

**PUNATSANGCHHU-I HYDROELECTRIC PROJECT AUTHORITY
BHUTAN**



BIDDING DOCUMENT

FOR

**CIVIL MAINTENANCE/RENOVATION WORKS OF 33/11 kV SUBSTATIONS
AT DAM AND POWERHOUSE SITES**

(NIT No. PHPA-I/CE(C&P)/146/2026-08)

SEPTEMBER, 2026

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SECTION – I

NOTICE INVITING TENDER (NIT)



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PUNATSANGCHHU-I HYDROELECTRIC PROJECT AUTHORITY
Office of the Chief Engineer (C&P)
Bjimthangkha, Bhutan

NOTICE INVITING TENDER

Sealed item rate bids are hereby invited for and on behalf of Punatsangchhu-I Hydroelectric Project Authority (PHPA-I) from experienced & financially sound Bhutanese and Indian bidders for the following work:

Tender No.	Name of work	Class of Contract	Bid Security (Nu.)	Contract Period
PHPA-I/CE(C&P) / 146/2026-08	Civil Maintenance/Renovation works of 33/11 kV substations at Dam and Powerhouse sites.	Small (W3)	73,000.00	6 (six) months

TERMS AND CONDITIONS: -

The participating bidders shall be experienced & financially sound Bhutanese and Indian, fulfilling the following criteria:

- a) Have valid trade license and registration with BCTA, MoIT, RGoB as **Small Class (W3)** contractor for Bhutanese and **Class V(B&R)** or **equivalent** category for Indian bidders.
- b) Have latest income tax/corporate tax clearance certificates. If such clearance certificate is not being issued by the concerned authority, an authenticated photocopy of the latest income tax return shall be submitted by the Bidder.

The interested eligible bidders may purchase Bidding Document from the office of the Chief Engineer (Contracts & Procurement Circle), PHPA-I, Bjimthangkha w.e.f **19.09.2026** to **14.10.2026** on payment of non-refundable fee of Nu. **1000.00** (one thousand) only in the form of cash warrant or demand draft drawn in favour of Punatsangchhu-I Hydroelectric Project Authority, payable at Bank of Bhutan, Bajo. The bidder can also download the tender document from PHPA website: www.phpa1.gov.bt/tenders at free of cost.

Any corrigendum/addendum/errata in respect of this tender shall be made available only at the mentioned website.

PHPA-I reserves the right to reject any or all the requests for the purchase of Bidding Document without assigning any reason thereof.

Chief Engineer (C&P)
(Ph. No. +975-2-471501)



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SECTION – II

GENERAL CONDITIONS OF CONTRACT



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SCOPE OF WORK, INSTRUCTIONS TO BIDDERS AND CONDITIONS OF CONTRACT

A. SCOPE OF WORK

The scope of work includes **Civil Maintenance works of 33/11 kV substations at Dam and Powerhouse sites** as per the approved design drawings, specifications, Bill of Quantities and/or as directed by Engineer-in-Charge, within the stipulated time period.

B. INSTRUCTIONS TO BIDDERS

1. Eligibility Criteria

1.1. The participating bidders shall be experienced & financially sound Bhutanese and Indian, fulfilling the following criteria:

- a. Have valid trade license and registration with BCTA, MoIT, RGoB as **Small Class (W3)** contractor for Bhutanese and **Class V (B&R)** or **equivalent** category for Indian bidders.
- b. Have latest income tax/corporate tax clearance certificates. If such clearance certificate is not being issued by the concerned authority, an authenticated photocopy of the latest income tax return shall be submitted by the Bidder.

2. Site Visit

The bidder, at his own cost, responsibility and risk, may visit and examine the Site for Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a Contract. The bidders shall make themselves fully aware of the work to be executed & account for the challenges foreseen until completion & handing over of the works.

3. Preparation of Tenders

- 3.1 The Tender Form should be returned intact during the submission of bid, whether bidders are quoting for any item or not. When items are not being quoted for, the corresponding space should be defaced by such words as "NOT QUOTING".
- 3.2 In the event of space of the Tender Form being insufficient for the required purpose, additional pages may be added. Each additional page must be numbered, bear the Tender Number and fully signed by the tenderer. Reference to the additional pages must be made in the Tender Form.
- 3.3 The bidder shall be excluded if contract has been terminated by PHPA-I due to fundamental breach of contract by the Contractor.
- 3.4 The bidder shall not have more than 1 (one) work in-hand during award of work.
- 3.5 The Bidder shall indicate the bid price in the currency of Ngultrum/Rupee (Nu./Rs.) in BoQ at Section-V.



4. Bid Price

Bidders shall quote rates for all items in the Bill of Quantities (BoQ) which shall be inclusive of all taxes, duties & other levies payable by the contractor under the contract excluding the applicable Goods & Services Tax (GST).

The Bidders shall quote applicable GST separately in the BoQ. However, during the performance of the contract, if PHPA-I is exempted from applicable GST in Bhutan, the quoted price of GST by the bidder in the BoQ shall not be paid for by PHPA-I.

5. Submission of Tender

- 5.1 The sealed bids shall be in two inner envelopes contained within one outer envelope, duly marking the inner envelopes as "ORIGINAL" and "COPY". The outer envelope and inner envelopes, marked as "Confidential" shall be addressed to PHPA-I at the following address:

**Chief Engineer (Contracts & Procurement),
Contracts & Procurement Circle,
PHPA-I, Bjimthangkha, Wangdue.**

And bear the project name, the notice inviting tender number, and the words **"Do not open before 1430 Hrs. on date prescribed"**.

- 5.2 The Bid Security shall be submitted by the bidder in a separate sealed envelope, duly marking as **"EMD/BID SECURITY"** along with inner envelopes contained within one outer envelope.
- 5.3 If the outer envelope is not sealed or marked as instructed above, PHPA-I will assume no responsibility for the misplacement or premature opening of the bid submitted. A bid opened prematurely for this cause will be rejected by PHPA-I and returned to the bidder.

6. Deadline for submission of Bids

- 6.1 The Bids must be received by PHPA-I in the aforementioned office not later than **1300 Hrs. on 14.10.2026**
- 6.2 PHPA-I may, at its discretion, extend the deadline for submission of Bids by issuing an amendment.
- 6.3 The Bid shall be submitted in person at the address indicated in clause 5.1. The Bid submitted through fax or e-mail shall not be accepted.



7. Late Bid

Any Bid received after the deadline for submission of bids prescribed pursuant to Clause 6.1, will be returned unopened to the Bidder.

8. Modification and withdrawal of Bids

The Bidder may modify, substitute or withdraw their Bids after it has been submitted by sending a written notice before the deadline for submission of bids. However, no Bid shall be withdrawn in the interval between the deadline for submission of Bids and the expiry of the period of the Bid Validity period. Withdrawal of a Bid during this interval shall result in the forfeiture of the EMD pursuant to Clause 13.3

9. Bid Opening

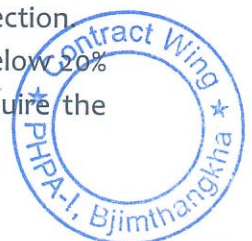
9.1 PHPA-I shall open the bid including modifications made pursuant to Clause 8 in the presence of bidder/bidder's authorised representatives who may wish to attend on **14.10.2026 at 1430 Hrs.** in the office of Chief Engineer (Contracts & Procurement), Contracts & Procurement Circle, PHPA-I, Bjimthangkha, Wangdue.

9.2 The envelope marked as EMD/BID SECURITY will be opened first. A bid will be rejected outrightly, if Bid Security does not satisfy the requirement set forth in clause 13 hereof.

9.3 The bidder's representative shall be required to submit a Power of Attorney or Authorization letter to sign on a register indicating their presence at the time of opening of tender. In case, the date of opening is declared a holiday, the tender shall be opened at the same time and place on the next working day.

10. Examination of Bids and Determination of Responsiveness

- 10.1 Prior to the detailed evaluation of bids, PHPA-I will determine whether each Bid
 - i. meets with the required eligibility and qualification requirements;
 - ii. has been properly signed;
 - iii. is complete and accompanied by the acceptable Bid Security/EMD;
 - iv. is substantially responsive to the requirements of the Bidding Documents;
 - v. provides any clarification and/or substantiation that PHPA-I may require.
- 10.2 PHPA-I's determination of a bid's responsiveness shall be based on the contents of the bid itself without recourse to extrinsic evidence.
- 10.3 If a bid is not substantially responsive, the same shall be rejected by PHPA-I, and may not subsequently be made responsive by correction or withdrawal of non-conforming deviation or reservation. Any incomplete bid is liable for rejection.
- 10.4 If the bid price of the lowest evaluated Bid appears abnormally low (below 20% of the estimated value) and/or seriously unbalanced, PHPA-I may require the



Bidder to produce written explanations or justifications and detailed price analyses for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. Abnormally low Bid may or may not be accepted. If PHPA-I decides to accept the abnormally low Bid and/or the bid with serious unbalanced rates after considering the above, the Bidder shall increase the performance security from ten percent (10%) up to maximum of 30% of the initial Contract price; or

Alternatively, the PHPA-I may require the successful bidder to deposit the difference between the departmental estimate and contract amount in the form of cash warrant in addition to 10% performance security.

- 10.5 If the prices of all bids are abnormally high (above 20% of the estimated value), PHPA-I may seek justification from the bidder for the high rates and if necessary, negotiate with the lowest evaluated bidder or may reject the bid if considered to be abnormally higher than the estimated cost.
- 10.6 PHPA-I reserves the right to accept or reject any variation, deviation or alternative offers. Variations, deviations, alternative offers and other factors which are in excess of the requirements of the Bidding Document or otherwise result in the accrual of unsolicited benefits to PHPA-I shall not be taken into account in Bid evaluation.

11. Correction of Errors

- 11.1 The price bids shall be checked by PHPA-I for any arithmetic errors in computation and summation.
- 11.2 The amount stated in the Proforma of Bid will be adjusted by PHPA-I in accordance with the correction of errors and shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, his bid will be rejected and the EMD will be forfeited.

12. Evaluation and Comparison of Bids

- 12.1 A substantially responsive document is one which conforms to all the terms, conditions & specifications without material deviation or reservation which:
- a) affects in any substantial way the quality or scope of the work;
 - b) limits in any substantial way the scope of work;
 - c) is inconsistent with the bidding document;
 - d) affects unfairly the competitive position of other bidder.



12.2 If PHPA-I decides to accept the abnormally or seriously unbalanced bids after considering the detailed price analysis, PHPA-I may as appropriate.

- i. Accept the Bid and increase the Performance Security from ten percent (10%) up to maximum of 30% of the initial Contract price; or
- ii. PHPA-I may ask the successful bidder to deposit the differential amount between departmental estimate and quoted amount in the form of cash warrant.
- iii. Reject the Bid.

13. Earnest Money Deposit (EMD)

13.1 As a part of his Bid, the Bidder shall furnish EMD/Bid Security amounting to **Nu. 73,000.00** (seventy-three thousand only) in the form of Demand Draft/Cash warrant/Unconditional Bank Guarantee (Proforma at Annexure-I) drawn in favour of Punatsangchhu-I Hydroelectric Project Authority (PHPA-I), payable at Bank of Bhutan (Bajo).

13.2 The EMD shall be valid for **30 (thirty) days** beyond the validity of bids or as extended, if applicable. Offers not accompanied by acceptable EMD shall be rejected as non-responsive. EMD of unsuccessful bidders will be released after signing of Contract Agreement with the successful bidder. EMD of successful bidder will be released on submission of Performance Security as per Clause 19.

13.3 The EMD shall be forfeited if:

- 26.1 The bidder withdraws the bid after bid opening & during the period of bid validity.
- 26.1 In the case of a successful bidder, if the bidder fails within the specified time limit to sign the agreement, or furnish the required Performance Security.
- 26.1 If the lowest evaluated bidder doesn't accept the correction of the bid pursuant to clause 11.

14. Quantities

The bidders shall note that the quantities indicated in the tender are as per the anticipated requirement of PHPA-I and no variation limit for any individual item in BoQ has been stated except for the payment due to the Contractor as detailed in clause 29.



