GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT

Notice Inviting Tender

Name of Work:

Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

Office of
Chief Engineer,
Border Fencing Zone,
CPWD, R.K. Puram,
New Delhi-110066

INDEX

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S. No.	DESCRIPTION	PAGE NO.
1.	Index	2-3
2.	Information and Instructions for Contractors For E-Tendering Forming Part of NIT and To Be Posted on Website	4-11
3.	Section-I: Information & instruction for bidders	12-19
4.	Section II: Forms for Furnishing Information	20-37
5.	CPWD-6 for e-tendering	38-46
7.	CPWD-EPC Tender and Contract for works	47-48
	Part – A	49
8.	Schedules "A to F"	50-63
9.	Design considerations & requirements	64-69
10.	General Conditions	70-74
11.	Special Conditions	75-89
12.	Annexure-XA & XB (Guarantee Bond)	90-93
13.	List of preferred make of materials	94-95
14.	Scope of the work	96-99
15.	Particular Specifications	100-107
16.	Specification for R.C.C./CC Work (Design Mix Concrete) / For Precast RCC Elements	108-115
17.	Specification For Modular Fence & Gate	116-125
18.	Drawings	126-127
19.	Nomenclature of items	128-133
	Part – B	134

20.	Schedule of stage payment	135
21.	Schedule of work (Financial bid)	136

Note:- The EMD shall be made / issued only from the account of the bidder / tenderer submitting the bid / tender. EMD made / issued from the account other than that of the bidder / tenderer submitting the bid, shall not be accepted.

Certified that this Bid document contains One Hundred Thirty Six (136) pages serially numbered.

This NIT is approved for Rs. 270,51,11,121/- (Rupees Two Hundred Seventy Crore Fifty One Lakh Eleven Thousand One Hundred Twenty One Only)

Assistant Engineer (P-III) BFZ CPWD New Delhi	Executive Engineer (P-I) BFZ CPWD New Delhi	Superintending Engineer (P&A), BFZ CPWD New Delhi

Chief Engineer
Border Fencing Zone CPWD
R.K. Puram New Delhi

INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING FORMING PART OF NIT AND TO BE POSTED ON WEBSITE

The Executive Engineer, Border Fencing Division- Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001 (Mobile No.8950084269 email id: bme-ee-bfd@cpwd.gov.in) on behalf of the President of India invites online **Percentage Rate** bids on EPC (Mode-III) basis from CPWD enlisted contractors of appropriate class in Building & Roads category and firms / contractors of repute satisfying the set eligibility criteria in two bid system for the following work:

S. No.	NIT No.	Name of work & location	Estimated cost put to tender	Earnest Money	Period of Completion	Time & Date of Pre-Bid Conference	Last date & time of submission of bid, copy of receipt of deposition of original EMD, and other documents as specified in the NIT	Time & date of opening of eligibility bid
1	2	3	4	5	6	7	8	9
1	08/CE/BFZ/EE(P-I)/2026-27	**Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)**	Rs. 270,51,11,121/-	Rs. 2,80,51,111/-	24 Months	11:00 Hours on 05.11.2026 in the office of CE, BFZ, CPWD, East Block-1, Level-4, R. K. Puram, New Delhi-110066	20.11.2026 up to 15:00 Hours	20.11.2026 at 15:30 Hours

1. The Contractors/ agencies who fulfill the following requirements shall be eligible to apply. Joint ventures are not acceptable. [1(b), 1(d) & 1(e) are not applicable for CPWD enlisted contractors of appropriate class. However, 1(a), 1(c) & 1(f) are applicable for CPWD enlisted contractors also].

(a) Should have satisfactorily completed the works as mentioned below during the last seven years ending last day of the month previous to the one in which tenders are invited:

Three similar completed works each costing not less than **Rs. 108.20 Cr.**

or

Two similar completed works each costing not less than **Rs. 162.31 Cr.**

or

One similar completed work costing not less than **Rs. 216.41 Cr.**

("Similar work shall mean construction of fencing or construction of road/embankment or combination of any one or more of the above").

Note-1: The value of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to previous day of last date of submission of bids.

Note -2: In case, the eligible work has been executed by a Joint Venture through one or more individual firm(s), then cost of completed work shall be distributed among the individual firm(s) in proportion to their share in Joint Venture and that will be considered as work experience for individual firm(s) for pre- qualification in bidding.

(b) Should have had Average Annual Financial Turnover of **Rs. 81.15 Cr.** on civil works during the last three years ending 31st March 2026 (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded). The year in which no turnover is shown would also be considered for working out the average. The value of annual turnover figures shall be brought to the current value by enhancing the actual turnover figures at simple rate of 7% per annum.

(c) Average monthly turnover: The bidder should have achieved average monthly financial turnover/progress of at least **Rs. 6.76 Cr**. per month in any single construction work costing not less than **Rs. 108.20 Cr.** (not necessarily similar work), completed during the last 7 (seven) years from last date of submission of tender. The value of average monthly financial progress shall be worked out on the basis of completion cost of work divided by actual duration of completion of work. The value of average monthly financial progress shall be brought to current costing level by enhancing the actual value of monthly turnover of single work at simple rate of 7% per annum; calculated from the date of completion of the work to last date of submission of tender.

(d) Should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2026.

(e) Should have a Banker's Certificate from a commercial Bank for **Rs. 108.20 Cr.** or Net Worth certificate from CA with Unique Document Identification Number (UDIN) of minimum **Rs. 27.05 Cr.**

(f) Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula:

Bidding Capacity = {[AxNx1.5]-B} Where,

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

* [Bidding capacity formula, for CPWD contractors who are enlisted based on rule 6.1.7 of Enlistment Rules-2026 i.e. government retired engineer / architect for three years from the date of issue of enlistment order, shall be as follows: -

Bidding Capacity = {[AxNx1.5]-B}

Where

A = Banker certificate figure as submitted by applicant (i.e. government retired engineer / architect) at the time of enlistment for first year of enlistment and subsequent fresh bankers certificate for second and third year respectively. Value of A for first year will be mentioned in the enlistment order by the member secretary of advisory committee for enlisting authority.

N= Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and on-going works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.
Within three years from the date of issue of enlistment order, the newly enlisted entity has to develop its own bidding capacity and thereafter the general capacity formula being used for other entities shall be applicable to it for calculation of bidding capacity.

Newly enlisted entity may like to follow general bidding capacity formula even before period of three years if it so chooses.]

** [Bidding capacity, for CPWD contractors who are enlisted based on rules 9.6.3 & 9.6.4 of Enlistment Rules – 2026 i.e. new entity based on previously enlisted entity for three years from date of issue of enlistment order, shall be as follows: -

Annual turnover of newly enlisted entity shall be in proportion to the shareholding of partners / directors in the original enlisted entity at the time of enlistment of the newly enlisted entity.

Within three years from the date of issue of enlistment order, the newly enlisted entity has to develop its own bidding capacity and thereafter the general bidding capacity formula being used for other entities shall be applicable to it for calculation of bidding capacity. Newly enlisted entity may like to follow general bidding capacity formula even before period of three years, if it so chooses.

Bidding capacity for newly enlisted entity based on rules 9.6.3 & 9.6.4 enlistment rules 2026 shall be as follows:-
= {[A'xNx1.5]-B}

Where

A'= Proportionate share of newly enlisted director / partner in originally enlisted company / firm multiplied by the factor A, as given below. Value of A' will be mentioned in the enlistment order by member secretary of Advisory committee for Enlistment Authority, it will remain same for three years.

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum. This value is of originally enlisted entity at the time of enlistment of newly enlisted entity.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.]

Note:- Enlisted entities based on rules 6.1.7, 9.6.3 or 9.6.4 of enlistment rules – 2026 can submit MoU from agency having requisite experience for structural system technology if the enlisted entity does not have required experience.

Note: The bidder should submit bidding capacity calculation as per Form "C-2".

(g) The bidder should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The bidder shall have to submit a list of these employees stating clearly how these would be involved in this work within 15 days of award of work.

2. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
3. This information and instructions for bidders posted on website shall form part of bid document.
4. The bid document consisting of details of buildings, proposed roads, Specifications, Schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website https://etender.cpwd.gov.in or www.cpwd.gov.in free of cost.

5. But the bid can only be submitted after deposition of original EMD either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as Insurance Surety Bonds, Account Payee Demand draft or Banker's Cheque or Fixed Deposit Receipts or/ and Bank Guarantee including e- Bank Guarantee (for balance amount as prescribed) from any of the Commercial Bank towards EMD in favour of Executive Engineer as mentioned in NIT, receipt for deposition of original EMD to division office of any Executive Engineer (including NIT issuing EE/ AE), CPWD and other documents as specified.

   Note : EMD is to be drawn in favour of Executive Engineer, Border Fencing Division-Barmer, CPWD, Barmer (Rajasthan).

6. Those contractors who are not registered or have not updated their profile on the website mentioned above, are required to get registered/update their profile beforehand. The necessary training materials including the videos with step-to-step process are available on download section of https://etender.cpwd.gov.in

7. The intending bidder must have valid class-III digital signature certificate with encryption key (combo type) to perform any operations/transactions on the e-tendering portal / website and the bidder should download and install the eMsigner on their system as per instruction available on download section of https://etender.cpwd.gov.in

8. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
9. Contractor can upload documents in the form of JPG format and PDF format.

10. Certificate of Financial Turn Over: At the time of submission of bid contractor may upload Affidavit/Certificate from CA mentioning Financial Turnover of last 7 years or for the period as specified in the bid document and further details if required may be asked from the contractor after opening of technical bids. There is no need to upload entire voluminous balance sheet.

11. Contractor must ensure to quote rate of each item. The column meant for quoting rate in figures appears in yellow colour and the moment rate is entered, it turns sky blue.
    In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

    However, If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in item rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

12. The Technical Bid shall be opened first on due date and time as mentioned above. The time and date of opening of financial bid of contractors qualifying the technical bid shall be communicated to them at a later date.

13. Pre-bid conference shall be held in the office of Chief Engineer, Border Fencing Zone, CPWD, East Block-1, Level-4, R. K. Puram, New Delhi-110066 at 11:00 Hours on 05.11.2026 to clear the doubt of intending bidders, if any. Bidders should send queries by email at ***bme-ee-bfd@cpwd.gov.in*** at least 24 Hrs before pre-bid conference, latest by 11:00 Hrs. of 04.11.2026 to the office of the Executive Engineer, Border Fencing Division-Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001 email id: ***bme-ee-bfd@cpwd.gov.in***. After pre-bid conference, modifications shall be issued to all eligible bidders by the Engineer-in-Charge through e-mail, if required necessary. If further pre-bid conferences are required for complete and effective interactions, the date and time of same will be communicated at the end of 1st pre-bid meeting or later. All modifications / addendums /corrigendum issued regarding this bidding process, shall be uploaded on website only and shall not be published in any Newspaper.

14. ~~When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted, then the bid submitted earlier shall become invalid.~~

15. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.

16. The contractor shall engage manpower duly verified by the local Police as per requirement of BSF, nothing extra shall be paid on this account.

17. Following persons shall only be accepted as accredited/authorized representative(s):
(i) Proprietor of an individual firm or one of partner in partnership firm or one of director of firm as the case may be,

Or

(ii) Senior person in management or engineer who has served in the firm in continuous past for at least 5 years and for this, Form 16A/TDS issued to person/engineer by the bidder in last 5 financial years shall be produced as basis. If person is not issued Form 16A/TDS than he/she shall not be considered as accredited / authorized representative.

This para shall prevail over any other provision in bid document/GCC.

18. Bidder is advised to avail the facility of mobilization advance (if applicable in Schedule A to F under clause 10 B(ii). If any bidder does not want to avail this facility from department, then bidder shall produce the evidence of having invested minimum 8% of the construction contract amount towards mobilization within 6 months of start of work. The evidence shall be of bank statement of firm showing the payment made for mobilization. Non-compliance to this provision may be considered as subletting of work to other person(s)/form(s) on back-to-back basis in full or part which may attract action under clause 3 of the GCC.

This para shall prevail over any other provision in bid document/GCC.

19. **Site information**

(i) The work is required to be carried out adjacent to the international border in Barmer Sector, Barmer in Rajasthan. There may be restrictions on working hours from the side of BSF owing to the security considerations. No damage shall be allowed/reimbursed to the contractor on this account.

(ii) The contractor shall have to obtain photo ID proof for all the workers from BSF authorities. All the labour and hired vehicles will have to be got checked at BSF Check posts at least two times.

(iii) BSF may not permit workers to stay at site during night or beyond specified hours and therefore contractor may be required to commute the workers from site to nearest village from the site considering the restricted area.

(iv) Dispensary or medical facility is available only at distance of more than 100 km from site, the contractor is advised to keep a spare vehicle in case of any medical emergency for workers.

(v) Though in general the labour is not allowed to stay at site, however, subject to the permission by BSF, the essential number of labour may be allowed to stay at site.

20. The List of Documents to be scanned and uploaded within the period of Bid submission.

a) Insurance Surety Bond, Demand Draft/ Account Payee Banker's Cheque / FDR/ Bank Guarantee of any commercial Bank (for balance amount as prescribed) against EMD in favour of Executive Engineer, Border Fencing Division Barmer, CPWD, Barmer, Rajasthan.

b) Copy of Receipt of deposition of original EMD issued from division office of any Executive Engineer (including NIT issuing EE/AE), CPWD. (Form – "F")

c) Enlistment order of the contractor.

d) Certificate of financial turn over from Chartered Accountant (Form – "A")

e) Format for average monthly turnover (Form-"A-1")

f) Banker's Certificate / Net Worth Certificate (Form "B"/"B-1")

g) Work experience certificate showing experience in eligible similar work (as detailed in Form – "C", and "C-1").

h) Calculation sheet for bidding capacity (Form – "C-2")

i) Certificate regarding structure & organization (Form – "E")

j) GST registration certificate, if already obtained by the bidder.

If the bidder has not obtained GST registration as applicable, then in such a case the bidder shall upload the following undertaking with the bid document.

"If work is awarded to me, I/We shall obtain registration certificate as applicable within one month from date of receipt of award letter or before payment of 1st R.A. bill whichever is earlier, falling which, I/We shall be responsible for any delay in payments which will be due towards me on account of the work executed and/ or for any action taken by CPWD or GST department in this regard". (Form "G")

k) Affidavit for eligible similar works not having been executed on back to back basis (Form-"H")

l) Undertaking on structural stability and soundness as per prescribed format (Form "I")

m) Letter of transmittal (Form "L").

Note1.:- Sl. No.(d) & (f) are not applicable for CPWD enlisted contractors of appropriate class in Building & Road Category.

Note 2:- Sl. No.(c) is not applicable for non-CPWD contractors.

Note 3:- If any required document is not scanned and uploaded while submitting the bid, the bid submitted shall become invalid and will not be considered for e-Tendering process and the bid shall be summarily rejected.

Executive Engineer,
Border Fencing Division - Barmer,
CPWD, Sector Headquarter, BSF Campus,
Barmer, Rajasthan-344001

SECTION I

INFORMATION & INSTRUCTION FOR BIDDERS

1.1. Letter of transmittal and forms for deciding eligibility are given in Section-III.

1.2. All information called for in the enclosed forms should be furnished against the relevant columns in the forms. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against the relevant column. Even if no information is to be provided in a column, a "nil" or "no such case" entry should be made in that column. If any particulars/query is not applicable in case of the bidder, it should be stated as "not applicable". The bidders are cautioned that not giving complete information called for in the application forms or not giving it in clear terms or making any change in the prescribed forms or deliberately suppressing the information may result in the bid being summarily disqualified. Bids made by telegram or e-mailed or telex and those received late will not be entertained.

1.3. References, information and certificates from the respective clients certifying suitability, technical knowledge or capability of the bidder should be signed by an officer not below the rank of Executive Engineer or equivalent with stamp, e-mail and phone numbers.

1.4. The bidder may furnish any additional information which he thinks is necessary to establish his capabilities to successfully complete the envisaged work. He is, however, advised not to furnish superfluous information. No information shall be entertained after submission of bid unless it is called for by the Employer.

Note:

1. Bidder shall maintain secrecy of infrastructure to be developed (prior and during execution) and shall not share any details related to the project either in physical or electronic mode with anyone except with authorized persons adhering to the official secrets act, 1923.
2. The scope of works & specification is given in general but they are not exhaustive i.e. does not mention all the incidental works required to be carried out for complete execution of the item of work. The work shall be carried out, all in accordance with true intent and meaning of the specifications and the drawings taken together, regardless of whether the same may or may not be particularly shown on the drawings and/ or described in the specifications, provided that the same can be reasonably inferred there from. There may be several incidental works, which are not mentioned in the contract document/specifications but will be necessary to complete the item in all respect. All these incidental works/ costs which are not mentioned, but are necessary to complete the work shall be deemed to have been included in the overall amount quoted by the contractor for various components of work.
3. There is no construction water and electricity available at site. The responsibility for making arrangement for "water and power supply" required for the work rests with the agency within his quoted rates.
4. The scope of work includes cost of all materials, manpower, equipment's, T&P, fixtures, accessories, royalties, taxes, watch & ward and all other essential elements for completion and maintenance of works as aforesaid whatsoever.

2.0. DEFINITIONS:

2.1. In this document the following words and expressions have the meaning hereby assigned to them:

2.2. EMPLOYER: Means the President of India, acting through Executive Engineer, Border Fencing Division-Barmer, CPWD, Barmer Rajasthan or successor thereof.

2.3. BIDDER: Means the individual, proprietary firm, firm in partnership, limited company (private or public) or corporation.

2.4. "Year" means "Financial Year" unless stated otherwise.

2.5. "**CE, BFZ**" means Chief Engineer, Border Fencing Zone, CPWD, New Delhi or successor thereof.

2.6. SE, BFC Jaisalmer Means Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer Rajasthan or successor thereof.

3.0. Method of Application:

3.1. If the bidder is an individual, the application shall be signed by him above his full typewritten name and current address.

3.2. If the bidder is a proprietary firm, the application shall be signed by the proprietor above his full typewritten name and the full name of his firm with its current address.

3.3. If the bidder is a firm in partnership, the application shall be signed by all the partners of the firm above their full typewritten names and current addresses, or, alternatively, by a partner holding power of attorney for the firm. In the latter case a certified copy of the power of attorney should accompany the application (Also be scanned and uploaded to the e-tendering portal). In both cases a certified copy of the partnership deed and the current address of all the partners of the firm should accompany the application.

3.4. If the bidder is a limited company or a corporation, the application shall be signed by a duly authorized person holding power of attorney for signing the application accompanied by a copy of the power of attorney. The bidder should also furnish a copy of the Memorandum of Articles of Association duly attested by a Public Notary.

4.0 FINAL DECISION-MAKING AUTHORITY

The employer reserves the right to accept or reject any bid and to annul the process and reject all bids at any time, without assigning any reason or incurring any liability to the bidders.

5.0 PARTICULARS PROVISIONAL

The particulars of the work given in Section-I are provisional. They are liable to change and must be considered only as advanced information to assist the bidders.

6.0 SITE VISIT

The bidder is advised to visit the site of work, at his own cost, and examine it and its surroundings to himself collect all information that he considers necessary for proper assessment of the prospective assignment.

7.0 INITIAL CRITERIA FOR ELIGIBILITY

7.1 The Contractors/ agencies who fulfill the following requirements shall be eligible to apply. Joint ventures are not acceptable. [7.1(b), 7.1(d) & 7.1(e) are not applicable for CPWD

enlisted contractors of appropriate class. However, 7.1(a), 7.1(c) & 7.1(f) are applicable for CPWD enlisted contractors also].

(a) Should have satisfactorily completed the works as mentioned below during the last seven years ending last day of the month previous to the one in which tenders are invited:

Three similar completed works each costing not less than **Rs. 108.20 Cr.**

or

Two similar completed works each costing not less than **Rs.162.31 Cr.**

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One similar completed work costing not less than **Rs. 216.41 Cr.**

("Similar work shall mean construction of fencing or construction of road/embankment or combination of any one or more of the above").

Note-1: The value of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to previous day of last date of submission of bids.

Note -II: In case, the eligible work has been executed by a Joint Venture through one or more individual firm(s), then cost of completed work shall be distributed among the individual firm(s) in proportion to their share in Joint Venture and that will be considered as work experience for individual firm(s) for pre- qualification in bidding.

(b) Should have had Average Annual Financial Turnover of **Rs. 81.15 Cr.** on civil works during the last three years ending 31st March 2026 (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded). The year in which no turnover is shown would also be considered for working out the average. The value of annual turnover figures shall be brought to the current value by enhancing the actual turnover figures at simple rate of 7% per annum.

(c) Average monthly turnover: The bidder should have achieved average monthly financial turnover/progress of at least **Rs. 6.76 Cr**. per month in any single construction work costing not less than **Rs. 108.20 Cr.** (not necessarily similar work), completed during the last 7 (seven) years from last date of submission of tender. The value of average monthly financial progress shall be worked out on the basis of completion cost of work divided by actual duration of completion of work. The value of average monthly financial progress shall be brought to current costing level by enhancing the actual value of monthly turnover of single work at simple rate of 7% per annum; calculated form the date of completion of the work to last date of submission of tender.

(d) Should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2026.

(e) Should have a Banker's Certificate from a commercial Bank for **Rs. 108.20 Cr.** or Net Worth certificate from CA with Unique Document Identification Number (UDIN) of minimum **Rs. 27.05 Cr.**

(f) Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula:

Bidding Capacity = {[AxNx1.5]-B} Where,

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

* [Bidding capacity formula, for CPWD contractors who are enlisted based on rule 6.1.7 of Enlistment Rules-2026 i.e. government retired engineer / architect for three years from the date of issue of enlistment order, shall be as follows: -

Bidding Capacity = {[AxNx1.5]-B}

Where

A = Banker certificate figure as submitted by applicant (i.e. government retired engineer / architect) at the time of enlistment for first year of enlistment and subsequent fresh bankers certificate for second and third year respectively. Value of A for first year will be mentioned in the enlistment order by the member secretary of advisory committee for enlisting authority.

N= Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and on-going works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.
Within three years from the date of issue of enlistment order, the newly enlisted entity has to develop its own bidding capacity and thereafter the general capacity formula being used for other entities shall be applicable to it for calculation of bidding capacity.

Newly enlisted entity may like to follow general bidding capacity formula even before period of three years if it so chooses.]

** [Bidding capacity, for CPWD contractors who are enlisted based on rules 9.6.3 & 9.6.4 of Enlistment Rules – 2026 i.e. new entity based on previously enlisted entity for three years from date of issue of enlistment order, shall be as follows: -

Annual turnover of newly enlisted entity shall be in proportion to the shareholding of partners / directors in the original enlisted entity at the time of enlistment of the newly enlisted entity.

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= {[A'xNx1.5]-B}

Where

A'= Proportionate share of newly enlisted director / partner in originally enlisted company / firm multiplied by the factor A, as given below. Value of A' will be mentioned in the enlistment order by member secretary of Advisory committee for Enlistment Authority, it will remain same for three years.

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum. This value is of originally enlisted entity at the time of enlistment of newly enlisted entity.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.]

Note:- Enlisted entities based on rules 6.1.7, 9.6.3 or 9.6.4 of enlistment rules – 2026 can submit MoU from agency having requisite experience for structural system technology if the enlisted entity does not have required experience.

Note: The bidder should submit bidding capacity calculation as per Form "C-2".

(g) The bidder should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The bidder shall have to submit a list of these employees stating clearly how these would be involved in this work within 15 days of award of work.

8.0 EVALUATION CRITERIA FOR NON CPWD CONTRACTOR

8.1 The details submitted by the bidders will be evaluated in the following manner.

8.1.1. The Initial Eligibility Criteria prescribed in Para 7.0 above and as defined in Information and Instructions for contractors in respect of experience of eligible similar works completed, Profit/Loss, Banker's certificate, Financial Turnover and Bidding Capacity etc., will first be scrutinized and the Bidder's eligibility for the work be determined.

8.1.2. The bidders qualifying the initial criteria as set out in Para 7.0 above will be evaluated for following criteria by scoring method on the basis of details furnished by them:

(a)	Financial strength (Form 'A', 'B' / 'B1')	: Maximum 20 Marks
(b)	Experience in eligible similar nature of Works during last Seven years (Form 'C')	: Maximum 20 Marks
(c)	Performance on works (Form 'C') - Time Over run	: Maximum 20 Marks
(d)	Performance on works (Form 'D-1') - Quality	: Maximum 40 Marks
	Total	**:Maximum 100 Marks**

Evaluation of performance: - Evaluation of the performance of contractors for eligibility shall be done by NIT approving authority or a Committee constituted by him. All the eligible similar works executed and submitted by the bidders in support of eligibility and any one or more of the ongoing works may be got inspected by a committee which may consist of client or any other authority as decided by NIT approving authority. The marks for the quality shall be given based on this inspection, if inspection is carried out.

Scoring method of evaluation: - The scoring for evaluation mentioned in these columns shall be done as given in Proforma- I.

NOTE:-

To become eligible for qualification in eligibility bid evaluation, the bidder must secure at least 50% (fifty percent) marks in each attribute (a, b, c, d) and sixty percent marks in aggregate.

The department, however, reserves the right to restrict the list of such qualified bidders to any number, as deemed suitable by it.

The average value of performance of works for time over run and quality shall be taken on the basis of performance report of the completed/ ongoing eligible similar works.

9.0 FINANCIAL INFORMATION

Bidder should furnish the Annual Financial Statement for the last five years **(in Form "A"),** Banker's Certificate **(in Form "B")** or Net Worth Certificate **(in Form "B-1").** The bidder should also furnish the average monthly turnover of works completed during last seven years as per requirement of tender document. **(in Form "A-1").**

10.0 EXPERIENCE OF SIMILAR WORKS

10.1 Bidder should furnish the list of eligible similar nature of works successfully completed and ongoing works during the last seven years **(in Form "C")** and ongoing works as well (**Form C-1**).

11.0 ORGANISATION INFORMATION

Bidder is required to submit the information in respect of his organization **(in Form "E").**

12.0 LETTER OF TRANSMITTAL

The bidder should submit the letter of transmittal attached with the document.

13.0 OPENING OF THE FINANCIAL BID AND ITS VALIDITY

After evaluation of eligibility bid, a list of agencies qualified in the evaluation will be prepared. Thereafter, the financial bids of only the qualified and technically acceptable bidders shall be opened at the notified time, date and place in the presence of the qualified bidders or their representatives.

14.0 AWARD CRITERIA

14.1 The employer reserves the right, without being liable for any damages or obligation to inform the bidder, to:

14.1.1 Amend the scope of work and value of contract.

14.1.2 Reject any or all of the applications without assigning any reason.

14.2 Any effort on the part of the bidder or his agent to exercise influence or to pressurize the employer would result in rejection of his bid. Canvassing of any kind is prohibited.

