state, shall be cleaned with round brush and by blowing air through a tube inserted in the hole and connected to hand operated blower. Depth of holes shall be checked by the field staff by inserting rod marked with standard length.

Then, epoxy shall be injected from foil pack with help of epoxy dispenser and epoxy cartridge holder and disposable PVC mixing nozzle inserted inside the drilled hole to fill it from bottom/end of hole and slowly withdrawing the pipe while injecting epoxy till mouth of hole to ensure no air void is left inside the hole. Then dowel bar shall be inserted by pressing and turning till end of the hole is reached and shall be allowed to remain undisturbed for minimum 24 hours for epoxy to be air cured.

Rates shall include cost of all inputs of material, labour and T&P etc. involved in all the operational except the cost of reinforcement.

8.1 WELDING ADDITIONAL REINFORCEMENT:

In case cross sectional area of an individual bar of RCC slab has been reduced by 20% or more, then additional reinforcement shall be welded with existing bar to ensure continuity of the reinforcement of equal strength of original bar as illustrated in the sketch. If any existing reinforcement bar is found displaced/loosened, same hall be secured at its design location.

9 SHEAR KEYS: -

Shear keys shall also be provided in similar manner as illustrated in para 8.0 above. The shear key bars cut and bent to the required shape shall be embedded in parent concrete to a minimum depth of 50 mm or longer as specified in the item. Rates shall include cost of all materials, labour and T & P etc. involved in all the operations.

10 CLEANING OF EXPOSED RCC/ CONCRETE SURFACE, INSERTING NIPPLES AND INJECTION GROUTING: -

10.1 The final chipped off concrete surface and exposed reinforcement, if any of the affected structural member should be cleaned off all loose and foreign materials by free air blast and then with water and allow it to dry.

10.2 For the honey combed portion of the concrete or cracked concrete, drill holes at least 18 mm in diameter and depth up to 60 mm or behalf the member thickness whichever is less, at the required spacing, as directed by the Engineer-in-Charge.

10.3 For cracked surface open up cracks by making V notch or groove of size 12 mm x 12 mm as directed by the Engineer-in-Charge.

10.4 Remove coarse debris and dust in opened up cracks and drilled holes by blowing air with hand operated blow out pump. Concrete surface required to be grouted shall be free from all loose and unsound material. The prepared surface should be clear of dust which could obstruct tree flow or grout material and also impede its bonding with concrete surface. Saturate the concrete in vicinity of crack / honey combed concrete surface with water (but without excess water) only if the cementations / polymer admixed grout to be injected.

10.5 Insert 12 mm diameter specified injection nipples in holes drilled along cracked lines or in honey combed area of concrete and fix them by sealing on its sides with or polymer modified mortar, as directed by the Engineer-in-Charge.

10.6 Seal the crack or the honey combed surface between the nipples by means of epoxy mortar or polymer modified mortar, as approved by the Engineer-in-Charge. The polymer used shall be of approved grade and polymer modified mortar shall be applied as per specifications mentioned separately for polymer modified mortar. The polymer modified mortar shall be moist cured for 3 days and allowed to gain strength before actual grouting commences.

10.7 To inject grout in nipples, the cementious grout shall be prepared from cement (OPC-43 grade), sand (sharp, washed well graded generally conforming to zone IV of IS: 383) and water conforming of IS: 456 mixed in specified proportions as directed by the Engineer-in-Charge.

10.8 The emulsified acrylic polymer shall be as specified and shall conform to manufacturer's specification. The physical and mechanical properties of polymers shall conform to manufacturer's specification. One test shall be carried out mandatorily for every lot of acrylic polymer supplied at site, before use in the work.

10.9 The grouting equipment shall be capable of supplying mixing, stirring and pumping grout to the satisfaction of Engineer-in-Charge. It shall have capacity to inject grout at a pressure up to 7 kg / sq. cm measured at grout connections. It shall be capable cement ratio ranging from 0.5 to 1.0.

10.10 Wherever epoxy is to be used the surface of the concrete shall be dried with air blast, before grouting or applying epoxy.

10.11 The cementious grout in proportion as directed by the Engineer-in-Charge shall be prepared. It should be lump free of creamy consistency, thoroughly blended and shall be continuously stirred to keep the cement particles in suspension to retain uniform consistency in grout is injected.

10.12 In case of vertical cracks the injection shall be started at the lowest nipple and continued until the injected grout begins to flow out at the next higher nipple. The first nipple shall then be closed and injection continued from second until grout flows out at the third and so on. The process shall be repeated until the whole surface is treated. As soon as the system is cured, the nipples shall be suitably cut.

10.13 In case of honey combed concrete, each grout hole shall be grouted individually. The sequence of injection shall be as per the directions of the Engineer –in-Charge.

10.14 The measurement of grout material shall be on the basis of only the weight of cement consumed in kg.

10.15 Pre measurements of the quantities of such grouting materials brought at site and balance quantities remaining at the end of grouting application shall be recorded separately which will determine the quantity of grout material actually injected. Adequate care is to be taken by the contractor as not to waste the grout. The quantity which can be consumed immediately within the prescribed time only shall be prepared in batches.

10.16 The quantity of grout material wasted, discarded, hardened shall not qualify for payment and shall be recorded for deduction at the end of each operation.

11. BOND COAT

11.1 Bond coat is required to be applied for adhesion of applied repair concrete or mortar to the parent concrete. For this, the surface should be thoroughly cleaned by brushes and by blowing air from hand operated pump. The surface shall then be saturated with water minimum 1 hour before application of bond coat and allow surface to attain saturated surface dry condition (SSD).

11.2 PREPARATION OF BOND COAT:

The components of bond coat shall be weighed batched and mixed in specific proportions as indicated in the item. Area of chipped concrete surface shall be assessed roughly. Accordingly required quantity of acrylic polymer for bond coat shall be taken in a plastic bucket/mini drum then proportional quantity of OPC cement by weight (as per

manufacturer's specifications) shall be blended slowly under continuous stirring with low speed (500 – 800 rpm) electric stirrer for minimum 2 minutes till a homogenous and lump free slurry is formed. In no case bond coat slurry shall be prepared without electric stirrer at site.