15. Right of Acceptance

PHPA-I is not bound to accept the lowest bid and reserves the right to accept or reject any or all bids without assigning any reasons thereof.

16. Correction of Bid

- 16.1 The bidder shall attest correction of their rate if any, with their full signatures before submission of the bid. The bidder shall sign each page of the offer duly endorsed with their rubber stamp/seal. The bid containing any overwriting or cutting or alteration which is left unsigned by the bidder shall not be considered.
- 16.1 This tender document is not transferrable.
- 16.1 The bid should be clearly and concisely written or printed in English.

17. Bid Validity

- 17.1 Bids shall remain valid for **60 (sixty)** days from the date of opening of the bid.
- 17.2 PHPA-I may request bidders to extend the bid validity period for a specified additional period, if any, as applicable. The request and bidder's responses shall be made in writing. EMD required pursuant to clause 13 shall be extended to 30 days after the deadline of the extended Bid validity period. A bidder may refuse the request without forfeiting the EMD. The refusal to extend the bid by the bidder will make the bid invalid and shall not be considered for evaluation and award.

18. Award of Contract

PHPA-I will issue a Letter of Award (LoA) to the successful bidder before the expiration of the Bid validity.

19. Performance Security

- 19.1 Within **15 (fifteen)** days of the issuance of Letter of Award (LoA) by PHPA-I, but not later than the date of the signing of the Agreement, the successful bidder shall be required to furnish the Performance Security in the form of Demand Draft or an irrevocable Bank Guarantee on the Proforma provided by PHPA-I (Annexure-II) for an amount equal to 10% (ten percent) of the value of LoA, valid till 30 days from the date of issue of Completion Certificate by the PHPA-I.
- 19.2 Failure of the successful bidder to comply with this requirement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

20. Signing of Agreement

Within **30 (thirty)** days of issuance of the Letter of Award and after submission of Performance Security, or a date and time mutually agreed upon, the successful bidder or his authorized representative shall sign Contract with PHPA-I during which



a detailed Work programme shall be submitted for approval of the EIC within next 7 (seven) days of contract signing.

C. CONDITIONS OF CONTRACT

21. Commencement of Works

The work shall be commenced within **30 (thirty)** days from the date of issue of Letter of Award (LoA).

22. Completion Time

The Work in all respect shall be completed within **6 (six)** months from the date of commencement of Work.

23. Extension of Time for Completion

- 23.1 Should the amount of extra or additional work of any kind may or any cause of delay referred to in these conditions, or other special circumstances of any kind whatsoever which may occur, other than through a default of the Contractor, be such as fairly to entitle the Contractor to an extension of time for the completion of Work, EIC shall determine the period of such extension and shall notify the Contractor accordingly.
- 23.2 The contractor shall maintain **Hindrance Register** for reporting Hindrance(s), in an approved format. The Contractor shall get record of hindrance in the hindrance register endorsed by EIC or EIC's representative, as the case may be such hindrance in the work approved by PHPA-I's authority will only be taken into consideration for granting time extension.
- 23.3 **Site Order Book** shall be maintained at site systematically and securely by EIC till completion of the Works.

24. Product Specifications, Manufacturing & Test Certificates

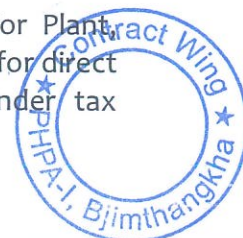
The offer of the bidders shall be as per the specifications indicated against each item in the BoQ and Technical Specifications.

25. Certificate for Completion of Work

The EIC shall issue a Completion Certificate, within 15 (fifteen) days from the date of receipt of Work Completion notice from the Contractor.

26. Compliance with Tax laws

- 26.1 The Royal Government of Bhutan shall exempt taxes, levies/duties for Plant, construction materials & equipment, machineries and services imported for direct use in the construction of the Project. Any procurement made under tax



exemption basis shall be liable for tax payment as per the Tax Act of the Kingdom of Bhutan if disposed off in Bhutan.

- 26.2 Any Contractor, sub-contractor or consultants recruited in connection with the Work will be liable for tax in Bhutan as per the Income Tax Act of the Kingdom of Bhutan, 2001. Further, such recruiting agency shall be responsible for deducting and remitting Tax Deducted at Source (TDS) as per the provision of the said Income Tax Act.
- 26.3 The Royal Govt. of Bhutan shall receive royalty from the Contractor for the timber, supply of such materials required for the Work.
- 26.4 The Contractor shall obtain necessary permits and deposit royalty with local authorities for supply of such materials required for the Work.
- 26.5 With effect from 1st July 2017, all exports (including ones to Bhutan) are 'zero rated items' under the GST regime in the Gol. Therefore, no reimbursement or costs on account of any tax implications will be admissible. However, in the situation, if the categorization is changed for exports from 'zero rated' to any other slab, the same will be applicable.

27. Price Adjustment

The price/rate shall remain firm and shall not be subjected to any adjustment during the performance of the contract.

28. Variations

- 28.1 The EIC shall make any variation in the form, quality or quantity of the Works or any part thereof or substitution for original specifications and instructions that may, in his opinion be necessary and for that purpose, or if for any other reason it shall, in his opinion be appropriate.
- 28.2 No such variations shall in any way vitiate or invalidate the Contract, but the effect if any, of all such variations shall be valued in accordance with Clause 29 hereof.
- 28.3 Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of Contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

29. Determination of Price for variations

- 29.1 Upon certified completion of the whole works, if reduction or increase in the total value of the work is found to be within 20% of initial contract price, then there shall be no change in the contract rates for individual items of work specified in the bill of quantities irrespective of the quantum of variation in individual items.
- 29.2 However, if reduction or increase is found to be more than 20% of initial contract price, the increase in payment for minus variation or decrease in payment for plus variation shall be specified based on slabs of variation in the contract value as specified below:



Variation in Value of Works	Increase in Payment for minus variation	Decrease in Payment for plus variation
Upto 20%	Nil	Nil
Above 20% and upto 35 %	6.00%	3.00%
Above 35% and upto 60%	8.00%	4.00%
Above 60 % and upto 100%	10.00%	5.00%
Above 100%	NA	5.00%

- 29.3 While working out the value of Work for the purpose of variation, the extra/substituted items for which new rates have been paid (but includes similar items, rate of which has been worked out from the BOQ) and payment towards price adjustment, and the adjustment towards statutory variations shall not be considered.

Illustration

- a. In case of variation in value of Works by (plus) + 60 percent, the payment for (60-20) percent i.e. 40 percent of contract value of Works shall be decreased by 4 % (four percent.). The reduction in Contract rates shall commence as soon as the value of Works executed reaches 120% of Contract Price.
 - b. In case of variation in value of Works by (minus) – 55 percent, the payment for (55-20) percent i.e. 35 percent of contract value of Works shall be increased by 8% (eight percent).
- 29.4 No variation limit for any individual BOQ item has been specified in these GCC except for the payment due to the Contractor as detailed above. No claim for revision of rate(s) for any individual BOQ item shall be admissible irrespective of the extent to which the ordered quantity may get revised (+) or (-) during the actual execution of the Works.
- 29.5 Within 14 days of the date of instruction for executing varied Works and before the commencement of such Works, notice shall be given either (a) by the Contractor to the Employer of his intention to claim extra payment or a varied rate or price, or (b) by EIC to the Contractor of the intention to vary a rate or price.
- 29.6 The valuation of variation shall be carried out in the following sequence:
- a. The rates already provided in the BoQ, shall apply in respect of the same item(s) of work to be executed due to variation.
 - b. If the rate of altered, additional or substituted works for which no rate is specified in the BoQ and such items of work exists in Bhutan Schedule of Rates, then such work shall be carried out at the rates provided in the Bhutan Schedule of Rates prevailing at time of award of work for Phuntsholing plus cost index. In case of items for which rates are not available in BoQ and Bhutan Schedule of Rates, the rates of such items as far as practicable shall be derived from the quoted rates of analogous/similar item(s) in the BoQ after submission of details by the contractor. The decision to select analogous/similar item(s) shall be taken by EIC, and the same shall be conclusive and binding on the contractor.



- c. In the cases, where analogous/similar items are also not available in the Bill of Quantities, such items shall be termed as extra items. The Contractor, within 14 days (or as agreed by EIC) from the receipt of order to execute such items, shall submit rate analysis to EIC supported by documentary evidence of basic rates adopted therein, notwithstanding the fact that the rates for such items exist in the Contract; having regard to the cost of materials, actual wages of labor and ownership & operational cost of Construction Equipment required as per standard norms or if standard norms are not specified/available then on the basis of labor/ materials/ Construction Equipment actually engaged for the particular work.
 - d. Over and above the cost of labor, materials arranged by the Contractor and ownership & operational cost of Construction Equipment, an element of 20% shall be allowed to cover the Contractor's overheads, profits, and supervision charges.
 - e. The Employer shall examine the rate analysis submitted by the Contractor and fix the rates after considering the same.
- 29.7 If there is delay in the Employer and the Contractor coming to an agreement on the rate of varied Works, provisional rates @ 75% of the rates as determined by the Employer shall be paid as a provisional payment till such time as the rates are finally determined.
- 29.8 Under no circumstances, the Contractor shall at any stage suspend work on account of non-settlement of rates of such item(s).

30. Liquidated Damages

If the Contractor fails to complete the works within the time prescribed in Clause 22, the Contractor shall pay to PHPA-I, Liquidated Damages @ 0.1 % (point one percent) on the Contract price per day subject to maximum of 10% (ten percent) of Contract Value.

31. Termination of Contract

PHPA-I or the Contractor may terminate the Contract if the other party causes any fundamental breach of the Contract.

In the event of termination of the Contract due to default of the Contractor, the Performance Security shall be adjusted towards Liquidated Damages. The balance works under the Contract shall be completed in any other manner by PHPA-I but at the risk and cost of the Contractor, which will be adjusted from the Contractor's receivable from PHPA-I including Performance Security.

Notwithstanding the above, PHPA-I may terminate the Contract for convenience. If the Contract is terminated on this ground, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.



32. Certification and Payment

32.1 Interim Payment Certificate

The Contractor shall submit an application for interim payment, in duplicate, to EIC at the end of each month in a proforma approved by EIC. The application shall include the following items, as applicable, which shall be taken into account in the sequence listed.

- 32.1.1. The value of the permanent Work executed upto the end of the month in question, obtained by applying the base unit rates in the BoQ to the quantities measured by the EIC.
- 32.1.2. The value of Permanent Work obtained as in 31.1.1 above, executed upto the end of the previous month.
- 32.1.3. The value at base unit rates, of the Permanent Work for the month in question obtained by deducting 31.1.2 from 31.1.1.
- 32.1.4. Any amount to be withheld under the retention provision pursuant to Clause 34.
- 32.1.5. Any amount to be deducted on account of the repayment of advances under the provisions of the Contract.

32.2 Advance Payment

32.3 Mobilization Advance

The interest free Mobilization Advance to the extent of 10 % (ten percent) of the Contract Price shall be granted on production of the irrevocable Bank Guarantee (Proforma of Bank Guarantee enclosed as (Annexure-II) for mobilization of labour, stores and workshops including camps, labour sheds, and constructional Plants. The advance is recoverable and the deduction of the advance shall be made on prorata percentage basis from the interim payment certified by EIC.

32.4 Secured Advance

Secured Advances shall be paid to the contractor as under:

- a. The materials shall be in accordance with the specifications for actual requirement for Works as per opinion of EIC.
- b. The materials shall be delivered at the site of the Works, properly stored and protected against loss, damage or deterioration.
- c. The sum payable for such materials on Site shall not exceed 75 % (seventy five percent) of the cost of materials delivered which shall be supported by the original invoices/bills from the suppliers. However, no payment shall be paid for perishable items which cannot be stored for a long period of time.



- d. The advances shall be recovered from the interim progress payments in the months in which these materials are used in the Works.
- 32.5 The entire amount of Mobilization Advance paid to the Contractor shall be completely deducted by the time the total payment to the Contractor has reached 80% of the Contract Price.