PROFORMA-1

CRITERIA FOR EVALUATION OF THE PERFORMANCE OF CONTRACTORS FOR PRE-ELIGIBILITY

Attributes		Evaluation				
(a)	Financial strength (**20 marks**)					
	(i) Average annual turnover (16 marks) (ii) Banker's Certificate / Net Worth Certificate (04 Marks)	(i) 60% marks for minimum eligibility criteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) – on pro-rata basis				
(b)	Experience in similar class of works **(20 marks)**	(i) 60% marks for minimum eligibility criteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) – on pro-rata basis				
(c)	Performance on works (time over run) **(20Marks)**					
	Parameter Calculation for points	Score				Maximum Marks
	If TOR=	1.00	2.00	3.00	>3.50	20
	(i) Without levy of compensation	20	15	10	10	
	(ii) With levy of compensation	20	5	0	-5	
	(iii) Levy of compensation not decided	20	10	0	0	
	TOR= AT/ST, where AT= Actual Time; ST= Stipulated Time in the Agreement plus (+) justified period of Extension of Time **Note:** Marks for value in between the stages indicated above is to be determined by straight line variation basis.					
(d)	Performance of works (Quality) **as per Assessment in Form D-1. (40 marks)**					
	Completed works (max. 25 marks)	**Ongoing works (max 15 marks)**	**(Total marks assessed)**			

SECTION-II
FORMS FOR FURNISHING
INFORMATION

FORM 'F'

Receipt of deposition of original EMD (Receipt No……./date.....)		
(i)	Name of work	Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)
(ii)	NIT No.	08/CE/BFZ/EE(P-I)/2026-27
(iii)	Estimated Cost	**Rs. 270,51,11,121/-**
(iv)	Amount of Earnest Money Deposit	**Rs.** 2,80,51,111/-
(v)	Last date of submission of bid **(To be filled by Tender inviting authority/NIT approving authority at the time of issue of NIT and uploaded along with NIT)**	20.11.2026 upto 15:00 Hours
(vi)	Name of the Contractor	……...#
(vii)	Form of EMD	……..……#
(viii)	Amount of EMD	……..……#
(ix)	Date of submission of EMD	……...#
Signature, Name and Designation of EMD receiving officer (EE/ AE(P)/ AE/ AAO) along with office stamp		
(# to be filled by EMD receiving EE or NIT issuing EE/AE as the case may be)		

Form 'L'
LETTER OF TRANSMITTAL

To

Executive Engineer,
Border Fencing Division - Barmer,
CPWD, Sector Headquarter, BSF
Campus, Barmer, Rajasthan - 344001

Sub: Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)
NIT NO.:- 08/CE/BFZ/EE(P-I)/2026-27

Sir,

Having examined the details given in bid document for the above work, I/we hereby submit the relevant information.

1. I/We hereby certify that all the statements made and information supplied in the enclosed forms and accompanying statements are true and correct.
2. I/We have furnished all information and details necessary for eligibility and have no further pertinent information to supply.
3. I / We, submit the requisite certified Banker's Certificate OR Net Worth certificate issued by a bank or Certified Chartered Accountant and authorize the Executive Engineer, Border Fencing Division-Barmer, CPWD, Barmer, Rajasthan to approach the Chartered Accountant issuing the Net Worth Certificate to confirm the correctness thereof. I/We, also authorize the Executive Engineer, Border Fencing Division-Barmer, CPWD, Barmer, Rajasthan to approach individuals, employers, firms and corporation to verify our competence and general reputation.
4. I/We submit the following certificates in support of our suitability, technical knowledge and capability for having successfully completed the following eligible similar works.

S.N.	Name of work	Amount	Certificate issued by
1.			
2.			

5. I/We hereby submit undertaking on structural stability and soundness as per prescribed format Form –"I".

Certificate:

It is certified that the information given in the enclosed eligibility bid are correct. It is also certified that I/we shall be liable to be debarred disqualified/cancelation of enlistment in case any information furnished by me/ us found to be incorrect.

Enclosures: Seal of bidder

Date of submission

Signature(s) of bidder(s)

Telephone No./Mobile No./Fax No/ email

FORM 'A'
FINANCIAL INFORMATION

I. Financial Analysis-Details to be furnished duly supported by figures in balance sheet / profit & loss account for the last seven years duly certified by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached).

		YEARS						
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
i)	Gross Annual turnover on civil construction works							
ii)	Profit/Loss							

II. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal

Signature of Bidder(s)

FORM 'A-1'

Format for Average Monthly Turnover

Work Costing not less than Rs. **108.20** Cr. and having average monthly financial turnover/progress of at least **Rs. 6.76 Cr.**

Sl. No	Name of work	Owner or sponsoring organization	Tendered cost of work (in Cr.)	Date of commencement as per contract	Stipulated date of completion	Actual date of completion	Time taken (in months)	Completion cost (Excluding any award/ amount through litigation / arbitration)	Average monthly turnover	Average monthly turnover enhanced to current date @ 7%	Name and address (Postal & e- mail)/telephone No. of office to whom reference may be made.
A	B	C	D	E	F	G	H	I	J=I/H	K	L

Signature of Bidder(s) (with stamp)

Note: Bidder shall submit self-certified copy of supporting documents which can establish aforementioned facts and figures, such as:

1. Final Bill Or
2. Completion certificate from the owner organization Or
3. Details filled in above format by manager / officer not below the rank of Executive Engineer from owner / sponsoring organization.

FORM 'B'

BANKERS' CERTIFICATE FROM A COMMERCIAL BANK

This is to certify that to the best of our knowledge and information that M/s/Shri …….. having marginally noted address,..... as a customer of our bank are/is respectable and can be treated as good for any engagement upto a limit of Rs. ……..…… (Rupees.....).

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature) For the Bank

Note:-

1. Banker's certificate should be on letter head of the Bank, addressed to tendering authority.
2. In case of partnership firm, certificate should include names of all partners as recorded with the Bank.

FORM "B-1"

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

"It is to certify that as per the audited balance sheet and profit & loss account during the financial year …….., the Net Worth of M/s ……(Name & Registered Address of individual/firm/company), as on ……(the relevant date) is Rs. …….. after considering all liabilities. It is further certified that the Net Worth of the company has not eroded by more than 30% in the last three years ending on 31.03.2026." Unique Document Identification Number (UDIN)…….

Signature of Chartered Accountant…… Name of Chartered Accountant ……
Membership No. of ICAI
Date and Seal

FORM 'C'

DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING PREVIOUS DAY OF LAST DAY OF SUBMISSION OF TENDERS

Sl. No.	Name of work/ project and location	Owner or sponsoring organization	Cost of work in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Actual date of completion	**Whether EOT granted with / without levy of compensation**	Litigation/ arbitration cases pending /in progress with details*	Name and address/ telephone number of officer to whom reference may be made	Whether the work was done on back to back basis Yes/ No
1	2	3	4	5	6	7	8	9	10	11

*indicate gross amount claimed and amount awarded by the Arbitrator.

Signature of Bidder(s)

FORM 'C-1'
PROJECTS UNDER EXECUTION

Sl. No.	Name of work/ project and location	Owner or sponsoring organization	Cost of work in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Upto date percentage progress of work	Slow progress if any and reason thereof	Name and address/ telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Bidder(s)

FORM 'C-2'

CALCULATION OF BIDDING CAPACITY
DETAILS OF EXISTING COMMITMENTS AND ONGOING WORKS

Sl. No.	Name of work/ project and location	Own er or sponsoring organization	Contract value in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Upto date percentage Progress of work	Remaining work in percent age (100-column 7)	Existing commitment column 4 x column 8/100	Name and address/ telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10	11

Total (B) =

Maximum turnover in last seven years =Rs.....

Updated value of turnover (A) =Rs.....

No. of years (N) =.....

Bidding Capacity = {[AxNx1.5]-B} =.....

Note:-*

A= As defined in the document. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N= No. of years prescribed for completion of work for which bid has been invited.

B= Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

Certificate

I certify that all the awarded and ongoing works have been included in the above list.

Signature of Bidder(s)

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

FORM 'D-1'

ASSESSMENT OF QUALITY FOR COMPLETED AS WELL AS ONGOING WORKS REFERRED

IN FORM "C" & "C-1" (Quality to be assessed by committee formed by NIT approving authority)

Name of work:-

Date of Inspection:-

Date of Submission of report:-

A.	**General observation & operational Aspects**		**Yes / No**
1.	Availability of approval from local bodies if included in the scope of work.		
2.	Availability of approved Structural Drawings		
3.	Whether Line & level maintained as per approved alignment.		
4.	Any Structural defects / distress observed during service life if any.		
5.	Whether safety standards followed at site as per govt. guidelines are adequate or not.		
6.	Whether the welfare facilities provided to labour as per govt. guidelines are adequate or not.		
B.	**Quality of work**	**Maximum Marks**	**Marks Assessed**
1.	Quality of road/embankment/ fencing work	40	
2.	Quality of road/ fencing foundation /base work	20	
3.	Whether line and level maintained in road/embankment/ Fencing work	20	
4.	Quality of Protection Work	20	

(i) Average Marks (To be awarded on 100 Marks scale based on average of marks assessed on each attribute mentioned at B above).

Note:-

1. All the above parameters may be considered for assessing the overall quality of work executed by the contractor. Each attribute shall be assessed on maximum marks as mentioned at 'B' above.
2. In case, any attribute is not applicable, the same may not be included in assessment and mentioned are not applicable (N/A).

3. The works as assessed above shall be converted on a scale of 25/15 marks for completed / ongoing works respectively. In case of agencies who do not have any ongoing work, the assessment shall be made on a scale of 40 marks considered for completed work.

4. In case of eligible completed works as well as ongoing works being more than one, the average marks assigned for eligible completed works shall be considered for marking purpose. only one ongoing work shall be assessed.

Dated: Executive Engineer or Equivalent

FORM 'E'
STRUCTURE & ORGANISATION

1.	Name & Address of the bidder		
2.	Telephone No./Telex No./Fax No		
3.	Legal status of the bidder (Scan & upload copies of original document defining the legal status).		
	a)	An Individual	
	b)	A proprietary firm	
	c)	A firm in partnership	
	d)	A limited company or Corporation	
4.	Particulars of registration with various Government bodies (scan and upload attested photo-copy).		
	Organization / Place of Registration		***Registration No.***
	1.		
	2.		
	3.		
5.	Names and titles of Directors & Officers with designation to be concerned with this work.		
6.	Designation of individuals authorized to act for the organization.		
7.	Has the bidder, or any constituent partner in case of partnership firm, Limited Company / Joint Venture, ever been convicted by the court of law? If so, give details.		
8.	In which field of civil engineering construction, the bidder has specialization and interest?		
9.	Any other information considered necessary but not included above.		

SIGNATURE OF BIDDER(S)

FORM 'G'

UNDERTAKING REGARDING GST REGISTRATION

(on letterhead of bidder with stamp)

To.

Executive Engineer,
Border Fencing Division - Barmer,
CPWD, Sector Headquarter, BSF Campus,
Barmer, Rajasthan - 344001

Sub:- Name of Work:- Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

NIT No.:- 08/CE/BFZ/EE(P-I)/2026-27

Sir,

Having examined the details given in press notice and bid document for the above works,

I/ We hereby submit the following. "If work is awarded to me / us, I / We shall obtain GST registration certificate as applicable within one month from the date of receipt of the award letter or before release of any payment by CPWD, whichever is earlier, failing which I/We shall be responsible for any delay in payments which will be due towards me/us on a/c of the work executed and/or for any action taken by CPWD or GST department in this regard.

Seal of bidder.

Date of submission

Signature (s) of Bidder(s)

FORM 'H'

AFFIDAVIT REGARDING EXPERIENCE OF WORK NOT BEING EXECUTED BACK-TO-BACK BASIS

(on letterhead of bidder with stamp)

To.

Executive Engineer,
Border Fencing Division - Barmer,
CPWD, Sector Headquarter, BSF Campus,
Barmer, Rajasthan - 344001

Sub:- Name of Work:- Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

NIT No.:- 08/CE/BFZ/EE(P-I)/2026-27

Sir,

I/We undertake and confirm that eligible similar works (s) has / have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of the Department, then I/We shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of the Department before the date of start of work, the Engineer-in-Charge shall be free to forfeit the Performance Guarantee.

Seal of bidder.

Date of submission

Signature (s) of Bidder(s)

FORM 'I'

UNDERTAKING ON STRUCTURAL STABILITY AND SOUNDNESS OF ALREADY COMPLETED BUILDINGS AND INFRASTRUCTURE PROJECTS

I/we undertake and confirm that any building/ infrastructure constructed by our firm/partnership firm/company has not suffered any failure, making it unfit for intended use, either due to structural design and defects or due to use of sub-standard materials or execution of sub-standard work, poor workmanship or any other reason during the last 25 (twenty-five) years.

I/we, further undertake that if such information comes to the notice of CPWD, then Engineer-in-Charge shall be free to terminate the bid/agreement and to forfeit the entire amount of earnest money deposit, performance guarantee and security deposits.

I/we, also undertake that in addition to above, the Engineer-in-Charge shall be free to debar us forever from tendering in CPWD.

The decision of Engineer-in-Charge or any higher authority shall be final and binding.

Signature of
Notary with seal

Signature of bidder or an
authorized person of the firm
with stamp

Note: Affidavit to be furnished on a 'Non-Judicial' stamp paper of Rs. 200/- (scanned copy of the notarized affidavit to be uploaded at the time of submission of bid).

On non judicial stamp paper of minimum Rs. 100

(Guarantee offered by Bank to CPWD in connection with the execution of contracts)

Form of Bank Guarantee for Earnest Money Deposit /Performance Guarantee/Security Deposit/Mobilization Advance/ refund of milestone withheld amount.

1. Whereas the Executive Engineer ……. (Name of division) ……. CPWD on behalf of the President of India (herein after called "The Government,) has invited bids under .....(NIT number)..... dated …… for..... (name of work) ….....The Government has further agreed to accept irrevocable Bank Guarantee for Rs. ..... (Rupees.....only) valid upto ..... (date)*..... as Earnest Money Deposit from.....(Name and address of contractor) ....., (herein after called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR**

Whereas the Executive Engineer …… (name of division) ……CPWD on behalf of the President of India (herein after called "The Government") has entered into an agreement bearing number.....with .....(name and address of the contractor) …… (herein after called "the Contractor") for execution of work..... ... (name of work) ..... The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. ..... (Rupees ……..... only) valid upto ..... (date)..... as Performance Guarantee/security Deposit/Mobilization Advance/Refund of milestone withheld amount from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We, ... (indicate the name of the bank).....(herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs,...,.....,..... (Rupees '".....only) on demand by the Government within 10 days of the demand.

3. We, ... (indicate the name of the Bank) .....do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ……..... (Rupees..... only).

4. We, ... (indicate the name of the Bank) ..... , further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending On non-judicial stamp paper of minimum Rs.100 before any court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment thereunder and the contractor shall have no claim against us for making such payment.

5. We, ... (indicate the name of the Bank) ……further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. We, ... (Indicate the name of the Bank) ……. further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

8. We, ... (Indicate the name of the Bank) ....., undertake not to revoke this guarantee except with the consent of the Government in writing.

9. This Bank Guarantee shall be valid up to …….. unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs ……. (Rupees ..... only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date……..
Witnesses:

1. Signature ……
   Name and address

   Authorized signatory
   Name
   Designation
   Staff code no.

2. Signature ……
   Name and address

   Bank seal

* Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

** In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance/Refund of milestone withheld amount, as the case may be.

CPWD-6	CPWD

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
CPWD-6 for e-TENDERING

1. The Executive Engineer, Border Fencing Division- Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001 (Mobile No.8950084269 email id: bme-ee-bfd@cpwd.gov.in) on behalf of the President of India invites online Percentage Rate bids on EPC (Mode-III) basis from CPWD enlisted contractors of appropriate class in Building & Roads category and firms / contractors of repute satisfying the set eligibility criteria in two bid system for the following work:
Name of work: Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

The enlistment of the contractor should be valid on the last date of submission of bids. In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

1.1 The work is estimated to cost **Rs. 270,51,11,121/-.** This estimate, however, is given merely as a rough guide.

1.2 Intending bidders are eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude as specified in the tendered document.

Criteria of eligibility for submission of bid documents.

1.2.1 The Contractors/ agencies who fulfill the following requirements shall be eligible to apply. Joint ventures are not acceptable. [1.2.1(b), 1.2.1(d) & 1.2.1(e) are not applicable for CPWD enlisted contractors of appropriate class. However, 1.2.1(a), 1.2.1(c) & 1.2.1(f) are applicable for CPWD enlisted contractors also].

(a) Should have satisfactorily completed the works as mentioned below during the last seven years ending last day of the month previous to the one in which tenders are invited:

Three similar completed works each costing not less than **Rs. 108.20 Cr.**

or

Two similar completed works each costing not less than **Rs. 162.31 Cr.**

or

One similar completed work costing not less than **Rs. 216.41 Cr.**

("Similar work shall mean construction of fencing or construction of road/embankment or combination of any one or more of the above").

Note-1: The value of executed work shall be brought to current costing level by enhancing

the actual value of work at simple rate of 7% per annum; calculated from the date of completion to previous day of last date of submission of bids.

Note -II: In case, the eligible work has been executed by a Joint Venture through one or more individual firm(s), then cost of completed work shall be distributed among the individual firm(s) in proportion to their share in Joint Venture and that will be considered as work experience for individual firm(s) for pre- qualification in bidding.

(b) Should have had Average Annual Financial Turnover of **Rs. 81.15 Cr.** on civil works during the last three years ending 31st March 2026 (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded). The year in which no turnover is shown would also be considered for working out the average. The value of annual turnover figures shall be brought to the current value by enhancing the actual turnover figures at simple rate of 7% per annum.

(c) Average monthly turnover: The bidder should have achieved average monthly financial turnover/progress of at least **Rs. 6.76 Cr**. per month in any single construction work costing not less than **Rs. 108.20 Cr**. (not necessarily similar work), completed during the last 7 (seven) years from last date of submission of tender. The value of average monthly financial progress shall be worked out on the basis of completion cost of work divided by actual duration of completion of work. The value of average monthly financial progress shall be brought to current costing level by enhancing the actual value of monthly turnover of single work at simple rate of 7% per annum; calculated form the date of completion of the work to last date of submission of tender.

(d) Should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2026.

(e) Should have a Banker's Certificate from a commercial Bank for **Rs. 108.20 Cr.** or Net Worth certificate from CA with Unique Document Identification Number (UDIN) of minimum **Rs. 27.05 Cr.**

(f) Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula:

Bidding Capacity = {[AxNx1.5]-B}Where,

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

* [Bidding capacity formula, for CPWD contractors who are enlisted based on rule 6.1.7 of

Enlistment Rules-2026 i.e. government retired engineer / architect for three years from the date of issue of enlistment order, shall be as follows: -

Bidding Capacity = {[AxNx1.5]-B}

Where

A = Banker certificate figure as submitted by applicant (i.e. government retired engineer / architect) at the time of enlistment for first year of enlistment and subsequent fresh bankers certificate for second and third year respectively. Value of A for first year will be mentioned in the enlistment order by the member secretary of advisory committee for enlisting authority.

N= Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and on-going works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.
Within three years from the date of issue of enlistment order, the newly enlisted entity has to develop its own bidding capacity and thereafter the general capacity formula being used for other entities shall be applicable to it for calculation of bidding capacity.

Newly enlisted entity may like to follow general bidding capacity formula even before period of three years if it so chooses.]

** [Bidding capacity, for CPWD contractors who are enlisted based on rules 9.6.3 & 9.6.4 of Enlistment Rules – 2026 i.e. new entity based on previously enlisted entity for three years from date of issue of enlistment order, shall be as follows: -

Annual turnover of newly enlisted entity shall be in proportion to the shareholding of partners / directors in the original enlisted entity at the time of enlistment of the newly enlisted entity.

Within three years from the date of issue of enlistment order, the newly enlisted entity has to develop its own bidding capacity and thereafter the general bidding capacity formula being used for other entities shall be applicable to it for calculation of bidding capacity. Newly enlisted entity may like to follow general bidding capacity formula even before period of three years, if it so chooses.

Bidding capacity for newly enlisted entity based on rules 9.6.3 & 9.6.4 enlistment rules 2026 shall be as follows:-
= {[A'xNx1.5]-B}

Where

A'= Proportionate share of newly enlisted director / partner in originally enlisted company /

firm multiplied by the factor A, as given below. Value of A' will be mentioned in the enlistment order by member secretary of Advisory committee for Enlistment Authority, it will remain same for three years.

A = Maximum turnover in civil construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum. This value is of originally enlisted entity at the time of enlistment of newly enlisted entity.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited. This value is for newly enlisted entity.]

Note:- Enlisted entities based on rules 6.1.7, 9.6.3 or 9.6.4 of enlistment rules – 2026 can submit MoU from agency having requisite experience for structural system technology if the enlisted entity does not have required experience.

To become eligible for issue of bid, the bidders shall have to furnish an affidavit as under:-

I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid).

2 Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website www.cpwd.gov.in. Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

3 The time allowed for carrying out the work will be 24 Months from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4 The site for the work is available. As the site is situated on international border, sometimes border guarding agencies may impose some restrictions for movement or for working. No compensation whatsoever shall be entertained on these grounds.
The availability of architectural and structural drawings has been mentioned in Schedule-F.

5 The bid document consisting of details of proposed Fence, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website https://etender.cpwd.gov.in or www.cpwd.gov.in free of cost.

6 After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.

7 While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.

8 ~~When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.~~

9 Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e- Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks (drawn in favour of Executive Engineer, Border Fencing Division-Barmer, CPWD, Barmer) shall be scanned and uploaded on the e- Tendering website within the period of bid submission. The original EMD should be deposited either in the office of the Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format i.e. Form-F (enclosed) uploaded by tender inviting EE in the NIT.

10 A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee including e- Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

11 The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier. However, in case of two/ three bid system, earnest money deposit of bidders unsuccessful during technical bid evaluation etc. should be returned within 30 days of declaration of result of technical bid evaluation.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the notice inviting e- tender shall be scanned and uploaded on the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in e- tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with any division of CPWD and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at 15:30 Hours on 20.11.2026.

12 The bid submitted shall become invalid and e-Tender processing fee (if applicable) shall not be refunded if:

12.1 The bidder is found ineligible.

12.2 The bidder does not upload scanned copies of all the documents stipulated in the bid document.

12.3 If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of bid opening authority.

12.4 If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in item rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

12.5 The contractor whose bid is accepted will be required to furnish performance guarantee "(a) 5% of tendered value or Estimated Cost Put to Tender (ECPT) (whichever is higher) and (b) Where the tendered amount is less than eighty percent (80%) of the Estimated Cost Put to Tender (ECPT), the Performance Guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount ." as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No., if applicable, and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work within the period specified in Schedule F.

13 The description of the work is as follows:

"Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)"

Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may

influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

14 The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.

15 Canvassing, whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.

16 The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.

17 The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of Housing and Urban Affairs. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

18 No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

19 The bids for the work shall remain open for acceptance for a period of 75 (Seventy-

Five) days from the date of opening of technical bids.

Further,

19.1 If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department within 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

19.2 If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department after expiry of 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

19.3 In case of forfeiture of earnest money as prescribed in para (i) and (ii) above, the bidders shall not be allowed to participate in the rebidding process of the same work.

19.4 This notice inviting Bid shall form a part of the contract document. The successful bidder/ contractor, on acceptance of his bid by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:

(a) The Notice Inviting Bid, all the documents including Special and additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

(b) Standard C.P.W.D. Form 8 and Standard General Conditions of Contract for CPWD 2024 for EPC Projects as amended/ modified up to last date of submission of bid.

20. (i) The contractor should see the site of work physically before quoting his rates. At several places of these stretches the fencing has been damaged/tilted due to exposed bases of the fencing posts and the damages of fencing is further increasing not only during rains but also due to blowing of wind in area. In this area soil is loose and having granular in nature and lack of proper maintenance due to non-feasibility, the bottom of Angle Iron posts have been rusted and gradually fencing getting damaged in several places.

(ii) Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made

himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

(iii) The intending bidders are required to update their profile in CPWD e- tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/uploading tender can be resolved through the concerned Executive Engineer/ Assistant Engineer or ERP helpline no. 18001803286 or e-mail id cpwd.support@techmahindra.com. The e- tendering bidders are also advised not to wait to raise any issues till the last date of submission of bid in their own interest.

Executive Engineer,
Border Fencing Division - Barmer,
CPWD, Sector Headquarter, BSF Campus,
Barmer, Rajasthan-344001

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
Percentage Rate EPC (Mode-III) Tender & Contract for works

(A) Tender for the work of: **"Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)**"

(i) To be uploaded by 15:00 Hours on 20.11.2026 — To be uploaded at https://etender.cpwd.gov.in.

(ii) To be opened in presence of tenderers who may be present at 15:30 Hours on 20.11.2026 in the office of the Executive Engineer, Border Fencing Division - Barmer, CPWD, Sector Headquarter, BSF Campus, Rajasthan - 344001 (Mobile No. 8950084269 email id: bme-ee-bfd@cpwd.gov.in)

TENDER

I/We have read and examined the notice inviting tender, schedule, A, D, E & F, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate, other documents, regulations, Acts and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the planning, designing and execution of the work as per scope mentioned in this tender document specified for the President of India within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the applicable municipal byelaws, regulations, Acts, NGT guidelines, specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for **75 (Seventy Five)** from the date of opening of technical bid in case tenders are invited in 2/3 bid system for work and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount in the office of concerned Executive Engineer as per the bid document.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank, is scanned and uploaded (strike out as the case may be). If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely.

Further, if I/We fail to commence work as specified, I/ We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12 of the tender form. Further, I/We agree that in case of forfeiture of Earnest Money or Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of the Department, then I/We shall be debarred for tendering in CPWD as per enlistment rules applicable. Also, if such a violation comes to the notice of the Department before the date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety & integrity of the State.

Dated Signature of Contractor / bidder
Witness: Postal Address

Address:
Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of Rs. …… (Rupees.....)
The letters referred to below shall form part of this contract agreement:
(a)
(b)

For & on behalf of the President of India.

Signatures .....

Dated: Designation .....