11.3 The specified bond coat shall be applied by stiff nylon bristle brush. The bond coat shall be worked well onto the concrete surface of the parent concrete including reinforcement surface ensuring that no pinholes are left. The polymer modified bonding cement slurry shall be applied to a thickness not more than 2mm. Bond coat shall be allowed to reach tacky condition before applying polymer modified mortar or pouring concrete jacket. (Area of exposed RCC unit shall be measured in sqm correct to two decimal places for the purpose of payment).

11.4 Prefabricated shuttering shall then be erected immediately. Fresh concrete / mortar shall be placed / applied while the bond coat is still tacky and well within pot-life / setting period. If adhesive cures to the extent of losing its tack or has set before concrete / mortar is placed / applied, the same shall be removed or slightly abraded and another coat of adhesive / bond coat shall have to be applied by the contractor at his own cost.

11.5 Freshly placed concrete shall be thoroughly consolidated to ensure full bonding of the fresh concrete with the parent concrete. If there is a failure of bond of fresh concrete/ plaster with parent concrete surface and it sounds hollow on tapping, the repair work shall be dismantled and redone by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. CPWD specifications for manufacture and placing and curing of concrete shall, in general, be followed unless specified otherwise.

12 ADDITIONAL REINFORCEMENTS FOR GUNITING/ JACKETING WORK:

12.1 The existing reinforcement bars in the R.C.C. member to be guinited shall be cleaned properly to remove all scales and rust by wire brushing and by rubbing with sand paper, sandblasting wherever possible etc. complete as directed by the Engineer-in-Charge.

12.2 The additional reinforcement shall be provided to hold gunited material/concrete in position and shall be so fixed that it is creased in succeeding layer.

12.3 The additional reinforcement, if required, as per the directions of the Engineer-in-Charge, shall be placed in position including cutting, straightening, binding and fixing. in position by fixing into the existing concrete by fastening to shear keys and should be secured rigidly so that it does not belly out or get displaced during guniting jacketing work. The mesh reinforcement shall be fixed in a manner so that it is firmly held at least 12mm away from the parent concrete as well as final finished surface. Also, clear spacing between the reinforcement bars shall not be less than 50mm.

12.4 Additional reinforcement if required shall be tied with required lap using G. I. binding wire or welded to the parent reinforcement and also to the shear keys is directed by the Engineer-in-Charge.

12.5 Additional vertical reinforcement shall be anchored to the base of the column by boring hole of diameter 4 mm larger than the dia of reinforcement bar for a depth of 12 times the dia of the bar and secured it in the hole with epoxy as per standard procedure described in para no – 8

13 ANTI CORROSIVE TREATMENT:

After cleaning off rust from reinforcement bar, coat of passivating slurry shall be applied on surface of reinforcement bar. Length of reinforcement bar to be treated with passivating coat shall be assessed roughly in advance. Accordingly required quantity of anticorrosive polymer shall be taken in a plastic bucket/mini drum and specified proportion of OPC cement by weight (as per manufacturer's specifications) shall be blended slowly under continuous stirring with electric stirrer for minimum 2 minutes till a homogenous and lump free slurry of creamy thick consistency is formed. One /Two coats of passivating slurry (as per manufacturer specifications) shall be applied on reinforcing bar by stiff nylon bristle brush ensuring no pinholes are left. In case application of two coats, the second coat shall be applied minimum six hours after application of 1st coat, The passivating coat shall be allowed to set for minimum 24 hours before operating next item. In no case passivating slurry shall be prepared without electric stirrer.

14 POLYMER MODIFIED MORTAR: -

14.1 Preparation of polymer modified mortar at site (PMM):

Polymer modified mortar shall be prepared with OPC cement and graded quartz sand admix with acrylic polymer. The graded coarse sand shall be obtained from mixing of 3 different grades of quartz sand at site in following proportion by weight/volume.

Quartz sand of grade 8 x 16 (coarse) = Z1

Quartz sand of grade 16 x 30 (medium) = Z2

Quartz sand of grade 30 x 80 (fine) = Z3

Desired proportion of Z1:Z2: Z3 = 8:3:4

Sufficient quantity of graded quartz sand shall be prepared before mixing of mortar. The same ratio shall be maintained throughout the execution of structural repair work. Area of chipped concrete surface shall be assessed roughly. Accordingly required quantity of acrylic polymer mortar shall be prepared for repair of RCC which can be applied within half an hour. Quantity of all components shall be found out as per theoretical consumption given in the item as per different manufacturers' specification. Calculated quantity of graded coarse sand and specified proportion of OPC cement shall be mixed in dry stage uniformly on GI mortar mixing tray. Quantity of polymer shall be taken in specified proportion of cement as per manufacturer's specifications in plastic bucket/mini drum. 85%

of required quantity of water shall be taken in a bucket/mini drum (not more than 30% capacity of the bucket), then dry PMM shall be blended slowly under continuous stirring with low speed (500 – 800 rpm) electric stirrer for minimum 2 minutes and mortar shall be allowed to remain undisturbed for three minutes to dissolve polymer in the mortar. Balance quantity of water shall be added in the similar manner to form homogenous cohesive mortar of dough like consistency. Right consistency of mortar can be checked by making medium size ball of green mortar with hand. The ball should retain its shape when held on palm and at the same time it deforms easily without being cracked when it is pressed with palm.

14.2 Application of polymer modified repair mortar

The quantity of mortar shall be prepared at site it can be used up within 30 minutes after mixing dry mortar with water. Small balls of green mortar shall be pressed with palm applying small force against the concrete substrate primed with bond coat (wet on wet) for a thickness not more than 12mm. Next layer of mortar shall be applied over the first layer minimum after 6 hours to build up thicker section. The surface of repaired area shall be roughly finished with trowel upto the level of original RCC surface of the structural member. In no circumstances PMM shall be applied by trowel by increasing water in the mix.

14.3 Pre measurement of thickness shall be taken just after the surface preparation is completed. Area under repair shall be measured correct to a centimeter.

14.4 Curing: -

Curing shall be started after 24 hours of application of PMM. The repaired RCC member preferably wrapped with damp hessian cloth wherever feasible. Otherwise, repaired member shall be kept damped by spraying water over it with spraying machine without causing any dripping to prevent leaching of polymer content from mortar. The repaired surface shall be moist cured for 3 days followed by air curing at ambient temperature; steam curing shall not be permitted.

