

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
 (भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

Registered Office: 27, Rajendra Nath Mukherjee Road,  
 Kolkata – 700 001, West Bengal.  
 Phone: (033) 2248 5841-44 Fax: 033-2210 3961  
 Email: [info.bbjconst@bbjconst.com](mailto:info.bbjconst@bbjconst.com); Website: [www.bbjconst.com](http://www.bbjconst.com);

<b>e-Tender No.</b>	<b>eNIT/ROB/AGRA-PALWAL/T-09-2025</b>	<b>Date:</b>	<b>14 May 2025</b>
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**NOTICE INVITING e-TENDER**

Sealed Tenders under a **Two-Bid system (i.e., "Techno-Commercial Part" & "Price Part")** are invited from eligible bidders for carrying out construction of Road Over Bridge (ROB) and other miscellaneous works as detailed in **"Scope of Work"/ "BOQ"**, here under:

Sl. No	NAME OF WORK	CONSTRUCTION OF 02-LANE ROAD OVER BRIDGE IN LIEU OF LEVEL CROSSING NO. 556A AT KM. 1457/14-16 IN THE AGRA-PALWAL SECTION OF AGRA DIVISION OF NORTH CENTRAL RAILWAY.
1	SCOPE OF WORK	AS PER NIT/ BOQ
2	CONTRACT TYPE	<b>WORKS CONTRACT</b>
3	COST PUT TO TENDER/ BASIC COST	<b>RS.21,20,40,300/- INCLUDING GST.</b>
4	COMPLETION PERIOD	<b>15 (FIFTEEN) MONTHS</b> FOR ENTIRE WORK FROM THE DATE OF LETTER OF ACCEPTANCE (LOA) OR WORK ORDER, WHICHEVER IS EARLIER.
5	COST OF TENDER DOCUMENT (NON-REFUNDABLE)	<p><b>RS.10,000/- (RUPEES TEN THOUSAND ONLY)</b> BY NEFT/ RTGS/ DEMAND DRAFT/ PAY ORDER/ BANKER'S CHEQUE IN FAVOUR OF "THE BRAITHWAITE BURN AND JESSOP CONSTRUCTION COMPANY LIMITED" PAYABLE AT "KOLKATA".</p> <p><b>TENDER DOCUMENTS WITHOUT THE TENDER FEE SHALL BE REJECTED.</b></p> <p>EXEMPTION FOR MICRO AND SMALL ENTERPRISES (MSE) FOR SUBMISSION OF "TENDER FEE" IS <b>"NOT APPLICABLE"</b> SINCE WORKS CONTRACT ARE EXCLUDED FROM THE PURVIEW OF PUBLIC PROCUREMENT POLICY FOR MSE ORDER, 2012 AND ITS LATEST AMENDMENT(S).</p>
6	EARNEST MONEY (BID SECURITY)	<p><b>RS.20,00,000/- (RUPEES TWENTY LAKH ONLY)</b> BY NEFT/ RTGS/ DEMAND DRAFT/ PAY ORDER/ BANKER'S CHEQUE IN FAVOUR OF "THE BRAITHWAITE BURN AND JESSOP CONSTRUCTION COMPANY LIMITED" PAYABLE AT "KOLKATA" OR BANK GUARANTEE AS PER THE FORMAT PROVIDED BY BBJ.</p> <p><b>TENDER DOCUMENTS WITHOUT EMD SHALL STRAIGHTWAY BE REJECTED.</b></p> <p>FOR UNSUCCESSFUL BIDDERS, EMD WILL BE REFUNDED AFTER THE FINALIZATION OF THE ORDER, WITHOUT ANY INTEREST.</p>

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Date: 14-May-2025

		<p>FOR SUCCESSFUL BIDDER, THE ABOVE EMD AMOUNT WILL BE CONVERTED INTO A SECURITY DEPOSIT AND WILL BE RETAINED BY BBJ TILL SUCCESSFUL COMPLETION OF THE DEFECT LIABILITY PERIOD.</p> <p>EXEMPTION FOR MICRO AND SMALL ENTERPRISES (MSE) FOR SUBMISSION OF "EARNEST MONEY" IS "<b>NOT APPLICABLE</b>" SINCE WORKS CONTRACT ARE EXCLUDED FROM THE PURVIEW OF PUBLIC PROCUREMENT POLICY FOR MSE ORDER, 2012 AND ITS LATEST AMENDMENT(S).</p>	
7	MODE OF SUBMISSION	<p>ONLINE THROUGH THE E-PROCUREMENT SYSTEM OF CPPP (CENTRAL PUBLIC PROCUREMENT PORTAL).</p> <p><b>A HARD COPY OF THE BID, AS UPLOADED, (TECHNO-COMMERCIAL) SHALL HAVE TO BE SUBMITTED TO BBJ’S REGISTERED OFFICE WITHIN FIVE (05) DAYS OF BID SUBMISSION LAST DATE.</b></p> <p>CORRIGENDUM, IF ANY, WILL BE PUBLISHED ON CPPP AND BBJ’S WEBSITE.</p>	
8	DATE & TIME SCHEDULE:	Date of Publishing NIT & Tender Documents	<b>14-May-2025</b>
		Document download Start Date	<b>14-May-2025 - 10:00 HRS</b>
		Start Date of uploading of bid document	<b>29-May-2025 - 10:00 HRS</b>
		End Date for uploading of bid document	<b>04-Jun-2025 - 15:00 HRS</b>
		Date of opening of Technical Bid	<b>05-Jun-2025 - 15:00 HRS</b>
		Date of opening of Financial Bid	<b>To be notified later</b>

(पार्थ नंदी / PARTHA NANDY)  
 मुख्य प्रबंधक (परियोजना) / CHIEF MANAGER (PROJECT)

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**INSTRUCTION TO BIDDERS**

1. **REGISTRATION OF CONTRACTOR**

Any bidder willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement system, through logging on to <https://eprocure.gov.in/eprocure/app>.

2. **DIGITAL SIGNATURE CERTIFICATE (DSC)**

Each bidder is required to obtain a Class-II or Class-III Digital Signature Certificate (DSC) for submission of tenders, from the approved service provider of the National Informatics Centre (NIC) on payment of the requisite amount. Details are available at the web Site (<https://eprocure.gov.in/eprocure/app>) in Clause 2 of Guideline to the bidder. DSC is given as a USB e-Token.

3. **SUBMISSION OF TENDER: ONLINE MODE IN CPPP'S PORTAL**

Bids are to be submitted online through the e-Procurement system of **Central Public Procurement Portal (CPPP)** (<https://eprocure.gov.in/eprocure/app>). Tender along with all other required documents are to be signed and sealed by the authorised signatory while submitting the bid through CPPP. While submitting Price Bid on CPPP, the rates should be properly filled in the appropriate space in the BILL OF QUANTITY (BOQ) of the Tender.

**Hardcopies of the uploaded documents, excluding Price Bid, are to be submitted along with EMD and Tender Fee (as applicable) in a sealed envelope to the BBJ's Registered Office within five (05) days of bid submission last date.**

4. **LANGUAGE**

Bids and all accompanying documents shall be in English. In case any accompanying documents are in another language, they shall be accompanied by an English version, which shall prevail in the matter of interpretation.

5. **SUBMISSION OF BID:** The Tender shall be signed by the person legally authorised to enter into commitments on behalf of the Tenderer. All pages of the Tender document and other required documents are to be **signed by the authorised signatory with Company's seal**. Tenders are to be submitted in **three parts** as described below.