33. Payment upon Termination

- 33.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, EIC shall issue a certificate for the value of the Work done and Materials ordered less advance payments received up to the date of the issue of the certificate and 20% (twenty percent) less the percentage to apply to the value of Work not completed. If the total amount due to PHPA-I exceeds any payment due to the Contractor, the difference shall be a debt payable by the Contractor to PHPA-I.
- 33.2 If the Contract is terminated for PHPA-I's convenience or because of a fundamental breach of Contract by the PHPA-I, EIC shall issue a certificate for the value of the Work done, materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on this Work, and the Contractor's cost of protecting and securing the Work, and less advance payments received up to the date of the certificate.

34. Retention Money

The Employer shall retain ten percent (10%) from each payment due to the Contractor until completion of the whole of the Work. The Retention Money shall be released to the Contractor on completion of Defects Liability Period and upon certification by EIC that defects notified to the Contractor before the end of this period have been corrected.

35. Defects Liability Period

Defects liability Period (DLP) shall mean a period of **12 (twelve)** months, calculated from the date of completion of the works, certified by EIC in accordance with Clause 25 hereof. Any defective or damages, which in the opinion of EIC is due to the use of materials or workmanship not in accordance with the Contract, or due to negligence or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract, then the Contractor shall at his own cost, rectify the defects. If the Contractor fails to comply this, PHPA-I shall employ other person to carry out the same and expense shall be recovered from the Contractor from any monies due or which may become due to the Contractor.



36. Contractor's Employees

The Contractor shall provide and employ personnel/labour on the site:

- 36.1 Such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the Work.
- 36.2 The Contractor shall have to arrange permits from the Royal Government of Bhutan for non-Bhutanese personnel deployed by him for execution of this Work. PHPA-I will provide assistance to the Contractor in arranging such permits.
- 36.3 The Contractor shall make his own arrangements for transportation, housing etc. for all labours (local or otherwise).
- 36.4 The Contractor shall, in respect of labour employed by him, comply with the provision of the various Labour laws/Minimum Wages as per Chathrim issued by Ministry of Home Affairs, RGoB and shall indemnify PHPA-I in respect of all claims that may be made against PHPA-I for non-compliance thereof by the Contractor.

37. Power Supply and Store

- 37.1 PHPA-I shall make arrangement for providing Power supply at Work site. Power supply from the point of supply shall be made by the Contractor at his own cost, and energy consumed for the execution of Work shall be on the account of the Contractor.
- 37.2 Contractor shall make their own arrangement for storage of materials, if any.

38. Security Rules and Safety

- 38.1 The Project shall be a protected area. The Contractor, his employees and labourers shall have to follow the Security Rules as may be imposed from time to time by EIC/Royal Government of Bhutan. If the Contractor, his employees or labourers are found to be reluctant to follow the Rules, EIC will have the right to prohibit such persons from entering into the Project area. If required, EIC shall have the authority to take the help of local District Administration and/or local police.
- 38.2 The Contractor shall abide, comply and practise all safety standards applicable during the contract period.

39. Accident or Injury to Workmen

PHPA-I shall not be liable for or in respect of any damages or compensation payable according to law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-Contractor, save and except an accident or injury resulting from any act or default of PHPA-I, its agents, or employees. The Contractor shall indemnify and keep indemnified PHPA-I against all such damages, to persons and property and compensation, save and except as aforesaid, and against all claims, proceedings, cost, charges and expenses whatsoever in respect thereof or in relation thereto.



40. Force Majeure

“Force Majeure” means any circumstance beyond the control of the parties i.e. PHPA-I & the Contractor including but not limited to wars or revolutions, fires, floods, earthquake, epidemic/pandemic affecting Contractor’s Work, except where solely restricted to employees of the Contractor or his sub-contractor and freight embargoes.

If a Force Majeure situation arises, the Contractor shall promptly notify PHPA-I in writing of such condition and the cause thereof. Unless otherwise directed by PHPA-I in writing, the Contractor shall continue to perform his obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

However, force majeure shall not include the following:

- a. Rainfall
- b. Snowfall
- c. Strikes in other countries
- d. non-availability of laborer and materials such as timbers, boulders, sand, and other materials
- e. difficulty and risky terrain and remoteness of site.

41. Inspection

The Engineer-in-Charge (EIC) or any person authorized by him shall, at all times, have access to the Work and to all workshops and places where the work is being prepared or from where materials, manufacture articles or machinery are being obtained for the Work and the Contractor shall afford every facility for and every assistant in or in obtaining right to such accesses.

42. Insurance

Insurance for mobilized staff, Plants & Machineries, and third-party liability are in the scope of the Contractor.

43. Early Warning

- 43.1 The Contractor shall warn EIC at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work, increase the Contract Price or delay the execution of the Work. EIC may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date.



- 43.2 The Contractor shall cooperate with EIC in making and considering proposals on how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Work and in carrying out any resulting instructions of EIC.

44. Quality Assurance Plan

To ensure that the works under scope of this Contract are in accordance with the relevant specifications & best industry standards, the Contractor shall prepare a comprehensive quality assurance plan and submit the same within 10 days from the commencement date to EIC for his approval.

45. Settlement of Dispute

- 45.1 Any differences/disputes arising out of the works shall be resolved amicably. If the Contractor is dissatisfied with the instructions or decision of EIC, the contractor may, within 15 days of the receipt of EIC, appeal to the Director (Technical), PHPA-I who shall afford an opportunity to the Contractor to be heard. The Director (Technical), PHPA-I shall give his decision within 30 days of receipt of Contractor's appeal. If the Contractor is dissatisfied with his decision, the Contractor shall within a period of 30 days from receipt of the decision, give notice to the Director (Technical), PHPA-I for resolution of disputes or differences through an arbitration in accordance to the ADR Act, of Bhutan 2013, as amended from time to time, failing which the said decision shall be final, binding and conclusive and not referable to adjudication by the Contractor.
- 45.2 It is a term of this contract that if the Contractor does not make any demand for appointment of arbitrator in respect of the claims in writing as aforesaid within 120 days of receiving the information from EIC that the final bill is ready for payment, the claim of the Contractor shall be waived and absolutely barred and EIC shall be discharged and released of all liabilities under the Contract in respect of claims.

46. Pre-Contract Integrity Pact

The Contractor shall have to sign a Pre-Contract Integrity Pact as per format enclosed at Annexure-III.

47. Occupational Health and Safety

The Contractor shall comply with the Labour and Employment Act of Bhutan 2007, Regulations on Occupational Health and Safety (OHS) and Welfare-2012 (or any revisions thereof), and other relevant national documents. Payment towards Personal Protective Equipment (PPE) and Common Protection Measures (CPMs) as listed in the relevant specifications for worker's OHS measures at construction sites shall be released upon certification by the Engineer-in-Charge.



Non-compliance

If during the performance of works under the contract, the PHPA-I informs the Contractor that it is the opinion of the Engineer-in-Charge that the Contractor is:

- a. Not conducting the work in compliance with the Contractor's Health and Safety Coordination Plan, relevant Safe Work Method Statements, relevant legislation or health and safety procedures provided by the department from time to time, or
- b. Conducting the work in such a way as to endanger the health and safety of Contractors employees or the department's or Agency's or its Contractors' and subcontractors' employees, and the public.
- c. Conducting the work in such a way as to risk property, plant, equipment or materials.

The Contractor shall remedy that breach of health and safety promptly.

The Engineer-in-Charge shall reject the Contractor's claim on worker's Occupational Health and Safety measures.

The Engineer-in-Charge may direct the Contractor to suspend the work until such time as the Contractor satisfies the Engineer-in-Charge that the work will be resumed in conformity with applicable health and safety provisions.

During periods of suspension referred to above, the PHPA-I shall not be required to make any payment whatsoever to the Contractor.

If the Contractor fails to rectify any breach of health and safety for which the work has been suspended, or if the Contractor's performance has involved recurring breaches of health and safety, the PHPA-I may as its option terminate the work forthwith, without further obligation to the Contractor. In this event, the PHPA-I's liability shall be limited to payment for the work performed and costs incurred by the Contractor up to the time of termination or an earlier suspension of works.



(Chief Engineer)

Contracts & Procurement Circle



SECTION - III

GENERAL TECHNICAL SPECIFICATIONS



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GENERAL TECHNICAL SPECIFICATIONS

1. General

The Technical Specifications shall give general information about execution of various items of works under the Contract and cover the specified stipulations for measurements and payment therefor included in the Bill of Quantities.

These specifications shall be the part of the requirements for various items of works, which shall be executed according to the stipulations of the Contract. Hence, the instructions given herein form an integral part of and are applicable to the bidding documents issued for the works. Addenda to these specifications may be issued, as required during bidding and construction phases.

These specifications shall be read in conjunction with Bill of Quantities (BoQ), drawings and the Conditions of Contract. While quoting the price, the Contractor shall comply with all provisions contained within the bidding documents with an objective to complete each item of work without any addition of cost thereof. In case Specifications, BoQ and Condition of Contract do not corroborate each other for completion of any particular item of work, the same as well as the assumptions made in quoting of price for such item(s) of Works shall be brought out clearly in the bid.

It is the intent of these specifications to establish acceptable standards of quality as specified in the technical specifications. These specifications cover the execution of the Works, as shown in the Bill of Quantities, Drawings and in the General Conditions of Contract, and shall be read in conjunction with all other contract and bidding documents including the Environmental Codes of Practice.

2. Quality of Materials and Workmanship

All works shall be executed in conformity to the approved drawings and instructions issued by the Engineer-In-Charge for construction. Execution of works contemplated under these specifications shall include, in complete, all the procurement and supply of all required Man power (skilled and un-skilled) and Materials (inclusive of octroi and all other taxes and charges as levied, if any), Equipment, Plant and Machineries, office, stores and workshop etc., transportation, handling and placement of Materials and Equipment to site in a professional and diligent manner.

All works shall comply with the quality requirements defined in the relevant sections of these specifications and other section of the bidding documents. Where no specifications have been laid down, the materials used and the Work done shall conform to the latest edition of Specifications for Building and Road Works: Royal Govt. of Bhutan, Indian Standards (IS), or International Standards Organisation (ISO) Specification and the Environmental Codes of



Practice (ECP), Highways and Roads or as directed by the Engineer-In-Charge. The Contractor shall endeavour to provide all such necessary efforts in order to comply with the intent of these specifications to the satisfaction of the Engineer-In-Charge.

The materials and workmanship shall be of the best of their respective kinds and shall be to the approval of the Employer or his representative on Site, the Engineer. In reading these Specifications, the words to the approval of the Engineer shall be deemed to be included in the description of all materials incorporated in the works, whether manufactured or natural, and in the description of all operations for the due execution of the works.

The contractor shall carry out modifications in the procedure of work, if found necessary, as directed by the Engineer during inspection. Substandard quality of work shall be rectified/redone by the contractor at his own cost, and defective work/material shall also be removed from the site of works by the contractor at his own cost.

The Engineer may ask to carry out the field/Laboratory tests wherever applicable as mentioned in the specification and the cost of carrying out such tests which include equipment charges, tools, materials, labour and incidentals to perform tests and other operations of quality control according to the specification requirements shall be deemed to be incidental to the work and no extra payment shall be made for the same. Sampling and testing procedure to be used shall be as approved by the Engineer and his decision shall be final and binding on the contractor.

3. Scope of Works

The work to be carried out under the Contract is as specified in the contract data and drawings and shall include the following:

1. Dismantling and Demolition
2. Clearing and Grubbing
3. Concrete Works
4. Flooring Work
5. Tiling –Wall & Floor
6. Roofing
7. Wood Works
8. Plumbing Work
9. Painting
10. Fencing
11. Occupational Health and Safety



4. Dismantling and Demolition

General

Dismantling implies careful removal of materials from a structure or a part of it without damage. Demolition implies breaking up whole or part of work, structure etc. The work consists of removing any structure(s) which are in place but interfere with the new construction or are not suitable to be in place, and of salvaging and disposing of the resulting materials and back filling the resulting trenches and pits.

The scheme for dismantling (generally in the reverse order of the one in which the structure was constructed) shall be approved by the Engineer before starting the work. Necessary propping, shoring, underpinning, shielding and fencing of areas shall be carried out so that no damage is caused to adjoining work, people or property, in any manner. Temporary enclosures, partitions etc. shall be provided as required. Nuisance of dust shall be kept down to the minimum. Personal Protective Equipment such as helmets, goggles, safety belts etc. shall be used wherever required as per the directives of the Engineer. First aid equipment shall be made available at all demolition works of any magnitude. OHS guidelines must be followed and practiced to prevent any workplace hazard or accident.