14.5 Testing: One mandatory test of the polymer modified mortar for every 250 sqm of plaster or part there of shall be conducted. The test shall be conducted on cube of size 70 mm, made from cement and graded quartz sand in ratio 1:3 admixed with approved polymer in specified proportion as per manufacturer specification. The test result should conform to the following strength parameter.

i) Minimum compressive strength after 28 days: 20 N/mm^2

ii) Minimum flexural strength after 28 days: 2 N/mm^2

15. **Particular specifications for premixed single component polymer modified repair mortar: (PMRM)**

Prior to applying premixed single component polymer modified repair mortar (PMRM) to RCC substrate, other repair items i.e. rust removal from reinforcement, anti corrosive treatment, providing additional reinforcement shall be completed in advance. Only bond coat shall be applied five minutes before applying PMRM.

15.1 Preparation of polymer modified repair mortar

PMRM shall be prepared in a plastic bucket/mini drum. 85% of required quantity of water shall be taken in a bucket/mini drum (not more than 30% capacity of the bucket), then dry PMRM shall be blended slowly under continuous stirring with low speed (500 – 800 rpm) electric stirrer for minimum 2 minutes and mortar shall be allowed to remain undisturbed for three minutes to dissolve polymer in the mortar. Balance quantity of water shall be added in the similar manner to form homogenous cohesive mortar of dough like consistency. Right consistency of mortar can be checked by making medium size ball of green mortar with hand. The ball should retain its shape when held on palm and at the same time it deforms easily without being cracked when it is pressed with palm.

15.2 Application of polymer modified repair mortar

The quantity of mortar shall be prepared at site it can be used up within 30 minutes after mixing dry mortar with water. Small balls of green mortar shall be pressed with palm applying small force against the concrete substrate primed with bond coat (wet on wet) for a thickness not more than 12mm. Next layer of mortar shall be applied over the first layer minimum after 6 hours to build up thicker section. The surface of repaired area shall be roughly finished with trowel upto the level of original RCC surface of the structure member. In no circumstances PMRM shall be applied by trowel by increasing water in the mix.

15.3 Curing

Curing shall be started after 24 hours of application of PMRM. The repaired RCC member preferably wrapped with damp hessian cloth wherever feasible. Otherwise, repaired member shall be kept damped by spraying water over it with spraying machine without causing any dripping to prevent leaching of polymer content from mortar. The repaired surface shall be moist cured for 3 days followed by air curing at ambient temperature; steam curing shall not be permitted.

15.4 Testing

One mandatory test of the polymer modified mortar for every 250 sq. m of plaster of part thereof shall be conducted. The test shall be conducted on cube of size 70 mm, made from polymer modified repair mortar. The test result should conform to the following strength parameter.

i) Minimum compressive strength after 28 days at w/p ratio 0.16:40 N/mm^2

ii) Minimum flexural strength after 28 days at at w/p ratio 0.16: 4 N/mm^2

16 PARTICULAR SPECIFICATION FOR PREMIXED READYMADE CEMENT MORTAR

The brands as specified in the preferred material / makes list are only to be used in place of traditional cement-sand mortar for readymade plastering.

1) **Surface Preparation**

The surface needs to be cleaned and made free from grease, dust and loose particles to ensure proper binding. The surface needs to be pre-wetted with clean water before plastering.

2) **Process of mixing**

i) Required quantity of dry mix shall be taken in a mortar mixing tray.

ii) Measured quantity of potable water shall be added to dry mix as per manufacturer's specification. (6-7 litre of water is required per 40kg bag of and 7-8 litres of water is required per 40kg bag). Correct ratio of water and dry mix is essential for better result.

iii) The mortar shall be mixed well for 5 to 10 minutes to achieve homogenous and cohesive mix. (Use of mechanical mixer / electrical stirrer is recommended for better results.)

iv) The prepared mix shall remain undisturbed for 5 minutes to dissolve polymer additive in mortar and shall be mixed once again without adding any water just before use.

3) **Method of Application**

i) Pre wetting of surface is required before applying plaster.

ii) The mixture should be applied within one hour of preparation of mix. This will ensure that the thin layer can be applied without cracking problems and proper cement hydration.

iii) If the concrete surface is smooth and dense, it is recommended to apply a bond coat of acrylic polymer of any approved make.

iv) Readymade mortar shall be applied manually using trowel and care should be taken that it does not expose to direct sunlight, wind and rain during its application.

4) **Curing**

Curing shall be started after 24 hours of plastering in normal weather condition. After the plaster is completely dried, curing shall be done 2 to 3 times for 2 to 3 days. In abnormally dry weather conditions, curing for 5-7 days is required.

17. **JACKETING BY CEMENT CONCRETE**

17.1 All care for casting, curing etc. shall be taken as per CPWD specifications (Ingredients of concrete have to be tested before use. Requisite number of test specimens shall be casted and tested).

17.2 Concrete for jacketing shall be prepared strictly in drum mixture machine (electric /diesel operated) 80% of gauging water for particular batch shall be poured in the mixer drum. Measured quantity of super plasticizer shall be mixed with remaining 10% part of gauging water and then it shall be added to the pre-wetted concrete mixed. Then dry aggregate and cement in specified proportion in sequence shall be added in the mixer drum as per CPWD specifications. Balance water should be added in such a manner to produce homogeneous high slum flowing yet very cohesive concrete without bleeding and segregation.

Before pouring concrete in the shuttering mould other repair items i.e. rust removal from reinforcement, anti-corrosive treatment, providing additional reinforcement and shear key etc. shall be completed in advance. Only bond coat shall be applied five minutes before pouring concrete. Concrete shall be poured in the shuttering mould when bond coat reaches tacky condition. There shall be no gap between shuttering and existing concrete surface. Thermocol sheet may be used to plug small irregular gaps.

17.3 While doing jacketing with cement concrete it should be ensured that dropping height of cement concrete should not be more than 60 cm.

17.4 **Testing:** One mandatory test for every 2.5 cum of concrete or part thereof shall be conducted. The test result should conform to the following strength parameter.

i) Minimum compressive strength: 42 N/mm2 in 28 days

ii) Minimum flexural strength: 4.42 N/mm2 in 28 days

18. PARTICULAR SPECIFICATION FOR MICRO CONCRETE

18.1 Preparation of mix at site:

85% to 90% of required quantity of potable water shall be taken in a clean plastic bucket/ mini drum or in a Pan of a Pan mixer. Proportional quantity of micro concrete (as per manufacturer specification) in dry state shall be blended slowly under continuous stirring electric stirrer or in rotating pan of pan mixer for 2 minutes. Then balance quantity of water shall be added to the mix and shall be stirred for another 2-3 minutes to form a homogeneous, free flowing lump free mix. 10 mm down coarse aggregate in the range of 25% - 40% by weight can be mixed where thickness of repair is more than 75 mm depending on site condition. Plastic bucket / Mini drum shall be used where volume of repair is less than 1 cum, otherwise pan mixer shall be used for preparation of micro concrete at site.