(a) **FEE PART:** Scanned copy of the **Earnest Money, Cost of Tender and Pre-Contract Integrity Pact** duly signed and sealed by the authorized signatory, as stated below, are to be uploaded in CPPP and a hard copy of the same to be addressed to the Chief Manager (Project) at BBJ's Registered office in a sealed envelope, super scribing "TENDER NOTICE NO." and "FEE PART" (**Non submission of any of the stated documents shall lead to rejection of the bid**):

(i) **Cost of Tender (Non-Refundable) of Rs.10,000/-** (Rupees ten thousand five hundred only) in the form of NEFT/ RTGS/ Demand Draft/ Pay Order from any Nationalised or schedule Bank drawn in favour of "The Braithwaite Burn and Jessop Construction Company Limited" payable at "Kolkata". Cost of tender is not refundable.

(ii) **Earnest Money Deposit (EMD) of Rs.20,00,000/-** (Rupees twenty lakh only) in the form of NEFT/ RTGS/ Demand Draft/ Pay Order from any Nationalised or Schedule Bank drew in favour of "The Braithwaite Burn and Jessop Construction Company Limited" payable at "Kolkata" or in the form of a Bank Guarantee as per the format provided by BBJ. In the

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

case of successful bidder, EMD shall be converted to part of Security Deposit and will be retained by BBJ till the completion of the entire job. EMD shall not carry any interest.

**(iii) Bank Details for NEFT/ RTGS:**

Name of Beneficiary: THE BRAITHWAITE BURN AND JESSOP CONSTRUCTION COMPANY LIMITED.  
Bank Name: CANARA BANK  
Branch: SPCL MID CORPORATE BRANCH  
Bank Address: 7, KYD STREET, CHOWRINGHEE, KOLKATA - 700016.  
Bank Phone No.: +91-33-22650981  
Bank Account No.: 0254261005248  
IFS Code: CNRB0005004  
MICR Code: 700015075  
Bank Account Type: CASH CREDIT

**PS:** (i) In the case of EMD & Tender Fee submitted through NEFT/ RTGS, necessary documents need to be uploaded in CPP Portal and submitted along with the bid.

(ii) In the case of Earnest Money/ Bid Security submitted through Bank Guarantee, copy of SMFS to be sent/ shared with BBJ to the correspondence email address mentioned in the bidding document.

(iii) **The Bank Guarantee for Bid Security/ Earnest Money shall remain valid for a period of ninety (90) days beyond the bid validity period and shall include a claim period of ninety (90) days.**

(b) **TECHNO-COMMERCIAL PART:** Scanned all other required documents duly signed and sealed by the authorized signatory, as stated below, are to be uploaded in CPPP and a hard copy of the same to be addressed to the Chief Manager (Project) at BBJ's Registered office in a sealed envelope, super scribing "TENDER NOTICE NO." and "TECHNO-COMMERCIAL PART" (**Non submission of any of the stated documents shall lead to rejection of the bid**):

- (i). Signed copies of documents as per Eligibility Criteria as per Clause No 2 of Special Conditions of Contract.
- (ii). Signed copy of **PAN, Goods & Service Tax (GST) registration certificates.**
- (iii). Signed copy of **Provident Fund & Employees State Insurance (ESI) Registration Certificate.**
- (iv). Certificate of the Incorporation of the Company/ Partnership Deed/ DIN/ CIN etc.
- (v). Company's audited Balance Sheet & Profit & Loss Account for last 3 (three) financial years ending 31<sup>st</sup> March of the previous financial year. However, in case balance sheet of the previous year is yet to be audited, the audited balance sheet of fourth previous year shall be considered.
- (vi). Downloaded Tender document (without quoting any price in Techno-Commercial Bid) duly signed with an official stamp on each page.
- (vii). **Solvency Certificate** (as per attached format) for at least **40%** of the advertised value of the tender.
- (viii). Any Bidder falling under Micro And Small Enterprises (MSEs) category, shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer:

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ ST & Women Owned)
Micro			
Small			

Note: - If the bidder does not furnish the above, the offer shall be processed construing that the bidder is not falling under MSE category.

(c) **PRICE PART:** The rates are to be properly filled up in appropriate space in BILL OF QUANTITIES (BOQ) of the Tender and uploaded on CPPP's website. **Price bid of only Techno-Commercially Qualified bidders shall be opened.**

6. **INTEGRITY PACT:**

The Bidder/ Contractor is required to enter into an Integrity Pact with BBJ, in the Format at Annexure-I. The Integrity Pact enclosed at Annexure-I will be signed by BBJ for and on behalf of Employer as its Agent / Power of Attorney Holder at the time of execution of Agreement with the successful Bidder. While submitting the Bid, the Integrity Pact shall be signed by the duly authorized signatory of the Bidder. In case of failure to submit the Integrity Pact duly signed and witnessed, along with the Bid, the Bid is likely to be rejected.

In case of any contradiction between the Terms and Conditions of the Bid Document and the Integrity Pact, the former will prevail. For monitoring of the Integrity Pact, BBJ has appointed the following eminent personality as Independent External Monitor(s) (IEM):

<b>Shri Sunil Pandey</b> <b>IFoS (Retd.)</b> 249, Phase-I, Vasant Vihar, Dehradun – 248001. Uttarakhand Email: pandey.sunil90@yahoo.co.in	<b>Dr. Ravindra Kumar Srivastava</b> <b>IAS (Retd.)</b> A6, Anand Niketan, New Delhi - 110021 Email: srivastava.rks@gmail.com
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7. All costs and expenses incidental to the preparation of the tender, discussion, conference, pre-award discussion with BBJ shall be borne by the bidder and BBJ shall bear no liability whatsoever on such cost expenses.
8. **Works Contract are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012.**
9. **No deviation to the tender conditions shall be accepted. Conditional tenders shall not be accepted, and no additional clause shall be entertained. BBJ reserves all rights in this regard.**
10. The award of the order or rejection of the Tenderer's offer and/or cancellation of the tender will be made at the absolute discretion of BBJ. BBJ reserves the right to cancel or accept or reject any or all tender(s), whether lowest or otherwise, without assigning any reason(s) whatsoever thereof. A tenderer, whose tender is not accepted shall not be entitled to claim any cost, charges or expenses incidental to or incurred by him through or in connection with the preparation and submission of the Tender/ Offer to BBJ.
11. **CURRENCIES OF BID AND PAYMENT**  
The tenderer shall submit his price bid/ offer in Indian Rupees and payment under this

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

contract will be made in Indian Rupees.

12. **Price Variation Clause (PVC) shall be applicable** as stated at Clause No. 15 of Special Conditions of Contract.
13. **Joint Venture (JV) – Not Applicable.**
14. All duties, taxes, fees and other levies payable by the bidder under the contract or any other cause shall be included in the quoted price.
15. **PREFERENCE TO MAKE IN INDIA:**  
The provisions of revised 'Public Procurement (Preference to Make in India) Order 2017' issued by Department of Industrial Policy and Promotion under Ministry of Commerce and Industry vide letter no. P45021/2/2017-PP (BE-II) dated 16th September 2020, as amended from time to time up to Bid Due Date, shall be applicable to the bidding process and award of the contract shall be done accordingly.  
  
