



बामर लॉरी एण्ड कं. लिमिटेड
Balmer Lawrie & Co. Ltd.

TEMPERATURE CONTROLLED WAREHOUSE
[PLOT NO. F-9/5, ADDITIONAL MIDC]
PATALGANGA, DIS- RAIGAD, MAHARASHTRA
Mobile No: +91 9988400155
E-mail: choudhary.rr@balmerlawrie.com]

Tender No: BL/LI/TCW-MUM/021

TECHNICAL / COMMERCIAL BID

Inviting Tender for

[Slope Protection Works on Hill Sides]

DUE DATE & TIME: [07/05/2018 AT 15.00 HRS]

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NOTICE INVITING TENDER

Online Bids in single bid system are invited from experienced civil contractor for carrying out the slope protection works on hill slopes at Temperature Control Warehouse at Patalganga in Raigad district, Maharashtra.

Tenderers are advised to download Notice Inviting Tender along with other tender documents from www.balmerlawrie.com and the procurement website <https://balmerlawrie.eproc.in>.

The tender has to be submitted online only.

The signed copies of the required documents in support of bidder's credentials are to be send along with the tender documents.

S. No	Description	Details
1	Name of Work	Slope Protection Works on Hill Sides at Temperature Controlled Warehouse at Patalganga.
2	Tender No	BL/LI/TCW-MUM/021
3	Validity Of Offer	120 days from the date of opening of Technical bid
4	Contract Period	30 Days from the date Of placement of Order or LOI whichever is earlier.
5	Tender Fee	Nil
6	EMD	Rs. 5000 /-
7	Downloading / Submission of Tender :	
	a. Starts on	26/04/2018
	b. Closes on	07/05/2018 at 15.00 Hrs.
8	Opening of Tender	07/05/2018 at 15.30 Hrs.

1. LIST OF DOCUMENTS TO BE SUBMITTED

The signed and stamped copies off following documents should be sent as part of the technical/commercial bid submission

- Power of Attorney authorizing the person who has signed the tender to act and sign on behalf of the company.
- Certificate of registration/incorporation in the case of Pvt Ltd/Public Ltd Company /certified copy of / partnership deed in the case of LLP/Partnership firm/ any document under the relevant rules/laws if the firm is a proprietorship firm.
- Company's PAN.
- Company's GST Registration.
- Chartered accountant's certificate or Audited / Certified Balance sheet and Profit and Loss account of tenderer's company for last three years ending 31.03.17

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2. VERIFICATION OF DOCUMENTS / SUBMISSION OF BIDS / CANCELLATION OF BIDS

- a. If Balmer Lawrie wants to verify all the submitted documents, then the bidder should bring all original documents.
- b. Failure on part of the tenderer to report on specified date and time for paper verification may result in rejection of the tender submitted by them without further communication.
- c. Tenderer should be in a position to produce all the original documents and/or any other information on dates as intimated or as and when required by Balmer Lawrie.
- d. Incomplete Tenders are liable for rejection without any reference to the tenderer and decision of Balmer Lawrie in this respect will be final.
- e. If at any stage it transpires that any party submitted false or forged documents may be Blacklisted and the EMD would be forfeited, contract could be cancelled, criminal prosecution or any other action as deemed fit may be initiated.
- f. Balmer Lawrie reserves the right to reject any or all tenders without assigning any reasons whatsoever.
- g. Bids of any tenderer may be rejected if a conflict of interest between the bidder and Company (Balmer Lawrie) is detected at any stage.
- h. All the bids will be evaluated based on the criteria as mentioned in this NIT. Tenders of those bidders who are not meeting the criteria as specified in the NIT, may not be considered for commercial evaluation.
- i. Tenders, if submitted through e-mail or fax, shall be summarily rejected.

SPECIAL INSTRUCTIONS TO THE BIDDER FOR PARTICIPATING IN E-TENDER

Tenderers are advised to download Notice Inviting Tender along with other tender documents from the e-tendering portal <https://balmerlawrie.eproc.in> Interested parties have to pay an interest free EMD of Rs.5000/- (**Rupees Five Thousand Only**) by Demand Draft/Pay Order at our above address. The DD/PO for EMD should be drawn in favour of **“BALMER LAWRIE & CO LTD”** on any Scheduled Bank, payable at **[Mumbai/ Navi Mumbai]**. Copies of the instruments (DD) evidencing payment of EMD should be scanned & uploaded before bidding. Payment of EMD is exempted for Small Scale Units registered with National Small Industries Corporation (NSIC) & Micro Small and Medium Enterprises (MSME) on submission of valid copy of registration certificate. **SCT/ST Category having MSME/NSIC certificates should specifically mention the same. MSME/ NSIC vendor are required to declare UAM number on CPPP (Central Public Procurement Portal) failing which such bidder will not be able to enjoy benefits as per PP Policy for MSME's order 2012.**