18.2 **Application of Micro Concrete:**

Primary repair items i.e. chipping, rust removal for reinforcement and anticorrosive treatment to reinforcement shall be operated well before jacketing of RCC members. Only bond coat shall be applied five minutes before pouring concrete. Micro Concrete shall be poured in the shuttering mould when bond coat reaches tacky condition. There shall be no gap between shuttering and existing concrete surface. Thermocol sheet may be used to plug small irregular gaps. Gaps in the shuttering shall be effectively sealed with masking tape to prevent leakage of fluid concrete through joint of shuttering or gaps between shuttering of RCC members at contact point. Repair surface shall be hacked immediately after removal of shuttering if it shall be finished with plaster later stage.

18.3 **Curing:**

Curing should be started after the shuttering. The repaired RCC member preferably wrapped with damp hessian cloth wherever feasible. Otherwise, repaired member shall be kept damped by spraying water over it with spraying machine without causing any dripping prevent leaching of polymer content from mortar. The repaired surface shall be moist cured for 3 days followed by air curing at ambient temperature; steam curing shall not be permitted.

18.4 **Testing**

One mandatory test of Micro concrete for every 2.5 cum of concrete or part thereof shall be conducted. The test shall be conducted on cube of size 75 mm, made from micro concrete. The test result should conform to the following strength parameter.

i) Minimum compressive strength: 42 N/mm2 in 28 days

ii) Minimum flexural strength: 4.42 N/mm2 in 28 days

SPECIAL CONDITION FOR WATERPROOFING WORK
GUARANTEE FOR WATER PROOFING TREATMENT:

All water-proofing work shall be carried out through approved specialist agency as per method of working approved by the Engineer-in-charge. However, the Contractors shall be solely responsible for waterproofing treatment until the expiry of the above guarantee period. 5 years guarantee in prescribed proforma attached shall be given by the contractor for the water proofing treatment. Towards that 10% (ten percent) of the cost of these items of water proofing under this sub head shall be retained as guarantee to watch the performance of the work executed. If any defect is noticed during the guarantee period, it should be rectified by the contractor within seven days of issuing of notice by the Engineer-in-Charge and, if not attended to, the same shall be got done through other agency at the risk and cost of the contractor and recovery shall be affected from the amount retained towards guarantee. In any case, the contractor and the specialist agency, during the guarantee period, shall inspect and examine the treatment once in every year and make good any defect observed and confirm the same in writing. The security deposit can be released in full, if bank guarantee of equivalent amount, valid for the duration of guarantee, period, is produced and deposited with the Department.

MAINTENANCE OF RECORDS BY THE CONTRACTOR

1. Maintenance of Material at Site (MAS) Register–

(i) All the MAS Registers including Cement and Steel Registers shall be maintained by Contractor which shall be issued to the contractor by Engineer-in-charge.

(ii) Each of the entry of receipt of material at site shall be 100% test checked by JE or by AE if there is no JE. Each MAS Register shall be checked by JE at least twice a week and at least once a week by AE. If there is no JE then MAS registers will be checked by A E at least twice a week.

2. Copy of all test registers and Material at Site Register with each alternate Running Account Bill and Final Bill shall be submitted by the contractor.

3. MAS register of the key materials including Cement, Steel Bitumen, Paint, Primer, Distemper, Varnishes, Tile Adhesive, Admixture, Anti termite chemical, Water proofing compound material and other items as required by Engineer-in-Charge, and shall be maintained as per proforma in Appendix-XX of GCC. All the entries in the MAS registers are to be made by the designated staff of the contractor and same is reviewed weekly by the authorized representative and fortnightly by the Engineer-in-Charge. However, contractor is responsible for maintenance and safe custody of MAS registers.

4. The self-attested copies of tax paid bill of all the materials entered in the MAS register shall be submitted by the contractor at the time of review by representative of Engineer-in-Charge. ln case of any doubt, genuineness of the tax paid bills; it can be verified by the representative of the Engineer-in Charge or the Engineer-in-Charge, however, onus of genuineness of tax paid bills rest with the contractor.

GUARANTEE TO BE EXECUTED BY CONTRACTORS FOR PREMIUM ACRYLIC SMOOTH EXTERIOR PAINT / ACRYLIC SMOOTH EXTERIOR PAINT AFTER COMPLETION IN RESPECT OF FINISHING ITEMS.

The Agreement made this_____day of_____Two thousand ---------- and between_____son of_____(hereinafter called the Guarantor of the one part) and the PRESIDENT OF INDIA (herein after called the Government of the other part).

WHEREAS THIS agreement is supplementary to a contract (hereinafter called the Contract), dated _____and made between the GUARANTOR OF THE ONE part and the Government of the other part, whereby the Contractor, inter alia, undertook to render the buildings and structures in the said contract recited completely defects free surface.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said structures will remain defect free for **FIVE YEARS** from the date of completion of work.

NOW THE GUARANTOR hereby guarantees that ***PREMIUM ACRYLIC SMOOTH EXTERIOR PAINT / ACRYLIC SMOOTH EXTERIOR PAINT** done by him will render the structures completely finish and the minimum life of such ***PREMIUM ACRYLIC SMOOTH EXTERIOR PAINT / ACRYLIC SMOOTH EXTERIOR PAINT** shall be **FIVE YEARS** to be reckoned from the date after the maintenance period prescribed in the contract.

Providing that the Guarantor will not be responsible for damage caused by earthquake or structural defects or misuse of surface and for such purpose.

The decision of the Engineer-in-charge with regard to kind of defects shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found render the building defects to the satisfaction of the Engineer-in-charge at his cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the GUARANTOR'S cost and risk. The decision of the Engineer-in-charge as to the cost, payable by the Guarantor shall be final and binding.

That if the Guarantor fails to remove its defects or commits breach there under, then the Guarantor will indemnify the Principal and his successors against all loss, damage, cost, expense or otherwise which may be incurred by him by reason of any default the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and / or damage and /or cost incurred by the Government the decision of the Engineer-in-charge will be final and binding on the parties.

