

STANDARD OPERATING PROCEDURES TO BE FOLLOWED BY BIDDERS TO MONITOR GST COMPLIANCE & INCOME TAX ACT :

Stage I :- Floating of Notice Inviting Tender (NIT)

- It is to ensure that the all prospective bidders to submit copy of Registration Certificate under GST Act.
- The following undertakings (on the letter head of bidder) to be made part of mandatory documents to be submitted by all bidders:
 - 1.1 GST registration is valid as on date.
 - 1.2 No default has ever been made by bidder in filing the various GST returns and deposit of GST dues with the department.
 - 1.3 Bidders having multiple registrations under GST will submit undertaking for each & every GST number. A default under a GST number even if the GST number pertains to some other state, will make the vendor ineligible to participate in tender.

In addition, the successful bidder will also submit the following undertakings in addition to above immediately after issue of work order and with submission of each & every bill unless mentioned otherwise:

- 1.4 Undertakings mentioned at 1.1, 1.2 and 1.3.
- 1.5 A CA certificate regarding validity of GST registration will be submitted every six months during the tenure of contract.
- 1.6 Vendor will submit copies of GSTR I and GSTR 3B/challans as evidence to deposit of GST with certification that GST collected from HPGCL, to be specified in exact rupees, has been paid to Govt. vide this challan (specifying the challan no. & date of deposit) and returns filed (date of filing of return) includes the transaction of supply of Good or/and services to HPGCL.
- 1.7 Vendor will inform immediately the HPGCL about initiation of any proceeding (if any) against him under the GST laws which may result in suspension or cancellation of GST number of the Vendor.
- 1.8 Undertaking to indemnify the HPGCL in case of any financial implication on HPGCL due to non-compliance of prescribed obligation under the GST Law on part of the Supplier/vendor.
- 1.9 In case of ARCs/AMCs having duration above one year, copies of GSTR 1, GSTR 2A and GSTR 3B along with copies of invoices raised to HPGCL, duly reconciled with three returns to be submitted on quarterly basis.
In case of one time job orders and purchase orders, copies of GSTR 1, GSTR 2A and GSTR 3B along with copies of invoices raised to HPGCL, duly reconciled with three returns to be submitted before release of the security.

Stage II :Scrutiny of bids -

- The GST registration status of vendors will be verified from the official website www.gst.gov.in
- The address of vendor, the place from which supplies will be made or the invoice will be raised, mentioned in bid document should match with the GST registration number on the department's website. In case vendor is having multiple GST registration numbers, executive to ensure that GST number linked to place of supplier should be submitted to HPGCL.
- Filing status of following returns is to be verified that the returns are being filed by vendor within due dates:

Return	Periodicity of filing	Return for
GSTR1	Monthly	Outward supplies
GSTR2A	Monthly	Its auto populated on GST portal on the basis of GSTR 1 filed by vendor.
GSTR 3B	Monthly	Payment of GST
GSTR9	Yearly	Compilation of outward and inward supplies, made during the FY
GSTR9C	Yearly	Analytical statement on GST returns certified by GST Auditor

- Will be verified the undertakings, as specified in NIT, have been submitted by bidders. Failure to submit unconditional undertakings will render the bidder to ineligible at technical stage of evaluation itself.

Stage III :Award of contract/ Issue of WO.

- Purchase order/work order to specify that in case of failure at the end of vendor regarding deposit of tax and in complying with conditions mentioned at stage I & II, HPGCL will have right to recover the GST amount in default along with interest & penal amount and deposit the same directly with GST department on behalf of vendor to the credit of HPGCL.
- Vendor will undertake to immediately inform the HPGCL about any amendment in the GST certificate and to immediately submit the updated registration certificate.

Stage IV : Receipt of first invoice-

- Executive wing to verify that the invoice is in Performa as specified under GST laws (Section 31 to 34 of CGST Act read with Rules 46 to 55A of the CGST rules deal with the Tax invoice, Credit notes and debit notes) with correct GST number of HPGCL so that no difficulty is faced by HPGCL while claiming Input Tax Credit of GST due to incorrect GST number and also to reconcile the GST number and address of supplier as per invoice with the GST number & address given in tender documents submitted by vendor and submit the duly verified invoice to accounts wing.
- After the implementation of the E-Invoice w.e.f.01 Oct 2020 generation of e-invoice from common e-invoice portal for B2B supplies by person having aggregate annual turnover of more than Rs.500 Crs has been made compulsory. And w.e.f 01.Jan2021 Generation of E-invoice for GST supplies by person having aggregate turnover of more than Rs. 100 Crs has been made compulsory. And w.e.f 01.04.2021 generation of E-invoice for GST supplies by the person having aggregate turnover of more than Rs.5 Crs is proposed to made compulsory. The nodal officer/engineer in charge of the contract/appointed officer of the respective plant should demand from the supplier E-Invoice containing the invoice reference number (IRN) and QR code. It is worthwhile to note that any tax invoice including tax credit / Debit note issued by such notified person for B2B supplies without following the e-invoicing procedure shall not be treated as a valid document.
- Obtain a undertaking from the vendor who are not generating e-invoice in following format:

We M/s..... having PAN and GSTIN Registration Numberhereby undertake that our Aggregate Turnover (as per Section 2(6) of Central Goods and Services Tax Act, 2017) for FY 2019-20 does not exceed the prescribed threshold (as on the date of this declaration) for generation a Unique Invoice Registration Number (IRN)and QR code as per the provisions of Central Goods and Services Tax Act,2017 and rules thereunder (“GST Law”). Further, we also undertake that if the aggregate turnover of M/s..... exceeds the current threshold or revised threshold notified by Government of India at any future date, then we shall issue invoice and credit note in compliance with the required provisions of GST Law. In case of any queries from the any state or centre Goods and Services Tax authorities, M/s.will be solely responsible.

Yours Truly,

For M/s.....

Authorized Signatory Name : Designation:

- Accounts wing to check Arithmetical accuracy, Rate of GST charged & other calculations.
- In case the reis difference in value of invoice, due to difference in quantity or quality actually supplied, GST will be applied on revised value of invoice.

Stage V: Receipt of IInd & subsequent invoices

- In addition to procedure mentioned in stage IV, following steps to be under taken
- All under taking mentioned at stage I to be obtained & verified.
- GSTR 2A should be matched with amount of GST paid. In case, the details are not there in GSTR2A, issue needs to be taken up with vendor and GST consultant of HPGCL.

Others:

- EMD and Securities / Bank guarantees taken by HPGCL may be refunded only after payment of GST by vendor / contractor which was charged from HPGCL.
- In case any issue arises wrt failure by the firm in GST compliances, all future payments to be put on hold after having consultation with HPGCL’s GST consultant.

Undertaking from the vendor (on vendor's letter head for not generating e-invoice

We M/s..... having PAN..... and GSTIN Registration Number.....hereby undertake that our Aggregate Turnover (as per Number Section 2(6) of Central Goods and Services Tax Act, 2017) for FY ----- does not exceed the prescribed threshold (as on the date of this declaration) for generation a Unique Invoice Registration Number (IRN) and QR code as per the provisions of Central Goods and Services Tax Act, 2017 and rules thereunder ("GST Law") Further, we also undertake that if the aggregate turnover of M/s..... exceeds the current threshold or revised threshold notified by Government of India at any future date, then we shall issue invoice and credit note in compliance With the required provisions of GST Law. In case of any queries from the any state or centre Goods and Services Tax authorities, M/s.....

Yours Truly,

For M/s.....

Authorized Signatory Name: Designation:

Undertaking from the vendor (on vendor's letter head) regarding validation of GST registration (for each GST number separately)

1.7.1. GST registration of GST no..... date in name of M/s..... is valid as on Date.....

1.7.2. No default has ever been made by me/my firm in name of in filing the various GST returns and deposit of GST dues with the department with respect to GSTN.....

Yours Truly,

For M/s.....

Authorized Signatory Name: Designation:

Undertaking cum declaration from the vendor (on vendor's letter head)

1.8. I undertake to submit a CA certificate regarding validity of GST registration on every six months during the tenure of contract.

1.9. I undertake to submit copies of GSTR I and GSTR 3B/ challans as evidence to deposit of GST with certification that GST Collected from HPGCL, to be specified in exact rupees, has been paid to Govt. vide this challans (specifying the challan no. & date of deposit) and returns filed (date of filing of return) includes the transaction of supply of Good or/and services to HPGCL.

1.10. I undertake to inform immediately the HPGCL about initiation of any proceeding (if any) against me/my firm under the GST laws which may result in suspension or cancellation of GST number of the Vendor.

Yours Truly

For M/s.....

Authorized Signatory Name: Designation:

Undertaking cum indemnity bond from the vendor (on vendor's letter head) regarding timely deposition of GST

- a) Certified that we are registered as taxable person under GST Act, our GST no. is and which is active as on.....
- b) Certified that bill for the month of..... In which GST has been claimed, is included in all the GST returns submitted by us to the GST authorities.
- c) Certified that we shall deposit the amount of GST collected from RGTPP/HPGCL to the Government exchequer within the time specified under the GST Law.
- d) Certified that the goods/services on which GST has been charged have not been exempted from GST under GST Act. The rate/amount of GST in these goods/services is correct under the provisions of the GST Act.

- e) We give Undertaking-cum-indemnity bond to RGTPP/HPGCL that we shall indemnify to RGTPP/HPGCL for any loss sustained in case we does not deposit the GST to the government exchequer, which it has recovered from the M/s HPGCL as tax.

Yours Truly,

For M/s.....

Authorized Signatory Name: Designation:

Annexure-Y

ADDITIONAL TERMS AND CONDITIONS OF CONTRACT

1) MODE OF PAYMENT: -

The payment shall be made by Sr. AO, RGTPP through RTGS on running bill for the work entrusted for the firm. The bill shall be processed within 10 days after the same is presented (In Triplicate) after completing all the formalities by the contractor. For payment firm will submit Account No., Type of Account, IFSC Code etc to Sr. AO / AO, RGTPP.

2) PENALTY

- i. Penalty for delay in work shall be regulated as per CBD.
- ii. As per labour laws the monthly payment to workers should be made by 7th day after the completion of wage period in their bank account and firm shall submit the copy of wages slip issued to workers duly signed by the concerned workers to this office along with payment proof latest by 10th day of every month otherwise a penalty of **Rs. 500/- per day** may be applicable on subsequent days till the submission of said document.
- iii. The firm shall deposit monthly EPF of workers as per EPF laws and submit the proof of EPF submission of worker by 20th day of next month otherwise a penalty of **Rs. 500 per day** may be applicable on subsequent days till the submission of said document.
- iv. The firm shall deposit monthly ESI of workers as per ESI laws and submit the proof of ESI submission of worker by 20th day of next month otherwise a penalty of **Rs. 500 per day** may be applicable on subsequent days till the submission of said document.
- v. **The overall penalty shall be imposed upto maximum of 10% of contract value of work order. Penalty shall not include non-payment on account of work not executed.**

3) COMPLETION PERIOD: -

The completion period of the work shall be 365 days after readiness/availability of site. The Work shall be started within in 7 days of issue of Notice to proceed with work, unless otherwise directed by issuer of the tender. The notice to proceed will be issued after readiness/availability of site.