The physical original instruments/drafts should reach our above address prior to due date and time. In case the Bidders intend to submit any additional supporting documents, the same can be submitted in physical form at our above address. Documents of only those bidders shall be

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entertained who are bidding on-line. **UNDER NO CIRCUMSTANCES PRICE BID SHALL BE SUBMITTED IN PHYSICAL FORM.**

Balmer Lawrie & Co. Ltd. has developed a secured and user friendly system which enables Vendors/ Bidders to Search, View, Download tenders directly and also, enables them to participate & submit Online Bids on the e-tendering site <https://balmerlawrie.eproc.in> in a secure and transparent manner which maintains confidentiality and security throughout the tender evaluation process.

1. Procedure to submit On-line Bids

For this purpose, Vendors/Bidders are advised to read the instructions available in the homepage of the portal <https://balmerlawrie.eproc.in> where detailed procedure for submission of bids is available under the option / link “Bidding Manual”.

1.1 Registration with e-procurement platform

For registration and online bid submission bidders may contact HELP DESK of C1India Pvt., Ltd. details of which is available at our web-site mentioned above or they can register themselves online by logging in to the website through <https://balmerlawrie.eproc.in>

Bidders may contact the following resource persons for any assistance required in this regard.

HELPDESK NOS ARE OPEN BETWEEN 1000 HRS to 1830 HRS IST		
(MONDAY TO FRIDAY (Exclusions: Balmer Lawrie HOLIDAYS))		
Please email your issues before your call helpdesk. This will help us serving you better.		
Contact Nos. and email IDs for Balmer Lawrie helpdesk officers		
Name	E-mail	Phone Numbers
Tirtha Das	Tirtha.das@c1india.com	+91-9163254290
Ravi Gaiwal	Ravi.gaiwal@c1india.com	02266865611
Tuhin Ghosh	Tuhin.ghosh@c1india.com	+91-8981165071
Ujjal Mitra	ujjal.mitra@c1india.com	+91-77026 69806

1.2 Digital Certificate authentication

The bidder shall authenticate the bid with his Digital Certificate for submitting the bid electronically on e-procurement platform and the bids not authenticated by digital certificate of the bidder will not be accepted on the e-procurement platform.

All the bidders who do not have digital certificates need to obtain Digital Certificate. They may contact help desk of C1 India Pvt. Ltd.

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1.3 For Price Bid Submission, the bidders are required to download the Excel Sheet of Price Bid, fill the relevant details and upload the same after signing and stamping.

2. Special Note

- Bids can only be submitted before the last date and time of submission as per the date and time mentioned in the e-tender. Resubmission (if required) of bid should be completed within the stipulated date and time. The system time (IST) that will be displayed on e-tendering web page shall be the time and no other time shall be taken into cognizance.
- Bidders are advised in their own interest to ensure that bids are uploaded and submitted successfully in e-tendering system well before the closing date and time of bid.
- No Price bid will be accepted physically or by post. Balmer Lawrie does not take any responsibility in case bidder fails to upload the documents within specified time of tender submission.
- Balmer Lawrie will not be responsible for any delay under any circumstances for non-receipt of any documents sent by post as part of response to the tender. Bidders are requested to provide correct “e-Mail address” and “Mobile No.” for receiving updates related to e-tender from time to time.
- Bidders are requested to provide correct “e-Mail address” and “Mobile No.” for receiving updates related to e-tender from time to time.
- The bidder has to keep track of any changes by viewing the Addendum/Corrigendum issued by the Tender Inviting Authority on time-to-time basis in the e-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
- **The bidder has to keep track of any changes by viewing the Addendum / Corrigenda issued by the Tender Inviting Authority on time-to-time basis in the e-Procurement platform. Interested parties have to keep referring to the website for further information. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.**

3. Filling of Tender Documents

- 3.1 The tenderers are requested to carefully study all the tender documents and tender conditions before quoting their rates.
- 3.2 The tender must be strictly in accordance with the terms and conditions and specifications laid out in the tender.
- 3.3 Any terms and conditions given by the tenderer on his own in their offers will not be binding on Balmer Lawrie.
- 3.4 The sole proprietor or authorised representative shall sign all documents that need to be uploaded. When the person signing the documents is not the sole proprietor / authorised representative of the company, the Power of Attorney authorizing such person to act and sign on behalf of the company must be scanned and uploaded

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and produced later on for verification by Balmer Lawrie.