Dismantling shall be done in a systematic manner. Materials likely to be damaged by dropping shall be carefully removed and lowered (not thrown) and properly stacked. Nails, screws and bolts, shall wherever required, be removed by use of proper tools in order to remove items fixed with them. The latter should not be removed by tearing or ripping off. All operations necessary for the removal of any existing structure that might endanger new construction shall be removed completely prior to the start of the work.

All materials obtained from dismantling or demolition shall be the property of the PHPA-I unless otherwise specified and such materials shall be kept in safe custody until they are handed over to the Engineer. All serviceable materials shall be stacked properly. Unserviceable materials shall be disposed off as directed by the Engineer. The distinction between the serviceable and unserviceable materials shall be as per the direction of the Engineer.

DD0045

Dismantling G.I. sheets including ridges, hips, valleys, gutters, and stacking of materials within 50m lead

Measurement

The area shall be measured flat and not girthed. The length and width shall be measured correct to 10mm and area calculated nearest to two places of decimal.

Rate

The rate shall include the cost of all labour involved and tools used in dismantling



including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable material properly and disposing of unserviceable material within a distance of 50 metres.

The rate shall also include for temporary shoring for the safety of portions not required to be pulled down, or of adjoining property, and providing temporary enclosures or partitions, where considered necessary.

5. **CLEARING & GRUBBING**

General

Clearing and grubbing consist of the removal and disposal of all trees, stumps, roots, logs, shrubs, grass, weeds, fallen timber and other surface litter, wherever they occur within the right-of-way and within such other areas as directed by the Engineer.

During clearing and grubbing of the trees, shrubs, pole lines, fences, monuments, pipe lines etc. within or adjacent to the work site which are not to be disturbed shall be protected properly from injury or damage by the contractor at his own cost and nothing extra shall be paid for this.

Where necessary, the contractor shall take all appropriate precautions against soil erosion, water pollution, etc. Before starting the work/operations, the contractor shall submit to the Engineer his work plan for approval including the procedures to be followed for disposal of waste materials, etc. and the schedules for carrying out temporary or permanent erosion control works as stipulated under earth work.

Methods, tools and equipment to be adopted for the work shall be such as to have no effect on the property to be preserved. Only those methods, tools and equipment approved by the Engineer shall be adopted in the work. If so desired by the Engineer, the Contractor shall demonstrate the efficacy of the type of equipment to be used before the commencement of the work

CG0001

Clearing grass including removal of rubbish within 50m outside the periphery of the area cleared.

All grass and rubbish shall be disposed off beyond 50m outside the periphery of the area cleared.



Measurement

Only the area over which the grass and rubbish has been removed shall be measured. The length and breadth shall be measured correct to 10mm and the area shall be calculated correct to two places of decimals.

Rate

The rate shall cover the cost of carrying out all the required operations including cost of labour, materials, equipment hired/owned, tools and plants, and incidentals necessary to complete the work. Where necessary, the rate shall also include handling; salvaging, piling and disposing of the cleared materials with all lift and lead up to 50m

Landslide Debris

CG0030

Clearing grass, removal of landslide debris and surface material including excavation & disposal within 50m lead

Clearance of earth shall be carried out to the required depths and profiles. The clearance of earth shall be done manually or using Bulldozer or any other earth moving equipment including excavating the same and disposal of the earth within 50m.

Measurements

The length, breadth and depth shall be measured correct to 10mm. In case the measurements are taken with staff and level, the level shall be recorded correct to 5mm and depth of cutting and heights of filling calculated correct to 5mm. The cubical contents shall be worked out to the nearest two places of decimal. Where the ground is not fairly uniform or where the site is required to be cleared, levels shall be taken before the start and after the completion of the work and the quantity of excavation in cutting computed from these levels

Rate

The rate shall cover the cost for carrying out all the required operations including cost of labour, materials, equipment hired/owned, tools and plants, and incidentals necessary to complete the work. The rate shall also include, where necessary, disposing of the cleared materials with all lift and lead up to 50m.



6. Concrete Works

A. General

Water, Cement, fine aggregate and coarse aggregate shall conform to material specifications. Concrete can be specified by proportions or by nominating the required strength.

Concrete shall be prepared by mixing graded stone aggregate or gravel of normal size as specified with fine aggregate and cement in specified proportions with required quantity of water.

Proportioning: It shall be done by volume. Boxes of suitable size shall be used for measuring sand and aggregate. The internal dimensions of the boxes shall be generally 35 x 25 x 40cm deep or as otherwise approved by the Engineer. The unit of measurement for cement shall be a bag of 50 kg and this shall be taken as 0.035cum. While measuring the aggregate, shaking, ramming or heaping shall not be done. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand allowance for bulking shall be made by adopting the method prescribed under IS 2386 (part III).

Mixing: It shall be done in mechanical mixer. Mixing by hand shall be employed only in special cases with the specific prior permission of the Engineer-in-Charge. Stone aggregate shall be washed with water to remove dirt, dust or any other foreign materials, where necessary.

Machine Mixing: The mixer drum shall be flushed clean with water. Measured quantity of dry coarse aggregate shall be followed with measured quantity of fine aggregate and then cement. In case damp sand is used, add half of the quantity of coarse aggregate followed by cement and sand. Finally add balance quantity of the coarse aggregate. The skip shall be raised and dry materials slipped into the drum. The dry materials shall be mixed for at least four turns of the drum, after which the correct quantity of water shall be added gradually while the drum is in motion, to ensure even distribution with the dry material. The total quantity of water for mixing shall be introduced before 25% of mixing time has elapsed and shall be regulated to achieve the specified water cement ratio. The complete contents of the mixed concrete shall be emptied before recharging. When the mixer is closed down for the day or at any time exceeding 20 minutes, the drum shall be flushed clean.

Mixing time: The materials shall be mixed for a period of not less than 2 minutes and until a uniform colour and consistency is obtained. The time shall be counted from the moment all the materials have been put into the drum.

Hand Mixing: Hand mixing shall be done on a smooth, clean and water-tight platform of suitable size in the following manner.

- Measured quantity of sand shall be spread evenly
- The cement shall be dumped on the sand and distributed evenly



- The sand and cement shall be mixed intimately with spade, turning the mixture over and over again, until it is of even colour throughout and free from streaks
- The sand cement mixture shall be spread out and measured quantity of coarse aggregate shall be spread on its top. Alternatively, the measured quantity of coarse aggregate shall be spread out and the sand cement mixture shall be spread on its top.
- The above materials shall be mixed at least three times by shovelling and turning over by twist from centre to side, then back to the centre and again to the sides.
- A hollow shall be made in the middle of the mixed pile
- Three quarters of the total quantity of water required shall be added while the material is turned in towards the centre with spades. The remaining water shall be added by a water-can fitted with rose head, slowly turning the whole mixture over and over again until a uniform colour and consistency is obtained throughout the pile.
- The mixing platform shall be washed at the end of the day.

Consistency: The quantity of water to be used for each mix of 50kg cement, to give the required consistency shall not be more than 34 litres for 1:3:6 mix, 30 litres for 1:2:4 mix, 27 litres for 1:1 1/2:3 mix and 25 litres for 1:1:2 mix. In the case of vibrated concrete, the limit specified may be suitably reduced to avoid segregation. The quantity of water shall be regulated by carrying out regular slump tests.

Slumps for different kinds of work

Work	Slump in mm	
	Vibrator Used	Vibrator not used
Mass concrete in foundation footings, retaining walls and pavement	10-25	50-75
Thin sections of flooring less than 75 mm thickness	25-40	75-100

The entire concrete used in the work shall be laid gently (not thrown) in layers not exceeding 150mm and shall be thoroughly vibrated by means of mechanical vibrators till a dense concrete is obtained. The Engineer may however relax the condition specifying use of mechanical vibrators at his discretion for certain items depending upon the thickness of the members and feasibility of vibrating the same and permit hand compaction. Hand compaction shall be done with the help of tamping rods so that concrete is thoroughly compacted and completely worked into the corners of the formwork. The layers of concrete shall be so placed that the bottom layer does not finally set before the top layer is placed. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to the dry mixture. For items where the



vibrators are not to be used, it shall be the duty of the contractor to take the permission of the Engineer before the start of work.

During cold weather, concreting shall not be done when the temperature falls below 4.5°C. The concrete placed shall be protected against frost by suitable covering. Concrete damaged by frost shall be removed and work redone. Please see specifications relating to cold weather concreting Reinforced Cement Concrete. During hot weather, precautions shall be taken to see that the temperature of wet concrete does not exceed 38°C.

When the placing of concrete is suspended, necessary removal of laitance and roughening the surface for jointing future work shall be done before the concrete sets. When the work is resumed the previous work must be thoroughly cleaned, roughened, watered and a grout of neat cement slurry of the proportion, 1 Kg of cement per 2 litres of water applied uniformly.

Curing: Green work shall be protected from rain by suitable covering. The work should also be protected from damage and rain during construction. After the concrete has begun to harden i.e. about 1 to 2 hours after its laying, it shall be protected with moist gunny bags, sand or any other material approved by the Engineer against quick drying. After 24 hours of laying of concrete, the surface shall be cured by flooding with water of minimum 25mm depth, or by covering with wet absorbent materials. The curing shall be done for a minimum period of 14 days. In special cases, curing may have to be done for more number of days as required by the Engineer.

Over the foundation concrete, the masonry work may be started after 48 hours of it's laying, but the curing of cement concrete shall be continued along with the masonry work for minimum period of 14 days.

Where cement concrete is used as sub-grade for flooring, the flooring may be commenced before the curing period of sub-grade is over but the curing of sub-grade shall be continued along with the top layer of flooring for a minimum period of 14 days.

The water used for curing shall not produce any objectionable stains or unsightly deposit on concrete surface. In special circumstances and locations curing by other means such as sealing material insulating blankets etc. may be adopted with the specific prior approval of the Engineer.

The minimum compressive strength of mix 1:1.5:3 and 1:2:4 shall be as follows:

Mix	Compressive strength in kg/sq.cm at 28 days	
	At 7 days	At 28 days
1:1.5:3	175	265
1:2:4	140	210



B. Plain Concrete

CW0002

Providing and laying in position plain cement concrete excluding the cost of centering and shuttering - All work upto plinth level - 1:1.5:3 (1 cement : 1.5 sand : 3 graded crushed rock 20 mm nominal size)

Measurement

It shall be measured in cubic meter.

Rate

The rates shall cover the cost for carrying out all the required operations including cost of labour, materials, equipment hired/owned, tools and plants, and incidentals necessary to complete the work.

7. Flooring Work

FL0225

Providing and fixing 2mm thick Vinyl or Linoleum sheet laid with special adhesive, including 2 coat of bitumen applied over subfloor on prepared surface @ 1.5kg/sq. m each coat including the cost of base concrete - over base 25mm thick cement concrete 1:2:4, 12.5mm aggregate

The vinyl tile shall be of a make, manufacture colour and pattern as approved by the Engineer. The adhesive to be used shall also get approved. Care shall be exercised in laying the vinyl tile floor and the work shall be done by skilled and experienced tile layers. The sub-floor concrete shall be finished smooth and to the proper level. It shall be allowed to dry thoroughly. This may take 4 to 8 weeks, but it is essential to have a dry floor.

Bitumen is applied on the dry sub-floor in two coats each at the rate of 1.5 kg/sq. m. Over this bitumen layer the base concrete of the specified proportion is laid to a thickness of 25 mm and finished smooth and level, and cured for 7 days. This base shall be perfectly dry and even before any laying work is started. After the base is dry, the tile layout shall be finalised and guidelines marked on the base. It is preferable to avoid laying of tiles under high humidity conditions

The adhesive shall be applied by using a notched trowel to the base as well as to the back of



the tiles. In approximately half an hour, by which time the adhesive will be tacky to touch but will not mark the fingers, the tiles will be ready for laying. (The adhesive should not be left for setting too long as the properties may be lost due to dust and other causes).