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

PART -A

PERFORMA OF SCHEDULES "A to F"

SCHEDULE 'A'		
Schedule of work:		Enclosed
SCHEDULE 'D'		
Extra schedule for specific requirements/ Document for the work, if any:		As per the Tender document
SCHEDULE 'E'		
Reference to General condition of Contract:		CPWD's General Conditions of contract EPC Projects – 2024 (with amendments upto last date of submission of bids)
Name of Work: "Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)"		
Estimated cost of Work:		Rs. **270,51,11,121**/-
(i)	Earnest Money:	Rs. 2,80,51,111/-
(ii)	Performance Guarantee:	(a) 5% of tendered value or Estimated Cost Put to Tender (ECPT) (whichever is higher). (b) Where the tendered amount is less than eighty percent (80%) of the Estimated Cost Put to Tender (ECPT), the Performance Guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount.
(iii)	Security Deposit:	2.5% of tendered value

SCHEDULE 'F' **GENERAL RULES & DIRECTION**		
	Officer inviting bid:	The Executive Engineer, Border Fencing Division- Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001
	Applicable Mode of EPC Contract	**Mode-III**
Definitions:		
2(vi)	Engineer-in-charge:	Border Fencing Division- Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001 or successor thereof.
2(viii)	Accepting Authority:	Chief Engineer, Border Fencing Zone, CPWD, New Delhi.
20(x)	Percentage on cost of materials and labour to cover all overheads and profits:	15%
2(x)(b)	Standard Schedule of Rates:	DSR 2023 & Market Rates
2(xi)	Department	Central Public Works Department
9(ii)	Standard CPWD Contract Form	CPWD's General Conditions of contract EPC Projects – 2024 (with amendments upto last date of submission of bids). and Amendment to clause 25 of construction and EPC GCC issued vide no. ADG(B)/55(Arb)/2026/619 dated 16.04.2026 (enclosed).

Clause 1		
(i)	Time allowed for submission of Performance Guarantee, programme chart (Time and progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW welfare board or proof of applying thereof from the date of issue of letter of acceptance.	**7 days**
(ii)	Maximum allowable extension with late fee @0.1% per day of Performance Guarantee amount beyond the period provided in (i) above:	**7 days**
Clause 2		
Authority for fixing compensation under clause 2.		Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer or successor thereof.

Clause 5		
(i)	Authority to convey the decision of shifting of milestone and extension of time. (Engineer-in- charge or Engineer-in-charge of Major component in case of composite contracts, as the case may be)	The Executive Engineer, Border Fencing Division- Barmer, CPWD, Sector Headquarter, BSF Campus, Barmer, Rajasthan-344001 or successor thereof.
(ii)	Authority to decide rescheduling of milestone and extension of time. (SE / SE&PD / CE / CE&ED).	The Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer or successor thereof.
(iii)	Shifting of date of start in case of delay in handling over of site. (SE / SE&PD/CE/CE&ED).	The Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer or successor thereof.

Time allowed for execution of work:	24 Months
Number of days from the date of issue of letter of acceptance for reckoning date of start. Milestone(s) as per Table given below:	**10 Days**

S. No.	Description of Milestone	Time Allowed (from date of start)	Amount to be withheld in case of non-achievement of milestone.
1	Approval of shop drawings. Dismantling of old fence in aggregate length of 30 km.	04 Months	1.25% of contract value
2	Laying of new foundation blocks, fixing CHS posts, fence and gates complete in aggregate length of 30 km. Dismantling of old fence in additional length of 70 km. Laying of paver block, kerb stone in aggregate length of 30 km	12 Months	1.25% of contract value
3	Laying of new foundation blocks, fixing CHS posts, fence and gates complete in aggregate length of 100 km. Dismantling of old fence in remaining length of 17.90 km. Laying of paver block, kerb stone in aggregate length of 70 km	20 Months	1.25% of contract value
4	Laying of new foundation blocks, fixing CHS posts, fence and gates complete and laying of balance paver block, kerb stone / protection work all complete in total length of 117.90 km.	24 Months	1.25% of contract value

Note:- If the work is executed in part stretches the aggregate length of all the stretches shall be considered for determination of milestone.

Schedule of handing over of site:

Part	Portion of site	Description	Time Period for handing over reckoned from date of issue of letter of intent.
Part A	Portion without any hindrance	Site is 100% available	Site will be made available immediately after award of contract. However, BSF may restrict length of fencing to be replaced in one go due to national security consideration.
Part B	Portions with encumbrances	NIL	NA
Part C	Portions dependent on work of other agencies	NIL	NA

Monthly recovery for delay in submission of the monthly progress report within specified period- not exceeding Rs.1 Lakh per month for each month default.

PERFORMA OF SCHEDULES

Schedule of issue of Design and drawings

Part	Time period for issue
All the design and drawings	All the design and drawings are available and attached in NIT.
Clause7 Gross work to be done together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment	Rs. 1100 Lakh
Clause7A	
Whether clause 7A shall be applicable:	**Yes,** applicable. (No running account bill shall be Paid for the work till the applicable Labour, licenses registration with EPFO, ESIC and BOCW Welfare Board, whatever applicable are submitted by the contractor to the Engineer-in-Charge).

Clause 8

Detail of the building / infrastructure to be completed early for use :

SI. No.	Name of building / infrastructure project to be completed	Remarks
1.	-----	---

Competent authorities to inspect and issue part / final completion certificate — Chief Engineer, BFZ

Clause 8A	
Authority to decide compensation on account if contractor fails to submit completion plan:	The Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer or success or thereof.
Clause 10A	
List of testing equipment to be provided by the contractor at site lab:	As per Annexure-1
Clause 10B(ii)	
Whether Clause 10 B (ii) shall be applicable	Yes
Clause 10B(iii)	
Whether Clause 10 B (iii) shall be applicable	Yes
Clause 10CC	Applicable

A. For Construction period only

S. No.	Relevant component of Material / Labour for price escalation	Percentage of total value of work
1.	**Component of cement**	**7%**
2.	**Component of Labour**	**5%**
3.	**Civil component of other construction materials**	**20%**
4.	**Component of POL (Diesel)**	**5%**
5.	**Reinforcement steel bars / TMT bars/structural steels (including fencing material).**	**63%**
	Total	**100%**

Clause 11 Specification to be followed for execution of work:	1. C.P.W.D. Specifications (Vol I & II) 2019 with upto date Amendments and correction slips. 2. For Road and Bridge work : Ministry of road Transport & Highways specifications for road and bridge work (Fifth Revision) and relevant IRC Codes. 3. SP: 13-2004, SP: 116-2018, IRC: 109-1997 and other IRC Guidelines Building information model (BIM) – N.A.
Clause 12 Deviation Limit beyond which Clauses 12.2 & 12.3 shall apply for items mentioned in Schedule of Quantity	**30%**
Clause 16 Competent Authority for deciding reduced rates:	The Superintending Engineer, Border Fencing Circle, CPWD, Jaisalmer or success or thereof.
Clause 19C Penalty for each default	Rs. 50,000/-
Clause 19D Penalty for each default	Rs. 50,000/-
Clause 19G Penalty for each default Enhanced penalty per day for continuous default	Rs. 50,000/- Rs. 1,00,000/-
Clause 19K Penalty for each default	Rs. 10,000/- per trade per day

Clause-25	
(i) Conciliator:	Additional Director General (Border)
(ii) Arbitrator Appointing Authority:	Chief Engineer, BFZ, New Delhi
(iii) Place of Arbitration:	New Delhi

Clause 32: "Requirement of Technical Representative (s) and Recovery Rates"				
Requirement of Technical Staff		**Minimum experience (Years)**	**Designation of Technical staff**	**Rate at which recovery shall be made from the contractor in the event of not fulfilling**
Qualification	**Number(of Major + Minor component**			
Graduate Engineer (Major Component)	1	20 (and having experience of one similar nature of work)	Project Manager with degree in major discipline of Engineering	Rs. 60,000/- per month
Graduate Engineer	2	12 (and having experience of one similar nature of work)	Deputy Project Manager	Rs. 40,000/- per Month per person
Graduate Engineer or Diploma Engineer	4	5 or 10 respectively	Project / Site Engineer	Rs. 25,000/- per month per person
Graduate Engineer	1	8	Quality Engineer	Rs. 25,000/- per month per person
Diploma Engineer	1	8	Surveyor	Rs. 15000/- per month per person
Graduate Engineer	1	6	Project Planning/billing	Rs. 20000/- per month per person

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineer. Diploma holder with minimum 10 year relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers.

Note:- The contractor may withdraw the strength of idle technical staff not required at site due to non availability of site with the approval of Engineer-in-Charge.

Clause 38

(i) (a) Schedule / statement for determining theoretical quantity of cement & bitumen on the basic of Delhi Schedule of Rates 2023 printed by C.P.W.D.

(ii) Variations permissible on theoretical quantities:

(a) Cement	3% plus / minus
(b) Bitumen All works	2.5% plus only & nil on minus side
(c) Steel reinforcement and structural steel sections for each diameter, section and category	2% plus / minus
(d) All other materials	Nil

~~**Provision of Independent External monitors**~~

~~(i) Estimated cost put to tender, at and above which integrity pact would be applicable is Rs.300 crore~~

~~(ii) Particulars of IEMs appointed by CVC are given below~~

~~S. No.~~	~~Name of IEM~~	~~Address~~
~~1.~~	~~Sh. Vinayaka Rao Turga IOFS (Retired)~~	~~Turga House, Anne Baburao Colony Penamaluru, Vijaywada, Andhra Pradesh – 521139 Mobil: 9007723414 email: tvrao56@gmail.com~~
~~2.~~	~~Dr. Ravindra Kumar Srivastava IAS (Retired)~~	~~A6 Anand Niketan, New Delhi - 110021 Mobile: 9999985440 email: srivastava.rks@gmail.com~~
~~3.~~	~~Sh. Vijay Kumar Singh Principal Chief Conservator of Forest HAG (Retired)~~	~~Flat No. 502, Tower 29, Lotus Boulevard, Sector-100, Noida (U.P.) 201304 Mobile:9717581113 email: ksingh_vijay@yahoo.com~~

Amendment to clause 25 of EPC GCC.

Clause	Existing provision	Amended provision
25	Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions hereinbefore mentioned and as to the quality of workmanship or materials used in the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter. **25.1 Conciliation**: If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawing, record or decision given in writing by the Engineer-in-Charge; or if the Engineer-in-Charge considers any act or decision of the contractor on any matter in connection with or arising out of the contract or carrying out of the work to be unacceptable and disputed; such party may promptly refer such disputes and amount claimed for each dispute to the Conciliator (Special Director General or the Additional Director General concerned with the work, as applicable) in the proforma prescribed in Appendix XVII mentioned in Schedule F, under intimation to the other party. The Conciliator may then request each party to submit to him a brief written statement describing the disputes and the points at issue. Each party shall send a copy of such statement to the other party. At any stage of the conciliation proceedings, the Conciliator may request a party to submit to him such additional information as he deems appropriate. When it appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of a possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, he may re-formulate the terms of a possible settlement in the light of such observations. If the parties reach agreement on a settlement of the disputes, they may draw up and sign a written settlement agreement on non-judicial stamp paper as per Stamp Act. The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each party. The termination of conciliation proceedings shall be in accordance with Section 76 of The Arbitration and Conciliation Act, 1996. No party	Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions hereinbefore mentioned and as to the quality of workmanship or materials used in the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter. **25.1.1 Appeal to Chief Engineer** **If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge or if the Engineer in Charge considers any act or decision of the contractor on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable and is disputed, such party shall promptly within 15 days of the arising of the disputes request the Chief Engineer/ CPM, along with a list of disputes with amounts claimed if any in respect of each such dispute. The Chief Engineer/CPM shall give his decision within a period of 30 days from the receipt of reference from Contractor/Engineer-in-charge. Provided that no party shall be represented before the Chief Engineer/CPM by an advocate/legal counsel etc.** **25.1.2 Conciliation**: If the aforesaid appeal proceedings fails(fully or partly) or the Chief Engineer/CPM fails to resolve disputes full or partly within the aforesaid period;such party may promptly refer unresolved disputes and amount claimed for each dispute to the Conciliator (Special Director General or the Additional Director General concerned with the work, as applicable) in the proforma prescribed in Appendix XVII mentioned in Schedule F, under intimation to the other party. The Conciliator may then request each party to submit to him a brief written statement describing the disputes and the points at issue. Each party shall send a copy of such statement to the other party. At any stage of the conciliation proceedings, the Conciliator may request a party to submit to him such additional information as he deems appropriate. When it

	shall be represented before the said Conciliator by an advocate or legal counsel. The conciliation proceedings shall be completed within 45 days from the receipt of reference. This time may be enlarged by 15 days by the Conciliator. The conciliation proceedings shall be deemed to have been terminated at the end of 60 days from the receipt of reference. **25.2 Arbitration**: If the aforesaid conciliation proceedings fail or the Conciliator fails to give proposal for settlement within the aforesaid period, either party may promptly give notice in the proforma prescribed in Appendix XVIII, under intimation to the other party, to the Chief Engineer or the Superintending Engineer concerned with the work (as applicable), hereinafter referred to as the Arbitrator Appointing Authority as indicated in Schedule F, for appointment of Arbitrator. However, a party may seek appointment of Arbitrator without taking recourse to the process of conciliation mentioned in sub-clause 25.1 above. In the event of either party giving a notice to the Arbitrator Appointing Authority for appointment of Arbitrator, the said Authority shall appoint Arbitrator as per the procedure given below and refer such disputes to arbitration. **(a) Number of Arbitrators**: If the contract amount is less than Rs.100 crore, the disputes may be referred for adjudication by a sole Arbitrator. If the contract amount is Rs.100 crore or more, the disputes may be referred to an Arbitral Tribunal of three Arbitrators. **(b) Qualification of Arbitrators**: It is a term of this contract that each member of the Arbitral Tribunal shall be Graduate Engineer (in Civil or Electrical or Mechanical Engineering) with experience in execution of public works engineering contracts, and he should have worked earlier at a level not lower than the Chief Engineer (equivalent to level of Joint Secretary to the Government of India). The aforesaid educational qualification and work experience shall be mandatory for appointment as Arbitrator. The age of Arbitrator at the time of appointment shall not exceed 75 years. An Arbitrator may be appointed notwithstanding the total number of active arbitration cases with him. **(c) Parties to select Arbitrator**: Based on the	appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of a possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, he may re-formulate the terms of a possible settlement in the light of such observations. If the parties reach agreement on a settlement of the disputes, they may draw up and sign a written settlement agreement on non-judicial stamp paper as per Stamp Act. The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each party. The termination of conciliation proceedings shall be in accordance with Section 76 of The Arbitration and Conciliation Act, 1996. No party shall be represented before the said Conciliator by an advocate or legal counsel. The conciliation proceedings shall be completed within 45 days from the receipt of reference. This time may be enlarged by 15 days by the Conciliator. The conciliation proceedings shall be deemed to have been terminated at the end of 60 days from the receipt of reference. **25.2 Arbitration**: If the aforesaid conciliation proceedings fail or the Conciliator fails to give proposal for settlement within the aforesaid period, either party may promptly give notice in the proforma prescribed in Appendix XVIII, under intimation to the other party, to the Chief Engineer or the Superintending Engineer concerned with the work (as applicable), hereinafter referred to as the Arbitrator Appointing Authority as indicated in Schedule F, for appointment of Arbitrator. **It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration in sub-clause 25.1.1 and 25.1.2 above.** In the event of either party giving a notice to the Arbitrator Appointing Authority for appointment of Arbitrator, the said Authority shall appoint Arbitrator as per the procedure given below and refer such disputes to arbitration. **(a) Number of Arbitrators**: If the contract amount is less than Rs.100 crore, the disputes may be referred for adjudication by a sole Arbitrator. If the contract amount is Rs.100 crore or more, the disputes may be referred to an Arbitral Tribunal of three Arbitrators. **(b) Qualification of Arbitrators**: It is a term of this contract that each member of the Arbitral Tribunal shall be Graduate Engineer (in Civil or Electrical or Mechanical Engineering) with

	criteria specified above, a list of empanelled Arbitrators has been prepared in CPWD, and the parties shall have option to select an Arbitrator from the list sent to them. **25.3 Appointment of Sole Arbitrator**: The parties may opt for appointment of the Arbitrator of the Ministry of Housing and Urban Affairs. In such cases, the party seeking arbitration has to submit an express agreement in writing as per Appendix XIX towards waiver of Section 12(5) of the Arbitration and Conciliation Act, 1996 along with the notice for appointment of Arbitrator in the proforma prescribed in Appendix XVIII, under intimation to the other party. The Arbitrator Appointing Authority shall, within 30 days of receipt of the said notice, appoint Arbitrator of the Ministry of Housing and Urban Affairs as Arbitrator in the matter, provided the other party also submits waiver of Section 12(5), ibid in Appendix XIX within 7 days of the receipt of the said notice. Where any one of the parties does not opt for the Arbitrator of the Ministry of Housing and Urban Affairs, or does not submit the waiver agreement, the Arbitrator Appointing Authority shall propose five Arbitrators from the list of CPWD Empanelled Arbitrators to the party seeking arbitration under intimation to the other party within 15 days of receiving the notice. The party seeking arbitration shall give his choice for one of them within 15 days of receiving the list, and the Arbitrator Appointing Authority shall appoint the chosen person as the Sole Arbitrator within 15 days of the receipt of choice. It is a term of this arbitration agreement that if the parties fail to select, within the period prescribed above, an Arbitrator of their choice from the list of CPWD Empanelled Arbitrators forwarded to them, the Arbitrator Appointing Authority shall himself select and appoint Arbitrator from the said list. **25.4 Appointment of Arbitral Tribunal of three Arbitrators:** The Arbitrator Appointing Authority shall prepare two separate lists of five Arbitrators each from the list of CPWD Empanelled Arbitrators, and send one to the party seeking arbitration and other to the responding party, within 15 days of the receipt of notice. The parties will then choose any one Arbitrator from the list provided to them within 15 days of receipt of the list. The Arbitrator Appointing Authority shall then appoint those chosen by the respective parties as Arbitrators and also a third Arbitrator from the list of CPWD Empanelled Arbitrators to act as	experience in execution of public works engineering contracts, and he should have worked earlier at a level not lower than the Chief Engineer (equivalent to level of Joint Secretary to the Government of India). The aforesaid educational qualification and work experience shall be mandatory for appointment as Arbitrator. The age of Arbitrator at the time of appointment shall not exceed 75 years. An Arbitrator may be appointed notwithstanding the total number of active arbitration cases with him. **(c) Parties to select Arbitrator**: Based on the criteria specified above, a list of empanelled Arbitrators, has been prepared in CPWD, and the parties **may** have option to select an Arbitrator from the list sent to them **but selected Arbitrator shall be other than past CPWD Official.** **Alternately, sole arbitrator or arbitral tribunal can be got appointed from India International Arbitration Centre (IIAC).** **25.3 Appointment of Sole Arbitrator**: The Arbitrator Appointing Authority shall propose five Arbitrators from the list of CPWD Empanelled Arbitrators (non ex-CPWD) to the party seeking arbitration under intimation to the other party within 15 days of receiving the notice. The party seeking arbitration shall give his choice for one of them within 15 days of receiving the list, and the Arbitrator Appointing Authority shall appoint the chosen person as the Sole Arbitrator within 15 days of the receipt of choice. It is a term of this arbitration agreement that if the parties fail to select, within the period prescribed above, an Arbitrator of their choice from the list of CPWD Empanelled Arbitrators forwarded to them, the Arbitrator Appointing Authority shall himself select and appoint Arbitrator from the said list. **Alternatively, IIAC can be requested to appoint arbitrator by the arbitrator appointing authority.** **25.4 Appointment of Arbitral Tribunal of three Arbitrators:** The Arbitrator Appointing Authority shall prepare two separate lists of five Arbitrators each from the list of CPWD Empanelled Arbitrators (non ex-CPWD), and send one to the party seeking arbitration and other to the responding party, within 15 days of the receipt of notice. The parties will then choose any one

	presiding Arbitrator, within 15 days of receipt of choice from both the parties. It is a term of this arbitration agreement that if the parties fail to select, within the period prescribed above, an Arbitrator of their choice from the list of CPWD Empanelled Arbitrators forwarded to them, the Arbitrator Appointing Authority shall himself select and appoint Arbitrator from the said list. **25.5 Applicable Law:** The provisions of the Arbitration and Conciliation Act, 1996 (Act 26 of 1996) and any further statutory modification or re-enactment thereof shall be applicable. Further, the fast-track procedure for arbitration contained in Section 29B of the said Act shall apply. **25.6 Fee payable to Arbitrator(s):** Fee payable to Arbitrator(s) for arbitration cases, shall be as per the fee given in the fourth schedule of the Arbitration & Conciliation Act, 1996 (or latest amendment), and shall be shared equally by both the parties. **25.7 Place of Arbitration**: The place of arbitration shall preferably be as mentioned in Schedule F. However, the Arbitral Tribunal may decide the place in consultation with both the parties.	Arbitrator from the list provided to them within 15 days of receipt of the list. The Arbitrator Appointing Authority shall then appoint those chosen by the respective parties as Arbitrators and also a third Arbitrator from the list of CPWD Empanelled Arbitrators (non ex-CPWD) to act as presiding Arbitrator, within 15 days of receipt of choice from both the parties. It is a term of this arbitration agreement that if the parties fail to select, within the period prescribed above, an Arbitrator of their choice from the list of CPWD Empanelled Arbitrators forwarded to them, the Arbitrator Appointing Authority shall himself select and appoint Arbitrator from the said list. **Alternatively, IIAC can be requested to appoint arbitral tribunal by the arbitrator appointing authority.** **25.5 Applicable Law:** The provisions of the Arbitration and Conciliation Act, 1996 (Act 26 of 1996) and any further statutory modification or re-enactment thereof shall be applicable. Further, the fast-track procedure for arbitration contained in Section 29B of the said Act shall apply. **25.6 Fee payable to Arbitrator(s):** Fee payable to Arbitrator(s) for arbitration cases, shall be as per the fee given in the fourth schedule of the Arbitration & Conciliation Act, 1996 (or latest amendment), and shall be shared equally by both the parties. The fee of IIAC appointed arbitrator or arbitral tribune will be as per IIAC norms. **25.7 Place of Arbitration**: The place of arbitration shall preferably be as mentioned in Schedule F. However, the Arbitral Tribunal may decide the place in consultation with both the parties.

ANNEXURE – 1

Clause 10 A: List of testing equipment's to be provided by the contractor at site lab, which may be needed for execution as per actual requirement.

All necessary equipment for conducting all necessary tests shall be provided at the site laboratory by the contractor at his own cost. The following minimum laboratory equipment's shall be set up at site office laboratory, which shall be set up at one place. (As per requirement of work decided by Engineer-in-charge).

A. ***For Fencing Work***

1. Balances
   (i) 7 kg. to 10 kg. capacity, semi-self-indicating type - accuracy 10 gm.
   (ii) 500 gm. capacity, semi-self-indicating type - accuracy 1 gm.
   (iii) Pan balance- 5 kg. capacity - accuracy 10 gms.
2. Ovens-electrically operated, thermostatically controlled upto 110°C - sensitivity 1°C.
3. Sieves: as per IS 460-1962.
   (i) I.S. sieves - 450mm internal dia, of sizes 100 mm, 80 mm, 63mm, 50 mm, 40 mm, 25 mm, 20 mm, 12.5 mm, 10 mm, 6.3 mm, 4.75mm, complete with lid and pan.
   (ii) I.S. sieves- 200mm internal dia (brass frame) consisting of 2.36mm, 1.18mm, 600 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns, with lid and pan.
4. Sieve shaker capable of 200 mm and 300 mm dia sieves, manually operated with timing switch assembly.
5. Equipment for slump test - Slump cone, steel plate, tamping rod, steel scale, scoop.
6. Dial gauges, 25 mm travel - 0.01 mm/division least count - 2nos.
7. Dry Film Thickness (DFT) meter.
8. Dial gauge
   (i) 25mm travel - 0.01mm/division.
9. Load frame-5 tonnes capacity, electrically operated with speed control.
10. Aggregate impact test apparatus as per IS 2386-Part IV-1963.
11. Compaction apparatus (Proctor) as per IS 2720-Part VII-1974.
12. Modified ASHO compaction apparatus as per IS 2720-Part-III-1974.
13. Sand pouring cylinder with control funnel and tube complete as per IS 2720-Part XXVIII-1974.
14. Sampling tins with rods 100mm dia × 50mm ht., 1/2kg capacity, and miscellaneous items like moisture tins etc.
15. Total station survey
16. Any other equipment as directed by Engineer-in-charge.
17. Ultrasonic pulse velocity test equipment (for concrete) – 01 no.
18. Screw gauge and vernier caliper.

ANNEXURE – 2

CLAUSE 18:- PLANT AND EQUIPMENT REQUIRED TO BE DEPLOYED BY THE CONTRACTOR

S No	Equipment	Nos. (min.)	S No	Equipment	Nos (min.)
1.	Farana/Hydra cranes/ Chain Wheeled crane of capacity from 18 to 50 MT	8	**12.**	Bob cut roller.	5
2.	Grouting machine	5	**13.**	Dumper.	8
3.	Table vibrator (electrical/Petrol)	3 (as and when reqd)	**14.**	Screener for coarse sand and fine sand	3
4.	Welding Generator and machine	3 (as and when reqd)	**15.**	Scraper	8
5.	Water pump (Electric/ diesel)	8	**16.**	Tractor with trolley	8
6.	Diesel Generator minimum capacity 125 KVA	8	**17.**	Vibratory, Tandem, Smooth wheeled Roller	2
7.	Grader	As per requirement	**18.**	Concrete Mixer 0.25 to 0.40 Cum with hopper	5
8.	Water tanker minimum Capacity 5000 ltr.	8	**19.**	Any other machinery required as per decision of Engineer-in-charge.	As per requirement
9.	Excavator cum loader (JCB 3D model or equivalent).	15			
10.	Compressor machine with Jack hammer.	10			
11.	RO PLANT	2			

Note: Any other machinery required for completion of the work as per decision of Engineer-in-Charge and as per actual requirement. The above list is only indicative and not exhaustive. Any other machinery/equipment desired for required progress shall be arranged by the agency as per direction of Engineer-in-Charge. The above construction equipment can be disengaged depending upon the quantity of work with the approval of Engineer-in-Charge.

Design Considerations & Requirements

1.1 The work shall be executed in accordance with shop drawings submitted by agency and approved by competent authority based on architectural, structural and services drawings on Turnkey (Design & Build) basis from concept to completion, handing over in fit condition ready for occupation and operation of all services.

1.2 All items of the work shall be executed as per the design, attached drawings, SOQ and applicable specifications. The scope of work includes the cartage of material and labours at all these locations. The work is to be executed in the area of Barmer Sector, Barmer Border. Following are the main components of the work:-

A) **Fencing:** To provide and fix Modular Fence with gates as per design and attached drawings. Fencing materials shall be procured from the approved manufacturers. Single row of modular fencing shall be provided on one side of the road. All the MS sections shall be coated with thermoplastic powder coating as per specifications for protection from the corrosion.