SCOPE OF WORK

The scope of work shall be as per the BOQ of the price bid, briefly the same is also elaborated as below.

1. Making proper slope of the hill, compacting the same by using plate compactor by using water to the satisfaction of engineer-in-charge.
2. Laying of stone on the slopes with close packing of stones and packing the gapes by using the smaller size boulders and followed by using the cement mortar in the ratio of 1:10 on the gapes of the pitched stones. The sizes of the stones should be not less than 200mm. The above work includes the lifting, shifting, staging and Curing as required for the above work.
3. Stone masonry as per the BOQ.

GENERAL TERMS AND CONDITIONS

1. ELIGIBILITY CRITERIA

The tenderers should meet the following eligibility criteria:

- I. Average annual turnover of the tenderer shall be minimum of Rs. 22 lacs during last three financial years ending 31st March, 2017. Copies of balance sheets of last three years are required to be submitted.
- II. The tenderer should have successfully executed the civil works of following minimum values during past seven (7) years ending last day of month previous to the one in which applications are invited.
 - A. 3 jobs each of value not less than Rs 4.00 lacs or
 - B. 2 jobs each of value not less than Rs 5.00 lacs or
 - C. 1 job of value not less than Rs 8.00 lacs

Copies of work order and the completion certificate are required to be submitted.

- III. Submission of EMD. MSMED/NSIC parties are exempted from payment of EMD.
- IV. Agency should have GST Registration number, copy of registration certificate is to be submitted.
- V. The agency needs to furnish self-declaration that they are not black listed by any PSU/Government Institutions.
- VI. Bidder should be register vendor of any unit of Balmer Lawrie & Co.Ltd.

2. SUBMISSION OF BIDS

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The bid is to be submitted in a single bid process i.e. Technical/ Commercial Bid with Price Bid together. In the price bid, the rates are to be submitted as per the given format and online as mentioned in the bid submission clause.

3. TENDER OPENING

Unpriced and price bid will be opened as per tender calendar.

4. ACCEPTANCE OF OFFERS

- (i) Balmer Lawrie reserves the right to accept any tender in whole or in part or reject any tender or all tenders or place order for any quantity, less than or more than the tendered quantity, without assigning any reason thereof.
- (ii) Bids of any tenderer may be rejected if a conflict of interest is detected between the bidders and Balmer Lawrie at any stage.
- (iii) Balmer Lawrie is not bound to accept the lowest rate for any tender. Balmer Lawrie also reserves its right to allow Public Enterprises (Central / State) price / purchase / contract / service preference as admissible under the existing Government policy. The decision of Balmer Lawrie in this connection will be final.
- (iv) Incomplete tenders, conditional tenders, tenders received late or tender not conforming to the terms and conditions mentioned in the Tender documents or not accompanied by the requisite Earnest Money Deposit (unless exempted under the terms of this Tender) will be rejected.

5. NEGOTIATIONS

- I. Balmer Lawrie reserves the right to negotiate with the Tenderer. Tenderer will have to attend the concerned office of Balmer Lawrie for negotiations/clarifications required from them, in respect of their quotations, without any commitment on the part of Balmer Lawrie.
- II. In case of negotiation, the Tenderer should send the confirmation of outcome of such negotiation in writing so as to reach the concerned office of Balmer Lawrie within 3 days from the date of negotiation/ the time stipulated. If the Tenderer fails to comply with this requirement Balmer Lawrie reserves its right to ignore their quotation at its discretion with the attendant remedies available to them.

6. NOTIFICATION OF AWARD

Prior to the expiry period of Bid validity, BL will place purchase order or letter of intent on the successful bidder(s).

7. CONTRACT PERIOD

The completion period is 30 days from the date of issue of LOI or P.O. whichever is earlier.

8. TERMINATION OF CONTRACT

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In case of any breach of contract, serious criminal act on the part of selected contractor and/or his employees, and any such acts, the Company shall have the rights to terminate the contract immediately without any notice

9. VALIDITY

Offers must be valid for 120 days from the due date of the tender. The rates quoted by the tenderers once accepted by the Company shall be valid and firm during the tenure of entire contract period.