In case the sites are not made available for carrying out the work during the execution period, or if any other compensation event (not attributable to the firm) occurs resulting in delay of the work, the countdown of the completion period shall be suspended. The balance work shall be carried out at the next available opportunity upon availability of the site. Intimation regarding the availability of the site shall be conveyed to the firm through email or letter, and the countdown of the completion period shall recommence from the date of such intimation. It is further stipulated that the repair work of bathrooms shall be carried out one side at a time in one go, and the contractor shall deploy adequate and additional workmanship/manpower, as required, to complete the work in one continuous operation within the allotted time for each side.

Since the work is to be allotted through HEW portal, there will be need of extension of completion period on HEW Portal on account of non-availability of site. The completion period shall be extended by Er. -In- Charge on HEW Portal after approval from competent authority as per clause no. 16.16.6 of PWD code read with clause 27 of CBD.

4) RISK AND COST: -

In case the contractor fails to full fill the contractual obligation, the work shall be got done from some other agency at the risk and cost of the contractor. It shall be without prejudice to the right of HPGCL to recover any further amount or any liquidated and/or other damages.

5) DOCUMENTATION: -

The contractor and the executive in-charge of the work shall ensure the following document before forwarding the bill of the contractor to the Accounts Wing for pass and payment to avoid delay in payment of the contractor: -

- i. Contractor shall submit Running bill in duplicate to the executive in-charge along with the followings: -
 - a. Running Bill for the work done should be in duplicate. The bills should be on the contractor's bill book duly serially numbered and bearing date of issue, contractors EPF Code, ESI Code, GST No., PAN No., A photo copy of the EPF Code, ESI Code, GST No., Labour License, PAN No. shall be attached with the bill for reference and record.
 - b. Self-attested copy of the deposit challan of EPF contribution, ESI contribution labour welfare fund deposited by the contractor for the labour engaged for the work duly validated with dossier of works and their account number in the appropriate prescribed Performa.
 - c. Workman compensation policy documents (as per applicability)
 - d. Self-attested copy of the attendance sheet, wages register and evidence of wage payment with wage slip.
- ii. The bill of the contractor along with the annexure submitted by the contractor at (i) above, should be approved and verified by the officer in-charge for gross value as well as net payable value and accompanied with the certificates / documents mentioned at (iii) and (iv) below.
- iii. Certificate from the Engineer In-Charge the: -
 - a. Work has actually been done as per the contract and to the entire satisfaction of EIC.
 - b. The copy of EPF challan, ESI Challan etc. submitted by contractor pertains to the labour deployed at site and none of workers has been excluded there from.
 - c. The record entry of the work done has been taken in the small measurement book (SMB) at Page No. ____ dated _____.
 - d. No penalty is leviable on the contractor on any account as per the contract if leviable the amount of penalty is _____.
 - e. Copy of protocol and certificate for stage payment, if required.
- iv. Certificate from labour welfare officer / factory manager stating that contractor has complied with all labour laws and safety clearance certificate from safety officer. In case of non-availability of labour welfare officer / safety officer from EIC.
Note Documentation attached along with the contractor bill should be referred in the forwarding letter of the executive office forwarded the bill for pass and payment.

DOCUMENT FOR SECURITY & PBG RELEASE: -

In addition to clauses of CBD for releasing security & PBG, following conditions shall also be applicable: -

- i. Security shall be released only after issue of the final labour Law Clearance Certificate by the Labour Welfare Officer as well as submission of latest documents i.e. returns challans by the contractor towards EPF, ESI etc.

6) FORCE MAJEURE: -

The delay in completion of work may be treated as force majeure to the contractor only if: -

- a. The delay is resulted from any causes arising out of compliance with regulations, orders or instructions of the Central or State Governments, acts of God, acts of Civil & Military authority, fires, floods, strikes, lock-outs, freight embargoes, war risk riots and civil commotion.
- b. The contractor's request for extension of the delivery period along with all necessary evidence comes, before the expiry of the schedule date(s) of delivery

7) IDLE LABOUR CHARGES: -

No idle labour charges will be admissible in the event of any stoppage caused in the work resulting in contractor's labour being rendered idle due to any cause.

8) OVER RUN CHARGES: -

No overrun charges shall be paid in the event of the completion period being extended for any reasons.

9) WATCH & WARD: -

The watch and ward of T&P and other material will be the responsibility of the contractor.

10) STATUTORY DEDUCTIONS: -

Statutory deduction on account of Income Tax etc. including surcharge shall be made at source from the bills of the contractor at the prevailing rates.

11) FACTORY ACT/MINIMUM WAGES ACT/INSURANCE ACT/ EPF ACT ETC.: -

Strict adherence of various applicable laws like the Factories Act, Minimum Wages Act, ESI Act, Payment of Wages Act, the workman's Compensation Act, EPF Act, Contractor labour (Regulation & Abolition) Act, 1970 and all other statutory requirements as amended from time to time to the entire satisfaction of Central/State Govt. Authorities, shall be the responsibility of the Contractor and he shall have to make good loss, if any, suffered by HPGCL on account of default in this regard by the contractor. EPF/ESI contributions will be deposited by the

contractor in his own EPF/ESI code no. in the respective account of the workers. The contractor will submit the copy of EPF/ESI challan to the Labour Welfare Officer, at the time of payment along with corresponding list of workers.

The contractor shall make the payment of wages to its labour/worker in their bank account only. Documentary evidence thereof shall be submitted along with the running bills.

12) SAFETY RULES: -

A firm shall have to comply with all the provisions of safety rules. The chief Safety officer may impose penalty of Rs. 200/- per day per head if the workers of contractor are found to be working carelessly without proper protective equipment's in unsafe conditions. Against violation of any other clause, a penalty of Rs 500/- per violation (minimum) shall be levied. In case of repeated violation of serious nature resulting in various serious accident or direct loss to the corporation/ threatens to cause severe consequences, higher penalty rates may be imposed including suspension/termination of the contract. If any action is initiated by Chief Inspector of Factories, Chandigarh or any other authority against occupier/factory manager or any other authority of HPGCL in case of any fatal/non-fatal accident or any other violation of factory act, 1948, Pb. Hr. Factory rules, 1952 or any other industrial or labour act, the contractor shall be liable for the same and also to deposit the amount of fine/penalty if any. In case of default action as deem fit shall be initiated against the contractor.

A safety clearance certificate from the chief safety officer shall be obtained by the contractor and has to be attached along with the bill.

This office reserves the right to claim adequate compensation from the contractor on account of any damage caused to the plant & equipment handed over to him for execution of the work, due to careless handling or negligence on the part of the contractor.

13) LAWS GOVERNING CONTRACTS: -

All contracts shall be governed by the laws of India for the time being in force. Irrespective of the place of delivery, place of performance or place of payment under the contract, the contract shall be deemed to have been made at the place from which the acceptance of tender has been issued. The courts of the place from where the acceptance of tender have been issued shall alone have exclusive jurisdiction to decide any dispute arising out of or in respect of the contract.

14) The contract may be short closed at any time during the period of contract by HPGCL without assigning any reason by giving a notice of one month, for which no compensation shall be payable to the contractor.

15) Instruction to Contractors: -

Firm to whom the contract is awarded shall ensure following

- Ensure Safety induction of workers before joining as incident of accidents are increasing day by day and provide PPEs to the worker at the time of joining.
- Registration under shop and commercial act if workers are less than 50.
- The Contractor required to ensure to pay wages, EPF, ESI, EDLI & other dues of workers as per respective labour laws like The payment of wages Act, 1936; Employees State Insurance (General) regulation 1950 (Amended on 11.01.2024), The employees Provident Funds and Miscellaneous Provisions Act, 1952, Contract Labour (Regulations & Abolition) Act 1970 & rules 1971, The Employees State Insurance Act, 1950 etc. or any other acts/rules as applicable time to time. The violation of labour laws may lead to heavy penalty and imprisonment. In case of non-compliance of labour laws following actions shall be taken by RGTPP management
- Blacklisting or debarring from participation in tenders.
- Doing pending payment of wages, EPF, ESI etc. of labour from payment or security of contractor/firm.
- Security forfeit of contractor/firm.
- Termination of contract and getting the balance work done at risk & cost of firm.
- Recommendation to EPFO, ESIC and Labour department for penal action for violation of relevant act.
- Non issuance of clearance certificate after 1 month, i.e. only current period clearance will be given. Non-compliance will be issued in case firm fails to submit bill on time

ANNEXURE-Z

Checklist Documents required for Technical Evaluation		
Sr.No.	Documents	Requirement
1	Contractor Id	Mandatory
2	HEWP Registration Certificate	Mandatory for taking EMD exemption subject to another requirement
3	Tender Fees	Mandatory

4	EMD	Mandatorily Required for unregistered bidders
5	EMD Declaration Form if exemption availed	Mandatory bid specific declaration form duly downloaded from HEWP, Any bid from the registered bidders not accompanied by a bid specific acceptable Earnest Money Declaration form (in case exemption is availed) as per 16.2 of Section 1 i.e. Instructions to Bidders (ITB) or not secured as indicated in Sub-Clauses 16.1 Section 1 i.e. Instructions to Bidders (ITB) shall be rejected as NON-RESPONSIVE
6	Proof of constitution	Mandatorily Required for unregistered bidders
7	PAN	Mandatorily Required for unregistered bidders
8	GST certificate	Mandatorily Required for unregistered bidders
9	Undertaking non-black listed Certificate	Mandatorily Required for unregistered bidders
10	Proof of immovable property	Mandatorily Required for unregistered bidders
11	Cancelled cheque or proof of bank account	Mandatorily Required for unregistered bidders
12	The applicant himself or his employee (at least one) should be a Diploma Holder Engineer (Civil/Electrical/Agri./Hort.) as applicable. Accordingly, self-declaration certificate of applicant and his employee along with copy of Diploma certificate is to be submitted	Mandatorily Required for unregistered bidders
13	Proof of address	Mandatorily Required for unregistered bidders
14	Society Resolution	Mandatory for society
15	Section 2: Qualification information	Mandatory completely and accurately filled
16	Available Bid Capacity	Mandatory calculated as per data provided in Section 2
17	Average annual Turnover of last 3 FY (Certified by CA) as per Appendix to ITB of this NIT	Mandatory
18	Similar Work executed: 3 Work of 40% value Or 2 Work of 50% value Or 1 Work of 80% value (Refer Appendix to ITB of CBD) as per Appendix to ITB of this NIT	Mandatory certificate from officer of rank not below XEN along with qualification information clearly mentioning the name of work, Contract Value, billing amount, date of commencement of works, satisfactory performance of the Contractor and any other relevant information.
19	Undertaking as per Section 7 (J)	Mandatory signed and stamped on letter head of date after the issue of NIT, original to be submitted before signing agreement
20	Affidavit as per Section 7 (K)	Mandatory on a non-judicial stamp paper of Rs.10/- and shall be attested by Magistrate/Sub-Judge/ Notary Public, original to be submitted before signing agreement, affidavit should be of a date later than the date of calling of tender
21	Any other pre-qualifying requirement/proof of ownership/lease of machinery/labour	As per Clause 39 of Section 4: ITB
22	GST undertaking (s) (As per Annexure-X)	Mandatory for firm to whom the work will be

		awarded. If the bidder to whom the work is awarded, do not submit undertakings then action shall be taken in line of Clause 33.6 of Section award of contract of NIT/CBD. Moreover, GST no. of all participating firms' firm shall be active. In case GST of any firm is not active then bid shall be rejected.
23	Undertaking regarding compliance of Labor laws	Mandatory for all participating firms. However, in case firm fails to submit the same in NIT the documents can be submitted at the time of technical evaluation. Firm has to certify itself for its eligibility with supporting documents to participate in the NIT stating that it is not under any default towards compliances under any of the labor laws presently, however in case at a later stage such certification found wrong then it will lead to misrepresentation of the fact and the firm shall be treated as blacklisted on this ground and action shall be taken as per regulation 36 & 37 of the HPGCL Works.
24	EPF no. and ESI no. or undertaking regarding getting EPF and ESI No.	Mandatory but if the document is not submitted while submitting technical bid, then document being new or not known to all contractor, will be allowed to be submitted even after opening of part- I i.e. technical bid.
25	Financial statement of last 3 years	Financial statement of last 3 years needs to be attached with the bid "in case where audited results for the last preceding financial year are not available for determining the average annual turnover, certification of financial statements from a practicing Chartered Accountant shall be considered acceptable. Further, if the bidder does not submit the said documents at the time of bidding, the same can be obtained from the bidder during the stage of technical evaluation.
26	Other documents as per clause 4 of ITB of NIT	As per requirement
All care should be taken by the bidder to submit correct information and documents in first place.		