Dismantling of old and dilapidated fencing with coil and removal of the same from the site, including taking away of salvage materials as credit.

Note:- The further details and specifications shall be as per tender document. The reference drawings are enclosed. The minimum acceptable specifications for various items are defined in the subject section of this tender document.

1.2.1 To carry out survey of the site handed over for execution of the project and shall verify the site dimensions as per the site plan, architectural drawings, structural drawings, provided with bid document/ or made available by Engineer-in-Charge.

1.3 To prepare shop drawings in accordance with drawings etc. attached with the bid document. The drawings attached with the bid document. The agency shall be required to prepare and submit the detailed shop drawings based on the above guidelines for approval of the Department. Any change, modification, revision etc. required to be done by Client (End User Department), CPWD, proof consultants etc. in the architectural drawings attached with the bid document, will have to be done by the agency and nothing extra shall be payable.

1.4 Complete levelling/dressing including filling of earth, its supply, disposal of surplus earth is to be completed as directed by the Engineer-in-charge.

1.5 Setting up a Testing Laboratory at site equipped with the apparatus (As per the list of the laboratory equipment given in this bid document) needed for day-to-day testing of construction materials during construction period as directed by the Engineer-in-charge.

1.6 Taking all precautionary measures to safeguard safety measures against any accidents for the agency's employees, labour, public, and staff of CPWD by providing all necessary safety equipment, helmets

etc. at work site.

1.7 The scope as described above is only indicative and not exhaustive. In additions to the above the agency shall be responsible for executing all the items required for completing the work in all respect to make them habitable and ready for occupation with all complete as per direction of Engineer-in-charge.

1.8 The above scope of work includes cost of all materials, manpower, equipment, T&P fixtures, accessories, royalties, taxes, watch & ward, and all other essential elements for completion.

Factory made PRE-CAST RCC WORK

The Technical Specifications with which the Pre cast RCC work shall be carried out by the Contractor is as follows:

1.1 **Specification for R.C.C. Work / C.C. Work (Design Mix Concrete)/For precast R.C.C. Elements (Page – 108).**

1.2 **The General Technical Specifications shall be the "CPWD Specifications" for Building Works and deemed to be bound into this document.**

1.3 **Relevant I.S. Codes**

2. **Design Consideration for precast construction: -**

2.1 Design criteria of RCC structural units shall conform to the Design requirements of latest version of IS:456.

2.2 Resistance to horizontal loading shall be provided by having appropriate moment and shear resisting joints or placing the shear walls. Where shear wall is provided, rotational stiffness of the floor wall joint is not be considered.

2.3 Bearing for Precast Units shall be as per clause 8.3 of IS 15916.

2.4 **Joints: -**

2.4.1 Requirements of a structural joint:

i) It shall be capable of being designed to transfer the imposed load and moments with a known margin of safety;
ii) It shall accept the loads without marked displacement or rotation and avoid high local stresses;
iii) It shall accommodate tolerances in elements;
iv) It shall enable the structure to absorb sufficient energy during earthquakes so as to avoid sudden failure of the structure.

2.4.2 The appearance of precast components join shall merge with architectural aesthetic appearance and shall not be physically prominent compared to other parts of structural components. Self-compacting concrete may be used for casting of joints which shall be as per design parameters. The contractor shall provide the same accordingly without any extra cost.

Compliance with Design Codes:
The construction should be undertaken as per the applicable BIS / BS / ACI standards for precast construction IS: 456, IS: 15916 – 2010, IS: 15917 – 2010, IS: 11447, IS: 10297 etc.

3. Manufacturing:

The precast concrete elements shall be factory made. Some manufactures have been included in list of preferred make for precast structure elements. New manufacturing setup for precast element, having minimum criteria as given below can also be adopted by agency after approval from Chief Engineer, BFZ:-

Minimum qualifying criteria for factory of RCC Precast elements

i) Fully controlled conditions with fully automated processes i.e. zero tolerance on the part of human errors. This includes compaction (preferably self-compacting) of concrete, curing (steam curing), controlled limiting parameters of RCPT & Water permeability etc. State of the art precast manufacturing plant set up is mandatory.

ii) Controlled source of input materials such as aggregate, cement, steel reinforcement, R.O. Water and other misc. materials including factory location should have availability of water commensurate to prevailing IS:456 within its campus.

iii) Regular testing of all raw materials, fresh concrete & hardened concrete at desired frequency is mandatory in well-equipped in house testing laboratory.

iv) Manufacturing facilities shall comprise of,

- Automatic concrete manufacturing batching plant commensurate to requirement of elements as per procurement plan.
- 3 nos. fix table for precast element casting
- 5000 Ltr. /hr. RO Water plant of sufficient capacity to ensure durability criteria
- Steam curing facility to accommodate production plant capacity
- In-house rebar cage making machines
- EOT Cranes - 2 nos., Fork lifts - 3 nos. for manufacturing and lifting of products
- Raw material stock yard
- Finish product stock yard with proper stacking system
- Watertight moulds formwork made up to automobile steel to have accurate dimensional product.

Factory Qualifying Criteria for Precast Elements

S. No	Criteria	Supporting Document
1	Precast manufacturer shall obtain necessary certificates from (i) ISO 9001, ISO 14001 and ISO 45001 within 3 months of award of work. For design, manufacture, and dispatch of products. (ii) In-House / Tie up with NABL approved Laboratory for testing laboratory.	ISO 9001, ISO 14001, and ISO 45001 certificates through accreditation forum/ body, NABL certificates.
2	The precast factory should have in house Design department with qualified structural engineers for support Precast designs as per required standards and loading.	List of on-role employees with their degree certificate and experience details in designing of Infrastructure products.

3	Batching Plant	The factory should be equipped with fully automated batching plants commensurate to the requirement of elements as per procurement plan. The batching plant shall conform to IS: 4925 for all jobs. The accuracy of the measuring equipment shall be within ±1% of the quantity of cement, water or total aggregates being measured and within ± 3% of the quantity of any admixture being used. Batching Plant shall be calibrated regularly at least once in a 3-month Computerized output shall be taken for each batch of production of concrete. The relevant documents like calibration certificates and validity etc. shall be submitted.
4	In-house Rebar Facility	Precast factory shall have in-house dedicated round the weather Rebar Unit. Rebar Unit shall have automated facilities for cutting, bending & making of rebar cages. The rebar unit should be equipped with (a) Cutting Machine (b) Bending Machine (c) Crane (d) Forklift.
5	Curing System	The precast factory shall be equipped with the necessary steam curing equipment that includes utilities such as boilers, pipes, and thermostat controls.
6	Handling of Equipment's	The precast factory shall be equipped with all necessary equipment such as Cranes for handling and transportation of products at factory premises.
7	QA-QC Setup	Precast Factory shall have well established Quality Assurance Plan (QAP) / Inspection & Testing Plan (ITP) with in-house laboratory set up as per relevant Indian Standards for testing of raw materials, process check, intermediate product check & finished product check.

Curing:

The curing for precast and pre-stressed concrete elements should be as per the applicable IS codes and supporting proof of curing records should be submitted.

Transportation of precast elements:

Since the construction is planned with precast technology, the precast concrete elements from the manufacturing location should not be removed and transported until they attain at least 70% of the required compressive strength of 28-days duration.

Cranes for Erection:

Cranes with at least 1.5 times safety margin along with calibration certifications only should be used for carrying out the erection of precast concrete elements at the site.

Erection of Precast elements:

The erection of the pre-stressed / precast elements should be done using experienced erection

persons and as per the standard methodology and in safe manner in accordance with design sequence ensuring erection tolerances as per accepted standards (like the PCI Manual).

Connections:

The precast elements should be given wet connections or alternatively as per the design requirements. All the connection details and details of structural ties should be furnished in advance for review and approval.

Grouting / fillings:

The grouting / fillings should be done with Premixed, packaged, shrink – resistant grout using materials of approved standards and technical specifications in accordance with accepted grouting practices.

Methodology Statements:

Methodology statements for manufacturing of precast elements, transportation, erection, connection, and screeding should be submitted in advance for approval. The methodology statement for safety practices should also be submitted.

GENERAL CONDITIONS

1. The work shall be carried out according to specifications of Road and Bridges works issued by Ministry of Road Transport and Highways and CPWD specification 2019 Volume I to Volume II, including correction slips upto date of submission of bid and particular specifications, additional conditions of the contract.

2. The contractors shall quote their rates inclusive of all sorts of taxes, stamp duty, cartage, royalties etc, complete.

3. Unless otherwise specified, the agreement rates for all items of work of the schedule of quantities are for all heights, depths, leads and lifts involved in the execution of work.

4. The contractor shall make his own arrangement of generators for carrying out electrical activities.

5. Other agencies working at site will also simultaneously execute the work entrusted to them and the contractor shall offer necessary co-operation wherever required to other agencies.

6. On account of security consideration, there could be some restrictions on the working hours, movement of vehicles for transportation of materials. The contractor shall be bound to follow all such restrictions and adjust the programme for execution accordingly.

7. The work shall be carried out in a manner complying in all respects with the requirements of relevant bye laws of the local bodies, labour laws, minimum wages act, workmen compensation act and other statutory laws enacted by Central Government as well as State Government.

8. No claims of the labour shall be entertained by the Department including that of providing employment, regularization of services etc.

9. The staff employed by the contractor should be well behaved, Polite & courteous. Any complaint against staff on behaviour should be taken very seriously and such should be removed by the contractor immediately from the site.

10. The contractor shall make all safety arrangement required for the labour engaged by him at his own cost. All consequences due to negligence or due to lapse of security/safety or otherwise shall remain with the contractor. The department shall not be responsible for any mishap, injury, accident or death of the contractor's staff. No claim in this regard shall be entertained /accepted by the department.

11. Contractor shall be fully responsible for any damages caused to govt. Property by his labour/staff in carrying out the work and shall be rectified by the contractor at his own cost

12. GST/Income Tax/other taxes as applicable shall be recovered from the contractor's bill.

13. The ground water available in the vicinity of site of work does not have good quality water and is not suitable for construction purpose. The contractor shall provide and install at site of work commercial R.O. system for purification of water to be used on the work. The R.O. purified water/potable water conforming to para 3.1.1 of CPWD specification 2019 Vol-I and having TDS less than 500 shall only be used in/on work for all purposes like construction, mixing, curing, drinking etc. No extra payment will be made to the contractor on this account. The R.O. system installed and provided by the contractor can be removed by contractor only after completion and handing over of the work to the BSF and that also with prior permission of the Engineer-in-charge.

14. All the screws used for joinery / fixing fixtures etc shall be stainless steel of 316 Grade. No MS screws shall be used.

15. Unforeseeable difficulties/situations:

15.1 Except as otherwise specifically stated elsewhere in the contract:

15.1.1 The agency shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the works.

15.1.2 By signing the contract, the agency accepts total responsibility for having foreseen all difficulties and costs of successfully completing the works.

15.1.3 The contract amount shall not be adjusted to take account of any unforeseen difficulties or costs.

16. **ALL HEIGHTS, LIFTS, LEADS AND DEPTHS**

Unless otherwise specified in tender document, the rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the fencing and nothing extra shall be payable to him on this account.

17. **DAMAGE CAUSED BY RAIN, SNOWFALL, FLOOD, CYCLONES, EARTH QUAKE OR ANY OTHER NATURAL CALAMITY**

DAMAGE CAUSED BY RAIN, SNOWFALL, FLOOD OR ANY OTHER NATURAL CALAMITY

No payment shall be made for any damage caused by rain, snowfall, flood or any other natural calamity, whatsoever during the execution of the work. The contractor shall be fully responsible for any damage to the government property and the work for which payment has been advanced to him under the contract and he shall make good the same at his risk and cost. The contractor shall be fully responsible for safety and security of his material, T&P/Machinery brought to the site by him.

18. **WATCH AND WARD/GUARD OF THE FENCING WORK**

The contractor shall be responsible for the watch and ward/guard of the works executed by them, safety of all fittings and fixtures including all equipment, services provided by him against pilferage and breakage during the period of Installations and thereafter till the fencing are physically handed over to the client. No extra payment shall be made on this account and no claim shall be admissible on this account for this period.

19. **SETTING OUT**

19.1 It shall be responsibility of the contractor to ensure correct setting out of alignment. Real Time Kinematics / Total Station survey instruments only shall be used for layout, fixing boundaries, and center lines, etc., Nothing extra shall be payable on this account.

19.2 The contractor shall ascertain and confirm the site levels with respect to benchmark from the concerned authorities. The contractor shall protect and maintain temporary/ permanent benchmarks at the site of work throughout the execution of work. These benchmarks shall be got checked by the Engineer-in-Charge or his authorized representatives. The work at different stages shall be checked with reference to bench marks maintained for the said purpose. Nothing extra shall be payable on this account.

19.3 The contractor shall be entirely and exclusively responsible for the horizontal, vertical and other alignments, the level and correctness of every part of the work and shall rectify effectively any errors or imperfections therein. Such rectifications shall be carried out by the Contractor at his own cost to the entire satisfaction of the Engineer-in-Charge.

20. **SCAFFOLDING/ SHUTTERING**

Wherever required for the execution of work, all the scaffolding shall be provided and suitably fixed, by the Contractor. It shall be provided strictly with steel double scaffolding system, suitably braced for stability, with all the accessories, gangways, etc. with adjustable suitable working platforms to access the areas with ease for working and inspection. It shall be designed to take all incidental loads. It should cater to the safety features for workmen. Nothing extra shall be payable on this account. It shall be ensured that no damage is caused to any structure due to the scaffolding. At the request of contractor, the use of Marine Ply shuttering for beams and columns may be permitted by Engineer-in-Charge. Nothing extra shall be paid on this account. Nothing extra shall be paid on this account.

21. **SUBMISSION AND DOCUMENTATION**

21.1 The Contractor shall display all permissions, licenses, registration certificates, bar charts, other statements etc under various labour laws and other regulations applicable to the works, at his site office. He should also keep at site at least one set of BIS Codes and other relevant codes at site and produce the same if asked for by Engineer-in-Charge. In case of non- compliance, these codes will be purchased from the market and actual cost of purchase will be recovered from the next RA Bill of the Contractor.

21.2 The Contractor shall make available four (04) sets of completed Fencing Drawings and services drawings (if any) like, water supply, road and electrical installations, “As Built Drawings” along with literatures, manuals, warranty certificates etc. of various installed fittings, fixtures and equipment for the completed projects. This shall be the prerequisite for payment of final bill.

22. **PROGRAMME CHART:**

The Contractor shall prepare an integrated programme chart within fifteen days of issue of award letter for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfilment of the program within the stipulated period and submit the same for approval of the Engineer-in-Charge. These shall be submitted by the contractor through electronic media besides forwarding hard copies of the same. The integrated programme chart so submitted should not have any discrepancy with the physical milestones attached in the contract agreement. The programme chart should include the following:

22.1 Descriptive note explaining sequence of various activities.

22.2 Construction Programme prepared on PRIMAVERA Software, which will indicate resources in financial terms, manpower and specialized equipment for every important stage.

22.3 Programme for procurement of materials by the contractor.

22.4 Programme for arranging and deployment of manpower both skilled and unskilled so as to achieve targeted progress.

22.5 Programme of procurement of machinery/equipment having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor.

22.6 Programme for achieving fortnightly micro milestones and periodic milestones.

22.7 In case of noncompliance/delay in compliance in this, a recovery @ Rs. 5,000/- per day will be imposed which will be recovered from the immediate next R/A Bill of the Contractor.

22.8 If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved programme referred above, the contractor shall produce a revised program within seven days showing the modifications to the approved program by additional inputs to ensure completion of the work within the stipulated time. A recovery of Rs. 5,000/- shall be made on per day basis in case of delay in submission of the modified programme.

22.9 The submission for approval by the Engineer-in-Charge of such programme or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

23. **DE-WATERING**

23.1 De-watering required, if any, shall be done conforming to BIS Code IS: 9759 (guide lines for dewatering during construction) and / or as per the specifications approved by the Engineer-in-Charge. Design of an appropriate and suitable dewatering system shall be the Contractor's responsibility.

23.2 Such scheme shall be modified / augmented as the work proceeds based on fresh information discovered during the progress of work, at no extra cost. At all times during the construction work, efficient drainage of the site shall be carried out by the Contractor and especially during the laying of plain cement concrete, taking levels etc. The Contractor shall also ensure that there is no danger to the nearby properties and installations on account of such lowering of water table. If needed, suitable precautionary measures shall be taken by the Contractor.

Also the scheme of dewatering adopted shall have adequate built in arrangement to serve as stand-bye to attend to repair of pumps etc. and disruption of power / fuel supply. Nothing extra shall be payable on this account.

23.3 In trenches where surface water is likely to get into cut / trench during monsoons, a ring bund of puddle clay or by any other means shall be formed outside, to the required height, and maintained by the Contractor. Also, suitable steps shall be taken by the Contractor to prevent back flow of pumped water into the trench. Nothing extra shall be payable on this account.

23.4 For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of the water is required, the contractor shall do the same at his own cost and nothing extra shall be paid. Nothing extra shall be paid for execution of work in or under water and / or liquid mud including pumping out of water as required.

24 The huts for labour are not to be erected at the site of work by the contractors without prior permission from BSF. He is required to make his own arrangements for labour accommodation and nothing extra shall be paid by CPWD on this account. He shall also arrange place for yard for keeping various materials, cement/ steel store. No space is available at the site of work, however for keeping chowkidar, site office, lab, samples room, toilets for labour etc., working yard and other essential requirements such as cement store for day to day requirement, some space shall be made available near the campus. All labour and staff of contractor shall possess valid identity cards such as Aadhar Card, Voter Card etc. Before tendering, he shall visit the site and assess the manner in which he is able to arrange the above facilities. The Engineer- in-Charge shall in no way be responsible for any delay on these accounts and no claim, whatsoever, on these accounts shall be entertained.

The contractor has to build his site office for housing their staff and engineers, sample rooms, testing laboratories, conference hall etc. The conference room should be air-conditioned and have at least capacity of 15 persons around a conference table.

25 The original copies of challan/cash memos / invoices towards the quantity of various materials procured shall be made available by the contractor at the request from the Engineer-in-Charge and a copy of the same shall be kept in record. Warranty / Guarantees cards of various materials shall also be submitted by the contactor during handing over of the buildings to the client.

26 The approach road of site shall be through link roads at some places wherever available and further along Border road upto site. Contractor shall take due care while transporting construction materials so that no damage is cause to the existing link road and border road by over loading of vehicles beyond the following;

a. Total 3 Axle truck- 15 tonne plus vehicle weight
b. Total 4 Axle truck, -17 tonne plus vehicle weight
c. Total 5 Axle truck -22 tonne plus vehicle weight

SPECIAL CONDITIONS

1. The work is required to be carried out at International Border in Barmer Sector, Rajasthan. The contractor shall not be compensated in case; the work is not executed in part or in full. No claim whatsoever shall be entertained on this account.

2. The contractor shall submit a detailed programme in the form of CPM/ PERT/ BAR chart to the Engineer-in-charge within 15 days of award of work and shall be got approved from him. The programme chart should include the following:-

1.0 Network CPM/ PERT/ BAR diagram prepared as per existing practice.

1.1 Programme for procurement of materials by the contractors.

1.2 Programme of mobilization of machinery/ equipment and their deployments.

3. The programme chart will have to be updated on monthly basis and will be submitted to Engineer-in-charge regularly.

4. The approval by the Engineer-in-charge of such programme or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibility under the contract. This is without prejudice to the right of the Engineer-in-charge to take action against contractor as per terms and conditions of the agreement.

5. All tools, plant and machinery provided by the contractor shall, when brought to the site, be deemed to be exclusively intended for construction and completion of this work and contractor shall not remove the same or any part thereof without the consent of the Engineer- in-charge.

6. The rates quoted by the contractor shall be all inclusive keeping in view the specifications, additional and special conditions and lead involved for various material and other inputs for carrying out the work, nothing extra shall be payable whatsoever, unless otherwise specified.

7. Labour Cess as per prevailing rules shall be deducted from each bill.

8. GST/Income Tax and Labour Cess shall be deducted from each bill as per Govt. Orders.

9. The contractor shall have to make approaches to the site and keep them in good condition for transportation of labour and materials as well as inspection of works by the Engineer - in-charge. Nothing extra shall be paid on this account.

10. Foreign consultants / sub-consultants and foreign bidders shall not be allowed.

11. TESTING OF MATERIAL

12.1 The cost of samples including packing, transportation and any other incidental charges and testing charges thereof shall be borne by the Contractor.

12.2 The test results shall be final and binding on the contractor. The decision of the Engineer- in-Charge in this regard shall be final and binding on the contractor.

12.3 All necessary tests as per the CPWD specifications /MoRT&H specifications /relevant BIS codes shall be carried out on all the materials whatsoever ISI marked or otherwise. Wherever CPWD specifications/ MoRT&H specifications /relevant BIS codes are not available, the tests shall be carried out as per the directions of the Engineer-In-Charge. Nothing extra, what so ever, shall be payable on this account.

12.4 **Ultrasonic Pulse Velocity Method of Test for RCC**

(i) The underlying principle of assessing the quality of concrete is that comparatively higher velocities are obtained when the quality of concrete in terms of density, homogeneity and uniformly is good. The consistency of the concrete as regards its general quality gets established. In case of poorer quality lower velocities are obtained. If there are cracks, voids or flaws inside the concrete which come in the way of transmission of pulse, lower velocities are obtained.

(ii) The quality of concrete in terms of uniformity, incidence or absence of internal flaws, cracks and segregation etc. indicative of the level of workmanship employed, can thus be assessed using the guidance given in table below, which have been evolved for characterizing the quality concrete in structure in term of the ultrasonic pulse velocity.

Velocity criterion for Concrete Quality Grading.

Sl. No.	**Pulse velocity by Cross Probing (km / sec)**	**Concrete Quality Grading**
1	Above 4.5	Excellent
2	4.5 to 3.5	Good
3	3.5 to 3.0	Medium
4	Below 3.0	Doubtful

Note : In Case of "doubtful" quality it may be necessary to carry further tests.

(iii) Pulse velocity method of test of concrete is to be conducted for CPWD works as a routine test. The acceptance criteria as per the above table will be applicable which is as per IS 13311 (part-1): 1992. From the above "Good" and "Excellent" grading are acceptable and below these grading the concrete will not be acceptable.

(iv) 5% of the total number of RCC members in each category i.e. plinth beam, footing blocks may be tested by UPV test method for establishing quality of concrete.

(v) The test results are to be examined in view of the above acceptance criteria "Good" and "Excellent" and wherever concrete is found with less than required quality as per acceptance criteria, repairs to concrete will be made. Honeycombed areas and loose pockets will be repaired by grouting using Portland Cement Mortar/Polymer Modifies Cement Mortar /Epoxy Mortar, etc. after chipping loose concrete in appropriate manner. In areas where concrete is found below acceptance criteria and defects are not apparently visible on surface, injecting approved grout in appropriate proportion using epoxy grout /acrylic Polymer modified cements slurry made with shrinkage compensating cement / plain cement slurry etc will be resorted to for repairs. (Refer relevant chapters from CPWD Hand Book on Repairs and Rehabilitation of RCC Buildings). Repair to concrete will be done till satisfactory results are obtained as per the acceptance criteria by retesting of the repaired area. If satisfactory results are not obtained dismantling and relaying of concrete will be done.

12.5 RCPT and permeability Test - The RCPT tests and permeability test shall be carried out as per direction of Engineer in charge at the frequency of 1 test per kilometer shall be carried out. The location / element shall be decided by Engineer in charge randomly. The RCPT test shall be done as per IRC 112 and permeability test shall be done as per MoRTH Specifications Para 1717.7.5. The testing charges shall be borne by the contractor.

12.6 Profometer test - The Profometer test for determining the concrete cover over reinforcement shall be carried out as per direction of Engineer in charge at the frequency of 1 test per kilometer shall be carried out. The location / element shall be decided by Engineer in charge randomly. The testing charges shall be borne by the contractor.

13. No payment will be made to the contractor for damages caused by cyclones, hurricanes, sand storms, flood waters or by pounding of water due to any reason etc. during execution of the work and no claim on these accounts will be entertained.

14. The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagman, as necessary at either end of the excavation/embankment and at such intermediate points as directed by the Engineer-in-Charge for the proper identification of construction area. He shall be responsible for all damages and accidents caused due to negligence on his part.

15. The malba/garbage, removed from the site shall be disposed off by the contractor at any suitable place as directed by the Engineer-in-Charge.

16. Some restrictions may be imposed by the security Staff/BSF/Army etc. on the working and or movement of labour, materials etc. and the contractor shall be bound to follow all such restriction / instructions and nothing extra shall be payable on this account or due to less reduced working hours etc.

17. Location, B.P. or chainage /R.D. given in the Name of work is only for broad guidance. Actual place /reach for the work will be decided at site by the Engineer-In-Charge and no claim what so ever on this account shall be entertained by the department.

18. Wherever any reference to the Indian Standard Codes of BIS/ IRC has been made, it shall be with reference to the latest revisions upto the date of receipt of tender.

19. No compensation shall be payable to the contractor for any damage caused by rains, lightening wind, storm, flood, tornados, earthquakes or other natural calamity or unforeseen accidents / incidents during execution of work. The contractor shall make good all such damages at his own cost and no claim on this account will be entertained.

20. The contractor shall be responsible to arrange at his own cost all necessary tools and plants required for execution of the work.

21. Royalty at the prevalent rates wherever payable, shall have to be paid by the contactor on the, boulders, metal, shingle, sand and bajri etc. or any other materials collected by him for the work direct to revenue authority of the District /State Government concerned.

22. The rates for all items of work, shall unless clearly specified otherwise include cost of all labour, materials T&P and other inputs involved in the execution of the item.

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

24. The work shall be carried out in a manner so as not to cause any obstruction or to affect the progress of the works being carried out in the area.

25. Necessary platforms of required size etc. shall be made by the contractor to prevent the construction material from coming in to direct contact with the local soil. Nothing extra shall be payable on this account.

26. Whenever any reference to any Indian Standard Specifications occurs in the documents relating to this contract the same shall be inclusive of all the amendments issued there to or revision thereof, if any, up to the date of receipt tenders.

27. The work shall be executed and measured as per metric dimensions given in the schedule of Quantities, Drawings etc. (F.P.S. Units wherever indicated are for guidance only).

28. The contractor shall ensure that sufficient quantity of water of approved quality is available at site for proper execution of work. Nothing extra for arranging water at site will be paid to the contractor by the department.