10. QUOTING OF RATES / TAXES

Rate shall be quoted as per the Price Bid Format. Applicable GST shall be mentioned separately as mentioned in the attached format.

11. EMD/SECURITY DEPOSIT

EMD of Rs 5000/- of the successful tenderer shall be converted into Non-interest bearing Security Deposit and shall be retained till one year after successful completion of the job. EMD of unsuccessful tenderers shall be refunded after finalization of the tender.

12. TERMS OF PAYMENT

- a. 90% of amount along with all the tax will be released after completion of the work.
- b. 10% shall be kept as Retention Money for a period of 12 months of Defect Liability Period. The retention money can be exchanged with an equivalent amount of B.G. valid for a period of 12 months from the date of issue of completion certificate.

13. DEFECT LIABILITY

Defect liability period shall be one year from the date of issuance of letter by BL after satisfactory supply of all the materials. The defect liability period shall be one year from the date of supply of all the pallets. During the period of guarantee the vendor's representative should visit the plant as required for sorting out any operational issues.

14. COMPLIANCE WITH REGULATIONS

Vendor shall warrant that all goods and services covered by these conditions shall have been produced, sold, supplied, dispatched, delivered and furnished in strict compliance with all applicable laws, regulations, labor agreements, working conditions and technical codes and requirements as applicable from time to time. The vendor shall execute and deliver such documents as may be required to effect or to evidence such compliance.

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All laws and regulations required to be incorporate in agreements of this character are hereby deemed to be incorporated by these references. Owner and their authorized representative disown any responsibility for any irregularity, contravention or infringement of any statutory regulations in the manufacture of supply of goods / services covered by this order.

15. SUB-LETTING OF WORK

No part of the contract or any share or interest therein shall in any manner or degree be transferred, assigned or sublet by the contractor directly or indirectly to any person, firm or corporation without the consent in writing from Balmer Lawrie. In the event of contractor contravening the conditions, Balmer Lawrie shall be entitled to get the work done from any other firm at the 'Risk & Cost' of the contract.

Safety

16.Safety Requirements to be followed

Housekeeping

Contractors shall ensure that their work area is kept clean tidy and free from debris. The work areas must be cleaned on a daily basis. Any disposal of waste shall be done by the Contractor.

All equipment, materials and vehicles shall be stored in an orderly manner. Access to emergency equipment, exits, telephones, safety showers, eye washes, fire extinguishers, pull boxes, fire hoses, etc. shall not be blocked or disturbed

Tools, Equipment and Machinery

The Contractor must ensure that all tools & equipment provided for use during the Work is:

- suitable for its intended use;
- safe for use, maintained in a safe condition and where necessary inspected to ensure this remains the case (any inspection must be carried out by a competent person and records shall be available);
- Used only by people who have received adequate information, instruction and training to use the tool or equipment.

Working at Height

Any Work undertaken where there is a risk of fall and injury is considered to be working at height.

For any Contractor Personnel working at height, Contractors shall provide fall prevention whenever possible and fall protection only when fall prevention is not practicable. Before commencing Work in a height the Contractor must obtain from BL a Permit to Work, the

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Permit to Work will define the requirements to be followed. Supervisor must be present at all point of time, to ensure no deviation occur during the course of work.

Fall Prevention System

Fall prevention systems (e.g. fixed guardrails, scaffolds, elevated work platforms) must provide protection for areas with open sides, including exposed floor openings.

Fall Protection Systems

Where fall protection systems are used then the Contractor must ensure the following is applied:

- i. Only approved full body harness and two shock-absorbing lanyards are used,
- ii. Prior establishment of a rescue plan for the immediate rescue of an employee in the event they experience a fall while using the system,
- iii. Anchorage points must be at waist level or higher; and capable of supporting at least the attached weight,
- iv. Lifeline systems must be approved by BL before use.
- v. Use of ISI marked industrial helmet at all point of time.

Scaffolding

All scaffolds shall subject to a documented inspection by a competent person and clearly marked prior to use. The footings or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. All scaffolding materials should be of MS tubular type.

Guardrails and toe-boards shall be installed on all open sides and ends of scaffold platforms. Scaffolds shall be provided with an access ladder or equivalent safe access. Contractor Personnel shall not climb or work from scaffold handrails, mid-rails or brace members.