Note:- This list is subject to terms and conditions of this NIT/CBD.



SOPS FOR SHOTCRETING WORK

(IS: 9012 of 1978)

A. SOPS FOR SHOTCRETING WORK IN INTERIOR AREA (Inside Houses)

A.1 PREPARATION OF SURFACE

1. Check slabs through light hammering. Remove/chip all loose & deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials. In case there is problem in any slab of room/bathroom i.e. plaster or concrete is loose, then whole slab needs to be chipped & repaired for that room/bathroom.
2. Repair configurations shall be kept simple, and shall have squared corners.
3. Existing reinforcement bars shall be cleaned to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer in Charge.
4. After cleaning, all exposed reinforcement shall be carefully evaluated to determine if replacement or additional reinforcement bars are required. The reinforcement bar shall be undercut a minimum 19 mm (3/4 in.) if the bond is broken between the rebars and the concrete during preparation, or if the bars have to be replaced or supplemented as specified below.



5. Rebars that have been cut or have lost 25 percent or more of their original cross-sectional area shall be supplemented by new in kind rebars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. An approved "squeeze type" mechanical bar splice capable of developing in tension at least 125 percent of the yield strength of the existing bar shall be used when it is not feasible to provide the minimum bar lap. No welding of bars will be permitted. The furnishing and replacing of supplemental reinforcement bars shall be included in this item.
6. The repair area shall be sandblasted, and then vacuumed or blown clean. Blowing shall be done with oil-free compressed air. The repair area and perimeter saw cut shall have a rough surface after final preparation.

A.2 BONDING COAT

Bonding Agents are used in concrete where there is a requirement to join the old and the new concrete surfaces. It is also used to join the surfaces between the successive concrete layers. Bonding coat of approved adhesive (ASIAN SMARTCARE / GCP / BASF / Bitumet / Technicol / Fosroc / Sika / Pidilite/ Ultra Tech/Synergy Telecommunications) shall be applied on chipped portion of RCC as per specifications and direction of Engineer In Charge complete in all respect.

Bonding agent shall be applied and used strictly as per technical data sheet and direction of Engineer In Charge complete in all respect.

A.3 INTRODUCTION OF NEW REBARS

Whenever bars corrode, they also lose section, thereby reducing the ultimate load carrying capacity. In some instances, bars lose all section through the corrosion process. Structural evaluation is required to understand the effects of section loss and whether introduction of new reinforcement is indicated. In this job the weld mesh of 3.4 mm and 100 mm spacing on both sides is to be provided. Weld mesh shall be conforming to IS 1566 of 1982. The nails of 75 mm length and 3 mm dia should be having 25 mm bent hook so that the weld mesh is properly stitched to the existing concrete and reinforcement bars. Total 12 nail per sq mtr of weld mesh to be used. The weld mesh should be free from rust and having a surface so that concrete sticks to them properly. The items includes wrapping of this weldmesh around the columns where ever required as per instruction of site engineer.

A.4 SHOTCRETE (GUNIT) (IS: 9012 of 1978)

It is recommended that strength of 30 N/mm² (300 kg/cm²) is only to be used for this job. Further, for Shotcrete procedure laid in IS: 9012/ 1978 and directions of Er-In-Charge shall be followed



complete in all respect. Surfaces shall be kept damp for several hours before Shotcreting.

A.5 PLASTER WORK

10 mm plaster of ratio 1 (Cement) : 3 (Fine Sand) shall be used preferably for ceiling works. Beating with thin bamboo strips shall not be done on the cement plaster. No lime putty solution shall be applied on the face when finishing. Further the plastering and finishing shall be completed within half an hour of adding water to the dry mortar. Plaster work shall be conforming to IS 1661 of 1972. Curing shall be started as soon as the plaster has hardened sufficiently not to be damaged when watered. The plaster shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages at the contractor's expense by such means as the Engineer-in-Charge may approve. The dates on which the plastering is done shall be legibly marked on the various sections plastered so that curing for the specified period thereafter can be watched. Specifications for Finish, Precautions, Measurements and Rate shall be as described

A.6 FINISHING WORKS

- Two coats white cement based putty of approved brand and manufacturer are to be applied, over plastered surface and grinding the surface smooth with sand paper to get an even and smooth finish.
- Priming coats are to be applied with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound).
- Painting shall not be started until the Engineer-in-Charge has inspected the items of work to be painted satisfied himself about their proper quality and given his approval to commence the painting work. Painting of external surface should not be done in adverse weather condition like hail storm and dust storm.
- Painting, except the priming coat, shall generally be taken in hand after practically finishing all other building work.
- The rooms/other area should be thoroughly swept out and the entire building cleaned up, at least one day in advance of the paint work being started.
- Distemper is to be applied as per approved brand and standard procedure.

B. SOPS FOR SHOTCRETING WORK IN EXTERIOR AREA (Stair & Corridors)



All the SOPs are same as SOPs for interior area. But painting is to be done with acrylic emulsion paint, having VOC (Volatile Organic Compound) content less than 50 grams/ litre, of approved brand and manufacture.

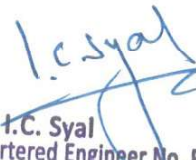
C. SOPS FOR SHOTCRETING WORK IN EXTERIOR AREA (Beam & Columns)

C.1 Providing and fixing scaffolding

For working at height, double scaffolding system (cup lock type) is to be provided on the exterior side up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal & vertical tube joining with cup & lock system with M.S. tubes, M.S. tube Challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it thereafter. The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations with essential safety features for the workmen etc. complete as per directions and approval of Engineer-in-charge.

Note:- The payment will be made once for all type of external works irrespective of duration of scaffolding.

All the other SOPs are same as SOPs for interior area except following painting is to be done with acrylic emulsion paint, having VOC (Volatile Organic Compound) content less than 50 grams/ litre, of approved brand and manufacture.


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SOPS FOR REPLACEMENT OF BATHROOM & KITCHEN PLUMBING FITTINGS

A. SOPs for Bathroom works

A.1 Floor Treatment of bathrooms

- Each and every effort of removal of bathroom fixtures like washbasin, toilet seat, taps shall be made and kept in safe custody by contractor so that the removed fixtures can be re-fixed after repair work. This process should be supervised by Site-In-Charge from HPGCL. In case washbasin & toilet seat, taps cannot be removed without damage then firm can dismantle the fixtures after directions of site in charge from HPGCL.
- Floor tiles laid in cement mortar are to be dismantled on first hand.
- Subsequently, cement concrete layer shall be dismantled.
- All the old plumbing fixtures (pipes, traps) shall be dismantled.
- All the debries malba shall be removed from the sunken floors of bathrooms.



- Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :
 - i. First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.
 - ii. Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.
- Sunken floor is to be filled with Light weight concrete having density of less than 1650 kg/cumtr in the depressed floor of bathrooms including watering and ramming.
- Cement concrete layer is to be laid as per quality of item in BOQ and direction of Er-In-Charge complete in all respect.
- Providing and fixing in position single socket SWR UPVC soil waste or antisiphonage pipes as per IS 13592 for washbasin and water closet. The laying & joining of pipes with traps and tees shall be ensured as per relevant IS Code. For soil, waste and rainwater (SWR) drainage systems, cement solvent jointing is normally adopted. It is preferable that trenching should be done just ahead of the laying and jointing of the pipes. The width of the, trench should be as narrow as possible, allowing enough room for joining, backfilling, etc. All the 8 no. bathrooms in one line from ground to 7th floor shall be repaired in one go to ensure proper jointing of common pipes with individual pipes of bathrooms. The pipes and their joints shall be pressure checked.
- Providing and laying rectified Glazed Anti-Skid floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1 :4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.

A.2 Wall Treatment of bathrooms

- Wall tiles laid in cement mortar are to be dismantled on first hand.
- All the old plumbing fixtures (pipes) shall be dismantled.
- Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings. All the 8 no. bathrooms in one line from ground to 7th floor shall be repaired in one go to ensure proper



jointing of common pipes with individual pipes of bathrooms. The pipes and their joints shall be pressure checked.

- Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick bed of cement mortar 1:4 (1 Cement : 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including pointing the joints with white cement and matching pigments etc., complete.
- Providing and fixing of plumbing fixtures like taps, valves, washbasin, looking mirror etc. as per requirement.
- Replacement of chowkhats shall be done if required and as per direction of Er-In-Charge.

B. SOPs for Kitchen works

- Floor tiles laid in cement mortar are to be dismantled on first hand.
- Subsequently, cement concrete layer shall be dismantled.
- All the old plumbing fixtures (pipes, traps) shall be dismantled.
- All the debries malba shall be removed.
- Cement concrete layer is to be laid as per quality of item in BOQ and direction of Er-In-Charge complete in all respect.
- Providing and fixing in position single socket SWR UPVC soil waste or antisiphonage pipes as per IS 13592 for washbasin and water closet. The laying & joining of pipes with traps and tees shall be ensured as per relevant IS Code. For soil, waste and rainwater (SWR) drainage systems, cement solvent jointing is normally adopted. It is preferable that trenching should be done just ahead of the laying and jointing of the pipes. The width of the, trench should be as narrow as possible, allowing enough room for joining, backfilling, etc. All the 8 no. kitchens in one line from ground to 7th floor shall be repaired in one go to ensure proper jointing of common pipes with individual pipes of kitchens. The pipes and their joints shall be pressure checked.
- Providing and laying rectified Glazed Anti-Skid floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1 :4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.



SOPS FOR EXTERIOR WORKS OF BUILDINGS



A. CHIPPING WORK

1. For working at height, double scaffolding system (cup lock type) is to be provided on the exterior side up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal & vertical tube joining with cup & lock system with M.S. tubes, M.S. tube Challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it thereafter. The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations with essential safety features for the workmen etc. complete as per directions and approval of Engineer-in-charge

Note:- The payment will be made once for all type of external works irrespective of duration of scaffolding.