29. The attached drawings are schematic drawing not to scale and shop drawings will be submitted by agency for approval from competent authority. They shall neither be scaled nor element in them counted. The decision of Engineer-in-Charge in regard to interpretation of drawing shall be final and binding.

30. The work shall be carried out strictly in conformity with the drawings and in accordance with the nomenclature of the items, specifications etc. Any discrepancy in the drawing /nomenclature of item /additional specification etc. shall be got clarified from Engineer in Charge. Decision of Engineer in Charge shall be final and binding on the agency.

31. The contractor has to start the work after submitting the programme duly approved by the Engineer-in Charge. Physical progress shall be similar to the programme submitted by the contractor and in accordance with the mile stone as in schedule 'F'.

32. The Engineer-in-Charge shall be at the liberty to appoint 3rd party inspection team from IIT/NIT or any other reputed government institute to check the quality of the work. The contractor shall be liable to the provisions under clause 16 of GCC 2024 in this respect also.

33. The security deposit will be refunded after the prescribed period as stipulated in the agreement or after the final bill has been prepared and passed for payment or after the work is handed over to BSF authorities in all respect, whichever is later.

34. The contractor will procure all the materials in advance so that there is sufficient time for testing and approving of the materials and clearance of the same before use in work.

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

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

37. The work is related with fencing network and protection work along and towards Indo-Pak border.

38. The work shall be carried out near Indo-Pak Border. Nothing extra for different location of work shall be entertained.

39. The contractor shall not store /dump construction material or debris on islands and / or within right of way.

40. The contractor shall get prior approval from Engineer-in-charge for the area where the construction material or debris can be stored beyond the islands. The contractor shall identify a suitable area and location for dumping debris and waste material, in consultation with the local authorities.

41. The contractor shall take appropriate protection measures like raising wind breakers of appropriate height on all sides of the plot/Area using CGI sheet or plastic and /or other similar material to ensure that no construction material dust fly outside the plot area.

Nothing Extra shall be payable on this account.

42. The contractor shall ensure that all the trucks or vehicles of any kind which are used for construction purposes/or are carrying construction material like cement, sand and other allied material are fully covered. The contractor shall take every necessary precautions that the vehicles are properly cleaned and dust free to ensure that enroute their destination, the dust, sand or any other particles are not released in air/ Contaminate air. Nothing Extra shall be payable on this account.

43. The contractor shall provide mask to every worker on the construction site and involved in loading, unloading and carriage of construction material and construction debris to prevent inhalation of dust particles. Nothing Extra shall be payable on this account.

44. The contractor shall provide all medical help, investigation and treatment to the workers involved in the construction of building and carry of construction material and debris relatable to dust emission. The contractor has to establish a Primary care/treatment unit which have a doctor and all essential medicine for primary treatment at site office. Nothing Extra shall be payable on this account.

45. The contractor shall ensure that C&D waste is transported to the C&D waste site only and due record shall be maintained by the contractor. Nothing Extra shall be payable on this account.

46. The contractor shall compulsorily use of wet jet in grinding and stone cutting. Nothing Extra shall be payable on this account.

47. The contractor shall comply all the preventive and protective environmental steps as stated in the MoEF guidelines, 2010. Nothing Extra shall be payable on this account.

48. The contractor shall carry out on-Road- Inspection for black smoke generating machinery. The contractor shall use cleaner fuel. Nothing Extra shall be payable on this account.

49. The contractor shall ensure that all DG sets comply emission norms notified by MoEF. Nothing Extra shall be payable on this account.

50. The contractor shall use vehicles having pollution under control certificate. The emissions can use reduced by a large extent by reducing the speed of a vehicle to 20 kmph. Speed bumps shall be used to ensure speed reduction. In cases where speed reduction cannot effectively reduce fugitive dust, the contractor shall divert traffic to nearby paved areas. Nothing Extra shall be payable on this account.

51. The contractor shall ensure that the construction material is covered by tarpaulin. The contractor shall take all other precaution to ensure that no dust particles are permitted to pollute air quality as a result of such storage. Nothing Extra shall be payable on this account.

52. The contractor shall make arrangement for creating a working platform for stacking of construction materials, Batch mix plant, setting of field lab, cement godown etc. at a sufficient height from natural ground level at their own cost. Nothing Extra shall be payable on this account.

53. Housing, water supply, drainage and electricity.

- No accommodation is available at the site of work.
- The contractor has to make his own arrangements for housing, stores and field offices, accommodations for his labour and other employees etc. Contractor should visit the site and see in what manner he is able to arrange the above. No other space shall be made available at work site. However, onus will be on contractor to arrange the space on its own. No claim whatsoever will be entertained on this account.
- The contractor has to make his own arrangement for water required for the work as per clause 30 of the general conditions of the contract for CPWD works. If required, boring of tube well with permission from concerned department which is to be obtained by contractor, if necessary, will be done by the contractor at his own cost and nothing extra shall be paid by the department for arrangement of water or on its treatment as per IS:456/2000, para 5.4 or CPWD specifications 2019 volume-I & II with upto date correction slips.
- Arrangement of water for drinking purpose in addition to the water required for construction work is also to be made by the contractor.
- The contractor shall make his own arrangements for obtaining electric connection for carrying out construction as well as any maintenance activity and make necessary payment directly to the department concerned. In the absence of electric connection or failure of power supply, the contractor shall make his own arrangement of generators.

54. The original copies of challan/cash memos/invoices towards the quantity of various materials procured shall be made available by the contractor at the request from the Engineer-in-Charge and a copy of the same shall be kept in record. Warranty / Guarantees cards of various materials shall also be submitted by the contactor during handing over of the work to the client.

55. Maintenance of Register: Site Order Book shall be kept at site. All test registers, and MAS registers issued by the Engineer-in-Charge shall be maintained by the contractor which will be reviewed by the officers of CPWD at regular intervals.

Maintenance of Register of Tests –

(i) All the registers of tests carried out at Construction Site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-Charge.

(ii) All Samples of materials including Cement Concrete Cubes shall be taken jointly with Contractor by JE/AE and out of this at least 50% samples shall be taken in presence of AE in charge. If there is no JE, all Samples of materials including Cement Concrete Cubes shall be taken by AE jointly with Contractor. All the necessary assistance shall be provided by the contractor. Cost of sample materials is to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site.

(iii) All the test in field lab setup at Construction Site shall be carried out by the Engineering Staff deployed by the contractor which shall be 100% witnessed by JE/AE. At least 10% of the tests are to be witnessed by the Executive Engineer / Executive Engineer and Senior Manager.

(iv) Minimum 10% test should be conducted in outside CPWD approved lab as directed by Engineer-in- Charge.

(v) All the entries in the registers will be made by the designated Engineering Staff of the contractor and same should be regularly reviewed by JE/AE/AEE/EE.

(vi) Contractor shall be responsible for safe custody of all the test registers.

(vii) Submission of statement of all test conducted at site/lab, material at Site Register along with each alternate Running Account Bill and Final Bill shall be mandatory.

Maintenance of Material at Site (MAS) Register:

(i) All the MAS Registers including Cement and Steel Registers shall be maintained by Contractor which shall be issued to the contractor by Engineer-in-Charge in the same manner as being issued to CPWD field staff. Authenticated copies of bills / vouchers of materials which has to be entered in the MAS register are to be submitted by the contractor to CPWD before making payments.

(ii) Each of the entry of receipt of material at site shall be 100% test checked by JE or by AE/AEE if there is no JE.

(iii) Each MAS Register shall be checked by JE at least twice a week and at least once a week by AE/AEE. If there is no JE then MAS registers will be checked by AE at least twice a week.

(iv) Cement Register shall be reviewed by EE at least once in a month.

(v) It will be deemed that work so measured, checked and paid is of the required quality and standard, both in respect of ingredients as well as the intended functions it is supposed to perform. In other words, the work would not only meet the required specifications but also the workmanship as per sound engineering practices.

(vii) Copies of bills: Agency will provide authenticated copies of itemize bills of materials which has to be entered in the MAS Register.

56. Since the curing of RCC or Mortar work is difficult in the area, the chemical curing compound in place of R.O. Water may also be used for the purpose of curing, for which nothing extra shall be paid.

57. GUARANTEE BOND FOR VARIOUS ITEMS

The main agency along with supplying agency shall provide 10 (Ten years) Guarantee bond in prescribed Performa (Annexure-XA & XB) for safe guarding against the manufacturing / construction defects and the to meet their liability / liabilities under the guarantee bond. The ten years Guarantee bond shall be submitted by the contractor which shall also be signed by both the agencies. However, the sole responsibility about efficiency of fulfilling the functional requirement shall rest with the contractor. If any defect is noticed during the guarantee period, the contractor shall rectify it within 15 days of receipt of intimation of defects in the work. If the defects pointed out are not attended to within the specified period, the same will be got done from another agency at the risk and cost of contractor.

The Guarantee bond in respect to following items of work shall be submitted by the main contractor:

1. Modular 3-5-8 fence Works
2. Precast RCC Elements

58. PRECAST RCC ELEMENTS (FOUNDATION BLOCKS): -

i. Excavation for foundation of RCC Foundation Blocks as per design requirements, IRC: SP : 13-2004 and MoRTH specifications.

ii. Base of RCC Foundation comprising PCC as per design requirements.

iii. The reinforced concrete shall be composed of cementitious materials as per IRC:112, IS:456, mineral aggregates as per IS:383, chemical admixture as per IS:9103 and water as per IRC:112 all latest editions and as per Specifications for Road and Bridge Works of MoRTH.

iv. Minimum Grade of Concrete shall be M-40 as mentioned in the NIT. Wet Cast Method of manufacturing shall be adopted with steam curing as per IRC: 112.

v. Dimensions of the precast unit shall conform to the design requirements. The transportation/shifting of the pre-cast elements shall be carried out only after achievement of minimum strength of 20 MPa or 0.7 times the compressive strength of concrete. The strength of concrete shall be tested as per IS:516.

vi. All precast units shall bear an indelible identification, location and orientation marks as and where necessary. The date of manufacture shall also be marked on the segments. The identification markings on the drawings shall be shown in a table on the setting schedule together with the length, type, size of the unit and the sizes and arrangements of all reinforcement for easy identification of the segment.

vii. Products shall be stored, handled shipped and unloaded in manner to minimize damage. The handling process encompasses the demoulding of the precast units, their loading and transportation to storage areas, offloading and storage, transfer to site and site erection. To avoid excessive stresses and possible damage, all precast units should be handled in the manner as envisaged in their design by means of approved devices, identified in the production and erection drawings.

viii. Lifting holes or inserts shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose. Lifting equipment such as mobile crane, gantry crane, forklift etc. must be carefully selected to ensure that lifting of precast units is carried out within the rated capacity of the equipment. The support for the lifting equipment must be checked to ensure that adequate supporting capacity is provided. Lifting accessories may comprise combinations of lifting beams or frames, slings or cables, hooks or shackles. The selection of each of these components should be predetermined to take account of the forces exerted on them due to various aspects of the lifting operations. A person suitably qualified in accordance with the relevant regulations must regularly inspect all lifting equipment prior to and after use. Results of such inspections must be properly recorded and be available for subsequent inspection. The location of lifting points should be clearly indicated on the drawings. Lifting methods may differ from different manufacturers and the same shall be agreed upon. Vertically or otherwise of the lifting ropes shall be as per the design requirements. During operation of lifting and unloading the precast concrete segment shall be protected from damage particularly the joining surfaces. Also, due care shall be taken for safety of the crew during this operation.

ix. Storage areas must be large enough so that the precast units can be stored safely, with adequate room for lifting equipment and transporting vehicles to manoeuvre. The ground of the storage area must be hard, level, clean and well drained to permit organized storage. Precast segments can be damaged by incorrect stacking and storage. Where the locations of support points for a precast unit are critical, the locations for the support should be noted on the shop drawings. Support must be arranged to avoid twisting or distorting of the precast segments and must be adequate to transfer the weight of the stacked units to the ground without excessive settlements. The stored and stacked units should be protected to prevent accidental damage and discoloration and the support material should be non-staining. Lifting points should also be well protected and kept accessible while the units are in storage. Precast segments must be stored safely with adequate supports such that it would not endanger any workers moving in the vicinity.

x. Consideration should be given to the propping and temporary support details and erection sequence to ensure safe and efficient installation of the precast elements in accordance with the design intent. For designing erection of precast concrete segments, provisions of Sub clause 11.10 of IS:15916:2010 shall apply.

xi. Bedding Details for Foundation block segments shall be as per design and specifications. The

bedding plain shall be flat and uniform without low or high points.

xii. The Dimensional tolerance limits are as under:
Length of Segment (not cumulative): plus minus 5 mm Width overall depth of segment, plus minus 5 mm Grade of form edge and soffit: plus minus 1.0 mm/m.

xiii. Guarantee Bond in prescribed Performa attached as Annexure, must be given by the manufacturer on stamp paper which shall be countersigned by the contractor, in token of his overall responsibility.

59. During the execution of the work for dismantling of existing fencing may be allowed in two stages. In 1st stage – India side, middle row and concertina coil will be dismantled & in 2nd stage – Third row pak side will be dismantled after erection of new fencing in the stretch.

SPECIAL CONDITION FOR CEMENT, STEEL AND SAND

1 CONDITION FOR CEMENT

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

1.2 The Contractor shall procure Cement OPC 43 grade /PPC required for the work.

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

1.3 The cement shall be brought at site in supply of approximately 50 tons or more as decided by the Engineer-in-charge.

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

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

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

1.7 The contractor shall supply free of charge the cement required for testing. The cost of tests shall be borne by the contractor.

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

1.9 The theoretical, consumption of cement shall be worked out as per procedure prescribed in agreement conditions and shall be governed by conditions laid therein. No payment for excess consumption of cement will be allowed.

1.10 For non-schedule items, the decision of the Superintending Engineer regarding theoretical quantity of cement, which should have been actually used, shall be final and binding on the contractor.

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

PROFORMA FOR THE CEMENT REGISTER

PARTICULARS OF RECEIPT			PARTICULARS OF ISSUE			REMARK							
Date of receipt	Quantity received	Progressive Total	Date of issued	quantity issued	Item of work for which issued	Quantity returned at the end of the day	Total issued	Daily Balance in hand	Contractors initials	J.E' s initials	Asstt. Engg. initials	A.E. E.E initials	Periodical Check
1	2	3	4	5	6	7	8	9	10	11	12	13	14

2 CONDITIONS FOR STEEL REINFORCEMENT

2.1 The contractor shall procure steel reinforcement TMT bars of Fe-550D conforming to relevant BIS codes from primary Steel producers such as SAIL, Tata Steel Ltd., RINL, Jindal Steel& Power Ltd. and JSW Steel Ltd. The cut end and blistered bends shall be finished with spray by cold galvanizing powder. The contractor shall have to obtain and furnish test certificate to the Engineer in charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to BIS codes, the same shall stand rejected and shall be removed from the site of work by the contractor at his own cost within a week's time by written orders from the Engineer in charge to do so.

2.2 The steel reinforcement shall be brought at site in supply of 10 tons or more as decided by the Engineer in charge.

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

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

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

2.5 The contractor shall supply free of cost the required steel bars for testing. The cost of tests shall be borne by the contractor

2.6 The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of steel shall be worked out as per procedure prescribed in clause 42 of the contract and shall be governed by conditions laid there in.

2.7 Steel brought to site and remaining unused shall not be removed from site without the written permission of Engineer-in-Charge.

2.7.1 Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated on the basis of IS: 1732 duly accounting for Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays and hangers. The annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement.

2.7.2 The standard sectional weights referred to shall be as in Table 5.4 in para 5.3.4 in CPWD specifications 2019 Vol. 1 will be considered for conversion of length of various sizes of High Corrosion Resistant Steel bars in to standard weight. Record of actual sectional weights shall also be kept dia wise and lot wise. The average sectional weight for each diameter shall be arrived at from samples from each lot of steel received at site. The decision of the Engineer in charge shall be final for the procedure to be followed for determining the average sectional weight of each lot. Quantity of each diameter of steel received at site of work each day will constitute one single lot for the purpose. The weight of steel by conversion of length of various sizes of bars based on the actual weighted average sectional weight shall be termed as Derived Actual Weight.

2.7.3 If the derived weight is less than the standard weight as in sub-para (ii) above, then the Derived Actual Weight shall be taken for payment.

2.7.4 If the derived actual weight is found more than the standard weight, then standard weight as worked out in sub para (ii) above shall be taken for payment and nothing shall be paid extra for the difference in Derived Actual Weight and standard weight.

2.8 The reinforcing steel brought to site of work shall be stored on brick or timber platform of 30/40- cm height, nothing extra shall be paid on this account.

3. **SPECIAL CONDITIONS FOR SAND:**

3.1 Coarse sand shall be either river sand or pit sand or crusher dust or a combination of the two. It shall be inert, clean, sharp, angular and gritty to touch and composed of hard siliceous material and shall be brought from the quarry approved by Engineer-in-Charge. Its grading shall fall within the limits of grading zone I, II, III of 'Table 4: Fine aggregates' of IS – 383.

3.2 Fine Sand shall be either river or pit sand or a combination of the two. Its grading shall fall within the limits of grading Zone IV of 'Table 4: Fine aggregates'

Annexure-XA

GUARANTEE BOND TO BE EXECUTED BY CONTRACTORS FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF PRECAST RCC ELEMENTS

The Agreement made this ..... day of two thousandand ..... between ..... son of (hereinafter called the Guarantor of the one part) and the PRESIDENT OF INDIA (hereinafter called Government of the other part).

WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract) dated ..... and made between the GUARANTOR of the one part and the Government of the other part, whereby the Contractor, inter alia, under took to render the precast RCC works in the said contract recited completely weather proof.
AND WHEREAS GUARANTOR agreed to give a guarantee to the effect that the said structures will remain weather proof for 10 years from the date of completion of precast RCC work.

NOW THE GUARANTOR hereby guarantees that precautions observed by manufacturer in manufacturing of precast RCC work will render the structures completely durable and the minimum life of such structures shall be 10 years to be reckoned from the date after the construction period prescribed in the contract.
Provided that the guarantor will not be responsible for damage caused by misuse of precast RCC elements or alteration and for such purpose:

a) Misuse of precast RCC work shall mean any operation which will damage precast RCC work, like flood and things of the same nature which might cause damage to the precast RCC work.

b) The decision of the Engineer-in-charge with regard to cause of damage shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found, render the precast RCC elements damage proof against settlement (total / differential), loading upto 70R and earthquake to the satisfaction of the Engineer-in-Charge at his cost, and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-Charge calling upon him to rectify the defects, failing which the work shall be got done by the Department by some other contractor at the GUARANTOR'S cost and risk. The decision of the Engineer-in- Charge as to the cost, payable by the Guarantor shall be final and binding.

That if GUARANTOR fails to replace the precast RCC Elements or commits breach there under then the GUARANTOR will indemnify the Principal and his successors against all loss, damage, cost, expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance

of this supplementary agreement. As to the amount of loss and/or damage and/or cost incurred by the Government the decision of the Engineer-in-Charge will be final and binding on the parties.

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

Signed, sealed and delivered by OBLIGOR in the presence of 1 1.
2.

Signed for and on behalf of THE PRESIDENT OF INDIA by..... in the presence of

1.

Annexure-XB

GUARANTEE BOND TO BE EXECUTED BY CONTRACTORS FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF MODULAR FENCING

The Agreement made this ..... day of two thousand and ..... between ..... son of ..... (hereinafter called the Guarantor of the one part) and the PRESIDENT OF INDIA (hereinafter called Government of the other part).
WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract) dated .....and made between the GUARANTOR of the one part and the Government of the other part, whereby the Contractor, inter alia, undertook to render the fencing in the said contract recited completely weather proof against colour fading, delamination and cracks in TPT coating.
AND WHEREAS GUARANTOR agreed to give a guarantee to the effect that the said structures will remain weather proof for 10 years from the date of completion of this work against colour fading, delamination and cracks in TPT coating and the quality of fencing material.

NOW THE GUARANTOR hereby guarantees that precautions observed by manufacturer in manufacturing of fencing will render the structures completely durable and the minimum life of such structures shall be 10 years to be reckoned from the date after the construction period prescribed in the contract.
Provided that the guarantor will not be responsible for damage caused by misuse of fencing or alteration and for such purpose:

a) Misuse of fencing shall mean any operation which will damage fencing, like flood and things of the same nature which might cause damage to the fencing.
b) The decision of the Engineer-in-charge with regard to cause of damage shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found, render the fencing damage proof against colour fading and delamination and cracks in TPT coating and the quality of fencing material to the satisfaction of the Engineer-in-Charge at his cost, and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in- Charge calling upon him to rectify the defects, failing which the work shall be got done by the Department by some other contractor at the GUARANTOR'S cost and risk. The decision of the Engineer-in- Charge as to the cost, payable by the Guarantor shall be final and binding.
That if GUARANTOR fails to replace the fencing or commits breach there under then the GUARANTOR will indemnify the Principal and his successors against all loss, damage, cost, expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and/or cost incurred by the Government the decision of the Engineer-in-Charge will be final and binding on the parties.

IN WITNESS WHEREOF these presents have been executed by the Obligor

.....and by ..... and for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.
Signed, sealed and delivered by OBLIGOR in the presence of 1 1.
2.
Signed for and on behalf of THE PRESIDENT OF INDIA by ..... in the presence of
1.

LIST OF PREFERRED MAKES OF MATERIALS

The contractor shall provide the materials as per the Make or Brand indicated below. When two or more alternative brands have been mentioned, the brand to be finally used shall be as decided by the Engineer-in-Charge. The contractor shall obtain the approval of Engineer in charge, for the alterative brands, before the actual execution of items.

General Materials.

S. No.	Materials	Brand /Manufacturer Name
1.	OPC/PPC Cement 43/53 Grade	A.C.C., Ultratech, J.P. Rewa, Vikram, Shree Cement, Ambuja, Birla Jute, Cement Corporation of India.
2.	POLYMER MODIFIED CEMENTITIOUS GROUT	BAL ENDURA/ WEBBER / MYK LATICRETE / CHRYSO
3.	EPOXY MORTAR	FOSROC / SIKA / CICO / LATICRETE
4.	CEMENTITIOUS GROUT	XYPEX / FOSROC/KRYTONE / CHRYSO
5.	POLYMERIC CEMENTIOUS COATING	BASF / CICO / FOSROC / SUNANDA
6.	LIST of RMC PRODUCER	ULTRATECH / READY MIX INDIA PVT. LTD./ ACC / LAFARGE/NDCON
7.	Steel Reinforcement Primary Producers	SAIL, TISCO, RINL, Jindal Steel & Power Ltd.,VIZAG
8.	Synthetic Enamel Paint / Emulsion / Steel Wood Primer	Berger, Asian Paints, Nerolac, Jenson & Nicholson, Shalimar Paints, ICI Paints
9.	Water Proofing Powder	CICO, FOSROC and Pidilite
10.	Dash / Anchoring	HILTI, Fischer, WURTH, BOSCH
11.	Nuts / bolts & Screw	GKW, Atul
12.	Admixtures	FOSROC, MBT, Sika, CICO, Asian, BASF

Pipes and Fittings

S. No.	Materials	Brand / Manufacturer Name
1.	G.I. Pipes	Tata, Jindal (Hissar)
2.	MS Pipe	TATA, Jindal (Hissar), APL Apollo

Precast RCC Products, Gabion & Geosynthetics

1	Gabion Box Mesh and revet mattress with polymer coating	Meccaferri, Guru Kripa Wire Netting Industries, A-1 Fence Products Company Pvt. Ltd., Mobius, Tech Fab India.
2	Geo textile, Geogrid, Geocells & Geo-composites	Tech Fab India, SKAPS Industries (I) Pvt. Ltd., Khator Technical Textiles Ltd., Supreme Non Woven Company Mumbai, Meccaferri, Vitro, Enviro web.
3	Precast RCC Box Culvert, Wing Wall and Parapet Walls, Precast RCC Block/Beam	Fuji Silvertech, Teemage Precast, Siddhivinayak Precast Pipe Pvt.Ltd., Sachi Precast Pvt.Ltd., 3G Infratech, Rachit Buildcon, Hexatron.

Fencing

1	Modular Fence, weld mesh panel, fence post, Omega Clamp with profile cover plate, Y-arm and fitting accessories, razor coils, razor tape and Hog ring	A-1 Fence Products Company Pvt. Ltd., Camwell, Guru Kripa Wire Netting Industries, Unifence, Tirupati Fence, MV Fence.

All other items shall be of ISI marked/as per approved sample kept at site of work. Samples of various materials to be approved by the Engineer-in-charge.

NOTE:

i. All approved materials, samples and products shall be kept at site.

ii. The Contractor shall procure and provide all the materials from the manufacturers / suppliers as per the above list attached with the tender documents, as per the item description and particular specifications for the work. The equivalent brand for any item shall be permitted to be used in the work, only when the specified make is not available. This is, however, subject to documentary evidence produced by the contactor for non-availability of the brand specified and also subject to independent verification by the Engineer-in-Charge. In exceptional cases, where such approval is required, the decision of Engineer-in-Charge as regards equivalent make of the material shall be final and binding on the Contractor. Nothing extra shall be payable on this account.

iii. The Chief Engineer, Border Fencing Zone, CPWD reserves the right to add/delete any material and Brands in the Preferred list of materials/brands on the recommendation of Engineer-in-Charge

Scope of the work

1. Salient details of the work for which bids are invited are as under:-

S. No.	Name of work	Estimated Cost	Period of completion
1.	**Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)**	**Rs. 270,51,11,121/-**	24 Months

2. The Border Fencing in Barmer sector was executed in phases. The fence have been damaged in several stretches between BP No. 780/M to BP No. 854/M. At several places of these stretches the fencing has been damaged/tilted due to exposed bases of the fencing posts and the damages of fencing is further increasing not only during rains but also due to blowing of wind in area. In this area soil is loose and having granular in nature and lack of proper maintenance due to non-feasibility, the bottom of Angle Iron posts has been rusted and gradually fencing getting damaged in several places.

3. The contractor should see the site of work physically before quoting his rates. The work will be carried out at the defined location i.e. between BOP NKT and BOP PRITPAL in Indo-Pak Border Barmer Sector, Rajasthan. The contractor shall make all necessary arrangement for carriage of materials and labour upto site of work. The rates shall be for carrying out all activity of work, including carriage of labour and material at Indo-Pak Border and nothing extra shall be paid on this account.

4. Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. The bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant etc will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

5. While execution of fencing work, time frame shall be chalked out in consultation with BSF due to Security reasons. Replacing of old damaged fencing at Indo-Pak Border in Barmer Sector in Rajasthan is to be carried out as per schedule provided in the bid.