The laying shall start at the centre of the area. The tiles shall be lowered in position and pressed firmly onto the adhesive. Care should be taken not to slide them as this may result in the adhesive being squeezed up between joints. The tiles shall be laid close to each other with minimum gap between joints. The tiles after laying shall be rolled with a light wooden roller of about 5 kg to ensure full contact with the base. Any undulation, if any, noticed shall be rectified by removing and relaying the tiles after cleaning the underside of the adhesives by using proper solvents and then cleaning the tiles of the solvents. The work shall be constantly checked to ensure that all four edges of each tile meet accurately. Any adhesive, which may squeeze up between tiles, shall be wiped off immediately with a wet cloth.

A period of 24 hours shall be given after laying of the floor for developing proper bond of the adhesive. When the flooring has been fixed securely it shall be cleaned with a wet cloth soaked in warm soap solution (two spoons of soap in 5 litres of warm water).

Measurement

Length and breadth shall be measured correct to 10 mm and its area shall be calculated in sq. m correct to two places of decimal. No deduction shall be made or extra paid for any opening in the floor upto 0.1 sq. metre in area.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above. The rate shall include the cost of 25mm base concrete and bitumen coating but not sub-floor.

8. Tiling -Wall and Floor

GL0001

Providing and fixing vitrified tiles in skirting, step risers, dado and wall in different sizes (Sizes and thickness to be specified by the engineer / as per design) in all colours and shade, on 12mm thick cement mortar 1:3 (1 cement: 3 sand) finished with flush-pointing in white cement



Preparation of surfaces

The joints shall be raked out to a depth of at least 15 mm in masonry walls, while the masonry is being laid. In case of concrete walls, the surface shall be hacked and roughened with wire brushes. The surface shall be cleaned, thoroughly washed with water and kept wet before skirting is commenced.

Laying

12 mm thick plaster of cement mortar 1:3 (1 cement: 3 coarse sand) shall be applied and allowed to harden. The plaster shall be roughened with wire brushes or by scratching diagonally at close intervals. The tiles should be soaked in water, washed clean, and a coat of cement slurry applied liberally at the back of tiles and set in the bedding mortar. The tiles shall be tamped and correct to proper plane and lines. The tiles shall be set in the required pattern and butt jointed. The joints shall be as fine as possible. Top of skirting or dado shall be truly horizontal and joints truly vertical except where otherwise indicated. Skirting and dado shall rest on the top of the flooring. Where full size tiles cannot be fixed these shall be cut (sawn) to the required size and their edges rubbed smooth.

Curing and Finishing

The joints shall be cleaned off the grey cement grout with wire brush or trowel to a depth of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement with pigments added if required to match the colour of tiles. The floor shall then be kept wet for 7 days. After curing, the surface shall be washed and finished clean. The finished work shall not sound hollow when tapped with a wooden mallet.

Measurement

Length shall be measured correct to 10 mm. Height shall be measured correct to 10 mm in the case of dado and 5 mm in the case of riser and skirting. The area shall be calculated in square metre, correct to two places of decimal. Length and height shall be measured along the finished face of the skirting or dado including curves where specials such as coves, internal and external angles and beads are used. Where cornices are used the area of dado shall be measured excluding the cornices.



Rate

The rate shall include the cost of the materials and labour involved in all the operations described above. The specials such as coves, internal and external angles and boards shall be measured and paid for separately in running metres. The rate shall not include the cost of cornices which shall be measured and paid for separately. Raking of joints in masonry and hacking of RCC are not included in the rate

9. Roofing

RF003

Providing & fixing Pre - Painted Galvanised Iron (PPGI) sheets, including bolts, hooks and nuts 8mm dia. with bitumen and G.I limpet washers filled with white lead for connection, excluding the cost of purlins, rafter and trusses - 25g (0.50 mm)

Laying and fixing

The sheets shall be laid and fixed in the manner described below, unless otherwise shown in the working drawings or directed by the Engineer. The sheets shall be laid on the purlins to a true plane, with the lines of corrugations parallel or normal to the sides of the area to be covered unless otherwise required as in special shaped roofs

The sheets shall be laid with a minimum lap of 20 cm at the ends and two ridges of corrugation at each side. The above end lap of 20 cm shall apply to slopes of 1 vertical to 3 horizontal and flatter slopes. For steeper slopes the minimum permissible end lap shall be 15 cm. The minimum lap of sheets with ridge, hips and valleys shall be 20 cm measured at right angles to the line of the ridge, hip and valley respectively. These sheets shall be cut to suit the dimensions or shape of the roof, either along their length or their width or in a slant across their lines of corrugations at hips and valleys. They shall be cut carefully with a straight edge and chisel to give a smooth and straight finish.

Sheets shall be fixed to the purlins or other roof members such as hip or valley rafters etc. with galvanised J or L hook bolts and nuts, 8 mm diameter, with bitumen and G.I. limpet washers or with a limpet washer filled with white lead as directed by the Engineer. The length of the hook bolt shall be varied to suit the particular requirements. The bolts shall be sufficiently long so that after fixing they project above the top of the nuts by not less than 10 mm. The grip of the J or L hook bolt on the side of the purlin shall not be less than 25 mm. There shall be a minimum of three



hook bolts placed at the ridges of corrugations in each sheet on every purlin and their spacing shall not exceed 30 cm. Coach screws shall not be used for fixing sheets to purlins.

Where slopes of roofs are less than 21.5 degrees (1 vertical to 2.5 horizontal) sheets shall be joined together at the side laps by galvanised iron bolts and nuts 25 x 6 mm size, each bolt with bitumen and a G.I. limpet washer or a G.I. limpet washer filled white lead. As the overlap at the sides extends to two corrugations, these bolts shall be placed zigzag over the two overlapping corrugations, so that the ends of the overlapping sheets shall be drawn tightly to each other. The spacing of these seam bolts shall not exceed 60 cm along each of the staggered rows. Holes for all bolts shall be drilled and not punched in the ridges of the corrugations from the underside, while the sheets are on the ground. Sheets with wrongly drilled holes shall be rejected. The holes in the washers shall be of the exact diameter of the hook bolts or the seam bolts. The nuts shall be tightened from above to give a leak proof roof

Wind ties shall be of 40 x 6 mm flat iron section as specified. These shall be fixed at the eaves ends of the sheets. The fixing shall be done with the same hook bolts, which secure the sheets to the purlins.

Finish

The roof when completed shall be true to lines, and slopes and shall be leak proof.

Measurement

The length and breadth shall be measured correct to 10 mm. Area shall be worked out in sq.m correct to two places of decimal. The superficial area of roof coverings shall be measured on the flat without allowance for laps and corrugations. Portions of roof coverings overlapping ridge or hip etc. shall be included in the measurements of the roof.

Roofs with curved sheets shall be measured and paid for separately. Measurements shall be taken on the flat and not girth. No deduction in measurement shall be made for opening up to 0.4 sq.m. For any opening exceeding 0.4 sq.m in area, deduction in measurements for the full openings shall be made and in such cases the labour involved in making these openings shall be paid for separately. Cutting across corrugation shall be measured on the flat and not girth.

Rate



The rate shall include the cost of all the materials and labour involved in all the operations described above. This includes the cost of roof sheets, galvanised iron J or L hooks, bolts and nuts, galvanised iron seam bolts and nuts bitumen and (galvanised iron) limpet washers. The ties shall be paid for separately.

RF007

Providing & fixing 600 mm ridges or hips in Pre - Painted Galvanised Iron (PPGI) sheets, including bolts, hooks and nuts 8mm dia G.I limpet and bitumen washers for connection - 25g (0.50 mm)

Ridges and Hips

Ridges and hips of P.P.G. I roofs shall be covered with ridge and hip sections with a minimum lap of 20.0 cm on either side over the sheets. The end laps of the ridges and hips, and between ridges and hips shall also be not less than 20.0 cm.

Fixing

Ridges shall be fixed to the purlins below with the same 8 mm dia G.I. hook bolts and nuts and bitumen and G.I. limpet washers which fix the sheets to the purlins. Similarly, hips shall be fixed to the roof members below such as purlins, hip and valley rafters with the same 8 mm dia G.I. hook bolts and nuts and bitumen and G.I. limpet washers which fix the sheets to those roof members. At least one of the fixing bolts shall pass through the end laps of ridges and hips, on either side. If this is not possible extra hook bolts shall be provided.

The end laps of ridges and hips shall be joined together by galvanised iron seam bolts 25 x 6 mm size each with a bitumen and G.I. washer or as directed by the Engineer. There shall be at least two such bolts in each end lap.



Finish

The edges of the ridges and hips shall be straight from end to end and their surfaces shall be plane and parallel to the general plane of the roof. The ridges and hips shall fit in squarely on the sheets.

Measurement

The measurements shall be taken for the finished work in length along with the centre line of ridge or hip, as the case may be, correct to 10 mm. The laps in ridges and hips, and between ridges and hips shall not be measured.

Rate

The rate shall include the cost of all labour and materials specified above, including the cost of seam bolts and any extra G.I. hook bolts, nuts and washers required for the work.

RF0010

Providing & fixing 450mm over all semi-circular plain G.I gutter, including brackets, bolts, nuts, washers & rain water pipes connections, excluding the cost of pipes- 24g sheet

Gutters

Gutters shall be fabricated from plain G.I. sheets 24g

The overall width of the sheet referred to shall mean the peripheral width of the gutter including the rounded edges. The longitudinal edges shall be turned back to the extent of 12 mm and beaten to form a rounded edge. The ends of the sheets at junctions of pieces shall be hooked into each other and beaten flush to avoid leakage.

Slope

Gutters shall be laid with a minimum slope of 1 in 120

Laying and fixing



Gutters shall be supported on and fixed to M.S. flat iron brackets bent to shape and fixed to the requisite slope. The maximum spacing of brackets shall be 1.20 metres. Where these brackets are to be fixed to the sides of rafters, they shall be of 40 x 3 mm section bent to shape and fixed rigidly to the sides of rafters with 3 Nos. 10 mm dia bolts, nuts and washers. The brackets shall overlap the rafter not less than 30 cm and the connecting bolts shall be at 12cm centres

Where the brackets are to be fixed to the purlins, the brackets shall consist of 40 x 3 mm M.S. flat iron bent to shape, with one end turned at right angle and fixed to the purlin-face with a 10 mm dia. bolt, nut and washer. The perpendicular over hung portion of the 40 x 3 mm flat bent to right angle shape with its longer leg connected to the bracket with 2 Nos. 6 mm dia M.S. bolts, nuts and washers and its shorter leg shall be fixed to face of purlin with 1 No. 10 mm dia, bolt, nut and washer. The overhang of the vertical portion of the flat iron bracket from the face of the purlins shall not exceed 20 cm with this arrangement. The gutters shall be fixed to the brackets with 2 Nos. G.I. bolts and nuts 6 mm dia, each fitted with a pair of G.I. and bitumen washers. The connecting bolts shall be above the water line of the gutters.

For connection to down take pipes, a proper drop end or funnel shaped connecting piece shall be made out of G.I. sheet of the same thickness as the gutter and riveted to the gutter, the other end tailing into the socket of the rain-water pipe. Wherever necessary stop ends, angles, etc. should be provided.

Finish

The gutters when fixed shall be true to line and slope and shall be leak proof.

Measurement

Measurement shall be taken for the finished work along the centre line of the top width of the gutter correct to a 10 mm. The hooked lap position in the junctions and gutter lengths shall not be measured.

Rate

The rate shall include the cost of all labour and materials specified above, including all specials such as angles, junctions, drop ends etc., flat iron brackets and bolts and nuts required for fixing the latter to the roof members.

RF0060



Providing & fixing wind tie of 40 x 6 mm MS flats

Wind ties shall be of 40 x 6 mm flat iron section. These shall be fixed at the eave end of the sheets. The fixing shall be done with the same hook bolts, which secure the sheets to the purlin.

Measurements

Wind ties shall be measured in running metres correct to 10mm

Rate

Rate shall include the cost of materials and labour involved in all the operations.

RF00190

Providing and fixing on wall face single socketed rigid PVC (Working Pressure 4kgf per sq.cm) rain water pipes including jointing with seal ring leaving 10 mm gap for thermal expansion- complete – 75 mm

Measurements

Rain Water pipe shall be measured in running metres correct to 10mm

Rate

Rate shall include the cost of materials and labour involved in all the operations.