Barricades

Floor openings, stairwells, platforms and walkways, and trenching where a person can fall any distance shall be adequately barricaded and where necessary, well lit. Where there is a risk of injury from a fall then rigid barriers must be used.

Barricades must also be used to prevent personnel entering an area where risk of injury is high e.g., during overhead work activity or electrical testing etc. Such barricading must provide clear visual warning..

Environmental Requirements

Waste Management

The Contractor is responsible to remove any waste generated by the work being done on the Site. The Contractor must dispose of the waste in line with the relevant local legislative requirements. The waste disposal route shall be documented and made available for BL to review at any time and may be subject to BL's prior approval.

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Wastes (includes rinse from washing of equipment, PPE, tools, etc.) are not to be poured into sinks, drains, toilets, or storm sewers, or onto the ground. Solid or liquid wastes that are hazardous or regulated in any way are not to be disposed of in general site waste receptacles.

Spills

The Contractor is responsible for the provision of adequate spill kits/protection and the clean-up and disposal costs arising from such spills.

Emissions

The Contractor shall identify and quantify any emission sources associated with the Works. The control measures associated with these emission shall be subject to the approval of BL. Emissions include but are not limited to noise, dust, fumes, vapours

17.Liability & Ensuring Safety

The Contractor will be fully responsible for ensuring safety of lives, cargo, vehicles, property and containers within Balmer Lawrie CFS yard. Any damage to any life and/or property inside the CFS yard due to negligence/mishandling of equipment by the Operator and /or malfunctioning of the equipment would be

to the account of the contractor. It is mandatory that necessary 3rd party insurance cover is kept valid by the contractor for the equipment's operating inside the CFS.

18.. Safety and penalty:

The Contractor will be penalized for any safety violation. The decision of the Safety Committee headed by Safety In charge will be final. For any safety violation viz. not using PPE as required by the nature of the job per violation Rs.1000 will be charged

19.INDEMNITY & GENERAL SAFETY

The Contractor will be required to indemnify and keep indemnified the Company against all losses and claims for injury and damage to any person or any property whatsoever which may arise out of or in consequence of the work and against all claims, demands, proceedings, damages, cost charges and expenses whatsoever that may arise against the company on account of the faults of the contractor/his workmen/due to malfunctioning of the equipment if any employed by the contractor. The company may forward the bidder any such claim demand or complaint made by any other person against the company. In such event, the contractor shall solely be liable for the disposal of the said complaint.

The contractor will be required to Indemnify and absolve the Company of all responsibilities related to employment condition of their employees and should adequately safeguard Company against any possible HR problems including those related to employment. The bidder should adhere to all State and Central Enactments related to employment such as Minimum Wages Act, Workmen Compensation Act, Provident Fund

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Act, Employees State Insurance Act, Gratuity Act, Bonus Act, Contract Labour [Regulations and Abolition] Act etc. Further, Company will not have any liability towards employment, remuneration or compensation in whatever manner made to the employee of the bidder. Such demand shall be settled by the bidder directly.

20.FORCE MAJEURE CONDITIONS

Delivery schedule is subject to force majeure conditions as under: If at any time during the continuance of this contract, the performance in whole or part by either party of any obligation under this contract shall be prevented or delayed by reasons of any war, hostility, acts of public enemy, civil commotion sabotage, fire ,floods, explosions, epidemics, quarantine restrictions, strikes, lock outs or acts of God (hereinafter referred as "events") provided notice of the happening of any such events is given by either party to the other within twenty one days from the date of occurrence thereof, neither party shall by reasons of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance. Deliveries under the contract shall be resumed as soon as practicable.

21.ARBITRATION

Any dispute or difference arising under this Contract shall be referred under jurisdiction of Kolkata to a sole arbitrator appointed mutually under the provisions of Arbitration and Conciliation Act, 1996 including any statutory modifications or enactment thereof shall apply to the Arbitration proceedings. The fees of the arbitrator, if any, shall be shared equally by both the parties. The award shall be a speaking award stating reason therefor and is final and binding on the parties. The proceeding shall be conducted in English language and courts at Kolkata will have exclusive jurisdiction to settle any dispute arising out of this contract.

22.SPECIAL INSTRUCTION

In case of any query/clarification, the tenderer may contact our Mr. Rakesh Choudhary, Project Leader [Phone : Mobile : **9866400155**]

DECLARATION

Having examined the tender documents, we have understood the terms & conditions indicated in the Tender No: BL/LI/TCW-MUM/021 DT.26.04.2018 and hereby confirm our acceptance of the same.