IN WITNESS WHERE OF these presents have been executed by the Obligator _____and by ----------and for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

Signed, sealed and delivered by Obligor in the presence of –

1._____

2._____

Signed for and on behalf of the President of India

In the presence of –

1._____ 2._____

* STRIKE OUT WHICH EVER IS NOT APPLICABLE

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION OF WORK IN RESPECT OF WATERPROOFING WORKS.

This agreement made this…… day ……. of two thousand and between, (Name of the contractor, hereinafter call Guarantor of the one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part).

Whereas this agreement is supplementary to a contract (hereinafter called the Contract) dated____and made between the GUARANTOR of the one part and the GOVERNMENT of the other part, whereby the Contractor inter alia, undertook to render the buildings and structures in the said contract recited completely water and leak proof.

And whereas the Guarantor agreed to give a guarantee to the effect that the said structures will remain water/leak proof for **five years** from the date of completion of the total project.

Now the Guarantor hereby guarantees that waterproofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be ten years to be reckoned from the date completion of work.

Provided that the Guarantor will not be responsible for leakage caused by earth quakes or structural defects or misuse of roof or alterations and for such purpose

a) Misuse of roof shall mean by operation, which will damage roofing treatment, like chopping of firewood and things of the same nature, which might cause damage to the roof.

b) Alteration shall mean construction of an additional storey or a part of roof or construction adjoining to existing roof, where by roofing treatment is removed in parts.

c) The decision of the Engineer-in-Charge with regard to cause of leakage/seepage shall be final.

During this period of guarantee, the Guarantor shall make good all defects and in case of any defects being found, render the building water proof at his own cost, to the satisfaction of the Engineer-in-Charge and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-Charge calling upon him to rectify the defects, failing which the work shall be got done by Department through some other contractor at the GUARANTOR‟S cost and risk. The decision of the Engineer-in-Charge as to the cost, payable by the Guarantor shall be final and binding.

That if the Guarantor fails to execute the necessary rectification or commits breach there under then the Guarantor will indemnify the principal and his successors against all loss, damage, cost expense or otherwise which may be incurred by him by reasons of any default on the part of GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and / or damage and / or cost incurred by the Government, the decision of the Engineer-in-Charge will be final and binding on the parties.

In witness where of these presents has been executed by the Obligator…….and by …….... and for and on behalf of the PRESIDENT OF INDIA on the day month and year first above written.

Signed, sealed and delivered by (OBLIGOR) in the presence of:

1.

2.

Signed for and on behalf of THE PRESIDENT OF INDIA BY……. in the presence of:

TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER SUPPLY AND SANITARY INSTALLATIONS

The agreement made this……day of ……Two Thousand and……between ……son of …….
(here in after called the GUARANTOR of the one part) and the PRESIDENTOF INDIA (hereinafter called the Government of the other part.)
WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated and made between the GUARANTOR OF THE ONE PART AND the Government of the other part, whereby the contractor inter alia, undertook to render the work in the said contracture cited structurally stable workmanship, finishing and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable and guaranteed against faulty workmanship, finishing, manufacturing defects of materials and leakages, etc.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable after expiry of maintenance period prescribed in the contract for the minimum life of 02 (Two) year to be reckoned from the date after the expiry of maintenance period prescribed in the contract.P

The decision of the Engineer-in-charge with regard to nature and cause of defect shall be final.
During this period of guarantee, the guarantor shall make good all defects to the satisfaction of the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the Guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost, payable by the Guarantor shall be final and binding.
That if the guarantor fails to make good all the defects commits breach there under, then the guarantor will indemnify the principal and his success or against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents, have been executed by the obligator …….and
……by
……. For and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of:

1. ……..
2. ……..

SIGNED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA BY …… in the presence of:

1. …….

….

Appendix -A

PREFERRED MAKE OF MATERIALS (FOR CIVIL WORKS)

Preferred Makes for Civil Works:

Brand names of materials to be used as per the scope of work are listed here and are indicative only. The agency should use 'Make-in-India' products only as per the Govt. of India "Make in India "policy updated up to the last date of submission of bids. The agency should also consider the availability of spare parts/components for maintenance purposes while proposing any brand/manufacturer. The alternate brand can be used only after the approval of NIT approving authority. The agency shall submit at least three brands from the list given below along with the rates (the difference in rates shall not be more than 10%) and specifications for the approval of Engineer-in-Charge before placing order. Any other equivalent brand shall be allowed only if the already provided brands in the preferred Make List are not available in the market. Preference shall be given to 'Make-in-India' products. In case of non- availability of 'Make in India' brands, then only the proposal for use of international brands is allowed with the prior approval of NIT approving authority complying with all Government of India norms. The list of preferred Makes for Civil work is given below:

Sr. No.	Material	Preferred Makes/Brands/Manufacturer
1	Ordinary Portland Cement/ Portland Pozzolana Cement	ACC/ULTRATECH/AMBUJA/ JKCEMENT / SHREE CEMENT
2	Ready Mix Concrete	ACC / ULTRATECH / PRISM / JOHNSON/ RMC GODREJ / JSW /NUVOCO (LAFARGE)
3	White Cement	BIRLAWHITE/ JKWHITE
4	Reinforcement Steel (TMT Bars) Low Alloy/ Corrosion Resistant Bars of Fe 550D Grade or more	SAIL/TATASTEEL/RINL/JSPL / JSW
5	Mechanical Bar Couplers for Reinforcement	DEXTRA / G-TECH / SNTP /SANFIELD
6	Re-barring Chemical/Mechanical Fastener, Anchor Fastener	HILTI/ 3MINDIA /WURTHINDIA /BOSCH / FISHER
7	Structural Steel	TATA / RINL / SAIL / JSW / JSPL
8	Admixture for Concrete: - Plasticizer/Super Plasticizers / SRA/Bipolar Corrosion Inhibitor Admixtures	SIKA / BASF/ CICO TECHNOLOGIES / PIDILITE / FOSROC /MCON /MAPEI /ASIAN SMART CARE
9	AAC Block	HLL BIRLA AEROCON / TATA TISCOBUILD / J K LAKSHMI / SIPOREX /FERROUS CRETE