The following general provision has been taken in this work, which may change according to the site conditions and schedule of quantity. Replacement of old fencing with one row modular fencing for Indo-Pak border has been considered based on approved drawing with following provision: -

i. Providing and fixing factory made precast reinforced cement concrete blocks for foundation in M40 grade concrete and in trapezoidal shape having size 600 mm x 600 mm at top, 1000 mm x 1000 mm at bottom and 900 mm height over 100 mm thick M-15 grade plain cement concrete, for embedding Circular Hollow Section (CHS) straining post of outer dia 88.9 mm and 4.0 mm thick.
ii. High Security weld mesh panel size 2743x955 mm having mesh wire diameter 4.00 mm, mesh size 76.20 x 12.7 mm with zinc coating on wire 100 GSM & minimum 300 microns of thermoplast powder coating.
iii. 6 nos. Razor wire of SS-316 Tear Blade profile, 3 nos. fixed to each arm of Straining & intermediate Y-arms.
iv. Punched type Razor wire coil of dia 850 mm and dia of wire not less than 3.5mm of SS-316.
v. Security gate with 2 nos. gate post MS rectangular hollow section 150x150x8 mm duly hot deep galvanized with minimum 360 GSM coating and subsequently thermoplast powder coating minimum thickness 400 micron.
vi. M 40 grade reinforced cement concrete block of size 1000x1000x1500 mm over 100 mm thick M-15 grade plain cement concrete for embedding gate post and a CHS post adjacent to the gate post made up of MS rectangular hollow section 150x150 mm & CHS post of 88.9 mm outer dia.
vii. Straining Y arm and intermediate Y arms for supporting concertina coil.
viii. 1.8 m wide M 30 grade cement concrete interlocking paver block 60 mm thick with 100 mm thick & 450 mm in depth kerb stone M 25 grade cement concrete on both side and 100 mm thick plain cement concrete 1:4:8 below the paver block & kerb stone. The average top level of paver block should be 150 mm above the ground nearby.
ix. This proposal is to replace old damaged existing fence with gates present in two rows over the complete length of 117.90 Km with single row of new design modular fencing from BP No. 780/M to BP No. 854/M along Indo-Pak Border in Barmer Sector, Rajasthan on EPC (Mode-III) Basis. Old damaged fencing with gates shall be dismantled, taken away and credit to govt. Then shall be replaced with new design modular fence with razor wire punched tape coil and one gate in every 1 km. The detailed drawings for work are available and attached with the NIT.
x. For the shifting sand dune stretches covering approximately 2.44 km out of the total project length of 117.90 km, considering the specific site conditions and the requirement for additional structural support in these areas, MS pipe posts (CHS Ø219.10 mm × 5.6 mm thick) shall be connected to the fence posts using flange plates of 350 mm diameter and 12 mm thickness, reinforced with gusset plates of size 150 × 100 × 10 mm. The flange plates are connected with 4 no mushroom head bolt. This setup shall be finished with construction of earthen embankment covered with geotextile and 0.17 meter thick gabion revet mattress.

    The MS pipe posts shall also be connected to the fence structure using both inclined and vertical Square Hollow Section (SHS) members of size 100 × 100 × 4 mm to provide the additional structural support and stability at every 20th post. (As shown in relevant drawings)
xi. The security gate of the fence shall rest over circular notched plate of high carbon steel through high carbon steel pin of 16 mm dia. The other details shall be as per attached drawings.

6. Before submitting the bid, bidders are expected to visit the site of work and satisfy themselves regarding the topography of the area. No claim will be entertained on the ground of variation in topography and circumstances.

7. For execution of work, following shall generally be used:
"CPWD Specification Vol. I to II 2019 with up-to-date correction slips.
Specification for Road and Bridges works" published by Indian Road Congress (MoRT&H) The Contract form of CPWD form EPC (Percentage Rate), as per latest updated "General Conditions of Contracts 2024 EPC Works" for CPWD works with up-to-date correction slip/amendments till

the submission of bid. This document is available separately at printer's outlets. The applicant may obtain the address of outlets from the Executive Engineer inviting bids.
IRC Guidelines.

Brief Description of activities: Planning:

(i) Survey, investigation (including soil investigation) and other related works & services.

(ii) The design and drawing of the work shall be provided by the department. However, the shop drawings shall be prepared by contractor and shall be submitted to Engineer-in-charge for approval. However, since this is an EPC contract, the contractor shall be responsible for the checking and satisfaction to ensure the damage and defects liability period as per General Conditions of Contract 2024 (EPC projects) clause 17 and as per amendment in NIT.

Execution of Work:

(i) After getting NOC from CPWD including necessary modifications as per the requirements execution of works, as per the scope of fencing works & services defined in the contract document, work shall be executed as per CPWD Specifications, NBC-2016, IS Codes, MoRTH Specifications and Sound Engineering Practices and handing over the assets after making them habitable in all respects.

PROJECT FACILITIES

1 DESCRIPTION OF PROJECT FACILITIES

The agency shall provide 02 Nos Site office (temporary type) for Engineer-in-charge and his representatives (AE/AEE, JE) having plinth area 500 sq ft approx. at each locations as specified by Engineer-in-charge, including but not limited to the following:-

a) The site office accommodation shall be provided with all necessary furniture, fitted with all electrical items like light, Air conditioners, DG Set, all office utilities. And electricity wiring, water supply, sewerage and drainage etc. The agency shall provide the office accommodation within 01 (one) month from the date of commencement of work failing which the compensation @ Rs.50,000/-per month shall be recovered from the contractor and the quoted rates are deemed to be inclusive of this cost. No additional payment shall be made to the Contractor on this account.

b) The agency shall maintain the site office which includes watch and ward, day to day housekeeping of the site office as per all-weather condition and surroundings including utilities, payment of electrical/water supply bills or arranging reliable power supply on 24 hrs. basis etc.

c) The cost of construction, all furniture, fittings/fixtures/electrical fittings etc. and cost of maintenance and their related service charges of the building, payment of electricity bills/water charges/cost of arranging power etc. (till completion of project) is deemed to be included in the quoted rates of work and nothing extra shall be payable.

d) The agency shall also provide and maintain 02 No. laptop (latest window version with high specifications i.e. min 16GB RAM, 1TB SSD, i7 13th Gen., MS office etc.) along with UPS and 1 no. A-4 Size Printer of reputed brand as approved by Engineer in charge with 3G/4G/5G enabled internet connection (internet connectivity subject to availability of any service provider at the location) for the supervisory staff of Employer. Recovery @ Rs.5000/-per month per laptop-cum-tablet, if contractor fails to provide laptop-cum-tablet within 90 days of letter of award/acceptance. The laptop- cum-tablet shall be returned to the contractor on completion of work and the quoted rates are deemed to be inclusive of this cost. No additional payment shall be made to the Contractor on this account.

e) One data entry operator and one MTS for each site office shall be provided by the contractor for 8 hours a day for entire completion period. For which nothing extra shall be paid. For failure to comply, the suitable recovery shall be made by Engineer- in-Charge.

No claim whatsoever shall be entertained on the ground whether the delay in completion of work has been attributable to the Department or to the contractor.

PARTICULAR SPECIFICATIONS

1. The work, in general, shall be executed as per description of item, specifications attached, MoRT&H specifications, CPWD Specifications 2019 Vol. I & II with correction slips issued up to the date of receipt of tender and relevant BIS Codes, BSEN codes, ISO Codes & ASTM Codes.

2. All the works unless otherwise specified hereinafter or permitted by Engineer- in-charge shall be done in accordance with the latest editions of MoRT&H specification and relevant BIS Codes, BSEN codes, ISO Codes & ASTM Codes as on the date of receipt of tenders or any other specified code.

   Any additional standard specifications or criteria published by the IRC/BIS or other foreign standard and in practice upto the date of receipt of tenders shall also take into account. In the absence of any definite provisions on any particular issue in the above-mentioned specifications / relevant BIS Codes, BSEN codes, ISO Codes & ASTM Codes, the design and construction shall be in conformity with the Sound Engineering Practice and in all such matters the decision of the Engineer-in-charge shall be final and binding on the contractor and nothing shall be paid extra.

   In case of any discrepancy or contradiction amongst the specified standard the following order of preferences shall generally prevail.

   i. Nomenclature of items etc. given in Schedule of Quantities.
   ii. Particular Specifications, Special conditions and additional specifications as per tendered document if any.
   iii. Drawings attached with the tender.
   iv. General Condition of Contract 2024 EPC Projects, amended upto last date of submission of bid.
   v. MoRT&H Specifications for Roads & Bridge works (2019) published by IRC.
   vi. CPWD Specifications, 2019 Vol. I & II with up-to-date correction slips.
   vii. All relevant IS Codes with the latest revisions.
   viii. Foreign standards, such as BSEN, ISO, ASTM etc. and accepted international practice as approved by Engineer-in-Charge.
   ix. Sound Engineering Practice as per directions of the Engineer-in-Charge
   .

   If there are varying or conflicting provision made in any document forming part of the contract, the Engineer-in-charge shall be the deciding authority with regard to the Intention / interpretation of the document and his decision shall be binding without any reservations.

3. The contractor shall ensure quality control measures on different aspects of construction materials, workmanship and correct construction methodologies to be adopted. He shall have to submit quality assurance programme within two weeks of the award of the work. The quality assurance programme should include method statement for various items of

work to be executed along with check list to enforce quality control.

3.1 The contractor shall submit brand / make of various materials from preferred make list brand / make of various materials to be used for the approval of the Engineer-in-Charge along with samples and once approved, he shall stick to it.

3.2 The contractor shall submit shop drawings of staging and formwork arrangement etc. for the approval of Engineer-in-Charge. Unless stated otherwise, the rate for concrete in plain concrete or reinforced concrete or prestressed concrete, shall be deemed to include all formwork required in accordance with this Section, which shall not be measured separately. The contractor shall also submit bar bending schedule for approval of Engineer-in- charge before execution.

3.3 The contractor shall get the water tested with regard to its suitability for use in the works and get written approval from the Engineer-in-charge before the proceeds with the use of same for execution of works. Water charges shall not be recovered in case arrangement of water is made at his own by the contractor.

3.4 Wherever any reference to any Indian Standard Specifications and other relevant codes occur in the documents relating to this contract same shall be inclusive of all amendments issued thereto or revision thereof, if any, upto date of receipt of the tender.

3.5 All the drawings shall at all times be properly correlated by the contractor before executing the work and no claim what so ever shall be entertained for failing to do so. In case of any discrepancy in the specifications, Schedule of Quantity and drawings, the decision of the Engineer-in-charge shall be final, conclusive and binding on the contractor.

3.6 Rates for the items are inclusive of all labour, materials, T&P, incidental charges, contractors profit and overheads and Taxes etc. unless, otherwise, specified. The contractors shall quote the rates accordingly.

4. GENERAL CONDITIONS FOR SUPPLY OF MATERIALS

4.1 The sample of all the items shall have to be got approved by the Contractor from the Engineer-in-charge before the supply commences and shall be without prejudice to the right of Engineer-in-Charge to get random samples tested out of the actual lot received.

4.2 The contractor shall if required furnish the manufacturer's certificate that the material supplied satisfy the requirements of the relevant specifications.

4.3 The Engineer-in-charge shall be at liberty to take respective sample (s) of each item of schedule of quantity in any approved laboratory as decided by him. The sample for testing shall be provided by the contractor. All other expenditure required to be incurred for taking sample, conveyances and packing etc. shall be borne by the contractor himself. In case any sample particular lot fails in testing the contractor shall be bound to replace the entire lot

with fresh material of prescribed specification and the rejected lot shall be returned to the contractor only after fresh lot is supplied.

4.4 Rejected materials shall have to be removed by the contractor at his own cost immediately of the instructions of doing so.

4.5 In case of any dispute regarding rejection of quality of materials the decision of the Engineer- in-charge shall be final and binding upon the contractor.

4.6 Royalty octroi terminal, tax etc. at prevalent rates shall have to paid by the contractor himself and the rates quoted by him shall include these duties and nothing extra on, this account shall be payable.

4.7 The contractor shall have to produce the cash memo to satisfy department that the material has been purchased from the authorized dealer and the GST has been paid.

5 MINIMUM QUALITY ASSURANCE PLAN

5.1 The contractor shall also assist inspection and collection of samples by Engineer in charge for testing. The samples of material/items of work required for testing by Engineer in Charge or his representative shall be provided free of charge by the contractor. **The cost incurred in collection of samples and its packing and transportation to the CPWD approved lab/field laboratory including testing charges shall be borne by the contractor.**

5.2 Tests which are mandatory as per CPWD specification 2019 Vol. I & II, MoRT&H Specifications are to be carried out by the contractor. While deciding these criteria CPWD Specifications, MoRT&H Specifications & Provisions of BIS Code and Standard Practices may be referred.

5.3 Machinery and other Tool & Plants required to be deployed at site by the contractor as per requirement. Entire Machinery and T&P may not be required at the start of work, therefore, a proper time schedule by which each Machinery & T&P is to be brought at site should be submitted by the contractor to the site staff before start of the work.

5.4 The contractor shall submit the design mix for PCC (if any), duly vetted by any IIT or NIT or any reputed Govt. institute. The submitted design mix must comply with the minimum requirements specified in the contract and relevant IRC & IS codes. The charges shall be borne by contractor.

5.5 QAP shall be prepared in accordance with quality assurance manual available at CPWD website and shall be got approved from Engineer-in-Charge CPWD.

5.6 The contractor shall ensure quality control measures on different aspects of Construction including materials, workmanship and correct construction methodologies to be adopted.

5.7 The contractor shall get the source of various raw materials namely bitumen, aggregate, cement, sand, steel, water etc. to be used on the work, approved from the Engineer-in-Charge and

trial mixes for controlled concrete shall be done using the approved materials. The contractor shall stick to the approved source unless it is absolutely unavoidable. Any change shall be done with the prior approval of the Engineer-in-Charge for which tests etc. shall be done by the contractor at his own cost.

5.8 Similarly, the contractor shall submit brand/make of various materials to be used for the approval of the Engineer-in-Charge along with samples and once approved, he shall stick to it. Any change will have to be got approved from engineer in charge in advance.

5.9 The contractor shall submit shop drawings of staging and shuttering arrangement, stone cladding and other works including mock work as desired by Engineer-in-Charge for his approval before execution. The contractor shall also submit bar bending schedule for approval of Engineer-in-Charge before execution.

5.10 The contractor shall depute Quality Engineer exclusively for enforcement of quality control. For other staff to be deployed for quality assurance, the contractor may refer to clause 32 under schedule "F".

Testing

(A) For determining that the works conform to the Specifications and Standards, the Engineer-in- Charge shall require the contractor to carry out or cause to be carried out tests, at such time and frequency and in such manner as specified in this Agreement and in accordance with sound engineering practice for quality assurance. Frequency and the manner in which tests shall be conducted shall be as per the MoRTH specifications, if the item pertains to MoRTH specification and as per CPWD specifications if item pertains to DSR.

(B) Outside tests shall be conducted at Government labs/IITs/NITs and other approved laboratories by the Engineer-in-Charge for testing of materials.

(C) All the tests in field lab setup at construction site shall be carried out by the QA Staff deployed by the contractor and shall be witnessed by the Engineer-in-Charge or his authorized subordinates as specified in NIT. The contractor shall provide all necessary facility to them for witnessing the tests in the field laboratory. In general, contractor shall carry out 90% of field tests in site laboratory and 10% tests shall be got carried out from outside laboratory as indicated below. Contractor shall endeavor to obtain test reports for tests conducted from outside laboratory in a reasonable time.

5.11 The cost of samples including packing and transportation and other incidental charge including testing charges shall be borne by the agency. Field laboratory is required if necessary for this work, then testing equipment to be arranged by the contractor.

6 MAINTENANCE OF REGISTER OF TESTS-

6.1. All the registers of tests carried out at Construction Site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-charge at the time of issue of award letter.

6.2 All samples of materials including cement concrete cubes shall be taken by contractor jointly with JE in charge of work and out of this atleast 50% samples shall be taken in presence of AE in charge. If there is no JE, all samples of materials including Cement Concrete Cubes shall be taken by contractor in presence of AE in charge of work. All the necessary assistance shall be provided by the contractor. Cost of sample materials is to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site.

6.3 All the test in field lab setup at Construction Site shall be carried out by the Engineering Staff deployed by the contractor in presence of JE-in-charge and at least 50% of tests in presence AE-in-charge. At least 10% of tests shall be carried out in presence of Executive Engineer.

6.4 All the entries in the registers will be made by the designated Engineering Staff of the contractor and same should be presented before JE/AE/Divisional Engineer for their review.

6.5 Contractor shall be responsible for safe custody of all the test registers.

6.6 It is mandatory to the contractor to submit copy of all test registers, Material at Site Register and hindrance register along with each alternate Running Account Bill and Final Bill.

If all the test registers and hindrance register is not submitted by contractor along with each alternate R/A Bill & Final Bill, no payment shall be released to the contractor.

6.7 <u>Maintenance of Material at Site (MAS) Register:-</u>

6.7.1 All the MAS Registers including Cement and Steel Registers (if any) shall be maintained by Contractor which shall be issued to the contractor by Engineer- in-charge along with the award letter.

6.7.2 The contractor shall get 100% test checked by JE or by AE after each entry of receipt of material at site in MAS register.

6.7.3 The contractor shall get MAS Register test checked by JE at least twice a week and at least once a week by AE. If there is no JE is available then MAS register must be checked by AE at least twice a week.

6.7.4 Cement register shall be got reviewed by Divisional Engineer at least once in a month by the contractor.

7 <u>Filed Laboratory</u>

7.2 The bidder shall set-up field laboratory with the equipment as laid down in MoRT&H and sub clauses there under of MORT&H Specifications or as directed by Engineer-in-charge with the water and electricity facilities and manpower as needed for carrying out the requisite tests on materials and finished work and shall maintain the same till the time of completion of the work or till such time as directed by the Engineer-in-Charge. Nothing extra will be paid on this account.

7.3 Wherever possible, the materials shall get tested in the field lab of Bidder. The cost of samples including packing, transportation and other incidental charges shall be borne by the Bidder.

7.4 The testing of materials, if required by the Officer in charge of the Quality Control Wing of CPWD or his authorized representative, shall also be carried out in the field Laboratory of the Bidder wherever possible. The cost of samples including packing and transportation and other incidental charges shall be borne by the Bidder.

7.5 In case the tests are conducted at any Laboratory other than field Lab of the Bidder, the testing charges shall be borne by the contractor. The cost of samples including packing and transportation and other incidental charges shall also be borne by the Bidder.

7.6 The decision of Engineer –in- Charge regarding test results shall be final and binding on Bidder.

CONDITION FOR COARSE AND FINE AGGREGATE, WATER & ADMIXTURE

1. SOURCE OF MATERIALS

It shall be the responsibility of the contractor to procure all the materials required for construction and completion of the contract. The contractor shall indicate in writing the source of materials well in advance to the Engineer-in- Charge, after the award of the work and before commencing the work. If the material from any source is found to be unacceptable at any time, it shall be rejected by the Engineer-in-Charge and the contractor shall forthwith remove the material immediately from the site as directed by the Engineer-in-Charge.

2. COARSE AGGREGATES

Coarse aggregate shall consist of naturally occurring crushed stones, crushed gravel, natural gravel or a suitable combination thereof. Coarse aggregate obtained from crushed or broken stone shall be angular, hard, strong, dense, durable, clean and free from adherent coating, injurious amounts of disintegrated pieces, alkali, vegetable matter, soft, friable, thin plate, elongated or flaky pieces and any deleterious material. The presence of flaky and elongated pieces shall be avoided. Coarse aggregate having positive alkali- silica reaction shall not be used. All coarse aggregates shall conform IS:383 and tests for conformity shall be carried out as per IS:2386 , part-I to part- VIII.

The nominal maximum size of aggregate to be used in R.C.C work shall be20 mm, while for factory made precast it shall be 12 mm due to self compacting concrete as per EFNARC of EN.

The contractor shall satisfy himself that the material proposed to be used for construction complies with the requirements of IS: 383 and shall submit the entire information indicated in Appendix 'A' of IS: 383 for approval of the Engineer-in-charge. In case the aggregate tested do not comply with any requirement of the specifications, the source for the same shall be rejected. No further samples from the rejected source shall normally be considered for approval.

The aggregate shall be stored in such a way as to prevent mixing with foreign materials. Different sizes of coarse aggregate shall be stored in paved area in separate stock piles sufficiently distant from each other in order to prevent intermixing of the materials at the edges of the stock piles.

3. FINE AGGREGATES

Fine aggregate shall consist of clean, hard, strong and durable pieces of crushed stone,

crushed gravel, or a suitable combination of natural sand, crushed stone or gravel. They shall not contain dust, lumps, soft or flaky, materials, mica or other deleterious materials in such quantities as to reduce the strength and durability of the concrete, or to attack the embedded steel. Motorized sand washing machines should be used to remove impurities from sand. Fine aggregate having positive alkali-silica reaction shall not be used. All fine aggregates shall conform to IS: 383 and tests for conformity shall be carried out as per IS: 2386, (Parts I to VIII). The contractor shall submit the entire information indicated in Appendix A of IS:383 for approval of Engineer- in-charge. In case the aggregate tested do not comply with any requirement of the specifications, the source for the same shall be rejected. No further samples from the rejected source shall normally be considered for approval.

Regarding storage of fine aggregate, provisions as specified for coarse aggregate shall apply.

4. WATER

Water used for mixing and curing shall be RO water and clear & free from injurious impurities like oils, acids, alkalis, salts, sugar, organic material or other substances that may be deleterious to concrete or steel. The maximum permissible limits for physical and chemical impurities shall be as per Quality Control requirements of this tender document. The agency has to install the industrial R.O. Plant of suitable capacity to meet the requirement of work.

The PH value of water shall not be less than six. Potable water is generally considered satisfactory for mixing concrete. As a guide, the following concentrations represent the maximum permissible values.

(a) To neutralize 100 ml sample of water, using phenolphthalein as an indicator, it should not require more than 5 ml of 0.02 normal NaOH. The details of test are given in 8.1 of IS:3025 (Part 22).

(b) To neutralise 100 ml sample of water, using mixed indicator, it should not require more than 25 ml of 0.02 normal H2S04. The details of test shall be as given in Clause 8 of IS:3025 (Part 23).

R.O. water shall also be used for curing concrete with the permissible limit same as mixing of concrete; however water used for curing shall not produce any objectionable stain or unsightly deposit on the concrete surface. The presence of toxic acid or iron compounds is objectionable.

5 ADMIXTURES

The admixtures, if used shall comply with the requirement of IS: 9103-1999. Admixtures shall not impair durability of concrete nor combine with constituents to form harmful compounds nor risk the corrosion of reinforcement. The contractor shall provide the following details concerning each Admixture proposed to be used, after obtaining the same from the manufacturer, for the prior approval of the Engineer-in-charge along with a copy of the Manufacturer's Test Certificate of not earlier than 6 months.

5.1 Normal dosage and detrimental effects, if any, of under dosage and over dosage. The chemical names of the main ingredients in the admixtures.

5.2 The chloride content, if any, expressed as a percentage by the weight of the admixture.

5.3 Values of dry material contents, ash content and relative density of the admixture which can be used for Uniformity Tests.

5.4 Whether or not the admixture leads to the entrainment of air when used as per the manufacturer's recommended dosage, and if so to what extent.

5.5 Where two or more admixtures are proposed to be used in any one mix, confirmation as to their compatibility.

5.6 There would be no increase in risk of corrosion of the reinforcement or other embedment as a result of using the admixture.

5.7 Admixture in addition to conformity to the requirement IS: 9103-1999 shall satisfy the following conditions.

5.8 "Plasticizers" and "Super-Plasticizers" shall meet the requirements indicated for "Water reducing Admixture".

5.9 The chloride content of the admixture shall not exceed 0.2 per cent when tested in accordance with IS:6925. 5.10

SPECIFICATION FOR R.C.C./CC WORK (DESIGN MIX CONCRETE) / FOR PRECAST RCC ELEMENTS

GENERAL:-

1. The RCC/CC work shall be done with Design Mix Concrete, unless otherwise specified in the nomenclature of items, wherever letter M has been indicated, the same shall imply for the Design Mix Concrete. The Ready Mix Concrete shall be as per IS : 4926 and as per CPWD Specification and guide lines. For the nominal mix in RCC, CPWD specification shall be followed. The Design Mix Concrete will be designed based on the principles given in IS : 456, 10262, SP 23 and CPWD specifications. The contractor shall carry out design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting requirements specified. The cement shall be actually weighed as presumption of each bag having 50 kg shall not be allowed. In case of use of admixture, the mix shall be designed with these ingredients as well. The specification mentioned herein below shall be followed for Design Mix Concrete.

1.1 CONDITION FOR CEMENT

Cement OPC 43 grade /PPC required for the work shall be procured by the contractor.

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

1.2 Admixture:- Admixtures shall not be used without approval of Engineer- in-Charge. Wherever required, admixtures of approved quality shall be mixed with concrete to achieve the desired workability within specified water cement ratio. The admixture shall conform to IS : 9103. The chloride content in the admixture shall satisfy the requirement of BS: 5075. The total amount of chlorides in the admixture mixed concrete shall also satisfy the requirements of IS : 456-2000

1.3 Minimum and Maximum cement content – shall be in accordance with as per CPWD specifications.

2.0 The contractor shall not be paid anything extra for admixture required for achieving desired workability without any change in specified water cement ratio for RCC / CC work.

2.1 The Concrete mix will be designed for minimum workability as specified in para 7 of IS– 456-2000

2.2 The recommended values of slump for various members to confirm IS 456

2.3 In the designation of concrete mix letter M refers to the mix and the number to the specified characteristic compressive strength of 15 cm – Cube at 28 days expressed in N/mm2.

2.4 The concrete design mix with or without admixture will be carried out by the contractor through IIT /NIT or any other govt. institute as per direction of Engineer-In- Charge.

2.5 The various ingredients for mix design/laboratory tests shall be sent to the lab/ test houses through the Engineer-In-Charge of the project and got it tested in approved laboratories as may be decided by the Engineer-in-charge immediately after award of work and the samples of such aggregate sent shall be preserved at site by the department. The admixture if used by contractor shall be at his own cost without any extra payment.

2.6 The contractor shall submit the mix design report from any of above approved laboratories like IIT/ NIT or any other govt institute, for approval of Engineer in charge within 30 days from the date of issue of letter of acceptance of the bid. No concreting shall be done until the mix design is approved.

2.7 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, a revised laboratory mix design report conducted in laboratories approved by Engineer-In-Charge shall be submitted by the contractor as per the direction of the Engineer in charge.

3.0 APPROVAL OF DESIGN MIX

3.1 The mix design for a specified grade of concrete shall be done for a target mean compressive strength Tck = Fck + 1.65s Where Fck = Characteristic Compressive Strength at 28 days s
= Standard deviation which depends on degree of quality control.