Please enter the percentage of local content in the material being offered. Please enter 0 for fully imported items, and 100 for fully indigenous items. The definition and calculation of local content shall be in accordance with the Make in India policy as incorporated in the tender conditions.
16. **PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA):**  
For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/Non-Local Supplier and purchase preferences to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 4th June 2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.
17. **COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (XI) OF GFR 2017**
  - I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. The Competent Authority for the purpose of this Clause shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).
  - II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any Bidder branch or office controlled by such person, participating in a procurement process.
  - III. Bidder from a country which shares a land border with India" for the purpose of this Clause means:
    - a) An entity incorporated established or registered in such a country; or
    - b) A subsidiary of an entity incorporated established or registered in such a country; or
    - c) An entity substantially controlled through entities incorporated, established or registered in such a country; or

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- d) An entity whose beneficial owner is situated in such a country; or
- e) An Indian (or other) agent of such an entity; or
- f) A natural person who is a citizen of such a country; or
- g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

IV. The beneficial owner for the purpose of (III) above will be as under:

18. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation-

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company.
  - b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.
19. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership or entitlement to more than fifteen percent of capital or profits of the partnership.
20. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person has ownership of or entitlement to more than fifteen percent of the property or capital or profits of the such association or body of individuals.
21. Where no natural person is identified under (19) or (20) or (21) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
22. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
23. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

Note:

- I. The bidder shall provide undertaking for their compliance to this Clause, in the format provided in Annexure-A.
- II. Registration of the bidder with Competent Authority should be valid at the time of submission of bids and at the time of acceptance of the bids.

24. **VALIDITY OF TENDER**

**90 (ninety) days** from the date of opening of tender or for a further period if mutually accepted. BBJ reserves the right to ask for the extension of validity if any.

25. **ORDER OF PRIORITY OF CONTRACT DOCUMENTS:**



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Where there is any conflict between the various documents in the contract, the following order of priority shall be followed i.e., a document appearing earlier shall override the document appearing subsequently:

- 1) Work order.
- 2) Letter of Award (LOA).
- 3) Schedule of Items, Rates & Quantities.
- 4) Special Conditions of the Contract (SCC).
- 5) Technical Specifications (TS).
- 6) Scope of Work (SOW).
- 7) Drawings.
- 8) Relevant Codes & Standards.
- 9) Notice Inviting Tender.
- 10) Instructions to the Bidders (IB).
- 11) General Conditions of Contract.
- 12) Any other documents forming part of the Contract.

26. **Bidder should submit the documents in Hard Copy on or before as stipulated in "DATE & TIME SCHEDULE" to the address as mentioned above.**



### **SCOPE OF WORKS**

**Name of work: "Construction of 02-lane road over bridge in lieu of level crossing No. 556A at km. 1457/14-16 in Agra-Palwal section of Agra Division of North Central Railway."**

Scope of work is as per the requirements given in the bid document but not limited to:

- a) Preparation of all detailed structural drawings and arranging approval of competent authority all complete. It also includes preparation of Quality Assurance Plan (QAP) for sub-structure, foundation, super-structure including bearings.
- b) Construction of RCC open foundation / pile foundation & pile cap as per approved drawings. Construction of RCC abutments and piers, for Composite Plate Girders and for PSC/RCC Girders as per approved drawings.
- c) Preparation of Temporary Arrangement Drawings (TAD), Launching Scheme and approval thereof for spans over Indian Railway (IR) non running/running lines and approach portion
- d) Fabrication of Bow string/Composite Plate Girders including erection over span and in-situ Construction of Post tensioned Pre-stressed (PSC) Girder over piers on approach portion.
- e) Construction of RCC deck slab on Composite Plate Girders and over PSC/RCC Girders and Construction of approaches which includes constructing of RE wall, RCC slab, piers, crash barrier, earthwork in bank, providing bituminous road & all works related to constructing approaches complete as per drawing.
- f) Providing and fixing in position standard fixed type POT bearing, free sliding type POT cum PTFE bearings/ Elastomeric bearings as per approved drawing
- g) Providing and laying cement concrete wearing coat, drainage spouts, footpath, etc.
- h) Providing and fixing RCC crash barrier, railing and electric lighting poles.
- i) Providing and fixing in position single strip seal elastomeric type expansion joints.
- j) Construction of Inspection platform, railing, ladders, etc.
- k) Construction of staircases.
- l) Providing and fixing of protection screens
- m) Making any temporary work for the purpose or arranging any temporary land for the working or stacking of materials of contractor.
- n) Other ancillary works i.e. diversion of existing roads, construction of service road, drain, painting of structural steel works etc.
- o) Miscellaneous - incidental to site conditions.
- p) Successful Bidder shall develop one number site office within 15 days from the date of LOA. Office containing infrastructure and tools are under the scope of Successful Bidder. Vehicle for transportation in connection with the work are under the scope of Successful Bidder.

**Note:** Tenderers to read understand and consider all the conditions, special & additional special conditions, instructions, specifications, work scope etc. before quoting rates.

### **MILESTONES AND TIME SCHEDULE for individual ROB**

The time allowed for execution of the works is **15 months (Fifteen months)** from the date of issue of letter of acceptance from BBJ. The contractor shall be expected to mobilize and commence execution of the works within 10(days) from issue of Acceptance Letter. If the contractor commits defaults in commencing execution of the works as afore stated, BBJ shall without prejudice to any other right to remedy, be at liberty to forfeit fully the Earnest Money Deposit and performance guarantee of the contractor.

**Progress of works:** The contractor shall submit a programme of work in the form of a Bar Chart of all the activities in consistence with milestone target envisaged below. In case this bar chart requires to be modified, the Engineer and the contractor shall agree upon a time and progress chart. The chart shall be prepared in direct relation to the time stated as 15 months for the

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Date: 14-May-2025

completion of the works as the milestone targets specified below of these special conditions. It shall indicate the forecast of the dates of commencement and completion of various activities of the work and may be amended as necessary by agreements between the Engineer and the contractor within the limitation of 15 months as overall completion period.

**Achievement of milestone progress:** In order to ensure progress during the execution of the work the contractor will be expected to achieve the following milestone targets ahead of dates mentioned against each. Failure to achieve accomplished milestone targets within allocated timeframe, save for reason accepted as laid by the Engineer shall create and constitute the ground for failure on the part of contractor for maintaining progress of the work as per agreed programme.

<b>Milestone Targets</b>	<b>Time allocated within which to achieve completion in total 15 (Fifteen) months' Time</b>
(a) Physical commencement of work	D+10 Days
(b) Mobilization of equipment's	D+20 Days
(c) Full mobilization of plant, machinery, men and material	D+30 Days
d)Construction of diversion of Road	D+50 Days
(e) Construction of foundation	D+120 Days
(f) Construction of substructure (Abutments & Piers)	D+120 Days to D+200 Days
(g) Construction of stair cases	D+120 Days to D+300 Days
(h) Fabrication and launching of steel superstructure	D+50 Days to D+300 Days
(i) Construction of deck slab including foot path, crash barrier, RE wall, RCC slab/Girder, railing, etc.	D+120 Days to D+300 Days
(j) Earthwork in embankment, Asphalted Road, rolling etc. complete	D+240 Days to D+300 Days
(k) Completion of providing & fixing of protection screens, cables, testing, etc.	D+330 Days to D+390 Days
(l)Providing and fixing Road sign boards, Lighting arrangements, painting etc. final Finishing and clearance / tidying up of site completely.	D+400 Days to D+450 Days

Note: "D" is the date of approval of drawing by **BBJ or Railways** to the contractor and it is planned to be completed in 90 days.