10	AAC Block Adhesive	HLL BIRLA AEROCON / ULTRATECH/ARDEXENDURA/MYK LATICRETE/ MAPEI
11	Injection Grouting System: - Cementitious/ Resin Based /PU	PIDILITE / CICO TECHNOLOGIES / SIKA / BASF/ FOSROC / MC BAUCHEMIE (I) PVT. LTD. / ASIAN SMART CARE / MAPEI
12	Curing Compound	SIKA / PIDILITE / CICO TECHNOLOGIES / FOSROC / BASF / MAPEI / ASIAN SMART CARE
13	Expansion Joint- modular	HERCULES/Z-Tech/SANFIELDINDIA/MIGUA / BASF/ SIKA/FERROUS CRETE / MAPEI
14	Anti Termite Treatment	BAYER/HINDUSTANINSECTICIDES /DE- NOCIL
15	Waterproofing Self-adhesive (HDPE) Membrane	PIDILITE / CICO TECHNOLOGIES / SIKA / BASF/ FOSROC /MC BAUCHEMIE (I) PVT. LTD./ MAPEI / ASIAN SMART CARE
16	Single Component or Two component Polyurethane (Pure/Hybrid) – Spray /Brush, Two Component Polyurea (Pure/Hybrid)- Spray / Brush Applied	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA/ MC BAUCHEMIE (I) PVT. LTD./ ASIAN SMART CARE / MAPEI
17	Integral Crystalline Waterproofing Compound	PENETRON (I) Pvt. Ltd / HYGIE (I) PVT. LTD. / XYPEX CHEMICAL CORPORATION / SPANOTECH (I) PVT. LTD. / VEXCOLT INTERNATIONAL LTD. / MAPEI
18	Crystalline Waterproofing Coating	KRYTON / CICO TECHNOLOGIES / PIDILITE/ PENETRON /FOSROC/ MAPEI/ASIAN SMART CARE / FERROUS CRETE
19	Swellable Water Bar, Re-injectable Hose System	KRYTON / CICO TECHNOLOGIES / PIDILITE/ PENETRON /FOSROC/ MAPEI /ASIAN SMART CARE
20	Integral Waterproofing Admixture for Plaster / Screed / Mortar	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA/MC BAUCHEMIE (I) PVT. LTD./ MAPEI/ ASIAN SMART CARE / MCON/FERROUS CRETE
21	Expanded polystyrene sheet (EPS) and Extruded Polystyrene Insulation Board (XPS) / Dimple board / Drainboard	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA / MC BAUCHEMIE (I) PVT. LTD./ MAPEI/ ASIAN SMART CARE
22	Epoxy Coating: Food Grade Epoxy Coating for water Tanks / Non-Toxic Epoxy Coating for STP Tanks / Bituminous Epoxy Coating	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA/ MC BAUCHEMIE (I) PVT. LTD./MAPEI/ ASIAN SMART CARE

23	Epoxy Mortar/Bonding Agent/Grout/ Floor Hardener	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA/MC BAUCHEMIE (I) PVT. LTD./BOSTIK / MAPEI
24	All Types of Plyboards	MERINO / GREENPLY/ CENTURY/ DURO / ROYAL TOUCHE / SAMRAT
25	Laminates	GREEMLAM/MERINOLAM/CENTURY / FORMICA / ROYAL TOUCHE/SAMRAT
26	Veneer	GREEMLAM/MERINOLAM/CENTURY / DURO/SAMRAT
27	Moisture Resistant HDF/MDF Board	ACTIONTESA/ GREENPLY/ MERINOLAM
28	SSMesh316GRADE	GKD METAL FABRICS / RAINOX / WMW
29	Flush door shutters	GREENPLY / DURO / MERINO / CENTURY / SAMRAT.
30	Glass / Rock wool Insulation	UP TWIGA / VETROTEX / ROCK WOOL I. LTD / L LLOYDS
31	Polycarbonate Sheet	GE LEXAN / DANPALON / GALLINA / DPI DAYLIGHT (FLUX)
32	Decking Steel sheet	TATASTEEL /LLOYDS/JSW
33	Fire Sealant	HILTI/3MINDIA/FISCHER / SIKA
34	Poly-Sulphide Sealant / PU Sealants / Silicon Sealants /Acrylic Sealant /Solvent/Based Silicon repellant coatings.	PIDILITE / CICO TECHNOLOGIES / FOSROC / SIKA/MC BAUCHEMIE (I) PVT. LTD./ MAPEI/ MCON/ ASIAN SMART CARE / FERROUS CRETE
35	Wooden/Metal/Glazed-fire rated Door Shutters & Acoustic	NAVAIR/PROMAT/PACIFIC/SUKRITI/SHAKTI-HORMAN/BHAWANIFIRE/ GODREJ
36	UPVC Doors &Windows	NCLVEKA/ DUROPLAST /LG-HAUSYS/ MARG/ FENESTA/ ALUCRAFT/ RAJSHRI PLASTIWOOD
37	WPC Door / CNC Jali	KAKA / RAJSHRI / ECOSTA
38	Fire rated glass (2hoursfire rating)	GLAVERBEL/SAINTGOBAIN/PYROGUARD /SCHOTT/MODIGUARD/ ASAHI / NAVAIR
39	Cement Fiber Board	LAFARGE/INDIAGYPSUM/CENTURY/ NCL (BISON) / EVEREST
40	Waterproof Plywood/ Fire Retardant Ply / Block Boards	GREENPLY/MERINO/CENTURYPLY/DURO / EVEREST
41	All types of paint/primer, Water Proofing Cement Paint, Synthetic Enamel Paint,	ASIANPAINTS /DULUX/NEROLAC/ BERGER / BIRLA OPUS