10. Wood Works

WW0030

Providing & fixing eaves board 225 x 25 mm with moulding fitted and fixed with necessary screws - Class 'B' (conifer)

The eaves board shall be fixed to the rafters with 65 mm long iron screws.

The timber shall be planed smooth and accurate to the full dimensions, rebates, rounding, and mouldings before assembly. Patching or plugging of any kind shall not be permitted except as provided. Woodwork shall not be painted, or otherwise treated before the Engineer has approved it.



The finished work with a tolerance of + 1 mm in thickness and +2 mm in width shall be accepted.

Measurements

The eaves board shall be measured in length correct 5 mm

Rate

The rate shall include all materials and labour involved in the work.

WW0055

Providing & fixing Class 'B' (conifer) (undressed) in frames etc. framed and fixed in position

Measurements

Wood work wrought and framed shall be measured for finished dimensions. No allowance shall be paid for wastage and for dimensions supplied beyond those specified. Length of each piece shall be measured overall nearest to 10mm so as to include projections for tenons, scarves or mitres width and thickness shall be measured to the nearest mm. Cubical contents shall be worked out in cubic metres nearest to 0.01 cubic metre. Increase of mouldings, rounding, rebates, circular and varying sections, the sectional area of the piece shall be taken as the area of the least square or rectangle from which such a section can be cut.

Rate

The rate includes cost of materials and labour involved in all the operations described.

WW00132

Providing and fixing Plywood lining with necessary nails etc. complete (excluding cost of frame) – 6 mm commercial

Specified Timber shall be used and it shall be sawn in the direction of the grains. Sawing shall be truly straight and square. The timber shall be planed smooth and accurate to the full dimension rebates rounding and mouldings as shown in the drawings made before assembly. Patching of any kind shall not be permitted.

Grounds, consisting of battens and plugs, shall be used if specified. Battens of 50 x 25 mm or as specified shall be fixed over wooden plugs spaced at 45 to 60 cm depending upon the nature of work, with 50 mm long wooden screws.



The planks for wall lining shall be tongued and grooved unless otherwise specified. The lining shall be painted with priming coat on the unexposed surfaces and fixed to true line and level with screws, which shall be sunk with the woodwork, and their tops covered with putty. The work shall be true and accurate as per the instruction of Engineer

Measurements

The length and breadth shall be measured correctly to 10 mm, and area worked out in square metre nearest to two places of decimal. Grounds shall be measured on cubical contents of battens and paid for separately. Plugs are deemed to be included in the rate.

Rate

It shall include the materials and labour involved in all operations described above.

WW00081

Providing & fixing to frames (wall or ceiling) Gypsum plaster board including finishing of joints smooth complete (excluding cost of frame) - 12 mm

The Gypsum plaster board (wall board) shall confirm to IS:2095. The boards shall be kept dry in transit and stored flat in a clean dry place.

Fixing:

The supporting walls and framework for the coverings shall be completed. Assembled components, such as, frames of doors, windows, etc, shall be installed in position before the wall covering work is commenced.

The fixing of coverings shall reasonably permit the adjustment of the coverings to thermal and moisture movements without cracking or appreciable distortion. Spacing of support and fixing of gypsum wall coverings shall be as shown below.

SPACING OF SUPPORT AND FIXING OF GYPSUM WALL COVERINGS

Sl. No	Thickness (mm)	Spacing of supports (mm)	Minimum clearance for nails from edges (mm)	Nail spacing c/c at edges and at other supports
1	10	400	10	100 to 150
2	12	500	10	
3	15	600	10	

During fixing, the nailing shall be done starting from the centre of the row, working outwards. The nails with a shank diameter of 2, 2.24 or 2.5 mm shall be used.



Jointing

The boards shall be fixed with a joint thickness of about 6 mm. All vertical joints shall be staggered particularly where both sides of the wall are covered. The joints shall be filled with gypsum plaster or other materials specified by the manufacturers of the boards.

After filling the joints, a thick skin of finishing materials shall be spread about 50 mm wide on either sides of the joint and on to it shall be trowelled dry a reinforcing scrim cloth about 100 mm wide. When metal scrim is used a stiffer plaster will be necessary to enable the trowelling of the scrim down to the board.

Measurements

The length and width of the work shall be measured correct to 10 mm. The area shall be calculated in square metres correct to two places of decimal.

Rate

It shall include all materials and labour involved in all operations described above.

WW0336

Providing and fixing Flush Door shutters with pre-laminated Cement Bonded Particle Board - 30 mm

Measurements

Length and width of the shutter shall be measured to the nearest 10 mm in closed position covering the rebates of the frame but excluding the gap between the shutter & the frame. Overlap of two shutters shall not be measured. All work shall be measured net as fixed.

Rate

It includes the cost of materials and labour involved in the work.

AA0006

Providing & fixing glass panes with putty, nails including removal of broken glass panes - 4mm thick plain

Removing Broken Glass Panes

Old putty shall be raked out with a hack knife. The brads (small nails without head) and pieces of broken glass shall be removed from the rebates of the sash-bars. The pieces of glass panes as



found useful shall be handed over to the Engineer. No glass shall be inserted in frames until they have been primed and prepared for painting so that the wood may not draw oil out of the putty

Fixing

The glass panes shall be so cut that it fits slightly loose in the frame. A thin layer of putty (prepared by mixing one part of white lead with three parts of finely powdered chalk and then adding the boiled linseed oil to the mixture to form into a stiff paste) shall be drawn along the inner edge of the rebate, for bedding the back of the glass pane. The glass pane shall then be put in position, pressed home against the thin layer of the putty, and secured in rebate by new brads. The brads shall not be spaced more than 7.5 cm from each corner and not more than 15 cm apart. The putty shall then be applied in the rebate uniformly, sloping from the inner edge of the rebate, in doing this care shall be taken, to keep the putty a little within the inner edge of the rebate and surplus putty removed so that none of it may show through the glass from the inside. The putty so filled in the rebates shall be levelled smooth and finished in a straight line. When dried the putty shall be covered with a coat of paint of approved quality and shade to match the existing, finishing of joinery work. The glass panes shall be cleaned with methylated spirit. All splashing or dropping of washing and paints shall be removed. All rubbish and unserviceable materials shall be disposed of to the dumping ground.

Measurements

Length and breadth of glass panes shall be measured correct to 10mm. The area of the glass panes as fixed shall be calculated in square metre correct to two places of decimal.

Rate

The rate shall include the cost of labour and materials involved in all the operations described above.

11. Painting

Painting shall not be started until the Engineer has inspected the items of work to be painted and satisfied himself about their proper quality and given his approval to commence the painting work. Painting, except the priming coat, shall generally be taken in hand after practically finishing all other builder's work. Painting of external surfaces should not be done in adverse weather conditions like hail or dust storms etc. The rooms should be thoroughly swept out and the entire building cleaned up at least one day in advance of the painting work being started. The contractor shall bring approved paints, oils and varnishes to the site of work, in their original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The empties shall not be



removed from the site of work till the relevant item of work has been completed and permission obtained from the Engineer.

Wherever scaffolding is necessary, it shall be erected on double supports tied together by horizontal pieces, over which scaffolding planks shall be fixed. No ballies, bamboos or planks shall rest on or touch the surface being washed. For all exposed brick work or tile work, double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed

Where ladders are used, pieces of old gunny bags shall be tied on their tops to avoid damages or scratches to walls. For white washing the ceiling, the proper stage scaffolding shall be erected.

PT0002

Surface preparation removing by scraping, sand papering, including scratch repairs - Dry oil bound distemper

Preparation of Surface

Before new work is white washed, the surface shall be thoroughly brushed free from mortar dropping and foreign-matter. In the case of old work, all loose pieces and scales shall be scraped off and shaded in plaster as well as patches of less than 50 sq.cm area shall be filled up with mortar of the same mix. The surface shall then be allowed to dry for at least 48 hours. Where so specifically ordered by the Engineer, the entire surface of old white wash shall be thoroughly removed by scraping. Any unevenness shall be made good by applying putty, made of plaster of paris mixed with water on the entire surface including filling up the undulation and then sand papering the same after it is dry.

Measurement

Length and breadth shall be measured correct to 10 mm and area shall be calculated correct to two places of decimals. Corrugated surface shall be measured flat as fixed and the area so measured shall be increased by 20% to allow for the girth area.

Cornices and other such wall or ceiling features shall be measured along the girth and included in the measurements. The item shall include removing nails, making good holes, cracks, patches etc. not exceeding 0.1 sq.m each with material similar in composition to the surface to be prepared. Work on old treated surfaces shall be measured separately and so described. Measurement for jambs, soffits, sills, etc. shall be the same as for plastering works.



Rate

The rate shall include the labour and materials involved in the work.

PT0031

Finishing wall with Water-Proof Cement Paint - Old work, one coats

Material

The cement paint shall be (equivalent to IS 5410) of approved brand and manufacture.

Preparation of Surface

In the case of old work, all loose pieces and scales shall be removed and the surface shall be cleaned of all dirt, dust, algae, oil etc. by brushing and washing. Pitting in plaster shall be made good and a coat of water proof cement paint shall be applied over patches after wetting them thoroughly.

Preparation of mix

Cement paint shall be mixed in such quantities as can be used up within an hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish. Cement paint shall be mixed with water in two stages. The first stage shall comprise two parts of cement paint and one part of water stirred thoroughly and allowed standing for 5 minutes. Care shall be taken to add the cement paint gradually to the water and not vice versa. The second stage shall consist of adding further one part of water to the mix and stirring thoroughly to obtain a liquid of workable and uniform consistency.

In all cases the manufacturer's instructions shall be followed meticulously. The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement paint rapidly becomes air set due to its hygroscopic qualities.

Application

The solution shall be applied on the clean and wetted surface with brushes or a spraying machine. The solution shall be kept well stirred during the period of application. It shall be applied on the surface, which is on the shady side of the building so that the direct heat of the sun on the surface is avoided. The method of application of cement paint shall be as per manufacturer's specification. The completed surface shall be watered after the day's work. The second coat shall be applied after the first coat has set for at least 24 hours. Before application of the second or subsequent coats, the surface of the previous coat shall not be wetted. For old work, the treatment shall be with one or more coats as found necessary to get a uniform shade.



Precaution

Water cement paint shall not be applied on surfaces already treated with white wash, colour wash, distemper dry or oil bound, varnishes, paints etc. It shall not be applied on gypsum, wood and metal surfaces.

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above

PT0041

Providing and applying finishing coats, with Dry distemper, one coat on old work

Materials

Dry distemper of required colour and (IS:427) of approved brand and manufacture shall be used. The shade shall be approved from the Engineer before application of the distemper. The dry distemper colour as required shall be stirred slowly in clean water using 0.6 litre of water per kg of distemper or as specified by the makers. Warm water shall preferably be used. The mixture shall be allowed to stand for at least 30 minutes (or if practicable over night) before use. The mixture shall be well stirred before and during use to maintain an even consistency. Distemper shall not be mixed in larger quantities than is actually required for one day's work.

Priming coat

A priming coat of whitening shall be applied over the prepared surface in case of new work, if so stipulated in the description of the item. No white washing coat shall be used as a priming coat for distemper. The treated surface shall be allowed to dry before a distemper coat is given.

Application

For old work, the surface prepared shall be applied one or more coats of distemper till the surface attain an even colour. The application of each coat shall be as follows:

The entire surface shall be coated with the mixture uniformly, with proper distemper brushes (ordinary white wash brushes shall not be allowed) in horizontal strokes followed immediately by



vertical ones, which together shall constitute one coat. The subsequent coats shall be applied only after the previous coat has dried. The finished surface shall be even and uniform and shall show no brush marks. Enough distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room, which cannot be completed the same day. After each day's work, the brushes shall be washed in hot water and hung down to dry. Old brushes, which are dirty or caked with distemper, shall not be used.