Place: Signature of Tenderer

Date: Name & Address

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ANNEXURE – 1

PARTICULARS OF THE TENDERER'S ORGANISATION

Sr. No.	Description	Tenderers Details
1	Name of the Tenderer	
2	Address of the Registered Office	
3	Address of the branch / office quoting against the Tender	
4.	Name, designation, mobile number, e-mail, Fax no. and any other details of the Contact Person	
5	Year of commencement of business	
6	Whether Sole Trader/ Partnership / Private Limited Co., or Public Limited Co. / LLP	
7	Registration No. (Under companies Act)	
8	Whether copy of Incorporation /Registration certificate from ROC(Registrar of company)	
9	Income Tax PAN no.	
10	Whether copy of PAN enclosed.	
11	Whether copy of latest Income Tax Return uploaded	
12	GST Registration. No.	
13	Whether copy of GST Registration certificate Uploaded	
14	Complete Details of the Banker, Name, Address, IFSC Code, Bank Code, Account No and Type of Account	
15	Whether registered under NSIC / MSME	
16	In case registered under NSIC / MSME, provide registration number and copy of registration	

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ANNEXURE -2

GENERAL TECHNICAL REQUIREMENTS

Stone Pitching

- The entire area to be first levelled and compacted by using plate compactors.
- Stone for pitching shall be granite or other clean, hard dense and durable rocks free from cracks, kaolinised patches, organic or other impurities.
- The dimension of each stone measured perpendicular to the face of the pitching shall not be less than 225mm. The exposed face of each stone shall not be less than 0.02 sq. mtr in area.
- Stone shall be hand placed with closed joints on a layer of gravel or crushed stone to a minimum finished thickness of 225mm.
- The sides of stones shall be roughly trimmed with a spalling hammer to obtain a reasonably close fit and the interstices filled with clean coarse aggregates or gravel well rammed and wedged with spalls. The finished pitching shall show an even surface to the lines and levels shown on the drawings.
- The joints in pitching should be raked out to a depth of at least 50mm and sealed with 1:2 cement/ sand mortar finished neatly flushed with the surrounding stones. The stones shall be left clean of all mortar and stains.
- Measurement of pitching shall be made by the square meter of surface pitched on otherwise stated in the bill of quantities. The rates of pitching shall apply whether the surface to be pitched is level or inclined.

Stone Masonry

1. SCOPE

This specification establishes the materials, dressing, lying, jointing, workmanship, curing etc. for stone masonry works and shall comply with all the requirements of IS: 1597.

2. GENERAL REQUIREMENTS

a. Materials:

Stones used in masonry shall be of approved quality locally available black trap. They shall be hard, sound and free from decay, weathering and fissures. Stones with round surface shall not be used.

b. Cement Mortar:

Cement mortar shall meet the requirements of IS: 2250 and shall be prepared by mixing cement and sand by volume. Proportion of cement and sand shall be 1:6 (one part of

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cement and six part of sand) or as specified. The sand being used shall be sieved before use. The mortar shall be used as soon as possible after mixing and before it has begun to set and in any case within initial setting time of cement, after the water is added to the dry mixture. Mortar unused for more than initial setting time or cement shall be rejected and removed from the site of work.

c. Proportioning :

The unit of measurement for cement shall be bag of cement weighing 50 KGs and this shall be taken as 0.035 cubic meter. Sand shall be measured in boxes of suitable size on the basis of its dry volume. In case of damp sand, its quantity shall be increased suitably to allow for bulking.

The mixing of mortar shall be done in a mechanical mixer operated manually or by power. The Engineer-In-Charge may however, permit hand mixing, as a special case, taking into account the magnitude, nature and location of work. The Contractor shall take the prior permission of the Engineer-In-Charge in writing, for using hand-mix, before the commencement of work.

d. Mixing in Mechanical Mixer

Cement and sand in specified proportions, by volume shall be thoroughly mixed dry in a mixer. Water shall then be added gradually and wet mixing continued for at least one minute. Care shall be taken not to add more water than that which shall bring the mortar to the consistency of a stiff paste. Wet mix from the mixer shall be unloaded on water-tight masonry platform, made adjacent to the mixer. Platform shall be at least 150mm above the leveled ground, to avoid contact of surrounding earth with the mix. Size of the platform shall be such that it shall extend at least 300mm around the loaded wet mix area. Wet mix, so prepared shall be utilized within initial setting time of cement (thirty [30] minutes for ordinary Portland cement conforming to IS: 269) after addition of water. Mixer shall be cleaned with water each time before suspending the work.