2. Whole Madrasi Dana of outer surface of building shall be chipped.

B. PLASTER WORK

20 mm plaster of ratio 1 (Cement) : 4 (Fine Sand) shall be used preferably for ceiling works. Beating with thin bamboo strips shall not be done on the cement plaster. No lime putty solution shall be applied on the face when finishing. Further the plastering and



finishing shall be completed within half an hour of adding water to the dry mortar. Plaster work shall be conforming to IS 1661 of 1972. Curing shall be started as soon as the plaster has hardened sufficiently not to be damaged when watered. The plaster shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages at the contractor's expense by such means as the Engineer-in-Charge may approve. The dates on which the plastering is done shall be legibly marked on the various sections plastered so that curing for the specified period thereafter can be watched. Specifications for Finish, Precautions, Measurements and Rate shall be as described

C. FINISHING WORKS

1. Two coats white cement based putty of approved brand and manufacturer are to be applied, over plastered surface and grinding the surface smooth with sand paper to get an even and smooth finish.
2. Priming coats are to be applied with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound).
3. Painting shall not be started until the Engineer-in-Charge has inspected the items of work to be painted satisfied himself about their proper quality and given his approval to commence the painting work. Painting of external surface should not be done in adverse weather condition like hail storm and dust storm.
3. Painting, except the priming coat, shall generally be taken in hand after practically finishing all other building work.
4. The area should be thoroughly swept out and the entire building cleaned up, at least one day in advance of the paint work being started.
5. Painting is to be done with acrylic emulsion paint, having VOC (Volatile Organic Compound) content less than 50 grams/ litre, of approved brand and standard procedure.



SOPs FOR EXPANSION JOINT

1. The area around the expansion joint to be dismantled.
2. The area and expansion joint is to be cleaned properly.
3. The expansion joint is to be filled with bitumen filler.
4. Expansion joint is to be sealed with Hypolen Tape/TPE Tape including adhesive. The materials to be used shall be of approved brand.
5. Aluminium sheet is to be fixed over Hypolen Tape/TPE Tape other work contingent thereto.



SOPS FOR RETROFITTING OF IDENTIFIED DISTRESSED RC COLUMNS

1. Remove concrete cover of the RC member and chip off all weak, damaged and easily removable concrete. Clean the concrete surface by sand blasting and remove any loose material.
2. Repair configurations shall be kept simple, and shall have squared corners.
3. Existing reinforcement bars shall be cleaned to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer in Charge.
4. After cleaning, all exposed reinforcement shall be carefully evaluated to determine if replacement or additional reinforcement bars are required. The reinforcement bar shall be undercut a minimum 19 mm (3/4 in.) if the bond is broken between the rebars and the concrete during preparation, the bars have to be replaced or supplemented.
5. Using appropriate epoxy grout, install steel dowels in the RC members as per drawing details and also in the footing in case of retrofitting of columns.



6. Bind the jacketing reinforcement in the form of longitudinal bars and lateral ties as per drawing details. If the standard hooks of the lateral ties are not possible to create then, welding of the lateral ties may be done to close them appropriately.
7. Erect the formwork around the existing RC member.
8. Apply epoxy-based adhesive on the chipped and cleaned concrete surface to ensure good bond between old and new concrete.
9. Concreting in the jacket portion to be done. Concreting in the jacket portion to be done. Cement concrete shall be machine batched and machine mixed design mix M 30 grade for reinforced cement concrete work, using cement content as per approved design mix & specifications given in BOQ, as per direction of Engineer-in-charge.
10. Remove the shuttering as per codal specifications and cure the concrete for 28 days to get best results.



SOPS FOR RETROFITTING WORKS ROOFS OF BUILDINGS

WATERPROOFING TREATMENT TO TERRACE AREA USING TWO COMPONENT 100% SOLIDS HYBRID POLYUREA COATING

Providing and applying waterproofing treatment using two component 100% solid content, hybrid polyurea/polyurethane, rapid curing and highly resilient fully bonded cured to membrane having a mixed density of 1.02g/l. Minimum recommended coverage rate is 1.5ltr/sqm in 2 coats to achieve a total DFT of 1.5mm. cured membrane shall exhibit:

- 1) Tensile strength ASTM D412 :)13 MPa
- 2)Tear Resistance ASTM D624C : 50 N/mm²
- 3) Shore A Hardness: 80
- 4) Elongation ASTM D412 :) 450%
- 5) 1kg, CS 10 wheels, ASTM D 4060): 1.3 mg/1000 cycles
- 6) Service temperature: -20°C to plus 80°C



- 7) Resistant to Fire (EN13501-1)-Class E,d0 Manufacturers shall provide Certificate for Zero VOC, resistance to fire, 25 years life expectancy test certificate before the start of work. System includes supply , application and termination of coating all complete as per the manufacturer methodology. Following steps shall be followed
- Clean the RCC slab/screed surface and wall for treatment by removing dust, dirt and layers of concrete over the surface. etc. by mechanical tools and wire brushing.
 - Pressure grouting at construction joints or honeycombs with non shrink cementations grout by mixing shrinkage compensating admixture per bag of cement as per manufacturer's recommendations.
 - Prepare a side gola of 50X50 mm at the junction using polymer modified mortar.
 - Providing and applying two component 100% solid content, hybrid polyurea/polyurethane membrane at coverage rate of 1.5ltr/sqm in 2 coats to achieve a total DFT of 1.5mm. It must be applied utilizing plural heated high-pressure spray proportioning machine/spray gun.
 - Termination shall be done 300 mm above FFI by providing a groove cut of 30mm x 30mm and seal it with shrinkage compensated polymer modified mortar.
 - Lay a 150 GSM geotextile layer to protect the coating from external damage on final coating before laying of screed concrete/final finish. It shall be applied as per manufactures specification.

Note:-

1. The work will be executed as per Haryana PWD B&R Specifications as per latest amendment. In case of any discrepancy the Bureau of Indian Standards shall be followed and then CPWD specifications shall be followed. These will be in order of preference as mentioned below:

- Haryana PWD (B&R) Specifications.
- Bureau of Indian Standards.
- CPWD Specifications.

In case, any item is not covered by all three above, then the decision of 'Engineer' shall be final.

2. Technical Specifications for building works given in Common Bid Document shall be followed in letter and spirit and shall be kept as part of contract documents.


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**Technical Specifications
For
Building Works**

1. SPECIFICATIONS

The work will be executed as per Haryana PWD B&R Specifications as per latest amendment. In case of any discrepancy the Bureau of Indian Standards shall be followed and then CPWD specifications shall be followed. These will be in order of preference as mentioned below:

- i) Haryana PWD (B&R) Specifications.
- ii) Bureau of Indian Standards.
- iii) CPWD Specifications.

In case, any item is not covered by all three above, then the decision of 'Engineer' shall be final.

1. PREAMBLE

- 1.1 The technical specifications contained herein shall be read in conjunction with the other bidding documents as specified in volume-1.

3. SITE INFORMATION

- 3.1 The information given here under and provided else, where in these documents is given in good faith by the employer but the contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the employer is erroneous insufficient.
- 3.2 The area in which the works are located is mostly plain terrain.

4.0 GENERAL CLIMATIC CONDITIONS

- 4.1 The Variation in daily temperature in this region is as under :-
 - i) During summer months, from about 20° C minimum to 46° C maximum.
 - (ii) During winter months, from about 2° C minimum to 28° C maximum.
- 4.2 The average annual rainfall in the area is of the order of 500mm. A good portion of which is concentrated during the months of August and September each year.
- 4.3 The range of relative humidity varies from a minimum of 40% to a maximum of 80%.

EXPLANATORY NOTES

1. The rates are for complete work including cost of all materials, labour, tools and plants and water etc. unless or otherwise specified.
2. All clauses and notes given in the Haryana PWD schedule of rates 2021 with latest modifications and latest DSR with upto date correction slips issued upto the date of tender shall be applicable to all above items wherever necessary.
3. The description, rates, units, etc. of above schedule shall be corrected as per Haryana PWD schedule of rate 2021 with latest modifications in case of any error or omission.
4. Chapter numbers with items referred to above are of Haryana PWD schedule of rates 2021 with latest modifications, corrected upto date.
5. The whole work shall be carried out strictly in accordance with the Haryana PWD specifications book 1990 latest edition as applicable to Haryana State with upto date correction slips and CPWD / MoRT&H / MoRD Specifications as applicable.
6. No premium shall be payable on the items which are not provided in the Haryana PWD schedule of rates 2021, corrected-up-to-date.
7. Samples of all building materials, doors and windows, fittings and other articles required for use on the work shall be got approved from the 'Engineer', Articles manufactured by firms of repute, approved by the 'Engineer' shall only be used. Only articles classified, as First Quality by the manufactures shall be used. Articles which are not First quality shall be rejected by the 'Engineer'. Preference shall be given to those articles, which bear I.S.I. certification mark. In case articles bearing ISI certification mark are not available, the quality of samples brought by the contractor shall be judged by the standards laid down in the relevant ISI specifications. All materials and articles brought by the contractor to the site of work for use shall confirm to the samples approved, which shall be preserved till the completion of work. Final decision to reject any material shall rest with the 'Engineer'.
8. The contractor shall provide suitable measuring arrangements at site for checking of various articles brought by him to ensure mixing in specified proportions.
9. The contractor shall provide such recesses, hole, openings etc. as directed by 'Engineer' as required for the Electrical / sanitary work and nothing shall be payable on this account.
10. Thickness of RCC shall be measured and paid for structural sizes designed.
11. **Reinforcement shall be measured in length including hooks, if any, separately for different diameters actually used in work, during overlaps. From the length so measured, the weight of reinforcement shall be calculated in tones on the basis of IS:1732 Wastage, overlaps couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing, shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement.**
12. Where there is a provision for flush door shutters, only doors which bear the ISI certification marks and arranged from manufacturer of good repute like Green, Duro, Durenzo, Century shall be accepted. In case flush door shutters bearing ISI certification marks are not available in the market, flush door

shutters confirming to ISI specifications and arranged from manufacturer of good repute shall only be accepted. They should be water proof, termite proof and have a guarantee for 10 years for any defect liability. The plyboard / mica / laminate / veneers / teak veneers/ block boards should also be of premium quality of reputed makes like Green, Duro, Durenzo, Century with ISI mark. For WPC doors, windows and frames thereof from brand Green, Duro, Durenzo, Century, COBE shall be accepted.

For Ceiling solutions : The items of brand names Armstrong, Gyproc, Decibel Ceiling & Acoustics, Shera, USG Boral and Gypsoman etc shall be accepted.

13. Steel butt hinges shall strictly confirm to Indian standard specification, IS-1341-1970 (Latest edition) and dimensions given in table 2 for medium weight cold rolled mild steel butt hinges of the above specifications Hinges shall be of good workmanship and manufactured by the firm of good repute.
14. Analysis of rates for non-schedule / non agreement items i.e. items which are not provided in the Notice Inviting Tender / Haryana PWD Schedule of Rates, 2021 2nd editions corrected upto date shall be payable as per actual lowest market rates from the recognized public market suitable to the executing division and wages of labour as applicable at the time of execution of work, plus admissible contractors profit and over head charge. For such items of materials the contractor shall be required to produce original vouchers which shall be subjected to verification by the 'Engineer'. The rates for non-schedule items shall be approved by the competent authority as recognized in the departmental financial rules in existence at the time of approval.
15. First Quality glazed/ceramic/vitrified tiles of reputed manufactures such as Kajaria, RAK, NITCO, Somany, Orient Bell, Jhonson, Simpolo/AGL tiles/Oasis Tiles/Home Square Tiles to be supplied by the Deptt. or arranged by the contractor.
 - 15 (a) OPC cement duly ISI marked of 43 grade such as JK, Lakshmi, L&T, A.C.C, Shree, Ambuja, Wonder Cement by RK Group and Birla or as approved by Engineer should be arranged by the contractor.
 - 15 (b) TMT Steel Fe-500/ 500 D duly ISI marked manufactured by reputed brands such as Rashtriya Ispat Nigam Limited Vizag TMT 500 D/ Tata Iron & Steel Company (TISCO) /Steel Authority of India Limited (SAIL TMT Bar)/JSW(Jindal Panther TMT)/ Electrosteel (V-Xega) 550D TMT Bar/Shyam Steel Industries Ltd. (Shyam TMT ReBars Fe 500D) / Orissa Metallurgical Industry Pvt. Ltd. (OMPL TMT 500 D)/Super Shakti Steel (Super Shakti Fe500), AF-Star manufactured by M/s M.S. Agarwal Foundries Pvt. Ltd. etc. shall be arranged by the contractor.
16. Waterproofing Compound, membrane, PU coating for basement podium terrace puf insulation, sunken portion treatment, Plasticizer, Super Plasticizer, Admixtures, Tile / Stone Adhesive /Tile / Epoxy Grout / Injection Grout, FRP / Fibre reinforcement wrap of reputed manufactures such as ASIAN SMARTCARE / GCP / BASF / Bitumet / Technonicol / Fosroc / Sika /

Pidilite/ Ultra Tech/Synergy Telecommunications to be supplied by the Deptt. or arranged by the contractor.