3.2 The degree of quality control for this work is "good" for which the standard deviation (s) obtained for different grades of concrete shall be as per IS relevant IS Standards/ Codes.

3.3 Out of the six specimen of each set, three shall be tested at seven days and remaining three at 28 days. The preliminary tests at seven days are intended only to indicate the strength to be attained at 28 days.

4.0 CHARGES FOR DESIGN MIX

All cost of mix designing and testing connected therewith including charges payable to the laboratory shall be borne by the contractor.

5.0 WORK STRENGTH TEST:-

5.1 TEST SPECIMEN

Work strength test shall be conducted in accordance with IS: 516 on random sampling. Each test shall be conducted on six specimen, three of which shall be tested at 7 days and remaining three at 28 days. Additional samples shall be prepared, if required, as per direction of Engineer in charge for testing samples cured by accelerated method as described in IS : 9103.

5.2 TEST RESULTS OF SAMPLE

The test results of the sample shall be the average of the strength of three specimen. The individual variation shall not be more than + - 15 percent of the average. If variation is more, the test results of the sample are invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in the laboratory of Government Engineering colleges, or in any other approved laboratory as directed by the Engineer-in- charge.

5.3 STANDARD FOR ACCEPTANCE

5.3.1 Standard of acceptance shall be same as specified in clause 16 of IS 456- 2000.

5.3.2 In order to keep the floor finish as per direction of Engineer-in-charge and as per Architectural drawings and to provide required thickness of the flooring asper specification, the level of top surface of RCC shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the contractor.

5.3.3 For the execution of centering and shuttering, the contractor shall use propriety "Reebole" chemical mould release agent of FOSROC or equivalent as shuttering oil as approved by Engineer-in-charge and nothing extra shall be paid on this account.

5.3.4 The design mix shall be carried out as per the various guidelines of IRC, BIS, MoRT&H Specification etc. like IRC:SP:70-2005, IRC:112 etc. for high performance concrete.

5.3.5 **As per IRC:112** Durability of concrete, Unlike the tests on concrete described above, there is no specified test method for durability, which can be completed within a reasonably short time. The requirement of long-term durability of concrete is 'deemed to be satisfied' by following the recommended provisions in this Code for maximum water-cement ratio, minimum cement content, cover thickness, type of cement and amounts of chlorides and sulphates in concrete etc. All these recommendations taken together tend resulting concrete being dense, workable, and place able and having as low permeability as possible under the given situation.

6. BATCH MIXED CONCRETE

Cement, Coarse sand and aggregate of brand/make/source as approved by the Engineer- in-Charge shall only be used for production of BMC. BMC mix with Cement OPC/PPC of 43 or 53 Grade required for the work shall be procured by the contractor.

7. QUALITY CONTROL OF READY MIXED CONCRETE

It shall be the responsibility of the contractor to ensure that BMC producer provides all necessary testing equipment's and takes all necessary measures to ensure quality control of ready mixed concrete. In general the required measures shall be:

7.1 Control of purchased material quality

BMC producer shall ensure that all the materials purchased and used in the production of concrete conform to the stipulation of the relevant agreed standards and the requirements of the concrete mix design and quality control procedures. This shall be accomplished by visual checks, sampling and testing, certification from material supplier and information/date from materials supplier. Necessary equipment for the testing of all materials shall be provided and maintained in calibrated condition at the plant by the BMC producer.

7.2 Control of material storage

Adequate and effective storage arrangement shall be provided by BMC producer at BMC plant for reliable transfer and feed systems, drainage of aggregate, prevention of freezing or excessive solar heating of aggregate, prevention from contamination etc.

7.3 Record of mix design and mix design modification

BMC producer shall ensure that record of mix design and mix design modification is readily available in his computer at BMC plant for inspection of Engineer-in-Charge or his authorized representative at any time. Any modification in mix design shall be done only after the approval of the Engineer-in-Charge.

7.4 Transfer and weighing equipment

BMC producer shall ensure that a documented calibration procedure is in place. Proper calibration records shall be made available indicating date of next calibration due & corrective action taken. BMC producer shall ensure additional calibration checks whenever required by the Engineer-in-Charge in writing to contractor. BMC producer shall also maintain a daily production record including details of customers to whom BMC was supplied including details of mixes supplied. Record shall also be maintained of materials used for each day's production including water and admixtures. The accuracy of measuring equipment shall be within + 2% of quantity of cement & + 3% of quantity of aggregate, admixture and water being measured.

7.5 Maintenance of Plant, Truck Mixers and Pumps:

Plant, Truck Mixers and Pumps should be well maintained so as to not hamper any operation of production, transportation and placement of concrete.

7.6 Production of concrete at BMC producing plant

7.6.1 Weighing (correct reading of batch date and accurate weighing):-For each load, written, printed or graphical records shall be made of the weights of the materials batched, the estimate slumps, the total amount of water added to the load, the delivery ticket numbers for that load and the time of loading the concrete into the truck.

7.6.2 Visual observation of concrete during production and delivery or during sampling and testing of fresh concrete (assessment of uniformity cohesion, workability, adjustment to water content :-The workability of the concrete shall be controlled on a continuous basis during production. The batch mix found unfit shall not be loaded into the truck for transportation. Necessary corrective action shall be taken in the production of mix as required for further batches.

7.6.3 Adequate testing equipments at the plant including equipment for measuring surface moisture content of aggregates shall be provided by the RMC producer.

7.6.4 Making corresponding adjustments at the plant automatically or manually to batched quantities to allow for observed measured or reported changes in materials or concrete qualities.

7.6.5 Sampling of concrete, testing, monitoring of results.

7.6.6 Diagnosis and correction of faults identified from observation/complaints.

7.6.7 Control of designed and the prescribed mixes: a quality control system shall be operated to control the strength of designed mixes to the required levels. The system shall include continuous analysis of results from cube tests.

7.7 Batch mix concrete shall be arranged in quantity as required at site of work. The ready-mix concrete shall be supplied as per the pre-agreed schedule approved by Engineer-in-Charge. Noting extra shall be payable on this account.

7.8 The Engineer-in-Charge reserves the right to approve RMC producing plants not mentioned in the list of approved RMC plants if they fulfill all the necessary conditions.

7.9 In case of rejection of concrete as governed by the para "Standard of Acceptance" as above, the work for which samples have failed shall be redone at the cost of the contractor. However, the Engineer-in-Charge may order for additional tests (like cutting cores, ultrasonic pulse velocity, and rebound hammer test etc.) to be carried out at the cost of contractor to ascertain, if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-Charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test result and reduced rates shall be regulated in accordance with para5.4.10.5 D(D-3) of CPWD specifications.

7.10 Laying of BMC concrete-All ready mixed designed concrete shall be laid with the help of concrete pump of adequate capacity.

7.11 Transportation, placing and Compaction of Concrete Mixed concrete from the RMC shall be transported to the point of placement by transit mixers and placed in position through concrete pumps and/or steel closed bottom buckets capable of carrying minimum 0.6 cum concrete is proposed to be transported by transit mixer, the mixing speed shall not be less than 4 rev/min. of the drum nor greater than a speed resulting in a peripheral velocity of the drum 70 m/minutes at its largest diameter. The agitating speed for the agitator shall be not less than 2 rev/min nor more than 6 rev/min of the drum. The numbers of revolution for a uniform mix, after all ingredients, have been charged into the drum. Unless tempering water is added, all rotation after 100 revolutions shall be at agitating speed of 2 to 6 rev/min and the number of such rotations shall not exceed 250. The general construction of transit mixer and other requirement shall conform to IS: 5892.

In case concrete is to be transported by pumping, the conduit shall be primed by pumping a batch of mortar through the line to lubricate it. Once the pumping is started, it shall not be interrupted (if at all possible) as concrete standing idle in the line is liable to cause a plug. The operator shall ensure that some concrete is always there in the pump receiving hopper during operation. The lines shall always be maintained clean and shall be free of dents.

~~At all stages, special precaution shall be taken that surrounding temperature during concreting shall not exceed 30 degree centigrade.~~

Except where otherwise agreed to by the Engineer-in-Charge, concrete shall be deposited in horizontal layers to a compacted depth of not more than 450mm. unless agreed to by the Engineer-in-charge; concrete shall not be dropped into place from a height exceeding 1.5m. In order to avoid such situations chutes, termite pipe or closed bottom buckets shall be used. These shall be kept clean and used in such a way as to avoid segregation. Slope of the chute shall be so adjusted that concrete flows without the use of excessive quantity of water. The delivery end of chute shall be as close as possible to the point of deposit; the chute shall be thoroughly flushed with water before and after each working period and the water used for this purpose shall be discharged outside the formwork. The concrete shall be compacted by using immersion type vibrators. When the concrete is being continuously deposited to a uniform depth along a member, vibrator shall not be operated within one meter of free end of the advancing concrete. Every effort shall be made to keep the surface of the previously placed layer of concrete alive so that the succeeding layer can be amalgamated with it by the vibration process.

In case the concrete in underlying layer has hardened to such an extent that it cannot be perpetrated by the vibrator but is still fresh (that is, just after initial set), un-imposed bond shall be achieved between the top and underlying layer by first scarifying the lower layer before the new concrete is placed by systematically and thoroughly vibrating the new concrete. The points of insertion of vibrator in the concrete shall be so spaced that the range of action overlap to some extent and the freshly filled concrete is sufficiently consolidated

at all locations. The spacing between the dipping positions of vibrator shall be maintained uniformly throughout the surface of concrete so that concrete is uniformly vibrated. The vibrating head shall be regularly and uniformly inserted in the concrete so that in penetrates of its own accord and shall be withdrawn slowly whilst running so as to allow redistribution of concrete in its way and allow the concrete to flow back into the hole behind the vibratory.

The vibrator head shall be kept in one position till the concrete within its influence is completely consolidated. Vibration shall be continued until the coarse aggregate particle have blended into the surface but have disappeared.

The contractor shall keep at least one additional vibrator in serviceable condition to be used in the event of breakdowns and maintenance problems.

The vibrator head shall not be brought more than 200mm near to the form work as this may cause formation of water stagnations. The formwork shall be strong and great care shall be exercised in its assembly. It shall be designed to take up increased pressure of concrete and pressure variations caused in the neighborhood of vibrating head, which may result in excessive local stress on the formwork. The joints of the formwork shall be made and maintained tight and close enough to prevent the squeezing out slurry or sucking in of air during vibration. The formwork to receive concrete shall be cleaned and made free from standing water, dust, etc. The contractor shall keep provision for screed and shutter vibrators at site.

7.12 Quality Assurance

i. The contractor shall ensure quality control measures on different aspects of construction including materials, workmanship and correct construction methodologies to be adopted.

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

iii. Similarly, the contractor shall submit brand/make of various materials to be used for the approval of the Engineer-in-Charge along with samples and once approved, he shall stick to it. Any change will have to be got approved from engineer in charge in advance.

iv. The contractor shall submit shop drawings of staging and shuttering arrangement, stone cladding and other works including mock work as desired by Engineer-in-Charge for his approval before execution. The contractor shall also submit bar bending schedule for approval of Engineer-in-Charge before execution.

v. The contractor shall depute Quality Engineer exclusively for enforcement of quality control. For other staff to be deployed for quality assurance, the contractor may refer to clause 32 under schedule "F".

SPECIFICATION FOR MODULAR FENCE & GATE

The fence system shall be executed as per detailed drawings attached in the NIT. Minimum acceptable technical details and specifications are described as shown below: -

Weld Mesh Panel:

Weld Mesh Panel should be produced by electrical resistance welded galvanized wires and subsequently thermoplast powder coated as per below spec.:

Weld mesh panel for fence will meet the standards of **EN 10223-7**with the following key specifications apart from the other points in the governing specification: (Note: There is no existing Indian standards for Weld mesh panels for fencing Applications)

Panel size:2743 mm X 955 mm (W x H). Tolerance of + / - 2 % with two no. V shape band.

Mesh Size:76.2 mm (+/- 3.0 mm) X 12.7 mm (+/- 2.0mm) (W X H). Tolerance as specified for each dimension.

Overlap: 75 mm overlap in horizontal direction and 167 mm overlap in vertical directions

Weld Shear strength: The average weld shear strength of 4 welds taken at random shall not be less than 50% of the breaking strength of the smallest wire (In this case the vertical wire)

Mesh Wire: Galvanised MS wire Specification

for wire Diameter: **IS 280 -2006** Horizontal wire,

Dia 4.0 mm (+/- 0.05mm):

Vertical wire, **Dia 4.0 mm**(+/-0.05mm)

Tensile Strength of wire: Minimum 550 N/sq.mm as per IS:7887 of TATA or JSW make

Galvanising of wire: 100 GSM as per **IS 4826** (Measurement as per IS 6745) Uniformity of Coating: As per **IS 2629**

Adhesion test for coating: As per **IS 6745 / IS 2629**

Powder Coating: The panels are Thermoplast Powder Coated after fabrication with thickness of minimum 300 Microns.

Colour: RAL 6005

Coating Standard: **EN 10245-1/ IS 13871**

Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Type Test Certificate to be provided by the contractor along with the material).

Weight / Panel: 25.70 Kgs + /- 5 %

Thermoplast Powder – Axalta PPA 571 ES or equivalent qualifying as per the test for coating and duly certified by CECRI

Wire rod make TATA / SAIL /JSW

2. Fence Post & Accessories:

Fence Post Type: Circular Hollow section (CHS)

Material: MS YSt 240

Specification of Material: IS 1161-2014 Outer

Diameter:88.9 mm +/- 1 % **Thickness:**4.0 mm +/- 10%

Length: 3400 mm (2700 mm above ground level and 700 mm under precast concrete (M-40) block below top of concrete surface)

Coating: Hot dip galvanised with minimum **360 GSM** coating on both sides as per IS 4736/ **IS 2629 /ASTM A123**

Uniformity of Coating: As per **IS 2629**

Adhesion test for coating: As per **IS 6745 / IS 2629**

Thermoplast Powder Coating: The Galvanized posts are subsequently Thermoplastic Powder coated after fabrication with a thickness of minimum **400 Microns**.
Colour: RAL 6005
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand 1440 Hours of salt spray test
(Type Test Certificate to be provided by the bidder along with the material. Test Certificate should be from a competent authority like CECRI, Central Electro Chemical research lab).
The OEM shall have facility for surface preparation (blast clean 2.5 SA) and surface treatment (7 tank or 10 tank) for better coating.
Weight / post: 28.49 Kgs +/- 8% (Taking standard weight of 8.38 kg/m)
Material make TATA/ JSW / RINL/ SAIL / APL Apollo

Qty / KM: 401 Nos (assuming spacing @ 2.50m C/C)

3. Omega Clamp with Profile cover plate:
This is used to fix the mesh on the poles by using suitable fasteners. The profile cover plate provides the necessary holding strength and as such the shape of the cover plate as given in the drawing is to be strictly followed.
Material: For omega clamp (192 mm x 40 mm x 3mm of shape as per drawing) MS flat 25 mm width and 3 mm thick using MS strip **as per IS 1730 , galvanized strip as per IS:277 or as per IS: 513 or as per IS: 1079**
For profile plate (192 mm x 50 mm of shape as per drawing) MS flat 2.75 Mm thick using MS strip **as per IS 1730**
Coating: Hot dip Galvanised for minimum 360 GSM as per **IS 2629/IS 4759/ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Thermoplast Powder Coating: The pregalvanized Omega clamp & profile cover plate are subsequently Thermoplastic Powder coated with a thickness of minimum 400 Microns.
Colour: RAL 6005
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand 1440 Hours of salt spray test
(Type Test Certificate to be provided by the bidder along with the material. Test Certificate should be from a competent authority like CECRI, Central Electro Chemical research lab).
Weight / Clamp:0.6 Kg +/-8 %
Qty / KM: 2800 Nos.
Material Make TATA / SAIL / RINL / JSW

3A. Mush room Head Bolts with security nuts and washers for fixing omega clamp:
Each clamp shall be supplied with two sets mush room headed, square necked bolts with security nuts and washers.
Material: SS 316
Size: M8 X 80 mm as per IS 8535-1987
Washer specifications :
Material : SS 316, OD-15.89mm. ID- 8.38, thickness : 2.04 mm
Weight of bolt & Nut with washer: 0.03Kg +/-8 %
Qty / KM: 8800 nos.

4. Straining Y Arm and fitting accessories:
4A. Straining Y Arm: Straining Y-Arm for supporting top PTCC:
Type: Y Angle of 120° with tie angle.
Size: 50x50x5mm **as per IS 1852**
Sleeve cap: Of MS plate, top plate of cap 92 mm dia and 5 mm thick which is welded to 3 mm thick 76.1 mm OD and 100 long pipes having two sets of 14 mms dia holes to fix the mushroom bolts**.**
Material: MS as per IS:5986 Gr.235
Thermoplast Powder Coating: Hot dip galvanised to min 360 GSM as per **IS 2629/IS 4759/ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Powder Coating: The Galvanized Y Arms are subsequently Thermoplastic Powder coated after fabrication with a thickness of minimum 400 Microns.
Colour: RAL 6005
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand 1440 Hours of salt spray test
(Type Test Certificate to be provided by the bidder along with the material. Test Certificate should be from a competent authority like CECRI, Central Electro Chemical research lab).
Length of one Arm is 510 mm, refer drawing as attached
One straining Y arm will be installed at every 30 meters.
Qty / KM: 34 Nos.
IP Binder Material: MS Flat 25x3 mm, 160 mm long with 2 slots as per IS 1730
coating : Pregalvanised / Hot dipped Galvanised material with min. 360 GSM
weight/set : 0.2 kg $\pm$ 10 %
other coating requirement: TPC should withstand 1440 Hours of salt pray test (material test certificate should be provided alongwith material)
Material make TATA / SAIL/ JSW / RINL/APL Apollo
Qty / KM: 1600 set, used for overlapping of weld mesh panels.
4.B. Fitting accessory for Straining Y arm:
Mushroom Head Bolts with breakable head security nuts: Each Y arm shall be supplied with two sets mush room headed bolts with security nuts and washers.
Material : SS 316
Size: M8 X 120 mm
Qty / KM: 68 Nos.
4.C. Eye Bolt for Straining Y arm:
Each Y arm shall be supplied with 6 sets of Eye bolts with security nuts and washers.
Material: SS 316
Size: M8 X 100 mm
Weight : Eye bolt , Nut and washer: 0.1 Kg +/- 10% ;
Qty / KM: 204 Nos.
5. Intermediate Y Arm and fitting accessories:
5A. Intermediate Y Arm: Intermediate Y-Arm for supporting top PTCC:
Type: Angle of 120° with tie angle
Material: MS
Size: 50x50x5mm **as per IS:2062 or IS:5986**
Sleeve cap : Of 3 mm thick MS plate , 99 mm OD, 93 mm ID and 45mm long pipe having two sets of 12 mm dia holes to fix the mushroom bolts (as per attached drawings)**. The sleeve cap is a fabricated component formed from a 3 mm thick sheet metal using press dies or any**

other manufacturing process as per drawing attached
Thermoplast Powder Coating: Hot dip galvanised to min 360 GSM as per **IS 2629/IS 4759/ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Thermoplast Powder Coating: The Galvanized Y Arms are subsequently Thermoplastic Powder coated after fabrication with a thickness of minimum 400 Microns.
Colour: RAL 6005
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand 1440 Hours of salt spray test
(Type Test Certificate to be provided by the contractor along with the material. Test Certificate should be from a competent authority like CECRI, Central Electro Chemical research lab).
Length of 1 Arm is 510 mm
Refer drawing as attached herewith.
1 intermediate Y arm will be installed at every post except the posts with Straining Y arms.
Qty / KM: 366 Nos.
Material make TATA / SAIL/ JSW / RINL
5B. Fitting accessory for Intermediate Y arm:
Mushroom Head Bolts with breakable head security nuts: Each Y arm shall be supplied with two sets mush room headed bolts with security nuts and washers.
Material : SS 316
Size: M8 X 120 mm
Qty / KM: 732 Nos.

6. Razor Coils & Razor Tape
6A. PTCC: 850 mm diameter/56 Loops/3.5mm Core wire
Coil Diameter: 850mm +/- 50 mm
Steel Tape : Material SS 316 as per IS 6911 /1992
Blade Thickness: 0.47 mm +/- 0.05 mm,
Core Wire Diameter: 3.5 MM +/- 0.05 mm as per IS: 6528
Core wire: Material SS 316 as per IS: 6528
Tensile Strength of wire: 1400-1700 N/sq.mm
Blade Profile: Tear Blade (TBBT)
Blade Length: 30 mm
Centre to Centre Distance Between blades: 50mm
Type of Clip: Material SS 316
Number of loops / coil: 56 Nos.
Weight per coil: 20.01 Kg (+/- 5%).
Qty / KM: 100 coil (Stretchable length of coil: 10mtr)
Material make of SS 316 : Jindal Stainless Steel Ltd, TISCO, POSCO
6B. Razor Tape: 3.5 mm Core wire
Steel Tape : Material SS 316 as per IS 6911 /1992
Thickness: 0.47mm +/- 0.05 mm,
Core Wire Diameter: 3.5 MM+/- 0.04 mm as per IS 6528
Core Wire: Material SS 316
Tensile Strength of wire: 1400-1700 N/sq.mm
Blade Profile: Tear Blade (TBBT) as per drawing
Blade Length: 30 mm
Centre to Centre Distance Between blades: 50mm
Type of Clip: Material SS 316
Weight of each coil roll of 100 mtr long Razor tape : 13 Kg +/- 8%
Qty: 63 rolls of 100 meters each.
Material make of SS 316 : Jindal Stainless Steel Ltd, TISCO, POSCO

7. Hog Ring
Material: SS 316
Dia: 3mm, Refer drawing as attached herewith
Qty. / km: 8000 nos.

Type test certificate for Coating from CECRI:
The type test for coating as certified by the above lab shall cover the following tests :

1. **Salt Spray test for 1440 Hrs as specified by** EN 10245-1/ IS 13871 and with ISO 9227.
2. **UV-QUVA test for 1000 / 1440 hrs as specified**
3. **Adhesion test as specified**
4. **Impact test**
5. **Gloss & Colour test**
6. **Permeability test**

Qualification norms for the manufacturer of the fence system:

The bidders should submit the following documents from any Indian Original Equipment Manufacturer (OEM) from whom they will be procuring the materials. The OEM should be meeting the credentials specified here:

i. Memorandum of Understanding with the OEM that they agree to supply the material to the contractor / Bidder for this specific tender.

ii. Documents for Credentials of the Manufacturer:

a. The OEM shall provide Type Test Certificate for sample testing of 1000/1440 Hrs Salt Spray Test as specified.

b. The OEM should have in-house plant and machinery for manufacturing weld mesh panels and powder coating. The powder coating plant shall be suitable for polyester powder coating as well as Thermo-plastic coating whichever is required as per coating specification.

c. The OEM shall have valid thermoplast powder application certification from Axalta or plascoat.

The OEM shall give guarantee through guarantee bond of 10 years of colour fading and delamination and cracks in TPT coating and quality of fencing material.

TECHNICAL SPECIFICATION FOR GATE

1. Weld Mesh Panel for GATE INFILL & for PTCC COIL SUPPORT:

Weld Mesh Panel should be produced by electrical resistance welded galvanized wires and subsequently Thermoplast powder coated as per below spec.:

Weld mesh panel for fence will meet the standards of **EN 10223-7** with the following key specifications apart from the other points in the governing specification: (Note: There is no existing Indian standards for Weld mesh panels for fencing Applications)

Panel size: Refer Drawing: panel will be factory welded to the frame.

Mesh Size: 76.2 mm (+/- 3.0 mm) X 12.7 mm (+/- 2.0mm) (W X H). Tolerance as specified for each dimension.

Weld Shear strength: The average weld shear strength of 4 welds taken at random shall not be less than 50 % of the breaking strength of the smallest wire.

Mesh Wire: Galvanised MS wire

Specification for wire Diameter: **IS 280 -2006**

Horizontal wire, **Dia 4.0 mm** (+/- 0.05mm):

Vertical wire, **Dia 4.0 mm**(+/-0.05mm)

Tensile Strength of wire: Minimum 550 N/sq.mm as per IS:7887 of TATA or JSW make

Galvanising of wire: Hot Dip Galvanized to 100 GSM as per **IS 4826** (Measurement as per IS 6745)

Uniformity of Coating: As per **IS 2629**

Adhesion test for coating: As per **IS 6745 / IS 2629**

Thermoplast Powder Coating: The galvanized panels are subsequently thermoplastic powder coated after welding. Thermoplast Powder coating thickness of 300 Microns.

Colour: Green (RAL 6005)

Coating Standard: **EN 10245-1/ IS 13871**

Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Material test certificate should be provided along with material).

Qty / Gate: 1 Set

Coating make: Axalta PPA 571 ES

Wire rod make: TATA/ SAIL / JSW / RINL

2. Gate Post

Type: Square Hollow section (CHS)

Material: MS

Specification of SHS:IS 4923.1997

Designation: 150x150mm +/- 1%

Thickness: 8mm +/- 10%

Length: 4070 mm (3070 mm above platform and 1000 mm underground in the precast concrete post of M-40 grade to be placed in hole which will be fixed by non-shrink grout)

Coating: Hot dip galvanized with minimum **360 GSM** coating as per IS 4736/ **IS 2629 /ASTM A123**

Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Powder Coating: The galvanized panels are subsequently thermoplastic powder coated after welding. Thermoplast Powder coating thickness of min 400 Microns
Colour: Green (RAL 6005)
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Material test certificate should be provided along with material).
Weight / post: 136 Kgs +/- 10% (Taking standard weight of 34.38 kg/m)
Coating make Axalta PPA 571 ES
Qty / Gate: 2 Nos
Material make TATA / SAIL/ JSW / RINL.

3. Gate Frame: Gate frame with Gate Brace
Type: Square Hollow section (SHS)
Material: MS
Designation: 80 x 80mm +/- 1%
Thickness:3.2mm +/- 10%
Coating: Hot dip galvanised with minimum **360 GSM** coating as per IS 4736/ **IS 2629 /ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Thermoplast Powder Coating: The galvanized panels are subsequently thermoplastic powder coated after welding. Thermoplast Powder coating thickness of min. 400 Microns
Colour: Green (RAL 6005)
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Material test certificate should be provided along with material).
Qty / Gate: refer drawing. will be factory welded as a part of gate
Coating make Axalta PPA 571 ES
Material make TATA / SAIL/ JSW / RINL .