Additional Special Conditions of Contract (Part-I)

- Execution of any work under this contract will be done as per the provisions of following Codes/ Specifications /Manuals /Rules /Guidelines /Technical Circulars and contractor will comply with all provisions of these below-mentioned documents. Rate of items are inclusive of all methods/procedures of various activities involved in execution for particular item detailed in these documents, unless otherwise written in Special Conditions of Contract.
  - Guidelines for Earthwork in Railway Projects (Guideline No. GE: G-1).
  - Guidelines & Specifications for Design of Formation for Heavy Axle Load (GE:0014).
  - Specification No. RDSO/2018/GE: IRS-0004 (D) Part-IV dated 25.07.2019.
  - Guidelines for cutting in Railway Formations-2005 (GE: G-2).
  - Indian Railway Bridge.
  - Indian Railway Bridge Manual.
  - IRS Code of Practice for Plain, Reinforced & Prestressed Concrete for General Bridge Construction (Concrete Bridge Code).
  - IRS Code of Practice for the Design of Sub-Structures and Foundations of Bridges (Bridge Sub-Structures & Foundation Code).

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- 9) IRS Specification for Fabrication and Erection of Steel Girder Bridges and Locomotive Turn-Tables (Fabrication Specification).
- 10) IRS Code of Practice for the Design of Steel or Wrought Iron Bridges Carrying Rail, Road or Pedestrian Traffic (Steel Bridge Code).
- 11) IRS Manual on the Design and Construction of Well and Pile Foundations (Well and Pile Foundation Code).
- 12) IRS Code of Practice for Metal Arc Welding in Structural Steel Bridges Carrying Rail, Rail-Cum- Road or Pedestrian Traffic (Welded Bridge Code).
- 13) IRS Code for Earthquake Resistant Design of Railway Bridges (Seismic Code).
- 14) IRS Code of Practice for the Design and Construction of Masonry and Plain Concrete Arch Bridges (Arch Bridge Code).
- 15) Indian Railways Permanent Way Manual.
- 16) Guide lines for handling and stacking of rails CT-35.
- 17) Manual of Instructions on Long Welded Rails.
- 18) Indian Railways Small Track Machine Manual.
- 19) Specifications for Track Ballast IRS-GE-1.
- 20) Indian Railways Code for the Engineering Department.
- 21) Indian Railways Schedule of Dimensions 1676mm Gauge (BG).
- 22) National Building Code 2005.
- 23) Any BIS/IRC Code referred in above listed documents.
- 24) Instructions circulated by Railway Board/ RDSO/ NCR HQ etc.
- 25) Indian Railways Unified Standard Specifications (Formation Works, Bridge Works and P. Way Works) 2021.
- 26) Any other Codes , Manual & Circular as per the need.

All above-mentioned codes/manuals etc. are freely available on websites of Indian Railways/ IRICEN. If contractor is not able to find any code/manual on internet, he may get it from office of AXEN/XEN/DyCE/in soft copy. Any document (e.g. IS Codes) which are sold online/offline by BIS or any other agency, contractor must get it on his own.

2. Various BIS / IRC Codes are referred to in BIS/IRC Code itself. Those referred BIS/IRC Codes will also apply in contract and the contractor will comply with provisions of referred BIS/IRC Codes too.
3. If work is being carried out as per RDSO drawing/any other drawing approved by Railway, material to be used, processes involved in fabrication/erection of structure etc. will comply with drawing. The contractor will follow all instructions conveyed through the notes of drawing or any other means.
4. For items not covered by IRS and BIS Codes, provision of IRC Codes and MOST Specification are to be followed in successive that order.
5. Bar charts in tabulated form have been annexed as Annexure- to these conditions. After issuance of LOA, the contractor will submit detailed bar charts in line with these bar charts and get it approved from Railway.
6. Contractor will prepare Design Basis Report (DBR) for important bridges and obtain approval of RDSO as per guidelines of RDSO Report No. BS-122 within time frame as shown in bar chart if required and required by Railway.
7. Contractor will prepare the Quality Assurance Program for all activities required to complete the work (e.g. center line of bridge, concreting, steel, construction material to be used) and get it approved from Railway.
8. Contractor will prepare Method Statement for all activities required to complete the work keeping time frame of bar chart in mind and get it approved from Railway.

9. In case of any disputes regarding interpretation of any of the clause, decision of the concerned Chief Project Manager/Gati Shakti, Agra, North Central Railway, shall be final and binding on the contractor/s. Plea of Custom:
10. The plea of custom prevailing will not on any account be permitted as excuse for an infringement of any of the conditions of the contract or specifications.
11. Important events/construction stages will have to be recorded by contractors in still and digital video format at his own cost and will be handed over to Railways for record.

**12. WORKING METHOD AND PROJECT MONITORING:**

- i). The contractor shall submit within the time frame stipulated by Engineer-in-charge. The details of actual method to be adopted by contractor for the execution of any item at each of location support. The relevant working drawings as plants and machinery to be used for method handling for approval of Engineer-in-charge, who reserves the right to suggest alteration/modification in proposed method, which shall be binding on the contractor and no claim on account of such changes in method of execution will be admissible.
- ii). The contractor shall submit additional program for work commencement of work by preparing bar chart. PERT / CPM chart on computer using MS project for approval of Engineer-in-charge. This program will be reviewed at different stages of work.

**13. Design and Drawings:**

Contractor will have to collect the site details required for design and submit detailed structural design and drawing for any component incidental to work. Except those components, for which Railway's standard drawing are available, as per the direction of Engineer-in-charge and the same will be submitted to the railways in required format duly proof checked by proof consultants of any of IIT's/NITs for final approval of railways along with all supporting input & output data with software used in the design & drawing to enable checking by the Railway's authorities. Nothing extra shall be paid on this account.

14. Contractor will have to drill bore holes for geotechnical investigation for development of design input data of foundations. He may encounter standing/flowing water in river course. Contractor has to develop earthen island/coffer dam for construction of piles/foundations. Same earthen island/coffer dam can be used for exploratory drilling/sampling/data collection/in-situ testing. Payment for such temporary earthen island/coffer dam will be made under relevant SOR/NS item only once. Contractor must organize these activities accordingly.

The rate for forming an earthen island/coffer dam shall, unless otherwise stipulated, include the cost of its construction, its maintenance for the period of utility and its removal to the extent ordered.

**15. Completion Drawing:**

On completion of work the contractor will submit completion drawing of the work, structures & bridges covered under scope of contract (as directed by Engineer-in-charge) to the railway on C.D. with three sets of hard copies and on reproducible tracing film of 75 micron double matt type of approved quality available in the market for record. The rate includes for submission of the completion plan and nothing extra will be paid for this work. If the same is not submitted before or along with final bill then recovery at the rate of 0.2% of the overall gross payment of the contractor will be recovered from the contractor's dues. This recovered amount will be released only after receiving contract paid to of completion drawing within 2 month from the date of passing of final bill to this office after this period; this recovered amount will stand forfeited.

If work is terminated then contractor has to submit completion drawing of the portion of work executed by him, otherwise action as stated above will be taken.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**16. Transport Arrangement:**

The Contractor has to provide & maintain proper transport facilities (1 no. road vehicle) for efficient transport of Railway supervisor / staff / men and material for supervision and execution of work at site. Timely and adequate transport facilities in the form of well-maintained road vehicle like Ertiga /Scorpio /Tavera /TUV 300 /Innova or similar (not older than 3 years) etc. with fuel and driver for 24hrs availability during entire completion period of work. No extra/additional payment will be made to the contractor for this arrangement. In case of contractors failures to maintain these facilities, Rs.2000/- per day per vehicle shall be deducted from running bills as a deterrent. In this regards decision of Engineer in charge shall be final and binding upon the contractor.