For paint works like Eexterior emulsions, ACRYLC interior emulsion / water-based enamels / enamel and distempers the products of only Asian Paint, Dulux, Nippon, Nerolac, Berger and Woodco paints etc shall be accepted.

For False Ceiling and acoustic wall paneling makes Hi-Steel (PR products) and Gyptech are approved.

For fire fighting equipment brand name Lifeguard Fire Fighting Equipment is approved.

17. The Tender with the condition regarding steel work to be done at labour rates shall be considered invalid and rejected straightway.
18. The quantities of all items given in the Schedule are tentative. These can be increased or decreased as per working Architectural drawings / structural drawings & nothing extra shall be paid.
19. For quality control, the contractor shall be required to use cement concrete mix giving a minimum cube strength as may be prescribed in the relevant structural drawings of work. For cement concrete and cement mortar work and other items the test should be regularly carried out as per procedure laid down in relevant I.S.I. & other codes at the expense of the contractor. The rates provided in the H.S.R. 2021 2nd edition included the cost of such testing.
20. Irrespective of what is stated in para 6 of General Rules of Haryana P.W.D. schedule of rates, 2021 2nd edition no carriage of cement, steel, bricks and water or any other type or material shall be admissible irrespective of any lead involved.
21. All the flooring like terrazzo, Kotah stone or marble flooring should be granite polish finished. No extra rate shall be paid on this account to the contractor
22. Where-ever brick work or earth filling/embankment work is to be executed, the same has to be executed in accordance with the provision in the Fly Ash Notification dated 14.9.99 & 27.8.2003 i.e. by using Fly Ash brick and filling/embankment construction by Pond Ash/Fly Ash as specified in the aforesaid notification after getting the design approved from Engineer-in-charge. Only I.S.I. marked factory manufactured flush door shutter ply and block board should be used, where ever required.
23. In case factory manufactured items, the contractor will get the name of manufacturers approved form deptt. and a warranty of 5 years certificate in favour of 'Engineer' in charge. In case of door shutters the type of wood used shall also be given by the manufacturer. The agency shall produce a certificate that door & window shutters fixed at site are actually factory manufactured - in case agency fails to do so the rate for the same shall

be paid for site manufactured shutters as per HSR 17.30 & 17.31 of HSR 2021 2nd edition.

24. The agency will provide 2 Nos. boards of size 4' X 2½' at the site of work intimating the details of the project otherwise deduction will be made from the first running bill of the Agency @ Rs 150000/- per board.
25. Contractor will use coarse aggregate (all type of stone grit) and course sand i.e. stone dust (Zone IInd as per IS code). The material should confirming to the latest IS specification.
26. Regular and monthly quality control test as per frequency as per IS code specification / PWD specification is to be done by the Contractor at his own cost and submit the result to the 'Engineer' regularly and in case if he fails to do the same, 'Engineer' will got conduct all quality control test as per frequency for any reputed lab & amount of the same will be recovered for the agency. Beside this 'Engineer' will carry out their own quality control test and also will engage IIIrd party quality control agency for proper quality control work and charges of this will be borne by the Govt.
27. All aluminum fittings for doors and windows shall be of 'Classic'/ or equivalents make confirming to I.S. Specifications as approved by the 'Engineer'.
28. **Third Party Inspection** - The Engineer-in-Charge may opt for 3rd party inspection other than department in addition to inspection by department staff, the 3rd party would inspect to ensure execution of work as per specification/ agreement and also quality control i.e. draw of samples, testing and other items etc. The report of the same would be submitted to Engineer-in-Charge by the 3rd party. The agency/ contractor shall be bound by the report of 3rd party inspection and shall take remedial measures for execution of work as per specifications in agreement at their own cost. The cost of 3rd party inspection will be borne by the employer.
29. **Cement contents** - Actual cement required for the aggregates in concrete to be used shall be determined by laboratory test while designing the concrete mixes. If the cement contents of the design mix of that grade come less than the provision of cement contents provided in the Haryana Scheduled of Rates, (with latest amendments) due to durability conditions, the cement contents as provided in the Haryana Schedule of Rates shall be used and no extra payment on this account shall be made to the contractor. No extra amount over and above the minimum cement content as provided in the Haryana Schedule of Rates shall be paid.
30. **Design Mix** Design mix will be got carried out by the Engineer-in-Charge from any of the reputed laboratory at the cost of contractor. The source of aggregate shall be identified by the contractor and Engineer-in-Charge's representative shall be present while taking sealed samples for the design mix from such source. Frequency of carrying out Design Mix shall be as per relevant IS Codes

and also when the source of aggregate will change, the design mix shall be carried out again.

31. Conditions for Quality Control and Lab:

- i. The contractor shall have to provide a field laboratory fully equipped at work site before starting the execution of works for conducting all the relevant tests mentioned in the Haryana PWD specification subject to the approval of the 'Engineer's -in-charge or his representative. The record of such tests is to be maintained in proper register duly signed by the Contractor or his representatives, which will become the property of the department. The Contractor will bear all the running expenses for conducting such tests. All the tests will be carried in the presence of S.D.E.-in-charge of the work. All the entries are to be signed by the contractor, S.D.E. and J.E.-in-charge. **In case the contractor does not set up the field laboratory, an amount of Rs 10.00 lacs shall be withheld from the first running bill and if the contractor does not setup the laboratory, the same will be setup by the department from the withheld amount.**
- ii. The quality control tests which are carried out by the department and the material for such tests will be supplied by the contractor free of cost. In case the material is not found up to the requirement, the same will be rejected.
- iii. Contractor shall provide suitable measuring arrangement and leveling instruments latest quality duly approved by 'Engineer's -in-charge at the site of work.
- iv. No extra payment on account of quality control measures shall be paid to the contractor.
- v. The 'Engineer's -in-charge at his discretion can get any type/Nos. of tests carried out any other approved laboratory for his satisfaction for which all the expenses incurred would be borne by the agency. The results so obtained from the laboratory would be acceptable and binding to the agency.
- vi. The Contractor shall be required to provide all such materials/equipment's at site to conduct field tests and to ensure that the quality of aggregate shall be according to the prescribed specification and no payment for material required for sample for such tests shall be made to him. In case, the material is not found up to mark, the same will be reject.
- vii. For cement, steel and similar other material, the essential tests are to be carried out at the manufacturer's plants or at laboratories other than the site laboratory, the cost of samples, testing and furnishing of test certificates shall be born by the contractor. He shall also furnish the test certificates to the 'Engineer'.
- viii. 25 % of the beams and columns in each floor before laying of slab for that floor of the building, shall be subjected to Rebound Hammer Test conforming to IS 13311 (Part 2): 1992 before proceeding further with construction of next story of Building. The tests shall be witnessed by SDE. In case the test result fails the column in parameters it shall be demolished and reconstructed at

the cost of the contractor. The test results shall be tabulated and made part of the final bill.

- ix. The liquidated damages can be deferred/reduced/waived (whole or part) by the SE concerned for contract(s) upto Rs.1.00 cr., CE from Rs.1.00 cr. to Rs.10.0. cr. and E-In-C of Haryana PW(B&R) Deptt. for contract(s) above Rs.10.00 cr. This will be done on the written request of the contractor and written recommendations of EE/SE as the case may be.
- x. Upon completion and before offering the work for acceptance, the contractor shall remove all false work, excavated and useless materials, rubbish, temporary building constructed by him and shall leave the site and adjacent area in a neat and clean condition to the entire satisfaction of the 'Engineer's. The 'Engineer's , reserves the option to take away any item of work or any part thereof at any time during the currency of the contract and reallocate it to any other agency with due notice to the contractor without liability of any kind or payment of any compensation. Extra amount if incurred will be recovered from the agency.
- xi. The contractor has to make his own arrangements for water, bricks, wood and every item required directly or indirectly for completion of work.
- xii. No claim shall be entertained on account of increase in price of labour and material other than provided in the contract due to any cause whatsoever.
- xiii. In case of emergency the Contractor shall be required to pay his labour every day and if this is not done, the 'Engineer' will make the requisite payment and recover the same from the contractor.
- xiv. Actual quantities of completed and accepted work shall only be paid.
- xv. No pits shall be dug by the contractor near the site of work or within Govt. land for taking out earth for use on the works. In case of default the pits so dug will be filled in by the department at the cost of the contractor plus fourteen percent departmental charges.
- xvi. The rates to be quoted by the contractor shall be inclusive of octroi terminal fee, royalty, cess and all other taxes (excluding GST) and charges. These are for complete work in all respects excluding GST. The GST amount shall be reimbursed on production of proof of deposit of GST with Govt. for the previous payment.
- xvii. The Contractor shall not be entitled for any payment on account of work done until he signs the agreement.
- xviii. Nothing extra shall be paid for any lead and if unless otherwise specified for any material required directly or indirectly and the rates to be given in the tender shall include all leads in the contract schedule.

- xix. The Contractor shall be responsible for any /all losses of material, damage done to unfinished work as a result of floods and other acts of God. The Govt. will not be responsible for any compensation as a result of such damage or loss to the Contractor and the Contractor shall be liable to set right such damage at his own cost to the satisfaction of the 'Engineer's .
- xx. Any cost of execution of item(s) of work, royalty, sales tax, cess and any other taxes, if any shall be paid by the contractor direct to the respective department in accordance with their rules and regulations in force from time to time without intervention of the Public Works Department.
- xxi. Amount of work may be increased or decreased and any item committed and substituted in accordance with the requirement of the department and no claim on this amount shall be entertained. **The contractor will have to complete the whole building as per architectural plans submitted by the Chief Architect Haryana or by the Architect hired by the department for the work.**
- xxii. All material left at site by the contractor for a period of more than one month after the completion of work shall become the property of the public works department and Contractor shall have no claim whatsoever for such material.
- xxiii. The Contractor shall maintain at site of work full details of specification of the work fixed by the 'Engineer' and approved drawing of the work.
- xxiv. Nothing extra shall be paid to the Contractor for diversion of water in the channels stream if it becomes necessary for the execution and completion of the work.
- xxv. The Contractor will not have any claim in case of delay by the Department for removal of tree or shifting, raising, removing of telegraph, telephone or electric lines (Over head or under ground) and other structure, if any, which comes in the way of the work.
- xxvi. The percentage above and below HSR including ceiling premium if any should be quoted by the Contractor after making due diligence of the items in the BOQ and item rates for NS items in BOQ should be quoted without any condition. In case any condition is tendered this will be considered as null and void and only percentage above and below HSR item rates quoted for NS items by the tenderer shall be considered. In case any tenderer refuses to accept this, action shall be initiated as per provisions in the Bid Security Declaration Form or Bid Security shall be encashed.