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above

PT0013

Providing & applying one coat of primer - Wood work - white primer

Cement primer coat is used as a base coat on wall finish of cement, lime or lime cement plaster or on asbestos cement surfaces before oil emulsion distemper paints are applied on them. The cement primer is composed of a medium and pigment which are resistant to the alkalis present in the cement, lime or lime cement in wall finish and provides a barrier for the protection of subsequent coats of oil emulsion distemper paints. Primer coat shall be preferably applied by brushing and not by spraying. Hurried priming shall be avoided particularly on absorbent surfaces. New plaster patches in old work should also be treated with cement primer before applying oil emulsion paints etc.

Application

The cement primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for atleast 48 hours, before oil emulsion paint is applied. The specifications in respect of scaffolding protective measures, measurements and rate shall be as described above for surface preparation.

The primer for woodwork, ironwork shall be as specified in the description of the item. The



primer shall be applied with brushes, worked well into the surface and spread even and smooth. Primers for plaster/wood/iron & steel/aluminium surfaces shall be as specified in the below :

PRIMERS FOR PLASTER/WOOD/IRON & STEEL/ALUMINIUM SURFACES

Sl. No	Surfaces	Primer to be used
1	Wood works (hard and soft wood)	Pink confirming to (IS 3536)
2	Resinous wood and ply wood	Aluminium primer
3	Aluminium steel and galvanised steel work	Zinc chromate primer conforming to (IS:104)
4	Cement, brick work, plaster surface, Asbestos surface for oil bound distemper and paint	Cement primer

The primer shall be ready mixed primer of approved brand and manufacture.

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above

PT0090

Providing, preparing and applying Sumdang painting - Rab

Traditional Painting shall not be started until the Engineer has inspected the items of work to be painted and satisfied himself about their proper quality and given his approval to commence the painting work. Painting, except the priming coat, shall be started after practically finishing all other builder's work. Traditional painting of external surfaces should not be done in adverse weather conditions like hail or dust storms etc. The rooms should be thoroughly swept out and the entire building cleaned up at least one day in advance of the painting work being started. The contractor shall bring approved painting materials to the site of work, in their original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The empties shall not be removed from the site of work till the relevant item of work has been completed and permission obtained from the Engineer.



Wherever scaffolding is necessary, it shall be erected on double supports tied together by horizontal pieces, over which scaffolding planks shall be fixed. No ballies, bamboos or planks shall rest on or touch the surface being painted. For all exposed brick work or tile work, double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed. Where ladders are used, pieces of old gunny bags shall be tied on their tops to avoid damages or scratches to walls.

Classification

Traditional Bhutanese paintings are classified into four categories namely Rab, Ding, Tamar and Yutshon. Bill of quantities shall be based on these categories

Preparation of Traditional paint

The preparation shall be carried out as per Specification for Building and Road work 2026 of Ministry of Infrasture and Transport Department of Infrastructure Development, Govt. of Bhutan.

Measurements

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m, correct to two places of decimal. The co-efficient in Table 5.19.1 of SBR 2026 shall be applied to the areas measured flat and not girth for all the items listed in the table wherever applicable. For railings either for staircase or balcony, the area shall be measured flat and equivalent area calculated for payment using 0.5 co-efficient for each side.

Measurement of areas for all types of cornices including at lintel level shall be measured flat. Length of the cornices being measured along with junction of wall and cornice (separate measurement for boh, kah, etc. shall not be allowed). For wall decoration design such as Tashi-tagey symbols, Tashi-Zeegay, Za-Tshering, and alike, the area shall be measured flat as squire or rectangle and equivalent area calculated for payment using 0.8 as the co-efficient or actual painted area calculated using appropriate method of area measurement.

Rate

Rate shall include cost of all labour and materials involved in all the operations described above



PT0046

Providing and applying finishing coats, with Synthetic enamel, for steel & wood work, one coat on old work

Synthetic Enamel paint (conforming to IS:1932) of approved brand and manufacture and of the required colour shall be used for the top coat and an undercoat of shade to match the top and as recommended by the manufacturer shall be used.

Painting on old surface**Preparation of surface**

Where the existing paint is firm and sound it shall be cleaned of grease, smoke etc. and rubbed with sand paper to remove all loose paint and loose particles dusted off. All patches and cracks shall then be treated with stopping and filler prepared with the specified paint.

The surface shall again be rubbed and made smooth and uniform. If the old paint is listered and flaked it will be necessary to completely remove the same. Such removal shall be paid for separately and the painting shall be treated as on new surface.

Painting

The number of coats as stipulated in the item shall be applied with the specified paint. Each coat shall be allowed to dry and rubbed down smooth with very fine wet abrasive paper, to get an even glossy surface. If, however, the surface is not satisfactory additional coats as required shall be applied to get correct finish.

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above

PT0040

Providing and applying finishing coats, with Dry distemper, two coats on new work, incl. white priming coat



Materials

Dry distemper of required colour and (IS:427) of approved brand and manufacture shall be used. The shade shall be approved from the Engineer before application of the distemper. The dry distemper colour as required shall be stirred slowly in clean water using 0.6 litre of water per kg of distemper or as specified by the makers. Warm water shall preferably be used. The mixture shall be allowed to stand for at least 30 minutes (or if practicable over night) before use. The mixture shall be well stirred before and during use to maintain an even consistency. Distemper shall not be mixed in larger quantities than is actually required for one day's work.

Priming coat

A priming coat of whiting shall be applied over the prepared surface in case of new work, if so stipulated in the description of the item. No white washing coat shall be used as a priming coat for distemper. The treated surface shall be allowed to dry before a distemper coat is given.

Application

In the case of new work, the treatment shall consist of a priming coat of whiting followed by the application of two or more coats of distemper till the surface shows an even colour. The application of each coat shall be as follows:

The entire surface shall be coated with the mixture uniformly, with proper distemper brushes (ordinary white wash brushes shall not be allowed) in horizontal strokes followed immediately by vertical ones, which together shall constitute one coat. The subsequent coats shall be applied only after the previous coat has dried. The finished surface shall be even and uniform and shall show no brush marks. Enough distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room, which cannot be completed the same day. After each day's work, the brushes shall be washed in hot water and hung down to dry. Old brushes, which are dirty or caked with distemper, shall not be used

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above



PT0061

Providing and applying wood stains, varnishes & polishes Synthetic varnish (clear) - one coat, on old work

Pure shellac varying from pale orange to lemon yellow colour, free from resin or dirt shall be dissolved in methylated spirit at the rate of 140 gm of shellac to 1 litre of spirit. Suitable pigment shall be added to get the required shade

Polishing Old Surface

Preparation of surface

If the old polished surface is not much soiled it shall be cleaned of grease and dirt by rubbing with turpentine and then rubbed with fine sandpaper. If the old polished surface is much soiled then it will be necessary to remove the entire polish with patent paint remover or with caustic soda solution, as suitable and such removal shall be paid for separately outside the rate of polishing. Further the polishing itself will have to be done like new work and will be paid for as such.

Measurement

The length and breadth shall be measured correct to 10 mm. The area shall be calculated in sq.m correct to two places decimal.

Rate

The rate shall include the cost of the materials and labour involved in all the operations described above

12. Plumbing

PI0150

Providing and fixing 32mm dia p.v.c. waste

Measurement

The items shall be measured in numbers.

Rate

The rate shall include cost of materials and the labour involved in the operation



Urinals

The installation shall consist of lipped urinal (single or range) automatic flushing cistern, G.I flush and waste pipes. The size of the flushing pipe shall be 15mm

Urinals shall be fixed in position by using wooden plugs and screws. It shall be at a height of 65 cm from the standing level to the top of the lip of the urinal, unless otherwise directed by the Engineer. The plugs shall be fixed in the cement mortar 1:3. After the plugs are fixed the mortar shall be cured until it is set. Each urinal shall be connected to a 32mm dia waste pipe, which shall discharge into the channel or a floor trap. The connection between the urinal and the flush or waste pipe shall be made by means of putty or white lead mixed with chopped hemp.

Measurement

Urinals shall be measured in numbers.

Rate

The rate shall include the cost of all materials and labour involved in all the operations described above

All the items under Plumbing head shall be carried out as per Specification for Building and Road work 2026 of Ministry of Infrastructure and Transport Department of Infrastructure Development, Govt. of Bhutan.

13. Fencing

RW0209

Providing & fixing G.I chain-link excluding the cost of posts, struts, earthwork excavation, concrete which is to be paid for separately - 4mm (8 SWG) x 50mm

Fixing of mesh

The mesh shall be stretched and fixed to posts by means of G.I. staples in case of R.C.C posts and to the iron angle posts it shall be fixed by appropriate welding. The mesh shall be fixed at every 30 cm or as directed by the Engineer.

The mesh shall be painted with aluminium paints unless otherwise specified or directed. Before the paint is applied the mesh shall be cleaned off any rust, etc.



Measurement

The length and breadth of the mesh shall be measured correct to a cm for the finished work and area calculated correct to two places of decimal from centre to centre of the posts.

Rate

The rate shall be in sq.m of the wire mesh fixed to post including fixing of post, staples etc. complete.

14. Occupational Health and Safety

Occupational Health and Safety (OHS) shall be followed as per requirements stipulated in clause 5.22, Chapter 22 of SPECIFICATIONS FOR BUILDING AND ROAD WORKS 2026.

Incorporation of Occupational Health and Safety measures at construction sites, including Insurance, Personal Protective Equipment (PPE), First Aid kits, Boundary Fencing, Scaffolding, Safety nets, Traffic management, signage, etc, as listed in the specifications. The standards and specifications for the Insurance, OHS materials and (or) equipment shall comply with the Labour and Employment Act - 2007, Regulation on Occupational Health, Safety and Welfare - 2012, and other relevant national documents. All OHS items will remain the property of the bidder upon completion of the project.



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SECTION - IV
FORMS



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Form 2: Proforma for Bank Guarantee for Bid Security

To

The Punatsangchhu-I Hydroelectric Project Authority (PHPA-I)

(Address of PHPA-I)

WHEREAS, (Name of Bidder) _____ (hereinafter called “the BIDDER”) has submitted his bid dated (_____ for the construction of (Name of Contract) _____ (hereinafter called “the Bid”)).

KNOW ALL MEN by these presents that we (Name of Bank) _____ of (Name of Country) _____ having our registered office at _____ (hereinafter called “the Bank”) are bound unto the Punatsangchhu-I Hydroelectric Project Authority (PHPA-I) in the sum of _____ for which payment well and truly to be made to the PHPA-I the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____.

THE CONDITIONS of this obligation are;

1. If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid; or
2. If the Bidder having been notified of the acceptance of his Bid by the PHPA-I during the period of bid validity;
 - 2.1 fails or refuses to execute the Proforma of Agreement in accordance with the Instructions to Bidders, if required; or
 - 2.2 fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders,

We undertake to pay to the PHPA-I up to the above amount upon receipt of its first written demand, provided that in its demand the PHPA-I will note that amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date **90 days** after the closing date for submission of bids as stated in the Invitation to Bid or as extended by you at any time prior to this date, notice of which extension to the Bank being hereby waived, and any demand in respect thereof should reach the Bank not later than the above date.

DATE

WITNESS

(Signature, Name and Address)

SIGNATURE OF THE BANK

SEAL



PROFORMA FOR
BANK GUARANTEE FOR PERFORMANCE SECURITY

To

The Punatsangchhu-I Hydroelectric Project Authority,

(Address of PHPA-I)

WHEREAS (Name and Address of Contractor) _____ (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated _____ to execute (Name of Contract and Brief Description of Works) _____ (hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Nu. _____ (Amount of Guarantee in words to be inserted by the Guarantor), representing the percentage of the Contract Price, specified in the Contract, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Nu. _____ (Amount of Guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.



This guarantee is valid until the date of **30 days** after issuing of the Completion Certificate.

SIGNATURE AND SEAL OF THE GUARANTOR

Name of Bank

Address

Date

Note; The Bidders are not required to fill this Proforma.