17. Railways can get the work supervised through Railway Officials or PSS/PMS.

18. (a) Contractor will develop site offices at Each LC at his own cost within one month from date of issuance of LOA. These site offices can be developed with prefabricated material. Contractor will maintain these site offices throughout the currency of contract, free of cost. He will deploy a suitable person whenever site office is used by railway officials. This site office must have the following infrastructure, T&P and other facilities for use of railway or PMC officials:

19.

i). Office of minimum 25 m2 area with toilet.

ii). 24-hours lighting arrangement.

iii). 24-hour watering facility.

iv). Visitors chair, Almirah, Computer Table.

v). Computer UPS with tables and laser printer.

No payment whatsoever, will be made to contractor for supplying equipment for office, development and maintenance of site offices. All construction material, accessories, furniture etc. will be the property of contractor after completion of work. Any delay in setting up of these site offices, which may hamper progress of work will be on account of contractor.

19. (a) Contractor will deploy following personnel at site, as per approved work plan , minimum number of personnel for the key positions with requisite qualification and experience as mentioned below , in compliance of Clause 26A of GCC:

Sl no	Position	Minimum No of Personal	Minimum Qualification	Minimum Experience in Similar Work [years]
1	Project Manager	1	Graduate in Civil Engineering	10 years, out of which 3 years in-charge of road/ Railway project (For Graduate) , 16 Years out of which 3 years in charge of Road/Railway project (For Diploma)

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

2	Senior Engineer			
	for Bridge concrete & Earthwork etc. works	1	Graduate in Civil Engg.	5 Years
3	Junior Engineer/Supervisors			
	(a) for Bridge concrete & Earthwork etc. works	1	Diploma in Civil Engineering	5 Years
	(b) Bridge steel work	1	Diploma in Mechanical Engineering	5 Years
4	Surveyor for setting out alignment, layouts and levels periodically	1	Diploma in Civil Engg.	5 Years
5	Material Testing-cum Quality Control Engineer	1	Minimum Diploma in Civil Engg.	
6	Safety Officer	1	Preferably Graduate in any discipline but must have completed Diploma in industrial safety management OR construction management.	5 Years
7	Draftsman with knowledge of AutoCAD	1	Diploma in Civil Engineering /AutoCAD	3 Years

**Project Manager to be deployed within 30 days of issue of Letter of Acceptance. The program for deployment of other personnel shall be conveyed by Railway/PMC and personnel shall be deployed within 30 days of the stated requirement. In case of failure to deploy any personnel within 30 days of the stated requirement, a penalty shall be imposed for each day of delay as under:**

- (i) **Rs 10,000 per person per day for Project Manager & Safety Officer.**
- (ii) **Rs 5,000 per person per day for Sr. Engineers, Surveyor & Material Testing-cum-Quality Control Engineer.**
- (iii) **Rs 3,000 per person per day for other personnel.**

- b) The decision of the Engineer-in-charge as to the period for which required technical staff was not employed by the contractor and as to the reasonableness of the amount to be deducted from the contractor , shall be final; & binding on the contractor.
- c) During Working days (i.e. the days during which technical work is required , maximum as 25 days per month) , if technical supervisor is present less than required days in any month , deduction of Rs. 2500/- per day for graduate engineer & Rs. 1500/- per day for diploma holder will be made from the bill of the contractor.
- d) On completion/likely completion of activities concerned to a particular personnel, demobilization of that personnel shall be requested by the contractor at least 30 days in advance and demobilization shall be done with the approval of Railway/PMC only. In case demobilization is done without approval of Railway/PMC, the penalty mentioned in sub- clause (b) above, as relevant, shall be imposed for each day of absence of the personnel.



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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**20. List of essential minimum equipment to be maintained at site:**

The contractor shall deploy, the minimum number of equipment for execution of the work as per mutually agreed programme as mentioned hereunder:

Sl no	Equipment Type and Characteristics	Min. Number Required
1	Earth excavation and loading equipment ( Excavator)	2 set
2	Earth moving equipment ( Dumper)	4 nos.
3	Earth levelling and grading equipment ( Grader)	1 no.
4	Earth compaction equipment( Vibratory Rollers)	1 no.
5	Truck mounted water tank/sprinklers	4 nos.
6	Concrete Vibrating equipment	6 nos.
7	Total stations	2 nos.
8	Auto Levels	4 nos.
9	Transit mixers[6 cum]	2 nos.
10	Fully equipped soil, aggregate and concrete testing Laboratory	1 no.
11	Self-loading transit mixer (Fiori)	2 nos.
12	Weigh batchers and concrete mixers	2 nos.
13	Gensets of suitable capacity to drive batching plant, lighting, offices, other machinery	As decided with engineer
14	Fabrication workshop with complete set of equipments	As decided with engineer
15	Suitable capacity concrete pumps and/ or boom placer	As decided with engineer
16	Fully automated/computerized concrete batching plant of minimum 30 cum/hr. capacity, one at each important bridge site	As decided with engineer
17	Cranes	2 nos.
18	Hydras	1 no.
19	JCBs	1 no.

**Note:**

1. Above equipment list is not exhaustive and contractor may have to deploy additional equipment, at his cost, to maintain and achieve the work plan. Deployment will be worked out in consultation with engineer and in case of dispute, engineer's decision will be final. Any equipment not required further can be demobilized with the prior approval of the Engineer.
2. The records of mutually agreed programme of deployment as well as request for demobilization of any equipment/plant and approval of the same should be maintained in a register.
3. The type of equipment specified can be changed by the Engineer depending upon suitability of the equipment as per site conditions with the approval of Dy CE/ Gati Shakti concerned subject to that the total rate of production/output of proposed number and type of equipment should be equal to or more than that of the number and type of equipment stipulated in the contract agreement and quality of work is not compromised in any way;



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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

4. Contractor will prepare a deployment scheme for above equipments in accordance with agreed upon plan of work and get it approved from Railways. Demobilization or reduction in machinery can be allowed during the course of work, subject to progress of work not getting hampered. Failure to provide above machinery will result in penalty of Rs 2000/- per day.

**SAFETY RULE:**

**22. Safety precautions:**

(a) Contractor will follow all provisions of PCE Circular 103-R (available in Tender Documents) or any other circular / instruction communicated regarding safety at worksite strictly during execution of work.

(b) Barricading/Fencing:

- (i). Contractor will provide barricading parallel to track as and when directed by Engineer. Barricading will be done as per the drawing given in said circular or any other drawing as directed by Engineer. Cost of this will be paid under relevant SOR/NS item.
- (ii). This fencing/barricading will be maintained till the time as directed by Engineer's representative. As this fencing gets damaged, stolen, broken due to many external factors, payment will be made for this under relevant NS item. Payment for maintenance of fencing can be made since day of erection. Clause of 'Maintenance Period' of 6 months will not be applicable.
- (iv) If fencing is not found intact (as per drawing) by Railway engineer at any time, penalty equal to the cost of fencing of damaged patch will be imposed. Entry regarding this will be made in site order book and information will be sent to authorize engineer via WhatsApp/e-mail.
- (v) If a damaged patch is not repaired by contractor in next 3 days, a penalty of Rs. 100/- per meter per week or part thereof will be imposed till repairing is done.

(c) If during execution of work situation arises that formation beside running track is used by road vehicles, contractor will ensure that fencing is intact in that stretch. If fencing is not intact even at a single place, which may endanger the safety of running trains, contractor will provide manned barrier on both side of this stretch at his own cost till fencing is repaired.