32. Relation with Public Authorities:

The Contractor shall comply with all legal orders and directions given from time to time by any local or public authorities and shall pay out of his own money the fees or charges to which he may be liable.

33. Additional Conditions applicable to performance of Contractor

- i. Item for which no rate or price have been entered in, will not be paid for by the employer when executed and shall be deemed covered by the other rates and prices in the bill quantities (Refer: ITB Clause 13.2 and conditions of contract Clause 43.3).
- ii. Where there is discrepancy between percentage written in figures and words while quoting rates for HSR items, the percentage written in words shall be considered. Where there is a discrepancy between unit rate and the figures written in words for NS items, total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern (ITB clause 27.1(b)).
- iii. The agency to whom the work is allotted will have to produce original voucher for all quantities in lieu of purchase of bitumen, steel and cement from the original manufacture or the authorized dealer/distributors to the satisfaction of the 'Engineer' for ascertaining the genuineness of material. Attested copy of such voucher will have to be submitted along with the bills.
- iv. The documentary proof of procurement of cement & steel from the reputed source and test result from CRRI or Sri Ram Test House, New Delhi will be produced by the agency.
- v. The contractor will be held strictly responsible to the true intent of the specification in regard to quality of materials, workmanship and the diligent execution of the contract.
- vi. All materials and each part of detail of the work shall be subject at all times to inspection by the Engineer-in-Charge. Departmental Representative or other authorized subordinate who shall be furnished with reasonable facilities and assistance by the contractor for ascertaining whether or not the work as performed or the materials used are in accordance with the requirements and intent of the plans and specifications.
- vii. The contractor shall furnish written information to the 'Engineer' stating the original source of supply and dates of manufactures of all materials manufactured away from the actual site of work. The information shall be furnished at least two weeks (or such other period as may be directed by 'Engineer' in advance of the incorporation of any such materials in the works.
- viii. Any work done or materials used without supervision or inspection by the 'Engineer' /Departmental Representative is liable to be ordered to be removed and replaced at the contractor's expenses.

- ix. If so directed the Contractor shall at any time before the acceptance of the work, remove or uncover such portion of the finished work as may be directed. After examination, the contractor shall restore the said portion of the work to the standards required as per specifications. The work shall not be considered to have been completed in accordance with the terms of the contract until the 'Engineer's -in-charge shall have certified in writing that it has been completed to his satisfaction. No approval of materials or workmanship or approval of part of the work during the progress of execution shall bind the Engineer in any way or effect his power to reject the work when alleged to be completed or to suspend the issue of his certificate of completion until such alterations or modifications or reconstructions have been affected as shall enable him to certify that the work has been completed to his satisfaction.
- x. The inspection of the work or materials shall not relieve the Contractor any of his obligation to fulfill the terms of the contract as herein prescribed by the plans and specifications.
- xi. Failure to reject any defective work or material will not in any way prevent later rejection when such defect is discovered or obligate the department to make final acceptance.
- xii. If, the contractor seeks to some assistance from the department in connection with arranging water/electric connection from the public utility service authorities for the purpose of Govt. work such assistance only to the extent of writing a letter from the 'Engineer' to the authority concerned for giving such connection may be provided. All charges etc. shall be borne by the contractor.
- xiii. The contractor may, on application of the contractor, issue essentiality certificate for Diesel/Petrol (if it becomes a controlled commodity) required for materials to be used on the work but the department will not undertake any responsibility for the arrangement of such Petrol/Diesel, Non availability of any such materials will not absolve the contractor of his contractual obligation. No claim of any kind what-so-ever shall be entertained for any and all the losses or damages to the contractor due to the completion of the work getting delayed due to the failure or delay on the part of the public works department under the terms and conditions of the contract.
- xiv. The contractor shall supply at his own cost and expenses all labour materials etc. for labour and checking of any portion of the work during construction. Whosoever required by the 'Engineer' or his representative and nothing extra shall be paid for same.
- xv. Occupation of Additional Lands:
In case, when it becomes necessary for due fulfillment of the contract for the contractor to occupy land outside the P.W.D. limits the contractor

shall make his own arrangement with the land owners and pay such amount, as may be mutually agreed upon by them.

- xvi. No claim by the contractor for additional payment will be allowed on the ground of any misunderstanding or misapprehension in respect of any such matter or otherwise on the ground of any allegation or fact that incorrect information was given to him by any person whether in the employ of the Govt. or not or of the failure on his part to obtain correct information nor shall the contractor be relieved from any risk or obligations imposed on or undertaken by him under the contract on any such ground or on the ground that he did not or could not fore-see any matter which may in fact, effect or have affected the execution of the work.
- xvii. During the absence on work of the 'Engineer' he shall be represented by one of his subordinate whose duties are to watch and supervise the works, to test and examine any materials to be used or workmanship employed to ensure that the works are performed in conformity with the plans, estimates and specifications in all respects and to keep 'Engineer' informed of the progress of the works and the manner in which they are done. The 'Engineer' may from time to time delegate any of the powers and authorities vested in him to the departmental representative in writing.
- xviii. The Departmental representative shall have no authority to alter or waive the provisions of plans and estimates and specifications or to relieve the contractor or any of his duties or obligations under the contract. He shall however, have the authority to inform the contractor in writing to replace any materials considered defective and to suspend, to do, or rectify the work improperly performed or not according to plans and estimates or specifications in his judgment and the contractor shall comply.
- xix. Failure of the Departmental Representative to disapprove any work of materials shall not prejudice the power of the 'Engineer' thereafter to disapprove such work or materials and to order the pulling down, removal or breaking up thereof. If the contractor shall be dissatisfied by reason of any decision of the Departmental representative, he shall be entitled to refer the matter to the 'Engineer'. Who shall thereupon confirm or reverse such a decision.
- xx. The contractor shall also inform the 'Engineer' in writing when any portion is ready for inspection giving him sufficient notice to enable him to inspect the same without retarding the further progress of the work.

- xxi. Unless otherwise provided in the contract document materials such as rubble, gravel sand, murrum, kankar earth, soil, etc. obtained from excavation and materials obtained by dismantling any existing structures shall remain the property of the Government.
- xxii. Any tress branches, bushes, crops etc. which may be required to be cut during the execution of the work shall be handed over to the Public Works Department or disposed of as directed.
- xxiii. The contractor will submit the design of temporary structure scaffolding to department in advance without any cost. The contractor will remain responsible for design and safety of scaffolding irrespective of approval by the Engineer-in Charge.
- xxiv. The contractor shall use canal water for construction of building or water from any other sources as approved by the 'Engineer'. Water should be got tested at regular intervals i.e. maximum of 2 (two) months from the laboratory approved by the 'Engineer' and no extra cost will be paid for the same. Water to be used shall meet latest IS standard as per IS 456/other relevant codes.

A. FOR EXCESS CONSUMPTION OF MATERIALS FROM THE THEORETICAL CONSUMPTION

- (i) No Claim for Excess Consumption of material other than those specified shall be entertained by the department.

B. FOR SHORT CONSUMPTION OF CEMENT

- (i) Upto 5%, the recovery of cost of material thus saved shall be made from the contractor at the base price as applicable on the date of tender.
- (ii) Less consumption by more than 5% (i.e. above 5 %) the rates of items of work involved shall be reduced. If it is not possible to determine the exact items on which less material has been used, the cost of the material so saved shall be recovered from the contractor at double the issue rate. The Executive Engineer reserves the right to take any other deterrent action which he deems fit against the contractor. It shall be at the discretion of the department to determine whether the stability of the structure is affected adversely due to less consumption of materials and in case it is felt that it is likely to be so, the Executive 'Engineer' shall reject the work and the decision of 'Employer' in such matter shall be final.

Conditions for MAINTAINENCE-CUM-DEFECT LIABILITY PERIOD [Building Works]

- 38.1 The defect liability-cum-maintenance period shall be **two years** from the date of completion in case of original works. For maintenance and S/R works, defect liability period will be **one year** and re-painting / white wash / snowcem / distempering will not be required. The date of completion shall be considered as the date certified by the 'Engineer'.
- 38.2 The Engineer shall give notice to the contractor of any defects before the end of the effects Liability-cum-Maintenance Period. The Defects Liability-cum-Maintenance period shall be extended for as long as defects remain to be corrected.
- 38.3 The Contractor shall correct the notified Defect / Defects within the length of time as specified by the Engineer's, notice.
- 38.4 The contractor will be fully responsible for the quality and workmanship of the works executed by him. The liability on account of shortcomings in executed items found by any investigating agency during the defect liability period or afterwards shall be born by the agency.
- 38.5 The Contractor shall do the routine maintenance of building to the required standards in the manners as per Haryana PWD specifications latest edition, DNIT, agreement conditions and keep the whole building in defect free condition during defect liability period as defined above.
- 38.6 The routine maintenance standards shall meet the following minimum requirements to the entire satisfaction of 'Engineer':-
- i) Plaster work and flooring work to be repaired soon after these appear or brought to his notice either during contractor's monthly inspection or by the Engineer or otherwise. Repair shall be carried out in a manner which does not affect the aesthetics.
 - ii) Defective joinery such as door, window, cup-board shutters, chowkhats, wire gauge, glass panes, fitting, fixtures etc. to be rectified / replaced immediately after the defects appear.
 - iii) Any structural damage / fault / defect to be rectified to the satisfaction of 'Engineer' as soon as the same appears.
 - iv) Defective or incomplete/improper white washing / colour washing, distempering, painting etc. to be rectified immediately on notice by the 'Engineer's .
 - v) All rain water pipes, sun-shades and the like components to be inspected every fortnightly and cleaned as and when required.
 - vi) Leakage of water of any kind in the building to be set right immediately on priority.
 - vii) All electrical / Public Health installations including wiring, pipelines etc. made in the building to be repaired / rectified / replaced as soon as any defect has appeared / notice.
 - viii) The agency shall make good all the items / works damaged during the repair being done by him and bring the same in original form.
 - ix) Any other maintenance operation required to keep the building use worthy at all the time during the maintenance period.

- x) He shall maintain a register in the building for daily recording the defects, damages, shortcomings noticed by user and address the problem within three days or else he will approach the 'Engineer' for extension of this time.
 - xi) Before the end of defect-cum-maintenance period is completed, all damaged door /window should be replaced as per original work. All malfunctioning fittings and fixtures of doors/ windows and woodwork, Public Health fixtures, taps etc. of the whole building should be replaced to the satisfaction of Engineer/ Employer as per original work will be carried out by the contractor.
- 38.7 To fulfill the objectives laid down in above sub clauses, the Contractor shall undertake detailed inspection of the building at least once in a month. The 'Engineer' can reduce this frequency in case of emergency. The Contractor shall forward to the 'Engineer' the record of inspection and rectification every month. The contractor shall pay particular attention on the maintenance of building during rains and rainy season.
- 38.8 The Engineer may issue notice to the Contractor to carry out maintenance or remove defects, if any, notice in his inspection, or brought to his notice. The contractor shall remove the defects within the period specified in the notice and submit to the 'Engineer' a compliance report. By not giving notice, will not absolve the contractor from his responsibility.
- 38.9 In case the Contractor fails to make good the defects, the Executive Engineer may employ any other person to make good such defects and all expenses consequent and incidental there to shall be borne by the Contractor.
- 38.10 The contract shall not be considered as completed until a defect liability-cum-maintenance certificate has been signed by the Executive Engineer and delivered to the contractor stating that the works have been completed and maintained to his satisfaction. The defect liability-cum-maintenance certificate shall be given by the SE or the recommendations of XEN. SE will send copy of such certificate to CE (Bldgs) alongwith CD.
- 38.11 Department shall not be responsible for any depreciation in the value of securities, not for any loss of interest thereon.
- 38.12 There will be double lock system for the cement store. One Key of the lock will be with the representative of the department and other key of the lock will be with the agency.