42	Premium Acrylic Emulsion Paint, Exterior Emulsion, Melamine Polish	ASIANPAINTS /DULUX/NEROLAC/ BERGER / BIRLA OPUS
43	Polyester Powder Coating Shades	NEROLAC/BERGER/ DULUX
44	Cement based Wall Putty	BIRLAWHITE/JKWHITE/BERGER/ASIA NPAINTS/ DULUX
45	Synthetic Resin Adhesives	ANCHOR/DUNLOP/PIDILITE-FEVICOL
46	Textured Exterior Finish	ASIAN PAINTS / BERGER / DULUX/ ULTRATECH/SPECTRUM
47	Epoxy Paint	DULUX /NEROLAC/ASIAN PAINTS / FOSROC / BERGER
48	Fire Retardant Paint	ASIANPAINT/BERGERPAINTS/JOTUN/ DULUX / NIPPON
49	Gypsum Plaster	ULTRATECH/ INDIAGYPSUM / GYPROC / USG KNAUF
50	Cement based Ready Mix Plaster	ULTRATECH/SAINT GOBAIN/ BERGER / BIRLA HIL
51	Pre-Cast GRC Jali	BIRLAGRC/ UNISTONE/KERAKROME GRC
52	Poly sulphide Sealant	FOSROC / SIKA / TUFFSEAL / PIDILITE / WACKER / DOW CORNING / MYK LATICRETE
53	Silicone/Weather Sealant	WACKER/DOWCORNING/GE/ BASF
54	Stainless Steel Grade 316	SALEMSTAINLESS /TATASTEEL / JINDAL
55	Welding Electrodes	ADVANI-OERLIKON/MODI
56	Dash/ Anchoring Fasteners	HILTI/FISHER/BOSCH/WURTHINDIA
57	Anodised Aluminium Hardware (Heavy Duty)	HARDIMA/ALUALPHA/PULSEOFLGF SYSMAC / HINDALCO / EVERITE
58	Aluminium Section for Window, Glazing	JINDAL/HINDALCO/NALCO/INDALCO
59	Modular (knock down) Stainless-Steel Railing, Accessories etc. (Grade SS 316)	OZONE / DORMA / JINDAL/ KICH
60	Gypsum Board / Glass Reinforced Gypsum Tile for False Ceiling	SAINT GOBAIN / KNAUF / USG BORAL
61	Metallic False Ceiling	KNAUF / HUNTERDOUGLAS / SAINT GOBAIN / DURLUM
62	Acoustical Tile False ceiling	KNAUF/SAINTGOBAIN/ECOPHON/ ANUTONE / AEROLITE / DURLUM
63	Open Cell Ceiling System	HUNTER DOUGLAS / DURLUM India Pvt Ltd / KNAUF

64	Moisture Resistant Calcium silicate ceiling tiles/ Board	GYPROC / AEROLITE / USG BORAL / HILUX / KNAUF / EVEREST
65	Cement Fiber board	AMF/USGBORAL/LAFARGE/INDIAGYPSUM / CENTURY / NCL (BISON)
66	Glass Mosaic Tiles	BISAZZA/MRIDUL/OPIO/PALLADIO/ITALIA GLASS / BIRLA
67	Rectified Ceramic Tiles (Antiskid/ Matt/Glazed)	KAJARIA/SOMANY/RAK / AGL / H & R JOHNSON
68	Vitrified Tiles (Double Charged / Glazed)	KAJARIA/SOMANY/RAK / AGL / H & R JOHNSON
69	PVC Flooring	ARMSTRONG/TARKETT/LGHAUSYS
70	Engineered stone-Marble/ Quartz	ASIAN/JOHNSON/KALINGA/ QUTONE / EURO
71	Adhesive / Tile Grout (for Tile / Stone)	BALENDURA/MYKLATICRETE/PIDILITE / MAPEI
72	Epoxy Flooring / PU Flooring	FOSROC/SIKA/CICO/ MYKLATICRETE/MAPEI/ASIAN SMART CARE
73	Heat Resistant Tiles(22mm)	THERMATEK / NATIONAL/THERMAX / DALAL TILE
74	Over deck foam Insulation	ASIANSMARTCARE/LLYODS/PIDILITE/ SOPREMA/MAPEI
75	C&D Waste Precast Elements (Karb stones, Paver blocks, CC Blocks etc.)	6M CONCRETE / IL&FS& ANY OTHER GOVT. APPROVED AGENCY
76	Glazing Structural/ Suspended / Skylight/ clear/ float/ frosted/ mirror	SAINT GOBAIN / PILKINGTON / AGC GLAVERBEL / AIS/GOLD PLUS
77	Clear/Float/Frosted Glass/ Looking Mirror	SAINT GOBAIN / PILKINGTON / AGC GLAVERBEL / AIS /GOLD PLUS
78	Toughened Glass / Hermetically sealed glass / High Performance Glass	SAINT GOBAIN / PILKINGTON / AGC GLAVERBEL / AIS /GOLD PLUS
79	Nuts/Bolts & Screws (SS OR GI)	HILTI /ATUL/ WURTHINDIA/FISCHER
80	Clamp system for dry stone cladding	HILTI / FISCHER/BOSCH/ WURTH INDIA
81	All type of hardware and fittings for all type of glazing / doors/ windows etc. including mortise latch & lock, tower bolt, ball bearing butt hinges, friction stay hinges, sliding door bolts, lever handle, magic eye, door closer etc.	DORMA/HAFELE/GODREJ/HETTICH/ GEZE
82	Modular Toilet Cubicles	MERINO/GREENLAM /CUBICLES INDIA

83	Hardware for Fire Check Door/ panic bar/ panic trim/door closer/ hinges/ mortise lock / Dead Lock etc.	DORMA / HAFELE / PROMAT / BECKER / GEZE / INGERSOLL RAND
84	EPDM Gasket	AMEE RUBER /OSAKA / BOHRA RUBBER
85	GI Pipes	JINDAL(HISAR)/TATASTEEL/SURYA PRAKASH / APL APOLLO TUBES
86	GI Fittings	UNIK/ZOLOTO/ SURYAPRAKASH
87	SS Pipes & fittings (316 Grade) -Water Supply	JINDAL LIFESTYLE / VIEGA / J PRESS / ALFA PRESS
88	DWCHDPE Pipes	RELIANCE/ PRINCE / JAIN PIPES / SUPREME
89	DI Pipes	ELECTROSTEEL (VEDANTA) / JINDAL / TATA DUCTURA
90	DI Fittings	ELECTROSTEEL (VEDANTA) / JINDAL / TATA DUCTURA / KESORAM
91	CI Double flanged sluice valve	KIRLOSKAR/SONDHI/KEJRIWAL
92	Float Valve	LEADER/ZOLOTO/ SANT
93	Hubless Centrifugally Cast (Spun) Iron Pipes & Fittings	NECO/SKF / RPMF
94	Centrifugally Cast (Spun)Iron (Class LA) Pipes	NECO/ELECTROSTEEL/TATA
95	CI Manhole covers, Frames& GI Gratings	NECO / SKF / RPMF
96	SFRC Manhole Covers& Gratings	KK / OCR / PARGATI / T-CON/NECO
97	Stone ware Pipes and Gully Traps	SONYA / SUPPERTECH / CHERRY
98	RCC Manhole covers & Frames	KKMANHOLE/GRATING CO.(P)LTD
99	Gun Metal Valves, Globes	ZOLOTO/ SANT/ LEADER
100	CP Fittings & Accessories (Premium range) *As per sheet attached Annexure-IV	JAQUAR/KOHLER/ROCA / GROHE
101	CP Fittings & Accessories (Automation)	JAQUAR/KOHLER/ROCA / GROHE / EURONICS
102	Sanitary Vitreous Chinaware (Premium range)	JAQUAR/KOHLER/ROCA / GROHE
103	Water Meter	PRIMA/ ZOLOTO/LEADER/ CAPSTAN
104	Brass Stop & Bib Cock	ZOLOTO/ ANT/L&K/LEADER/ASTRAL
105	PVC/ CPVC Pipe &Fittings	ASHIRVAD / SUPREME/FINOLEX