e. Hand Mixing

The measured quantity of sand shall be leveled on a clean masonry platform and cement bags emptied on top. The cement and sand shall be thoroughly mixed dry by being turned over and over, backward and forward, several times till the mixture is of uniform color. The quantity of dry mix which can be consumed within initial setting time of cement shall then be mixed with just sufficient quantity of water to bring the mortar to the consistency of stiff paste.

f. Curing

Green work shall be protected from rain, running water or accumulated water from any source, by suitable means. Masonry work, as it progresses shall be kept thoroughly wet by sprinkling water at regular intervals, on all faces. Curing shall be done after 24 hours of completion of day's work and shall be done for at least 10 days after completion. Proper

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watering cans with spray nozzles, rubber or PVC pipes shall be used for this purpose.

g. Staging/Scaffolding

Staging/Scaffolding shall be properly planned and designed by the Contractor. Use of only steel tubes is permitted for Staging/scaffolding. Design of staging/scaffolding shall be submitted for approval of the Engineer-In-Charge, before commencement of work. Single scaffolding having one set of vertical support, shall be used and other end of the horizontal scaffolding member shall rest in a hole provided in header course. The support shall be sound and strongly clamped with the horizontal pieces over which the scaffolding planks shall be fixed. The holes left in the masonry works for supporting the scaffolding shall be filled and made good with plain cement concrete of grade 1:3:6 during plastering. Suitable access shall be provided to the working platform area. The scaffolding shall be strong enough to withstand all loads likely to come upon it and shall also meet all the requirements specified in IS: 2750.

The following measure shall also be considered during erection of the scaffolding/staging,

- i. Sufficient sills or underpinning, in addition to base plates shall be provided, particularly, where scaffolding are erected on soft grounds.
- ii. Adjustable bases to compensate for uneven ground shall be used.
- iii. Proper anchoring of the scaffolding/staging at reasonable intervals shall be provided in each direction with the main structure wherever available.
- iv. Horizontal braces shall be provided to prevent the scaffolding from rocking.
- v. Diagonal braces shall be provided continuously from bottom to top between two adjacent rows of vertical supports.
- vi. The scaffolding/staging shall be cracked at every stage for plumb line.
- vii. Wherever the scaffolding/staging is found to be out of plumb, it shall be dismantled and re-erected afresh. Effort shall not be made to bring it in line with a physical force.
- viii. All clamps and couplings shall be properly tightened with nuts and bolts to avoid slippage.
- ix. Erection work of a scaffolding/staging under no circumstances shall be left totally to semiskilled or skilled workmen and shall be carried out under the supervision of contractor's technically qualified civil engineer.

h. Embedment of Fixtures

All fixtures, pipes, conduits, holdfasts of doors and windows etc. required to be built in walls, shall be embedded in plain cement concrete of grade 1:3:6 at the required position as the work proceeds.

3. SPECIFIC REQUIREMENTS

a. Dressing

Stone shall be hammer dressed on the face, the sides and the beds to enable it to come in proximity with the neighboring stone. The "bushing" (projection) on the face shall not be

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more than 40mm on an exposed face and 19mm on the face to be plastered. It shall not have depression more than 10mm from the average wall surface. It shall also conform to the general requirements for dressing of stones covered in IS: 1129.

b. Laying

All stones shall be wetted before laying to prevent absorption of water from mortar. The stones shall be laid so that the pressure is always perpendicular to the natural bed. The courses (if any) shall be built perpendicular to the pressure which the masonry will bear. In case of battered walls, the base of stone and plan of courses (if any) shall be at right angles to the batter. The walls shall be carried up truly plumb or to the specified batter. Every stone shall be carefully fitted to the adjacent stones, so as to form neat and close joints. Vertical joints shall be staggered as far as possible. Stone may be brought to level course at plinth, Window sills and roof level. Leveling up at plinth level, window sills and roof level shall be done with concrete comprising of one part of the mortar as used for the masonry and two parts of graded stone aggregate of 20mm nominal size. The bond shall be obtained by fitting in closely the adjacent stones. Transverse bonds shall be provided by the use of bond stones extended from the front to the back of the wall. At angular junctions the stones at each alternate course shall be well bonded into the respective courses of the adjacent wall.