4. Wicket Gate:
Type: Square Hollow section (SHS)
Material: MS
Designation: 40x40mm +/- 1%
Thickness: 2.6mm +/- 10%
Coating: Hot dip galvanised with minimum **360 GSM** coating as per IS 4736/ **IS 2629 /ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Thermoplast Powder Coating: The galvanized panels are subsequently thermoplastic powder coated after welding. Thermoplast Powder coating thickness of min. 400 Microns

Colour: Green (RAL 6005)
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Material test certificate should be provided along with material).
Qty / Gate: refer drawing. will be factory welded & TPC Coated
Coating make Axalta PPA 571 ES
Material make TATA / SAIL/ JSW / RINL .

5. COIL SUPPORT FRAME
Type: Square Hollow section (SHS)
Material: MS
Designation: 50x50mm +/- 1%
Thickness: 2.6mm +/- 10%
Coating: Hot dip galvanised with minimum **360 GSM** coating as per IS 4736/ **IS 2629 /ASTM A123**
Uniformity of Coating: As per **IS 2629**
Adhesion test for coating: As per **IS 6745 / IS 2629**
Thermoplast Powder Coating: The galvanized panels are subsequently thermoplastic powder coated after welding. Thermoplast Powder coating thickness of min. 400 Microns
Colour: Green (RAL 6005)
Coating Standard: EN 10245-1/ IS 13871
Other coating requirement: Thermoplast Powder coating should withstand **1440 Hours of salt spray test** (Material test certificate should be provided along with material).
Weight of coil support frame: 13.28 Kgs+/- 10%
Qty / Gate: 4 NOS… refer drawing
Material make TATA / SAIL/ JSW / RINL .

6. PTCC: 850 mm diameter/56 LOOPS/3.5mm Core wire over gate
Coil Diameter: 850mm +/- 50 mm
Blade: SS 316
Blade Thickness: 0.47 mm +/- 0.02 mm,
Core Wire Diameter: 3.5 mm +/- 0.05 mm as per IS 6528
Core Wire: SS 316
Tensile Strength of wire: 1400-1700 N/sq.mm
Blade Profile: Tear Blade (TBBT)
Blade Length: 30 mm
Centre to Centre Distance Between blades: 50mm
Type of Clip: SS 316
Number of loops/coil: 56 Nos.
Weight per coil: 5.5 Kg (+/- 5%).
Qty / Gate: 2 coil
Material make of SS 316 : Jindal Stainless Steel Ltd, TISCO, POSCO

7. PTCC over gate posts : Flat wrap
Coil : Dia 650 mm+/- 50mm Blade SS 316
Blade thickness 0.47 mm+/- 0.02 mm

Core wire dia: 3.5mm +/-0.05mm as per IS 6528
Core wire: SS 316
Tensile strength: 1400-1500 N/Sqmm
Blade Profile : Tear Blade (TBBT)
Blade length: 30 mm
C/C distance between blades: 50 mm
Type of clips: SS 316
Number of loops: 5
Weight per coil: 1.25 kg

8. Top And Bottom Hinges: 4 NOS. per gate… refer Drawing
9. Hinges for Wicket Gate: 2 Nos. per gate … refer Drawing
10. Lock / Handle / Aldrop: 1 Set per gate with material SS 316 grade along with nuts, bolts & omega hook for fixing handle and Aldrop… refer Drawing

Material makes of SS 316: Jindal Stainless Steel Ltd, TISCO, POSCO

Material test certificate for Coating:

1. **Salt Spray test for 1400 Hrs as specified by** EN 10245-1/ IS 13871 and with ISO 9227.
2. **UV-QUVA test for 1440 hrs as specified**
3. **Adhesion test as specified**
4. **Impact test**
5. **Gloss & Colour test**
6. **Permeability test**

DRAWINGS

The architectural and structural drawings are uploaded in separate PDF folder namely **"Architectural and Structural drawings"** which shall be part of NIT.

INDEX OF DRAWINGS

NAME OF WORK: Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

S. No.	Drawing Title
1	FENCE ASEEMBLY
2	OMEGA CLAMP
3	PROFILE PLATE
4	IP BINDER
5	STRAINING Y ARM
6	INTERMIDIATE Y-ARM
7	WELDMESH PANEL
8	GATE DRAWIMG
9	AL DROP AND HANDLE INSTALLATION
10	DROP BOLT ASSEMBLY
11	GATE FRAME LEFT
12	GATE FRAME RIGHT
13	WICKET GATE
14	AL DROP ASSEMBLY (GATE FRAME)
15	AL DROP ASSEMBLY (WICKET GATE)
16	DROP BOLT
17	HANDLE
18	FOOTING FENCE POST
19	FOOTING GATE POST
20	TYPICAL CROSS SECTION FOR SHIFTING SAND DUNES PORTION
21	DETAIL OF JOINTING ASSEMBLY CHS POST AND M.S. PIPE FOR SHIFTING SAND DUNES PORTION (DETAIL-A)
22	TYPICAL CROSS SECTION FOR SHIFTING SAND DUNES PORTION (EVERY 20^{TH} CHS POST)
23	FENCE GATE- BOTTOM PIVOT SYSTEM

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

Nomenclature of Items

NAME OF WORK: Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

S. No.	Item of Work
A	**Earthwork (Excavation and Filling)**
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.
	All kinds of soil
2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and for all lift.
B	**Concrete Work (PCC)**
3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :
3.1	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources : 8 graded stone aggregate 40 mm nominal size derived from natural sources)
4	Providing and laying in position ready mixed or site batched design mix cement concrete for plain cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana/Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering and finishing as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 110% of the minimum specified cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.
4.1	All works upto plinth level :
4.1.1	Concrete of M15 grade with minimum cement content of 240 kg /cum
C	**Centering and shuttering work**
5	Centering and shuttering including strutting, propping etc. and removal of form for Sides of pavements, Foundations, footings, bases of columns, etc. for mass concrete
D	**Dismantling Work (Concrete, Steel etc.)**
6	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.
6.1	Nominal concrete 1:3:6 or richer mix (including equivalent design mix)
6.2	Nominal concrete 1:4:8 or leaner mix (including equivalent design mix)

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

7	Dismantling steel work in single sections including dismembering and stacking within 50 metres lead in: Channels, angles, tees and flats.
8	Dismantling steel work manually/ by mechanical means in built up sections without dismembering and stacking within 50 metres lead as per direction of Engineer-in-charge.
9	Dismantling barbed wire or flexible wire rope in fencing including making rolls and stacking within 50 metres lead.
E	**Paver Block and Kerb Stone**
10	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.
11	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured to calculate volume for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).
F	**Fencing Item (CHS Post, Welded wire mesh, Intermediate and Straining arm with accessories)**
12	Providing and fixing factory made post of MS Circular Hollow Section (CHS) of grade YST 240 as per IS 1161 : 2014 having external diameter of 88.90 mm, thickness 4.0 mm heavy grade and having weight 8.38 kg/metre with hot dip galvanised coating of minimum 360 GSM on both side as per IS 4736, IS 2629 and ASTM A123 (as applicable) and thermoplastic powder coating of minimum thickness 400 microns as per coating standard EN 10245 -1 and ISO 12944 (as applicable) of specified colour. The length of post shall be 3400 mm, of which 2700 mm above ground level and 700 mm in the concrete block, provided at a distance of 2.50 m centre to centre placed in predetermined holes either in cast-in-situ cement concrete block of M-40 grade with 10 mm diameter 300 mm long mild steel anchor rod tied with wire at bottom of post or in precast CC block of M-40 grade of required size fixed with M-60 grade cementitious non shrink grout as per direction of Engineer-in-Charge. (The cost of precast or cast in situ cement concrete block shall be paid for separately.)
	Coating requirements:- The modular fence manufacturer shall have a facility for surface preparation of (Blast clean SA 2.5) and surface treatment (7 tank or 10 tank process) for better longevity of the coating. Type Test Certificate should be provided by the Fence Manufacturer for the quality of powder coating and thermoplastic coating during supply of fence materials. Type Test Certificate should be provided from a Government Institution like Central Electrochemical Research Lab. The Fence Manufacturer shall have a valid applicator certificate for thermoplastic powder coating.
13	Providing and erecting factory made high security welded wire mesh panels of size 2743 mm x 955 mm (3 nos. panels vertically per unit length of fencing for height 2.70 metre with permissible overlapping), weight 25.70 kg of each panel, having mesh size 76.2 mm x 12.7 mm produced by electrical resistance welded galvanised wire of diameter 4.00 mm of grade 1 to 4 as per IS:7887 and Mild steel wire as per IS 280, with zinc coating of 100 GSM as per IS 2629 and IS 4826 (as applicable) and minimum 300 microns of thermoplastic powder coating as per EN 10245 -1 and IS 12944 (as applicable) of specified colour including making two numbers V-shaped bends, each of depth 38 mm and width 107 mm, at an angle of 100° in horizontal direction of the panel with overlapping of panel (75 mm overlap in horizontal direction and 167 mm overlap in vertical directions). Fixing CHS post and wire mesh panel shall be done by using Omega clamp of size 192 mm x 40 mm x 3 mm with 2 nos. of 12 mm diameter holes and profile cover plates of size 192 mm x 50 mm x 2.75 mm with 2 slots for bolts, using two numbers SS 316 mushroom head bolts with breakable head safety nuts of size M8 x 80 as per IS 8535-1987 and SS 316 washers of size 15.89 mm outer diameter, 8.38 mm inner diameter and 2.04 mm thick and 2 nos of IP binders (set of 2 plates) are used in overlapping area of panels, made up of MS flat 25 mm x 3 mm size and 160 mm long with 2 slots of 9 mm

	x 20 mm and fixed with 2 nos. SS 316 M8 x 35 mm size mushroom head bolts. Omega clamp and IP Binder, both shall be made up of MS flat as per (Omega clamp IS 277 and IP Binder IS 2062) which shall be hot dip galvanised for minimum 360 GSM coating as per IS 2629 and IS 4759 (as applicable) and thermoplastic powder coating of minimum thickness 400 microns as per coating standard EN 10245 -1 and ISO 12944 (as applicable) of specified colour all complete as per direction of Engineer in charge. No extra cost shall be paid for permissible overlapping of panel.
	Coating requirements:- The modular fence manufacturer shall have a facility for surface preparation of (Blast clean SA 2.5) and surface treatment (7 tank or 10 tank process) for better longevity of the coating. Type Test Certificate should be provided by the Fence Manufacturer for the quality of powder coating and thermoplastic coating during supply of fence materials. Type Test Certificate should be provided from a Government Institution like Central Electrochemical Research Lab. The Fence Manufacturer shall have a valid applicator certificate for thermoplastic powder coating.
14	Providing and fixing factory made intermediate and straining Y-arms, consisting of MS angle 50 x 50 x 5 mm as per IS 2062, each arm of length 510 mm angled at 120° having 3 nos. of slots of 6 mm width at an angle of 45° and 12 mm diameter hole at the end of slot at a depth of 25 mm, welded with (i) at top and at bottom with a cap consisting of 45 mm long sleeve of 99 mm outer diameter and 93 mm inner diameter of 3 mm thick MS plate in intermediate Y-arm and (ii) a 3 mm thick 76.10 mm outer diameter 100 mm long MS pipe welded with 92 mm diameter 5 mm thick MS plate in straining Y-arm, having two sets of 14 mm diameter holes in sleeve / pipe for inserting SS 316 mushroom head bolts with breakable head safety nuts of size M 8 x 120 mm. The Y-arms shall be hot dip galvanised coating of minimum 360 GSM as per IS 4759 and thermoplastic powder coating of minimum 400 microns as per coating standard EN 10245-1 and ISO 12944 (as applicable) of specified colour. Intermediate Y-arm shall be provided at 2.50 m centre to centre and straining Y-arm shall be provided at first post, every 13th post, last end post and corner post. Six numbers of 3.50 mm diameter SS-316 Razor wires as per IS 6911, of tensile strength of 1400-1700 N/Sqm with SS 316 Tear blades (TBBT) of size 30 mm x 16 mm x 0.47 mm at 50 mm centre to centre in slots of Y-arms and tightened using six SS 316 Eye bolts at every straining Y-arm. SS 316 Razor wire punched tape coil, wire 3.5mm diameter as per IS 6911 of tensile strength 1400-1700 N/sqm, having diameter 850 mm of 56 loops stretchable length 10 m shall be spread over the six Razor tape wire and tied with SS 316 hog rings of diameter 3 mm with minimum 8 numbers per meter length of fencing complete as per direction of Engineer-in-charge.
	Coating requirements :-The modular fence manufacturer shall have a facility for surface preparation of (Blast clean SA 2.5) and surface treatment (7 tank or 10 tank process) for better longevity of the coating. Type Test Certificate should be provided by the Fence Manufacturer for the quality of powder coating and thermoplastic coating during supply of fence materials. Type Test Certificate should be provided from a Government Institution like Central Electrochemical Research Lab. The Fence Manufacturer shall have a valid applicator certificate for thermoplastic powder coating.
G	**RCC for Fence and Gate Footing including Grouting**
15	Providing and Fixing factory made precast M-40 grade Reinforced Cement Concrete Block (with minimum cement content 390 kg/cum), having 700 mm deep hole/recess of required dia for embedding circular hollow section (CHS) straining post of outer dia 88.90 mm with M-60 grade cementious grout (non-shrink) as per drawing including reinforcement (As per approved drawing), 2 nos. U-Shape Alloy steel hooks made of 16 mm dia bar 700 mm long with 250 mm anchor rod for lifting purpose, centering & shuttering, moulds (Pallet system, Tilts form, table moulds, battery moulds, vertical moulds, beam moulds, column moulds, staircase moulds, Facade mould, etc.), mixing, transporting and placing of concrete, vibrating, curing, finishing, making necessary cutout/ holes of required sizes for services, yard handling & stacking, hoisting and transportation of pre cast RCC Block from factory to working site and fixing the same in position, line, level & in alignment at site etc. all complete as per IS 15916:2020 and as per approved shop drawings and design mix as per the direction of Engineer-in-Charge (Cost of CHS post, M-60 grade cementious grout (non-shrink), Mechanical, Electrical and Plumbing inserts will be paid separately).

	a) Precast M-40 (with minimum cement content 390 kg/cum) grade reinforced cement concrete block of Trapezoidal shape with bottom width 1000mm, top width 600 mm height 900 mm , including minimum reinforcement steel @ 18 kg/unit, minimum 390 kg/cum cement to achieve RCPT value less than 800 coulombs tested as per ASTM C 1202 and water permeability less than 25 mm tested as per section 1700, MORTH. Note 1 Any excess requirement of cementitious materials beyond the stipulated limit of 390 kg/cum, if any, shall be met by adding additional Supplementary Cementitious Materials or cement and nothing extra shall be paid for such additional Supplementary Cementitious Materials or cement. NOTE 2: The physical and chemical properties of Supplementary Cementitious Materials (if required) shall conform to relevant IS Code. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS:456-2000 Note 3: The dosage of Super plasticizer or High range water reducers (HRWR) shall be enhanced suitably for achieving required target strength of concrete.
16	Providing and Fixing factory made precast M-40 grade reinforced Cement Concrete block (with minimum cement content 390 kg/cum), having required size hole/recess for embedding CHS post having size outer dia 88.90 mm dia and MS gate post of size 150*150 mm with M-60 grade cementious grout (non-shrink) as per drawing including reinforcement, 2 nos. U-Shape Alloy steel hooks made of 16 mm dia bar 1000 mm long with 300 mm anchor rod for lifting purpose, centering & shuttering, moulds (Pallet system, Tilts form, table moulds, battery moulds, vertical moulds, beam moulds, column moulds, staircase moulds, Facade mould, etc.), mixing, transporting and placing of concrete, vibrating, curing, finishing, making necessary cutout/ holes of required sizes for services, yard handling & stacking, hoisting and transportation of pre cast RCC Block from factory to working site and fixing the same in position, line, level & in alignment at site etc. all complete as per IS 15916:2020 and as per approved shop drawings and design mix as per the direction of Engineer-in-Charge {Cost of gate post, M-60 grade cementious grout (non-shrink), Mechanical, Electrical and Plumbing inserts will be paid separately}.
	a) Precast M-40 (with minimum cement content 390 kg/cum) grade reinforced cement concrete block of size 1000 mm x 1000 mm and height 1500 mm, including minimum reinforcement steel @ 45 kg/unit, minimum 390 kg/cum cement to achieve RCPT value less than 800 coulombs tested as per ASTM C 1202 and water permeability less than 25 mm tested as per section 1700, MORTH. Note 1: Any excess requirement of cementitious materials beyond the stipulated limit of 390 kg/cum, if any, shall be met by adding additional Supplementary Cementitious Material or cement and nothing extra shall be paid for such additional Supplementary Cementitious Materials or Cement. Note 2: The physical and chemical properties of Supplementary Cementitious Materials (if required) shall confirm to relevant IS Code. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS: 456-2000. Note 3: The dosage of super plasticizer or high range water reducers (HRWR) shall be enhanced suitably for achieving required target strength of concrete.
H	**Fence Gate**
17	Providing and fixing security gate with 2 no. gate post of MS rectangular hollow section 150 x150 mm (± 1%) thickness 8 mm (± 10%) with Hot dipped galvanised zinc (Zn) coating of minimum 360 GSM as per IS 2629/IS 4759/ASTM A123/IS 4736 and subsequently thermoplast coating of minimum 400 micron (DFT). The gate frame of both leaf made with top and bottom frame and that of gate brace, frame of required size for supporting coil as shown in drawing of MS hollow section of 80x80 mm (± 1%) thickness 3.20 mm (± 10%) , one leaf has required size of wicket gate as shown in drawing frame & bracing of that wicket gate made of MS hollow section of 40x40 mm (± 1%) thickness 2.60 mm (± 10%) is to be provided and all the MS section to be coated with Hot dipped galvanised zinc (Zn) coating of minimum 360 GSM as per IS 2629/IS 4759/ASTM A123/IS 4736/IS4826/EN 10244-2 and duly thermoplast coating of minimum thickness of 400 micron (DFT) after fabrication of gate. The weld mesh panel with mesh size 76.2 mm (± 3mm) x 12.7 mm (± 2mm) (WxH) of wire dia 4 mm (± 0.05mm) to be provided in the 02 no panels size of 2570x2665 mm with one number wicket gate of size 940x2485 mm. The mesh wire with Hot dipped galvanised zinc (Zn) coating of minimum 100 GSM as per IS 2629/IS 4759/ASTM A123/IS 4736/IS 4826/EN 10244-2 and subsequently thermoplastic coating after fabrication with the minimum coating

	thickness of 300 micron (DFT), fixed with M-60 grade cementitious non shrink grout. The concertina coil of 850 mm dia having 56 loops of 3.50 mm core wire stretchable in the length of 10 mtr to be provided on the top of gate with the SS 316 clips including providing of top and bottom hinges for gate and pivot system, hinges for wicket gate, sliding door bolt for main gate and for wicket gate as per drawing and as per manufacturer's specifications complete as per the direction of engineer-in-charge.
I	**Credit of Steel Items**
18	Credit to work for taking away dismantled M.S. sections like posts & struts (after cutting exposed length), G.I. barbed wire (in three rows) and concertina coil (in two rows) from existing three rows fencing fixed with angle iron posts at average spacing of 3.0 m as per standard drawings, including dismantling of tightening bolts, hooks, G.I. staples, M.S. spike flats & diagonal barbed wires & collecting all the dismantled material at identified places, removing all such dismantled materials from the site, clearing and cleaning the site from all such dismantled materials & small pieces, all complete as per direction of Engineer-in-Charge. **Note:-** i) Dismantling of MS sections will be paid under relevant item. ii) Dismantling of barbed wire and nuts bolts. concertina coil etc. will be paid under relevant item. iii) The amount of this item shall be considered negative while calculating the quoted amount of whole work.
J	**Shifting Sand Dunes Items**
19	Providing and fixing factory made post of MS Circular Hollow Section (CHS) assembly for shifting sand dunes portion, The CHS post of grade YST 240 as per IS 1161 : 2014 having external diameter of 88.90 mm, thickness 4.0 mm heavy grade. The CHS post assembly shall have an overall length of 3400 mm. It shall be factory-fitted at the bottom with a circular base/flange plate of 12 mm thickness and 350 mm dia (PCD 280 mm with 18 mm dia clearance holes for M 16 bolts),stiffened with 10 mm thick tringular gusset plates (100 mm x 150 mm) of grade E250.The assembly shall be provided with hot-dip galvanised coating of minimum 360 GSM on both sides as per IS 4736, IS 2629, and ASTM A123 (as applicable), and a thermoplastic powder coating of minimum thickness 400 microns as per coating standard EN 10245 -1 and ISO 12944 (as applicable) of specified colour. The post assembly shall be jointed to the lower foundation pipe assembly using M 16 Mushroom Head bolts with Security nuts and washers. Post to be placed at a center to center distance of 2.50 m as per direction of Engineer-In-Charge.
	Coating requirements: - The modular fence manufacturer shall have a facility for surface preparation of (Blast clean SA 2.5) and surface treatment (7 tank or 10 tank process) for better longevity of the coating. Type Test Certificate should be provided by the Fence Manufacturer for the quality of powder coating and thermoplastic coating during supply of fence materials. Type Test Certificate should be from a Government Institution like Central Electrochemical Research Lab. The Fence Manufacturer shall have a valid applicator certificate for thermoplastic powder coating.
20	Supplying, assembling, lowering and fixing in vertical / Inclined position with Factory made Steel built up tubular section (round, square or rectangular hollow tubes etc.) including 350 mm dia and 12 mm thick flange plate with four 18 mm dia hole for fixing M16 Bolts at one end(Top of Pipe)., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete as per direction of Engineer In Charge. Hot finished welded type tubes (Nominal Bore -219.10 mm & 5.6 mm thickness) with 12 mm thick 350 mm dia top flange plate)
21	Painting with black anti-corrosive bitumastic paint of approved brand and manufacture to give an even shade : Two or more coats on new work
22	Drilling for embedding M.S. pipe of 219.10 mm outside diameter, light-duty, into sand dunes/Tibba portion below existing ground level/sand dune surface level, by using hydraulic excavator, hydraulic hammer and/or other suitable mechanical means, including all necessary setting out, positioning, drilling, driving/embedding of pipe, hire and running charges of all equipment, tools, tackles, plant and machinery, labour and incidental works required for proper complete in all respects as per approved drawings, specifications and directions of the Engineer-in-Charge. (Cost of M.S. pipe shall be paid separately).

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

	(a) For depth up to 6.00 metres below ground level/sand dune surface level.
23	Providing and making revet mattress with mechanically woven, double-twisted, hexagonal-shaped wire-mesh gabion boxes, conforming to IS 16014:2012 and MoRTH Clause 2500, of required size as per approved drawings and site requirements, using Mesh Type 6 × 8 (D = 60 mm, ±2% tolerance), zinc + polymer coated, with mesh wire diameter 2.2/3.2 mm (ID/OD), mechanically edged/selvedged, having an average thickness of 170 mm, complete with partitions/diaphragms at 1.0 m intervals and additional diaphragms wherever required as per MoRTH Specifications. The mattress shall be properly assembled and tied with 2.2/3.2 mm (ID/OD) diameter lacing wire, supplied at 3% by weight of gabion boxes, and filled with sound, durable boulders of size 100 mm to 170 mm, hand-packed and properly secured, including all necessary cutting, tying, fixing, handling, loading, unloading, transportation, leads, placing, levelling, dressing, anchoring and all other incidental works, complete in all respects as per approved drawings, specifications and directions of the Engineer-in-Charge. (For payment, only the plan area of the completed revet mattress shall be measured).
24	Providing and laying of geotextile between pitching/Revet mattress and the embankment slope over which stone pitching/cement concrete/Revet mattress blocks are laid, to prevent the escape or washing out of embankment material through the voids of the pitching/blocks/Revet mattress and to facilitate free movement of seepage water without creating any uplift head or pressure beneath the pitching. The work shall include providing, transporting, unloading, handling, cutting, laying, positioning, overlapping, joining and securely fixing the approved geotextile fabric over the prepared embankment slope, including all necessary labour, materials, tools, tackles, equipment, leads and lifts, anchoring and securing arrangements, and all incidental works required for proper installation and completion, as per approved drawings, specifications and directions of the Engineer-in-Charge
25	Construction of embankment with materials obtained from borrow pits, with all lift and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2 of MoRTH specifications.

Executive Engineer,
CPWD, Sector Headquarter, BSF Campus,
Barmer, Rajasthan - 344001

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)

PART -B

SCHEDULE OF STAGE PAYMENT

Payment Break up Schedule

Sl. No.	Activity	Break up of total % payable of the quoted rate of the total length after completion of activity mentioned for full length (Percentage of quoted amount)
1	Site clearance & dismantling of existing fencing (Dismantled material will be property of the contractor) Earth work in Excavation & filling, surface excavation for paver block, providing and laying PCC M15 below foundation blocks of fencing and gate post and providing & fixing precast R.C.C. blocks of fencing & gate post.	21%
2	Providing and fixing of fence posts on foundation blocks.	12%
3	Providing and laying PCC 1:4:8 below paver block & kerb stone, 60 mm thick cement concrete interlocking paver block & kerb stone.	15%
4	Providing and fixing of weld mesh panels along with all accessories.	37%
5	Providing and fixing of intermediate and straining Y-arm with razor wire punched tape coil and gate i/c it's all elements.	13%
6	Providing and fixing revet mattress, geotextile, MS Pipe, Square Hollow section and construction of Embankment in shifting sand dune portion	2%

Note :- 1. The interim payments of above stages may be released on pro-rata basis of per unit length/area/volume of work done of that stage or part there off as decided by the Engineer-in-charge.

SCHEDULE OF WORK (Financial bid)

Name of work : Replacement of Old/ Rusted BS Fence with Single Row Modular Fence in the AOR of BARMER Sector, BSF (Raj.) (length 117.90 km)

S. No.	Description of item	Estimated Cost (in rupees)	% above or below the estimated cost	Percentage in figures	Total Cost (in rupees)
1.	Dismantling of existing fencing and providing new design single row modular fencing along with a gate at every one km, credits of serviceable materials received from dismantling, including 2.00 metre wide paver block platform including 100mm thick kerb stone both sides, earth work, PCC all complete as per the scope of work, specifications, drawings and nomenclature of items (NIT page no. 96 to 133) between BP No. 780/M to BP No. 854/M (length 117.90 km) on Indo-Pak border.	**Rs. 270,51,11,121/-**			

Note 1: This shall be read in conjunction with the description given in Scope of work, specifications, drawings and nomenclature of items mentioned in NIT document. The Bidder shall quote for the complete scope as envisaged in the document.

Executive Engineer,
Border Fencing Division-Barmer,
CPWD, Barmer

Overwriting-NIL, Insertion-NIL, Correction-NIL, Deletion-NIL AE(P) EE(P)