PROFORMA FOR
BANK GUARANTEE FOR MOBILISATION ADVANCE

In consideration of the Punatsangchhu-I Hydroelectric Project Authority (PHPA-I) (which expression shall unless repugnant to the subject or context include its administrators, successors and assigns), (hereinafter called the "Principal") having agreed to make advance payment to (Name and full address of the Contractor) _____ (hereinafter called "the Contractor(s)", (which expression shall unless repugnant to the subject or context or meaning thereof include its successors, administrator, executors and permitted assigns), whose bid for (Name of the Contract) _____ has been accepted and to whom the acceptance of the bid has been communicated by a Letter of Award and who is required to execute a formal agreement on conditions of production of a Bank Guarantee for Rs..... (Both in figures and words) _____ we, the _____ Bank (any financial institutions in Bhutan) hereinafter referred to as "the Bank") do hereby undertake promise and guarantee payment to the Principal on demand all the amounts advanced by the Principal to the said Contractor.

2. The Bank further agrees that;

- a) The Principal shall have the fullest liberty without affecting in any way the liability of the Bank under the Guarantee or Indemnity, from time to time, to vary any of the terms and conditions of the said Contract or to extend time for performance by the said Contractor or to postpone for any time and from time to time any of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of the terms and conditions governing the said Contract or the securities available to the Principal and the Bank shall not be released from its liability under these presents by any exercise by the Principal of the Liberty with reference to the matters aforesaid or by reason of time being given to the said Contractor or any other forbearance, act or omission on the part of the Principal or any indulgence by the Principal to the said Contractor or of any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of a releasing the Bank from its such liability.
- b) These presents shall be governed by and constructed in accordance with Bhutanese laws.



- c) the Bank hereby declares that it has the power to issue this Guarantee and the undersigned has full power to do so.
- d) It shall not be necessary for the Principal to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Principal may have obtained or obtain from the Contractor, shall at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealized.
- e) The Guarantee herein contained shall remain in full force and effect, during the period that would be taken for the performance of the terms and conditions of the said Contract, Letter of Award and the Agreement which is to be executed as aforesaid and that it shall continue to be enforceable until all the dues of the Principal have been duly paid and its claims satisfied and discharged and till the Principal discharges the Guarantee in writing or until _____ whichever is earlier.
- 3 The Bank lastly undertakes not to revoke this Guarantee until all the dues of the Principal have been duly paid except with the previous consent of the Principal in writing.

Dated the _____ Day of _____ 2020

Here affix the Common Seal of the

Bank for _____ Bank Ltd.

Note: The Bidders are not required to fill this Proforma.



PRE-CONTRACT INTEGRITY PACT

Note: This Proforma is included in the Bidding Documents for information of Bidders and shall signed by successful Bidder when the work(s) is award. Signing authorities will be the head of the Client (Agency) or the authorized representative of the bidder.

1 General:

Whereas the Punatsangchhu-I Hydroelectric Project Authority (PHPA-I) hereinafter referred to as the "Employer" on one part, and(Name of bidder or his/her authorized representative, with power of attorney) representing M/s.(Name of firm), hereinafter referred to as the "Bidder" on the other part hereby execute this agreement as follows:

This agreement shall be a part of the standard bidding document, which shall be signed by both the parties at the time of purchase of bidding document and submitted along with the tender document. This IP is applicable only to "large" scale works, goods and services, the threshold of which will be announced by the government from time to time. The signing of the IP shall not apply to framework contracting such as annual office supplies etc.

2 Objectives:

Whereas, the Employer and the Bidder agree to enter into this agreement, hereinafter referred to as IP, to avoid all forms of corruption or deceptive practice by following a system that is fair, transparent and free from any influence/unprejudiced dealings in the bidding process and contract administration, with a view to:

- 2.1 Enabling the Employer to obtain the desired contract at a reasonable and competitive price in conformity to the defined specifications of the works or goods or services; and
- 2.2 Enabling bidders to abstain from bribing or any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also refrain from bribing and other corrupt practices.

3. Scope:

The validity of this IP shall cover the bidding process and contract administration period.

4. Commitments of the Employer:

The Employer Commits itself to the following: -

- 4.1 The Employer hereby undertakes that no officials of the Employer, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favor or any material or immaterial benefit or any other advantage from the Bidder, either for themselves or



- for any person, organization or third party related to the contract in exchange for an advantage in the bidding process and contract administration.
- 4.2 The Employer further confirms that its officials shall not favor any prospective bidder in any form that could afford an undue advantage to that particular bidder in the bidding process and contract administration and will treat all Bidders alike.
- 4.3 Officials of the Employer, who may have observed or noticed or have reasonable suspicion shall report to the head of the employing agency or an appropriate government office any violation or attempted violation of clauses 4.1 and 4.2.
- 4.4 Following report on violation of clauses 4.1 and 4.2 by official(s), through any source, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings shall be initiated by the Employer and such a person shall be debarred from further dealings related to the bidding process and contract administration.
5. Commitments of Bidders
The Bidder commits himself/herself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of the bidding process and contract administration in order to secure the contract or in furtherance to secure it and in particular commits himself/herself to the following :-
- 5.1 The Bidder shall not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Employer, connected directly or indirectly with the bidding process and contract administration, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding process and contract administration.
- 5.2 The Bidder shall not collude with other parties interested in the contract to manipulate in whatsoever form or manner, the bidding process and contract administration.
- 5.3 If the bidder(s) have observed or noticed or have reasonable suspicion that the provisions of the IP have been violated by the procuring agency or other bidders, the bidder shall report such violations to the head of the procuring agency.
6. Sanctions for Violation:
The breach of any of the aforesaid provisions shall result in administrative charges or penal actions as per the relevant rules and laws.
- 6.1 The breach of the IP or commission of any offence (forgery, providing false information, mis-representation, providing false/fake documents, bid rigging, bid steering or coercion) by the Bidder, or any one employed by him, or acting on his/her behalf (whether with or without the knowledge of the Bidder), shall be dealt with as per the terms and conditions of the contract and other provisions of the relevant laws, including De-barment Rules.
- 6.2 The breach of the IP or commission of any offence by the officials of the procuring agency shall be dealt with as per the rules and laws of the land in vogue.
7. Monitoring and Administration:



- 7.1 The respective procuring agency shall be responsible for administration and monitoring of the IP as per the relevant laws.
- 7.2 The bidder shall have the right to appeal as per the arbitration mechanism contained in the relevant rules.

We, hereby declare that we have read and understood the clauses of this agreement and shall abide by it.

The parties hereby sign this Integrity Pact at (place) _____ on (date) _____

EMPLOYER

Witness:



BIDDER

A blue ink handwritten signature, likely belonging to the witness for the Employer, written on a horizontal line.



SECTION - V

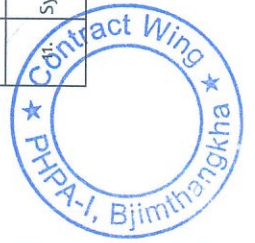
BILL OF QUANTITIES



BLANK

BoQ for Civil Renovation/Maintenance works of 33/11 kV substations at Powerhouse & Dam sites

SL No.	Description	Unit	Qty.	Unit Rate (Nu./Rs.)		Amount (Nu./Rs.)
				In Figures	In Words	
Cleaning & Dismantling works						
1.	Clearing grass including removal of rubbish within 50m of site	Sqm	807.3			
2.	Clearing grass, removal of landslide debris & surface material including excavation & disposal within 50m lead	Cum	147.3			
3.	Dismantling G.I sheets including ridges, hips, valleys, gutters & stacking materials within 50m lead	Sqm	1340.9			
Painting works						
4.	Surface preparation removing by scraping, sand papering, including scratch repairs; dry oil bound distemper	Sqm	1107.7			
5.	Finishing wall with Water-Proof Cement Paint, old works, one coat	Sqm	726.5			
6.	Providing and applying finishing coats: Dry distemper, one coat on old work	Sqm	1083.1			
7.	Providing & applying one coat of primers; Wood work - white primer	Sqm	287.3			
8.	Providing, preparing and applying Sumdang painting (Not washable); Rab	Sqm	121.3			
9.	Metal Painting for Main Entrance Gate, Angle posts, window bars etc.	Sqm	211.7			
10.	Providing and applying finishing coats; Dry distemper, two coats on new work, including white priming coat	Sqm	159.6			
	Synthetic varnish (clear) - one coat, on old work	Sqm	50.0			



Plumbing works						
12.	Repair of the European Toilet (Seat & Cistern)	No.	2			
13.	Providing Urinal and fittings	No.	2			
14.	Providing & fixing 32mm dia pvc. waste	No.	4			
Roofing works						
15.	Providing & fixing Pre - Painted Galvanised Iron (PPGI) sheets, including bolts, hooks and nuts 8mm dia. with bitumen and G.I limpet washers filled with white lead for connection, excluding the cost of purlins, rafter and trusses.;25g	Sqm	1236			
16.	Providing & fixing 600 mm ridges or hips in Pre - Painted Galvanised Iron (PPGI) sheets, including bolts, hooks and nuts 8mm dia G.I limpet and bitumen washers for connection; 25g(0.50mm)	m	197			
17.	Providing & fixing 450 mm over all semi-circular plain G.I gutter, including brackets, bolts, nuts, washers & rain water pipes connections, excluding the cost of pipes	m	83			
18.	Wind bracing, Providing & fixing wind tie of 40 x 6 mm flats	m	212			
19.	Providing and fixing on wall face single socketed rigid PVC (Working Pressure 4kgf per sq.cm) rain water pipes including jointing with seal ring leaving 10 mm gap for thermal expansion- complete; 75mm dia	m	52			
20.	Providing & fixing Eaves board (225x25mm) with moulding fitted and fixed with necessary screws, Class B confiers	m	212			
21.	Providing & fixing Class 'B' (conifer) (undressed) in wall- frames etc.	Cum	2.6			



22.	Providing & fixing Plywood lining with necessary nails etc. including beading complete (excluding cost of frame); 6 mm, commercial	Sqm	295.3			
23.	Providing and fixing to frames (wall or ceiling) Gypsum plaster board including finishing of joints smooth complete (excluding cost of frame); 12mm thick	Sqm	725.2			
Flooring/tiling works						
24.	Providing & fixing 2mm thick Vinyl or Linoleum sheet laid with special adhesive, including 2 coat of bitumen applied over subfloor on prepared surface @ 1.5 kg/sq.m each coat including the cost of base concrete	Sqm	428.4			
25.	Providing and fixing tiles in skirting, step risers, dado and wall in different sizes (Sizes and thickness to be specified by the engineer/as per design) in all colours and shade, on 12 mm thick cement mortar 1:3 (1 cement:3 sand) finished with flush-pointing in white cement	Sqm	46.8			
Fencing works						
26.	Repair of G.I chain-link mesh; 4mm (8 SWG) x 50mm (Considering 25% fence needs tending)	Sqm	215.8			
27.	Repair/Dismantling barbed wire, flexible wire including making rolls & stacking within 50m lead (Considering 40% fence needs tending)	m	129.5			
Cement Concrete works						
28.	Providing and laying in position plain cement concrete excluding the cost of centering and shuttering - All work upto plinth level; 1:1.5:3 (1 cement : 1.5 sand : 3 graded crushed rock 20 mm nominal size)	Cum	20.0			
Doors & Windows						
29.	Providing & fixing glass panes with putty, nails including removal of broken glass panes; 4mm thick plain	Sqm	10			
30.	Providing & fixing Flush Door shutters with pre-laminated Cement Bonded Particle board; 30mm	Sqm	3.8			



31.	Providing temporary living accommodation which includes bed room, kitchen, and toilet cum bathroom including proper water supply and electricity as per the drawing and temporary living accommodation standards. The accommodation facilities must be dismantled and cleaned upon the completion of project. All reusable materials of the accommodation facilities will remain as the property of the bidder upon completion of the project.	L/S	1.0			
32.	Incorporation of Occupational Health and Safety measures at construction sites, including Insurance, Personal Protective Equipment (PPE), First Aid kits, Boundary Fencing, Scaffolding, Safety nets, Traffic management, signage etc as listed in the specifications. The standards and specifications for the Insurance, OHS materials and (or) equipment shall comply with the Labour and Employment Act - 2007, Regulation on Occupational Health, Safety and Welfare - 2012, and other relevant national documents. All OHS items will remain the property of the bidder upon completion of the project	L/S	1.0			
Sub-Total (A)						
Rebate. If any (B)						
Final Total (C) = A - B						
Goods & Services Tax (D)						
Grand Total Amount = C + D						
Grand Total Amount (in words):						