106	Non-Return Valve (Check valve) and other kind of Valves	ZOLOTO/SANT/LEADER
107	Brass Ferrules	ZOLOTO/SANT/LEADER
108	Insulation for hot waterpipes	KAIFLEX/ARMAFLEX/CAREFLEX/LLOYD
109	Pipe protection for external water supply pipes	PYPKOTE/ARMAFLEX/ MAKPOLYKOTE
110	Stainless Steel Sink	PRAYAG / NIRALI/CERA/ KINGSTON / JAYNA
111	RCC Pipes	LAKSHMI/SOOD&SOOD/JAIN&CO./PRAGATI CONCRETE
112	Dash/Stud/Anchor Fasteners	HILTI/CANON / BOSCH /FISCHER
113	Irrigation Equipment	JAINIRRIGATION/KISAN/FINOLEX/ PLASSON
114	SMC Panel Water Tank	SINTEX/POLYCON / PLASTO / SUPREME
115	Modular Rainwater harvesting	RETAS WATER HARVESTING / ADWYN IMPEX PVT. LTD / LIFE GREEN SYSTEM / BANTAIR
116	Factory made Modular kitchen cabinets, wardrobes, dressing cabinet etc.	GODREJ, HAFFLE, SLEEK, ROCKWORTH.
117	Organic Waste Composter	ECOBOT /BIORECO/ EXCEL
118	Window Blinds	DECK/HUNTER DOUGLAS /VISTA /MAC/ MARVEL
119	Modular SS Grade316 Curtain Rods and Accessories	JINDAL/HAFELE/GEZE/Q-RAILING/ MARK / TRESA
120	Wooden / Laminated Flooring	ACTION TESA / KNAUF / EGO/ GREENLAM / MIKASA
121	Aluminum Composite Panel	ALUDECOR / EUROBOND / DPI DAYLIGHT
122	Urinal Frosted Glass Partition-toughened	JAQUAR / GOLD PLUS GEREENLAM/MERINO/FUNDERMAX
123	Automatic Meter System Reading (Ultrasonic)	PELTEK / AVVA / DIEH AXIOMA/ BAYLAN/ GLOBAL
124	Automatic Meter Reading System (Electromagnetic)	SENSUS /XYLEM /HONEYWELL / ITRON
125	Aluminum Formwork	MIVAN, S-Form, MFS, MAIONI, ALFOAK
126	Chequered Tiles, Paver Block & Kerb Stone	SUPER TILES / VYARA / KAJARIA / NITCO / CONCRETO +

127	High Pressure Laminate	FORMICA / MERINO / GREENLAM
128	Stone polymer flooring / Carpet tiles	MILIKEN/MOHAWK/FLOTEX / EGO/ WELSPUN/ DOLPHY
129	Single / Double Glazed Modular partition system & Stile / Glazed Doors	GEZE / DORMA / JEBB / OPTIMA / HAFELE
130	Modular Furniture Work	GODREJ/ FEATHERLITE /DURIAN / HAWORTH
130	Acrylic Polymer Solid Surface board	HANEX/ HUNEX/CORIAN
131	Frosted Film	3M / GARWARE

Note: -

(a) Material bearing ISI mark and having BIS certifications shall only be used in the work, where articles of different designs/makes bearing ISI/BIS certifications are available.

(b) Where material bearing ISI mark and having BIS certifications are not available, then material conforming to relevant BIS certifications shall be used with prior approval of Engineer-in-Charge. The decision of Engineer-in-Charge about the design/ make to be used in the work shall be final & binding on the agency.

(c) If the brand or specifications of any item is not available, then the decision of the Tender accepting authority regarding quality shall be final & binding on the agency.

Annexure-IV

CP Fittings & Accessories (Premium range				
BRAND	KOLHER	JAQUAR	ROCA	GROHE
Description				
European Water Closet	30306IN-0	OPS-WHT-15953BIUFPM	RS803136002	3932800H
Flush Cock with Exposed Part	315381IN-NA + 24555IN-P-CP	FLV-1089NG	RE890010100	39165000
Health Faucet	12927IN-CP	ALD-CHR-577	RF9060A	27513001
2 Way Bib Tap	33972IN-4-CP	OPP-15041PM	RT5A9390CA1	20280000
Toilet Paper Holder	5633IN-CP	ACN-1153S	RA816662001	40367001
Table Top Wash Basin	31459IN-0	OPS-WHT-15931 PM	RS32745D460	39216000
Wall Mounted Basin Faucet	315381IN-NA + 24555IN-P-CP	PRS- 061	RT5A6509CA1	29337003
Bottle Trap	75823 IN-CP	ALD-CHR-769L	RF9066A1	29058000
Waste Coupling	7120 IN - CP	ALD-729 L 130	RF5054017A1	65807000
Angle Valve for Basin	33978IN-4-CP	OPP-CHR-15053PM	RF52515970	22008000
Towel Ring	5631IN-CP	ACN-1121BN	RA81665900	40365001
Soap Dispenser	10712D-CP	ACN-CHR-1135N	RA816678001	40805000
Under Counter Basin	2211IN-0	CNS-WHT-701	--	--
Pillar tap	20747-IN-8-CP	PRS-031L65	--	--
URINAL	264745IN-ER-0	URS-WHT-13253 N	RS3590J400C	264745IN-ER-0
Urinal Flush Valve	315381IN-NA + 24555IN-P-CP	PRS-073	RT5A8202A0N	315381IN-NA + 24555IN-P-CP