GENERAL NOTES:

1. CONCRETE TO BE USED IN JACKET IS TO BE OF GRADE M30 HAVING 30 MPa CHARACTERISTICS CUBE STRENGTH AT 28 DAYS WITH A SLUMP OF 75 TO 100 MM.
2. REINFORCING STEEL TO BE USED IN THE JACKET SHALL BE OF GRADE Fe500 CONFIRMING TO IS 1786.
3. CLEAR COVER TO LONGITUDINAL REINFORCING BARS IN THE CONCRETE JACKET SHALL BE 30MM.
4. ALL DIMENSIONS ARE IN MM. 6. DIMENSIONS ARE TO BE READ AND NOT TO BE SCALED OFF.
5. LAP LENGTH WHERE EVER REQUIRED SHALL NOT BE LESS THAN $50d$, WHERE d IS THE DIA OF THE BAR.
6. NOT MORE THAN 50% OF THE BARS ARE TO BE LAPPED AT ONE LOCATION.
7. CHEMICAL TO BE USED FOR REBARING/DOWELS SHALL BE OF APPROVED BRAND HAVING BOND STRENGTH NOT LESS THAN 9.3 N/mm^2 .
8. ALL HOLES DRILLED FOR REBARING/DOWELS SHOULD BE CLEANED BY COMPRESSED AIR OR SUCTION PUMP.
9. THE CHEMICAL SHOULD BE PUT BY NOZZLE & PLUG UP TO FULL DEPTH OF HOLE. HOLE DEPTH FOR VARIOUS DIA OF REINFORCING BARS ARE GIVEN BELOW:
 - 10MM = 100 DEEP HOLE
 - 12MM = 180 DEEP HOLE
 - 16MM = 220 DEEP HOLE
 - 20MM = 250 DEEP HOLE
 - 25MM = 350 DEEP HOLE G

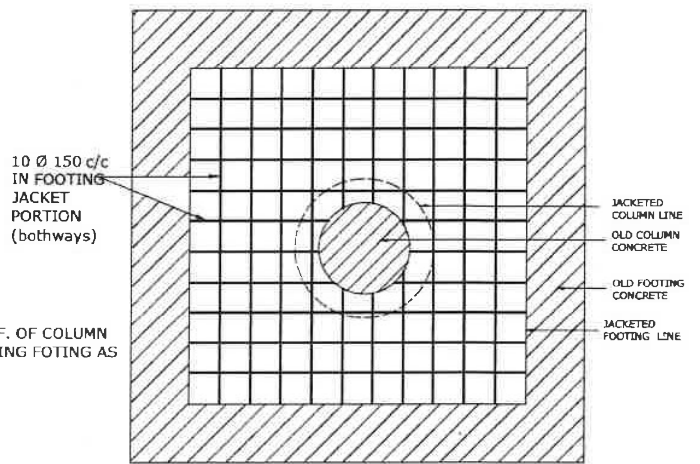
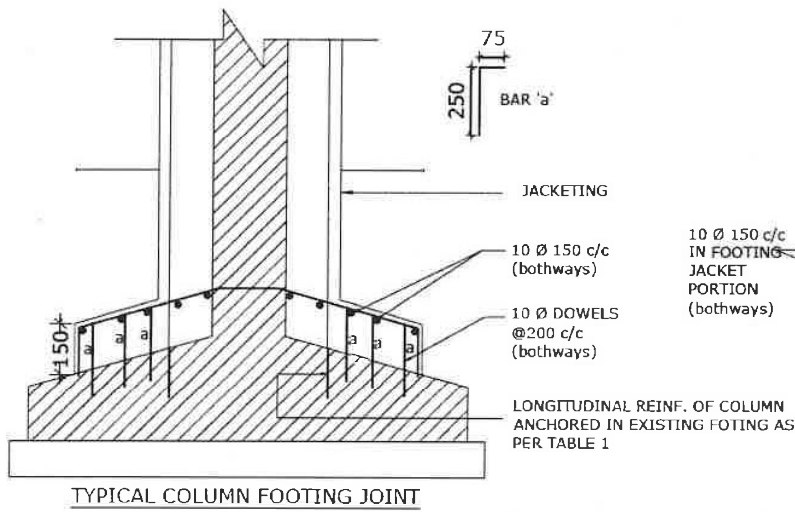
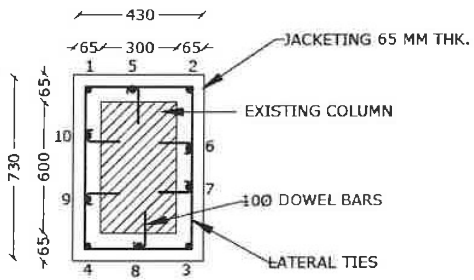


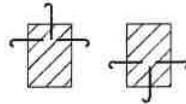
TABLE 1			
REBAR TO BE ANCHORED	DEPTH OF HOLE	DIA OF HOLE	TYPE OF EPOXY GROUT
20mm	250 mm	25 mm	RE-500
16mm	200 mm	20 mm	RE-500
DOWEL BARS 10mm dia	100 mm	12 mm	RE-500

REFER DRG. NO. 01 FOR NOTES

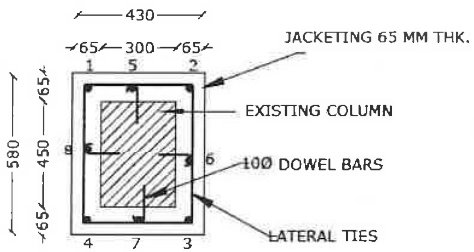


BARS IN JACKETED PORTION OF COLUMNS C-1, C-2, C-3, C-4, C-16, C-19		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 4 - 20 Ø 5 TO 10 - 16 Ø	1 TO 4 - 16 Ø 5 TO 10 - 12 Ø
LATERAL TIES	10MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 6 NOS. 10MM DIA, @ 350c/c VERTICAL
SPACING WITH THREE DOWELS IN ONE HORIZONTAL PLANE AS SHOWN BELOW:

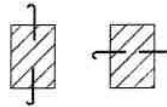


TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF COLUMNS C-1, C-2, C-3, C-4, C-16, C-19



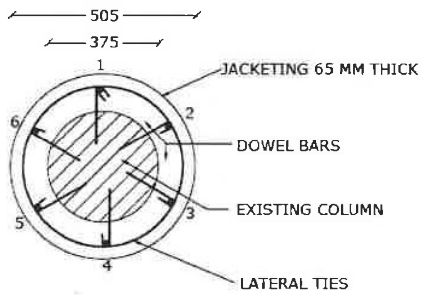
BARS IN JACKETED PORTION OF COLUMNS C-11, C-14, C-15, C-20, C-21		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 4 - 16 Ø 5 TO 8 - 12 Ø	1 TO 4 - 16 Ø 5 TO 8 - 12 Ø
LATERAL TIES	8 MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 4 NOS. 10MM DIA, @ 350c/c VERTICAL
SPACING WITH TWO DOWELS IN ONE HORIZONTAL PLANE AS SHOWN BELOW:



TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF COLUMNS C-11, C-14, C-15, C-20, C-21

REFER DRG. NO. 01 FOR NOTES

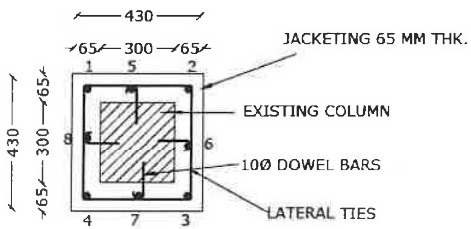


BARS IN JACKETED PORTION OF COLUMNS C-17 & C-18		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 6 - 20 Ø	1 TO 6 - 16 Ø
LATERAL TIES	10 MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 6 NOS. 10MM DIA, @ 350c/c VERTICAL SPACING WITH THREE DOWELS IN ONE HORIZONTAL PLANE AS SHOWN BELOW:

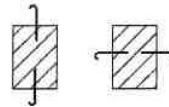


TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF CIRCULAR RC COLUMN C-17 & C-18



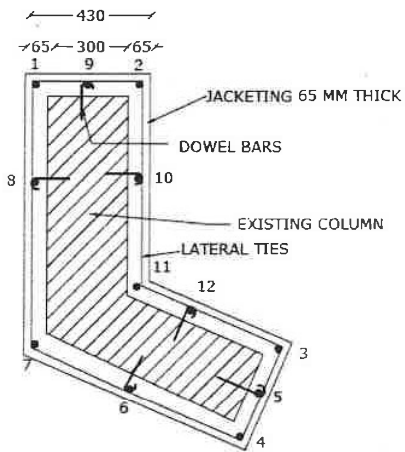
BARS IN JACKETED PORTION OF COLUMN C-13		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 8 - 12 Ø	1 TO 8 - 12 Ø
LATERAL TIES	8 MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 4 NOS. 8 MM DIA, @ 350c/c VERTICAL SPACING WITH TWO DOWELS IN ONE HORIZONTAL PLANE AS SHOWN BELOW:



TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF COLUMN C-13

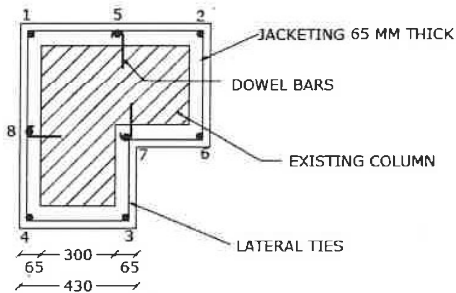
REFER DRG. NO. 01 FOR NOTES



TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF RC COLUMN C-5

BARS IN JACKETED PORTION OF COLUMN C-5		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 12 - 20 Ø	1 TO 4 - 16 Ø + 5 TO 12 - 12 Ø
LATERAL TIES	10 MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 6 NOS. 10MM DIA, @ 350c/c VERTICAL
AS SHOWN BELOW:



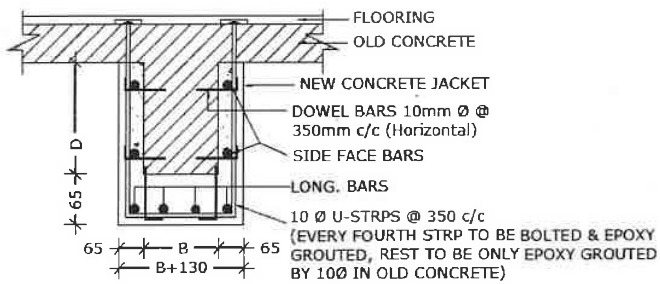
TYPICAL SECTIONAL DETAIL FOR RETROFITTING OF RC COLUMN C-12