(d) Contractor at the direction of Engineer's representative, will provide obstructions like excavation, placing of sleepers/cess ballast/released material, fencing, barrier etc. at the points from where road vehicles entry on formation parallel to track. No payment will be made for such activities.

(e) Manning of barriers:

- (i) During execution of work situations will arise when vehicles will ply on railway formation/bed parallel to track. To control such movement, Engineer's representative can direct contractor to provide manned barrier at locations identified by him. Cost of manning will be paid under relevant SOR/NS item. Cost of barrier will be borne by contractor and it will be their property. Barrier must be sturdy and with locking arrangement.
- (ii) Before manning, contractor and Engineer's representative (AXEN/XEN) will jointly plan the scheme mentioning how much time will it take to complete the work in that patch. If work is not completed in that period, further manning will be done by contractor at his own cost. While deciding the completion period of that particular patch, quantum of work, original completion period of contract, bar chart submitted by contractor etc. must be considered. Engineer's representative will strive to minimize the requirement of manning. For example;

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

1. Patch lying between two level crossings may be manned from one side and closed from another side, reducing manpower deployment to one. 2. Manning can be done for the only period in which vehicles ply. If night working is not being done, manning will be done in day time only.
- (iii) If work is not completed in stipulated time and manning of check points is also not being done by contractor, railway will arrange manning by departmental manpower/home guards/private guards/any other means. Recovery at double rate of cost of such arrangement will be made from contractor's dues.
- (f) In case the contractor has to ply vehicles for the purpose connected with the contract adjacent to Railway track the Railway Administration will be at liberty to post an experienced staff as flag man for guidance of the movements such vehicles so as to prevent accidents and the contractor will bear wages including all etc. of the staff posted as flag man for the period such staff is posted for the purpose. The Railway Administration will be sole judge in the absolute discretion, of the fact that it is necessary to post any staff, that which of the staff will be suitable for the purpose, that what should be the wages and other allowance payable by the contractor for staff posted for the purpose. The Railway administration will have a right without prejudice to other remedies to deduct the wages etc. of such staff from the bills of the contractor in respect of this contract or from any moneys or the contractor whatsoever available with the Railway Administration. The contractor will be liable for any over payments under Workman Compensation Act on account of any injury sustained to Railway servant during that period.
- (g) Within the station premises, especially on passenger platform, or near the running track, contractor/s shall ensure sufficient free space for movement of passenger traffic. He must cover and protect the excavation carried out in such areas with a view to avoid the accident. The works must be carried out most carefully in such a way that they do not hinder the railway operation except as agreed to by the railway.
- (h) The contractors shall see that no change is caused to railway signaling and transmission wire, stations, installation, communication lines, electric devices, trains of any kind, fencing as well as any rolling stock and in general to all railway installation and equipment in case any damage is caused to these due to the fault of the contractor on the part of anyone on his behalf all repairs there required will be carried out by the railway at the entire cost of the contractor and amount of expenses thus incurred will be recovered from the payment due to him.
- (i) The contractor shall be responsible for safe custody of tools and of the safety of his labour. He should ensure that labour on work removes their tools clear of the tracks on the approach of any trains. After the day work, the contractor should ensure that the tools are deposited proper tool box before the labours leave the work site. Tool issued should not be allowed to fall in unwanted hands who can tamper with the railway track.
- (j) The contractor shall employ one suitable supervisor to supervise the work at site. Though all the work relating to the safety of running trains shall be executed under railway supervisor, presence of qualified supervisor from the contractor's side is a must at the site of work.
- (k) Normally, night working shall be avoided. A night working shall be permitted by AXEN/XEN in writing. One inspector shall be specifically deputed to supervise the night working. The site/area where night working is to be done shall be adequately lit. Nothing extra shall be paid for this.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

(l) The worksite shall be suitably demarcated to keep public and passengers away from work area. Necessary signage boards such as "Work in progress. Inconvenience is regretted" etc. shall be provided at appropriate locations to warn the public/ passengers. Adequate lighting arrangement of worksite wherever required shall be done to ensure safety of public/passengers during night.

(m) In the event of accident at the work site, a departmental enquiry shall be held and in case, it is established that the accident has occurred on account of contractor's negligence or the negligence of his men, penalties up to an upper limit of 10% of the total cost of the work shall be imposed on the contractor.

(n) Railway administration reserves the right to terminate the contract with immediate effect if contractor is found responsible for causing an accident, without giving any further notice/notices to the contractor.

(o) In the event of contractor not completing the work or leaving it unsafe at the end of day's work such that it may cause speed restrictions to be imposed, track shall be attended by the railway immediately at the contractor's cost without any further notice. In addition, the labour cost recoverable from the contractor, supervision charges @ 12.50% and train detention charges @ Rs. 50000/- every half hour or part thereof shall also be recovered.

(p) In the event of contractor starting the job without proper supervision causing an accident, he may be prosecuted under Railway Act for unlawful interference with the railway track in addition to the recovery of Rs. 20000/- or value of actual loss, whichever is higher.

(q) Training to Supervisors and Operators of Contractor: The supervisors and operators of the contractor proposed to be deployed at work site, which is close to the running track, shall be imparted mandatory training by the Railway at site free of cost about the safety measures to be adopted while working in the vicinity of running track. Engineering-charge of the work shall decide the scale, extent & adequacy of training. In case, training is imparted at a recognized Railway training institute, the charges for the same shall be recovered from contractor as per latest instructions available from Railway Board/NCR HQ. A competency certificate to this effect to the individual supervisor/ operator shall be issued by a Railway Officer not below the rank of Assistant Officer. No supervisor/ operator of the contractor shall work or be allowed to work in the vicinity of running track that is not in possession of valid competency certificate. All the labour, materials, tools, plants etc. except detonators, required for ensuring safe running of trains shall be provided by Contractor at his own cost. Wherever lookout men are provided by Railway, charges at the rate of Rs. 500/- per man day shall be recovered from Contractor. The Railway will not acquire any land for the purpose of movement of vehicles of the contractor/s in doing earthwork.

(r) In addition, instructions issued through various PCE/Rly circulars with all amendments regarding barricading, protection of running lines while working in vicinity of it should be strictly followed.

(s) Storage of inflammables must be well away from site office/running track.

23. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra labourer shall be engaged for holding the ladder and if the ladder is used for carrying materials as will, suitable foot-holds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than one horizontal to four vertical.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