Face stones shall extend and bond well in the back. These shall be arranged to break joints as much as possible, and to avoid long vertical lines of joints. The depth of stone from the face of the wall inwards shall not be less than the height or breadth at the face.

Where there is a break in the masonry work, the masonry shall be raked in sufficiently long steps for facilitating joining of old and new work. The stepping of the raking shall not be more than 45 degrees with the horizontal. The masonry work shall not be raised more than 1.2 meter per day. Toothing joints in masonry shall not be permitted.

c. Hearting of Chip

The hearting or interior filling of the wall shall consist of rubble stones which may be of any shape but shall not be less than 150mm on any face. These shall be carefully laid, hammered down with a wooden mallet into position and solidly bedded in mortar. The hearting should be laid nearly level with facing and backing, except that at about one meter intervals, vertical bond stones shall be firmly embedded to form a bond between successive courses.

d. Insertion of Chips

The chips and spalls of stones shall be used wherever necessary to avoid thick mortar beds or joints and it shall also be ensured that no hollow spaces are left anywhere in the masonry. The chips shall not be used below the hearting stone to bring these up to the level of face stones. The use of chips shall be restricted to the filling of interstices between the adjacent stones in hearting and this shall in no case exceed 20% of the quantity of stone masonry.

e. Bond Stone

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Bond or through stone running across the thickness of wall shall be provided in the walls having thickness up to 600mm, two or more bonds stones overlapping each other by at least 150mm shall be provided in a line from face to back. At least one bond stone or a set of bond stones shall be provided for every 0.5 sq.m courses and shall be staggered in subsequent course. An identification mark for the bond stones shall be given on both faces.

f. Quoins

The quoins shall be of selected stones neatly dressed to the required angle and shall be of the same height as the course in which they occur and laid header and stretcher alternately. The quoin shall not be less than 0.03 cubic meters in volume.

g. Jointing

Stones shall be so laid that all joints are fully packed with mortar. Face joint shall be minimum 20mm thick. The joints shall be struck flush and finished at the time of laying; when plastering and pointing is not required. If walls are to be plastered or pointed, joint shall be raked to a minimum depth of 20mm during the progress of work when the mortar is still green. For the faces of the wall which are not to be plastered, stone surface shall be cleared of mortar splashing to give uniform stone appearance.

4. Mode of Measurement

The payment for stone masonry works shall be inclusive of all labour, material, sampling and testing, scaffolding/staging dressing, wetting, out of stones laying etc., raking of joints, curing, pointing, providing recesses and making circular or rectangular opening, sealing the gap between the masonry and soffit or beam/slab with and including cement mortar, making of masonry platform for unloading the wet mix, embedding fixtures/fittings including providing PCC(1:3:6) etc., for all heights and depths. Deduction for circular or rectangular openings or for making pockets shall be as per relevant IS Codes.

Payment for random rubble stone work shall be made on cubic meter basis on the volume of work done, to be measured as per relevant IS Codes.

PRICE BID

The price bid shall be as per the following format and the bidders are requested to fill the rates and send as mentioned in the NIT on Bid Submission.

Sr. No.	Descriptions	Qty	Unit	Rate	Amount
1	Supplying, providing and laying Rubble Random Stone pitching of 230mm thick in CM 1:6 with stone of size 150mm to 200mm size on the slopes for embankments, berm slopes, or horizontal surfaces including payments of all applicable royalty for leads and lifts, preparation of subgrade for pitching, wetting of stones, filling all the voids with CM 1:6 raking out the joints, flush pointing in CM 1:4, curing etc., complete as per instruction of BL in charge.	950	Sq. Mtr.		
2	Supplying, providing and laying Random Rubble Masonry in CM 1:5 for 350 to 500mm thick wall using approved quality rubble stones including pipes with pipes, payment of all applicable royalty and ROW Payments and for lead and lifts. Rate to include dressing of stones, watering prior to laying etc., complete including racking the joints with upto a depth of minimum 6 mm below, Curing the masonry after construction including scaffolding required if any for the execution of the above job.	110	Cum		
3	Providing and laying PCC by volumetric mix with 40mm & down size aggregate for all surface at all levels including surface preparation, providing temporary shuttering, tamping, vibrating, curing etc., complete.	5	Cum		
	Sub-total				
	Add GST				
	Gross Total				