BARS IN JACKETED PORTION OF COLUMN C-12		
FLOOR LVLS.	LVL. 1 TO LVL. 6	LVL. 6 TO LVL. 10
LONG. BARS	1 TO 8 - 20 Ø	1 TO 4 - 16 Ø + 5 TO 8 - 12 Ø
LATERAL TIES	10 MM DIA @ 150MM c/c	8 MM DIA @ 150MM c/c

DOWEL BARS 3 NOS. 10MM DIA, @ 350c/c VERTICAL
SPACING WITH THREE DOWELS AS SHOWN BELOW:

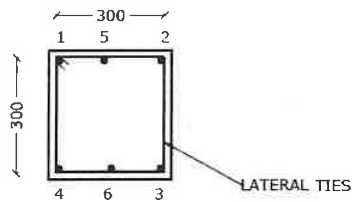


REFER DRG. NO. 01 FOR NOTES



BARS IN JACKETED PORTION OF BEAMS		
SPAN OF BEAM	UPTO 4M	4M & ABOVE
LONG. BARS	3 NOS. - 16 Ø	4 NOS. - 16 Ø
SIDE FACE BARS	2 NOS. - 12 Ø (ONE ON EACH FACE)	4 NOS. - 12 Ø (TWO ON EACH FACE)

TYPICAL DETAIL FOR RETROFITTING OF RC BEAMS



REINFORCEMENT DETAIL OF BRACING BEAM BB-1	
FLOOR LVLS.	LVL. 1 TO LVL. 10
LONG. BARS	1 TO 6 - 16 Ø
STRPS.	8 MM DIA, 2 Legged @ 150MM c/c

TYPICAL DETAIL OF ADDITIONAL BEAM FOR BRACING OF OUTER COLUMNS



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Ref. No. S.A./2024-25/IC/217

Date : 18/09/2024

CONSTRUCTION HAZARDS AND SAFETY MEASURES

Sl.	Stage and Nature of Construction Hazard	Safety measures expected to be taken by the Contractors and Site Engineers
1	Excavation in soft loose & slushy soil above 2.00 m depth- sliding of earth or collapsing of sides.	The Excavation beyond 1.5 m to 2.00 m to be done in steps of minimum 500 mm offsets and also planking and strutting should be done as per specifications and instructions of site engineer
2	Excavation in slippery area (water logged)- The labour may fall or machinery on site may slip	Try to dewater the area and spread minimum 150 mm thick sand layer to avoid slipping.
3	Excavation in Rock where chiselling is involved- The fall of hammer may injure the hand, small rock pieces may injure the eyes and legs	For hammer work, only experienced and skilled labour should be employed. Chisel should not be allowed to be held by hand, while hammering but chisel holding clamp should be provided. The labour should be provided with goggles and leg cover to protect eyes and legs, from injuries due to small rock pieces.
4	Excavation in Rock where blasting is involved- Care- less handling may lead to injury to main worker or passer-by	The work of blasting should be entrusted to only experienced persons. Provide sufficient length of fuse to give ample margin of time from the time of lighting to the time of explosion. A danger zone at least 180 m diameter is to be flagged off 10 minutes before



		actual firing. All workmen should be sent away from danger zone except the firing man, who should be provided with a whistle.
5	Excavation for drain across road or manhole adjacent to a road- chances of a passer by falling into the excavated portion.	The area should be well barricaded & a red lamp provided at night. A watchman should be deputed to prevent any movement of persons, or vehicles.
6	During Excavation or sometimes even while concreting Snake bites or Scorpion stings	In places where the movement of snakes are more the contractor should provide the labour with gum boots, gloves etc. and also make snake antidotes available on site. A particular care that has to be taken on such site is to always keep a vehicle available on site to rush the patient to a doctor. This applies to snake stinged patients as well.
7	Providing and fixing double scaffolding system (cup lock type) on the exterior side, up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal and vertical tubes joining with cup and lock system with M.S. tubes, M.S. tube Challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it there after .The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations	The work shall be done as per specification given in HSR and as per provisions of relevant IS code.



	<p>with essential safety features for the workmen etc. complete as per directions and approval of Engineer-in-charge .The elevational area of the scaffolding shall be measured for payment purpose .The payment will be made once irrespective of duration of scaffolding. Note :- Note: - This item to be used for maintenance work judiciously and where necessary deduction for scaffolding in the existing item is to be done</p>	
8	<p>Form-work for beams and slabs: The bottom of beam collapses and many a times brings down the slab as well, injuring the labour and supervision staff</p>	<p>This case is noticed when slender ballies are used without bracing. In fact, no concreting should be allowed without bracing at 300 mm above ground, and at mid-way, in normal beams & slabs. The bracings should be for the support of beams as well as slabs</p>
9	<p>Form-work for sides of a slab--The labour just rests his foot on the plank and loses balance and falls resulting a fatal accident.</p>	<p>This is noticed when the carpenter fixes the side shuttering of a slab with a plank just tied by binding wire to the steel reinforcements and by wooden pieces nailed in wall and plank. This is so weak a portion that with little pressure the plank gives way. Hence side shuttering should be done with a direct balli support from ground or floor, and the practice of tying planks with binding wire to the steel reinforcement should be totally avoided. A temporary railing along the periphery of slab will guard the life of labour and supervision staff.</p>



10	Form-work for beams and slabs-Opening the form- work--Accident due to fall of materials during removing the forms.	In fact, this is a most dangerous work. One should be very careful while form-work is removed. Only trained carpenters should be deputed for the work. A safe resting place outside the area of slab as a temporary measure should be constructed from where the slab can be removed safely. Removal of form-work during night should not be permitted under any circumstances.
11	Scaffolding-Fall of work-man, Supervision Staff, Standing on Chalis not tied properly or tied only at one end	This is a very common negligence on the part of labour who do scaffolding work. The Chalis on which they work either span over its complete length or is tied loosely and many a times at one end only. Hence, care must be taken that the Chali do not span over the full length but some middle support should be provided and also the same is tied properly on both ends.
12	Ladders- The horizontal member breaks and the person falls. Sometimes the top face just rests on wall and the whole ladder tilts causing an accident.	The ladders should be strong enough to bear the weight of a labour with materials on head. As far as possible a hand rail should be provided at one end. The horizontal member should be preferably fixed with bolt & nuts or strong nails. When the ladder is placed across a wall the top portion should be tied firmly to a strong support so that the ladder does not move laterally.
13	Column Reinforcements- Column reinforcements mainly in independent	The tendency of bar-benders is to tie the vertical steel with coir rope or 8 mm steel



	footings collapses - Injury to persons working nearby.	rods as ties on all four sides of the column reinforcement. This method of supporting the column reinforcement results in a weak support. Hence, the column reinforcements should be supported by strong ballies on all four sides of reinforcements and as far as possible a combined platform should be constructed out of ballies over which the reinforcements can be supported.
14	Concreting chajjas - When chajjas are concreted without care and on opening the form-work the chajja would collapse, causing injury to labour on top or bottom of chajja.	While concreting chajjas care must be taken that the labour doesn't stand on the reinforcement and disturb the position. A separate scaffolding must be tied over which the labour can stand and work without disturbing the reinforcements. The main reason is in chajja the steel is placed on top face but if the labour stands on the steel, it will bend and come to bottom face and hence the chajja will fall when form-work is removed, thus, causing injury to labour working on top, or bottom
15	Dismantling--Dismantled materials may fall on passer-by or the person engaged in dismantling work may fall due to slipping. The dismantled materials may fall on persons working below.	When work of demolition is to be taken up the area should be closed for all outsiders. No one should be allowed up to 50 m. from the place of demolition. The workers engaged in demolition should be asked to wear safety belts. Helmets must be worn by all the workers engaged in dismantling work. The place should be strictly guarded at night with red lights at prominent places, and watchman should be posted
16	Electric-Connections/Cables etc.-	The work in such places, should not be



	High tension/L. T Electric wire passing near the slab structure- while bending, lifting or tying reinforcements the bar benders may sustain the Electric Shock, causing fatal injury	allowed to the workers themselves, but in such position the work must be executed under the strict supervision of a responsible Foreman or a Supervisor.
17	Electric Connections/Cables etc.-Cables below ground may get punctured during excavation & thus electrocute the labour working. Similarly, when concreting is in progress the punctured cable may prone to be fatal to the labour.	Before taking up the work all available drawings should be studied, local enquiry to be made to know the position of cables and work in such area should be got executed under strict supervision of an experienced Foreman or a Supervisor.
18	Electric Connections/Cables etc.- Temporary Electric lines near damp walls, near joinery stretched on a considerable length There is every chance that the wire may get cut due to usage and may develop short circuits/leakages etc. and may electrocute the person touching the wire accidentally.	The Electric wires should be maintained by an electrician who should regularly check-up the insulation of wires especially placed near steel items & damp areas. The temporary wiring should be supported properly AS far as possible a good quality wire should be used which may not get damaged easily.
19	Electric and gas welding work - Drilling, polishing work Done by temporary cables used on a number of works- Due to the fact that the wires are old & when they come in contact with water even in the process of curing the surrounding area may get affected due to leakage in the electric current thus causing damage to the workers & supervision staff.	All wiring works to be inspected by experienced electrician. All wires to be properly insulated and fixed at height on temporary poles. No welding work should be permitted near damp area, the welders to be provided with welder's goggles & gloves. As far as possible machine in good condition should be used
20	Construction Machinery & Lifts - Concrete Mixers - Safety precautions. A mixer with	The Mixers with hopper should be operated by an experienced mixer



	<p>hopper tried to be operated by a helper could not release brake in time thus causing injury to the person near hopper-sometimes fatal one</p>	<p>operator and such mixers should not be allowed to be handled by a helper or a labour.</p>
21	<p>Construction Machinery & Lifts - Lifts - Safety precautions.</p> <p>(1) The lift pit if left unguarded the children of workers may fall in the pit resulting in fatal accident</p> <p>(2) The manually operated brakes of the lift failed or the communication between the labour at the top and the liftman failed and thus, the lift was not controlled and resulted in fatal accident.</p>	<p>(1) A brick protection wall of minimum 1.00 m height should be constructed around the Lift Pit, thus, preventing the children going near the pit. A special care should be taken to see that the children are not allowed to come near the machinery.</p> <p>(2) The condition of the lift must be maintained properly. The lift operator should be well trained. The labour receiving the bucket at top should be smart and active enough to convey the message of stopping & releasing the lift to lift operator properly.</p>
22	<p>Water Storage Tank for general use & curing - chances of children of workers falling in the tank with fatal accident.</p>	<p>The water tanks constructed on site should be protected by at least 1.00 m high walls on four sides, so that the children do not fall.</p>
23	<p>Misuse of lift by labour and sometimes supervision staff- The lifts that are meant for lifting materials used by labour to go to upper floors - The labour thus travelling many a times get injured.</p>	<p>No person should be allowed to go to upper floors by lifts that are mainly meant for conveying the building materials. Fatal accidents have taken place due to above action of workers.</p>



24	Site Cleaning- Cleaning top floors of buildings - Upper portion of any structure - Throwing waste materials broken concrete pieces, brick bats, sand etc. straightway from top to ground injuring person below or even a passer-by	This dangerous practice should not be allowed at all. The materials should be brought to the ground with the help of lift or the use of rope over pulley with a bucket, thus bringing down materials safely.
25	Bar bending work--Helpers of bar benders to follow short cut method, throw surplus steel pieces from top floors to ground and may cause fatal injuries	This is a very bad practice. The helpers should bring the rods to ground with the help of lift or rope & pulley