24. Scaffolding or staging more than 3.5 meters above the ground or floor swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached bolted, braced and otherwise secured above the floor or platform of such scaffolding or staging and extending along the entire length thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
25. Working platform gangways and stairways should be so constructed that they should not sag unduly or unequally, and where the height of the platform or the gangway or the stairway is more than 3.5 meters above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in the Para above.
26. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 10 metres in length while the width between side rails in swung ladder shall in no case be less than 300mm for ladder up to and including 3.5 metres in length. For longer ladders this width should be increased by at least 20 mm for each additional meter of length. Uniform steps spacing shall not exceed 300 mm. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sides of work shall be so stacked or placed as to cause danger for inconvenience to any persons or the public.
27. The contractor shall provide all necessary fencing and lights to protect the public from accident, and shall be bound to bear the expenses of defence of every suit action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such person.
28. Before any demolition work is commenced and also during the process of the work:-
  - (a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
  - (b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.
  - (c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion of flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
29. All necessary personal safety equipment as considered adequate by the Engineer-in-charge should be kept available for the use of the persons employed on the site and maintained in a condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by these concerned.
  - (a) Workers employed on mixing asphalt materials, cement and live mortar shall be provided with protective goggles.
  - (b) These engaged in white washing and mixing or attacking of cement bags or any materials which are injurious to the eyes shall be provided with protective goggles.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- (c) Those engaged in welding works shall be provided with welder's protective eyesight lids.
- (d) Stone breakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.
30. Those engaged in welding works shall be provided with welder's protective eyesight lids. Stone breakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe. When the work is done near any place where there is risk of drowning, all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any persons in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
31. Use of hoisting machines and tackle including their attachment anchorage and supports shall conform the following standards or conditions:-
- (a) (i) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good repair and in good working order.  
(ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from patent defects.
- (b) Every Crane Driver or hoisting appliances operator shall be properly qualified and no person under the age of 21 years shall be in-charge of any hoisting machine including any scaffolding.
- (c) In case of every hoisting machine and of every cabin ring, shackle, swivel and pulley block used in hoisting or as means of suspension safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked within the safe working load.
- In case of a hoisting machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machinery or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- (d) In case of departmental machine the safe working load shall be notified by the Electrical Engineer-in-charge. As regards contractor's machines, the contractor shall notify safe working load of the machine to the Engineer-in-charge whenever he brings any machinery to site of work, get it verified by the Electrical Engineer concerned.
32. Motors, gearing transmission, electric wiring and the dangerous part of hoisting appliances should be provided with efficient safe guards, hoisting appliances should be provided with such means will as reduce to the minimum the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized insulating mats, wearing apparel, such as gloves, sleeves and both as may be necessary should be provided. The workers should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
33. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold ladder or equipment shall be altered or removed while it is use. Adequate washing facilities should be provided at or near places of work.

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**34. PRECAUTIONS WHILE WORKING IN THE VICINITY OF TRACK:-**

The Contractor shall not allow any road vehicle belonging to his or his suppliers etc., to ply in Railway land next to the running line. If for execution of certain works viz., earthwork for parallel Railway line and supply of ballast for new or existing rail line gauge conversion etc., road vehicles are necessary to be used in Railway land next to the Railway line, the Contractor shall apply to the Engineer-in-charge for permission giving the type and No. of individual vehicles, names and License particulars of the drivers, location, duration and timings for such work / movement. The Engineer-in-charge or his Authorized Representative will personally counsel, examine and certify, the road vehicle drivers, Contractor's flagmen and Supervisor and will give written permission giving names of road vehicle drivers, Contractor's flagmen and Supervisor to be deployed on the work, location, period and timing of the work. This permission will be subject to the following obligatory conditions.

- a) The road vehicles will ply on between sunrise and sunset.
- b) Nominated vehicles and drivers will be utilized for work in the presence of at least one flagman and one Supervisor certified for such work.
- c) The vehicles shall ply minimum 6 m clear of track. Any movement/work at less than 6 m and up to minimum 3.5 m clear of track centre shall be done only in the presence of Railway employee Authorized by the Engineer-in charge. No part of the road vehicle will be allowed at less than 3.5 m from track centre. Cost of such Railway employee shall be borne by the Railway.
- d) The Contractor shall remain fully responsible for ensuring safety and in case of any accident, shall of all damages to this equipment and new and also damages to Railway & its passengers.
- e) The Contractor shall also bound by the provisions of this agreement to ply the road Vehicles only with adequate margin of safety, well clear of the fixed structure profile of infringements, as stipulated in the rules made under the Indian Railways Act and to seek and be guided by the Signals and other directions of any look-out men or other personnel retained for the purpose of ensuring safety, and to ensure extra care and vigilance while turning, reversing or moving the road Vehicles Track or the siding as the case may be. The Contractor shall employ necessary look-out men also at his own cost, irrespective of any other arrangement that Railway may make in this regard.
- f) Any breach of these conditions by the Contractor and/or his agents affecting the safety of movement of Trains, engines, or other rolling stock of the Railway shall constitute a breach of Contract by the Contractor entailing liability for termination of contract for default on the part of the Contractor.
- g) When the work is required to be done along or near the existing Railway track the contractor/s shall take such steps as are necessary for the safety of the track and labour working at site. He/they will also be required to programme his/their working so as not to interfere with the movement of trains. In this regard, contractor will not take up the track work on running lines without the presence of authorized representative of Railway. No extra payment shall be allowed for these precautions and also for crossing track/tracks, if required during the execution of the work. It should be ensured that the ballast of the track (s) is not spoiled or mixed with earth.



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- h) In addition to the precaution by the contractor/s for the safety of the track and labour, it may necessary to post flagman in same locations as an additional safety measure, for which the cost shall be recoverable from the contractor/s on the basis of the expenditure incurred by the railways enhanced by 12½% department charges. The contractor/s shall be fully responsible for any damage to or trespass caused by his/their men to any surrounding structure, Railways bear no liability whatsoever on this account.

Notwithstanding the above clause from (1) to (14) there is nothing in these to exempt the contract or the operation of any other act or Rule in force in the Republic of India.

**35. PROTECTION AND STEPS TO BE TAKEN IN ORDER TO AVOID DANGERS TO RAILWAY INSTALATIONS:**

- a) At such of the locations where contractor/ road vehicle are permitted to ply adjacent to the running lines and yard, an experienced gang-man shall be deputed as flagman at the cost of the contractor to prevent accidents. This factor should be borne in mind by the contractor/s while formulating the rates.
- b) If the work to be executed is in proximity or the running railway track, the contractor will be required to be followed all precautions and carry out all works that may be necessary to ensure the safety of the running track/trains, without imposition of any speed restriction thereon as may be directed by the engineer or his authorized representative. No claim whatsoever will be entertained for either an inconvenience caused to the contractor or for the rescheduling of the operations or for any other reasons on this account.
- c) The contractor shall take all precautionary measures in order to ensure protection of his own personnel moving about or working on the railway premises and shall have to conform to the rules and regulations of North Central Railway. If any unforeseen accident or injury happens while on working, the contractor shall be solely responsible for the same.
- d) Within the station premises, especially on passenger platform, or near the running track, contractor/s shall ensure sufficient free space for movement of passenger traffic. He must cover and protect the excavation carried out in such areas with a view to avoid the accident. The works must be carried out most carefully in such a way that they do not hinder the railway operation except as agreed to by the railway. The contractor's employee and workers shall not for any reason operate any appliances or installation of the railway concerning the safety of the trains movements but they should whenever necessary notify to the qualified railway staff who will then take necessary steps.
- e) The contractors shall see that no change in caused to railway signaling and transmission wire, stations, installation, communication lines, electric devices, trains of any kind, fencing as well as any rolling stock and in general to all railway installation and equipment in case any damage is caused to these due to the fault of the contractor on the part of anyone on his behalf all repairs there required will be carried out by the railway at the entire cost of the contractor and amount of expenses thus incurred will be recovered from the payment due to him.
- f) The contractor shall be responsible for safe custody of tools and of the safety of his labour. He should ensure that labour on work removes their tools clear of the tracks on the approach of any trains. After the day work, the contractor should ensure that the tools are deposited proper tool box before the labour proceeds for their homes. Tool issued should not be allowed to fall in and unwanted hand who can tamper with the railway track.



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- g) The contractor shall employ one suitable supervisor to supervise the work at site. Though all the work relating to the safety of running trains shall be executed under railway supervisor and presence of qualified supervisor from the contractor's site is a must at the site of work. Contractor shall provide 150mm thick white line with lime at a distance of 3.5m from centre to existing track. This white line shall be in the entire length where work is going on and/or the vehicle/machinery are plying along the track. Nothing extra shall be paid for this.
- h) Barricading with the help of portable fencing shall be provided in the length where the day's work is to be done in close vicinity of the track. The fencing shall consist of self supporting steel column connected with at least 20mm thick red nylon rope/red colour strips. The column shall be of 1.2m height. This will be placed at a distance of 3.5m from centre line of the nearest track. Nothing extra shall be paid for this work unless otherwise payable.
- i) Asstt. Officer/Sr. Scale officer shall issue competency certificate after checking license and their working to all drivers of nominated vehicles/machinery. Inspector at site shall ensure that the driver who does not possess the competency certificate will not work at site.
- j) The area between running line and white line shall not be permitted to become slushy and adequate drainage must be ensured at all times.
- k) Machine/vehicle shall ply 6m clear of track and movement /work at less than 6m and up to 3.5m of clear track centre shall be done in the presence of the railway employee authorized by the Engineer in- charge. The railway employee so deputed shall ensure safety of the track, with banner flag, hand signal lamps and detonators.
- l) If vehicle/machinery/materials are to come within 3.5m of existing track, work must be done under the presence of an inspector authorized to do safety works. A caution order shall be issued and track will be protected with the banner flag, hand signal lamps and detonators.
- m) Normally, night working shall be avoided. A night working shall be permitted by AEN/SEN in writing. One inspector shall be specifically deputed to supervise the night working. The site/area where night working is to be done shall be adequately lit. Nothing extra shall be paid for this.

**37.PENALTIES DUE TO UNSAFE WORK:**

- a) In the event of accident at the work site, a departmental enquiry shall be held and increase it is established that the accident has occurred on account of contractor's negligence or the negligence of his men, penalties up to an upper limit of 10% of the total cost of the work shall be imposed on the contractor.
- b) Railway administration reserves the right to terminate the contract with immediate effect in the contractor is found responsible for causing an accident without giving any further notice/notices to the contractor.
- c) In the event of contractor not completing the work or leaving it unsafe at the end of days work so they may serve speed restrictions if required to be imposed, track shall be attended to by the railway immediately at the contractor's cost without any further notice. In addition, the labour cost recoverable from the contractor, supervision charges @ 12.50% and train detention charges @ Rs.2000/- every half hour or part thereof shall also be recovered.

- d) In the event of contractor starting the job without proper supervision causing an accident, he may be prosecuted under railway act for lawfully interfering with the railway track in addition to the recovery of Rs. 20000/- or value of actual loss, whichever is less as penalty.

### **38.FLAGMEN**

At such of the locations where contractor/s road vehicles are permitted to ply adjacent to the running lines and yard, an experienced gang man shall be deputed as flagman at the cost of the contractor to prevent accidents. This factor should be borne in mind by the contractor/s while formulating the rates.

39. In case of any disputes regarding interpretation of any of the above clause, decision of the Chief Project Manager/North Central Railway, Agra shall be final and binding on the contractor/s.

40. Safety Precautions to be Taken While Permitting Plying of Vehicles in the vicinity of working site: Safe working of contractors (Extract of Para 826 of IRPWM):—A large number of men and machinery are deployed by the contractors for track renewals, gauge conversions, doublings, bridge rebuilding etc. It is therefore essential that adequate safety measures are taken for safety of the trains as well as the work force. The following measures should invariably be adopted:-

- (i). The contractor shall not start any work without the presence of railway supervisor at site.
- (ii). Wherever the road vehicles and/or machinery are required to work in the close vicinity of railway line, the work shall be so carried out that there is no infringement to the Railway's schedule of dimensions. For this purpose, the area where road vehicles and/or machinery are required to ply, shall be demarcated and acknowledged by the contractor. Special care shall be taken for turning/ reversal of road vehicles/machinery without infringing the running track. Barricading shall be provided wherever justified and feasible as per site conditions.
- (iii). The look out and whistle caution orders shall be issued to the trains and speed restrictions imposed where considered necessary. Suitable flagmen/detonators shall be provided where necessary for protection of trains.
- (iv). The supervisor/workmen should be counselled about safety measures. A competency certificate to the contractor's supervisor as per Proforma shall be issued by AXEN/XEN, which will be valid only for the work for which it has been issued.
- (v). The unloaded ballast/ rails/ sleepers/ other P Way materials after unloading along track should be kept clear off moving dimensions and stacked as per the specified heights and distance from the running track.
- (vi). Supplementary site specific instructions, wherever considered necessary shall be issued by the Engineer in Charge.
- (vii). There shall be an assurance register kept at each site, which will have to be signed by both, i.e. Railway Supervisor or his representative as well as the contractor's supervisor as a token of their having understood the safety precautions to be observed at site.

**41. PLYING OF ROAD VEHICLES AND WORKING OF MACHINERIES CLOSE TO RUNNING TRACKS:**

- (i) Normally, the road vehicles shall be run or machinery shall be worked so as not to come closer than 6.0m from centre line of nearest running track.
- (ii) The land strip adjacent to running tracks, where road vehicle is to ply or machinery is to work, shall be demarcated by lime in advance in consultation with the Railway's Supervisor. Wooden pegs at interval not exceeding 75mts shall be provided along the line marking as permanent marks. The road vehicles shall ply or machinery shall work so as not to infringe the line of demarcation.
- (iii) If a road vehicle or machinery is to work closer to 6.0m due to site conditions or requirement of work, following precautions shall be observed.
  - a. In no case the road vehicle shall run or machinery shall work at distance less than 3.5m from center line of track.
  - b. Demarcation of land shall be done by bright coloured ribbon/nylon chord suspended on 75cm high wooden/bamboo posts at distance of 3.5 m from center line of nearest running track.
  - c. Presence of an authorized Railway's representative shall be ensured before plying of vehicle or working of machinery.
  - d. Railway's Supervisor shall issue suitable caution order to Drivers of approaching train about road vehicles plying or machineries working close to running tracks. The train drivers shall be advised to whistle freely to warn about the approaching train. Whistle boards shall be provided wherever considered necessary.
  - e. Lookout men shall be posted along the track at a distance of 800m from such locations who will carry red flag and whistles to warn the road vehicle/machinery users about the approaching trains.
  - f. On curves where visibility is poor, additional lookout men shall be posted.
  - g. If work is required to be executed in night hoursthen adequate lighting arrangements including all safety measures to be ensured while working in vicinity of running lines.
- (iv) If vehicle/machinery is to be worked closer to 3.5m from running track. Under unavoidable conditions, if road vehicles is to ply or machinery is to work closer to 3.5m due to site conditions or requirement of work, following precautions shall be observed:
  - a. Plying of vehicles or working of machinery closer to 3.5m of running track shall be done only under protection of track. Traffic block shall be imposed wherever considered necessary. The site shall be protected as per provisions of Para No. 806 & 807 of P-Way Manual as case may be.
  - b. Presence of a Railway's Supervisor shall be ensured at worksite.
  - c. Railway's Supervisor shall issuesuitablecautionordertoDriversofapproachingtrainaboutvehicles plying or machineries working close to running tracks. The train drivers shall be advised to whistle freely to warn about the approaching train.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- (v) Precaution to be taken while reversing road vehicle alongside the track. The location where vehicle will take a turn shall be demarcated duly approved by Railway's representative. The road vehicle driver shall always face the Railway track during the course of turning/reversing his vehicle. Presence of an authorized Railway representative shall be ensured at such location.
- (vi) Road vehicle shall not be allowed to run along the track during night hours generally. In unavoidable situations, however, vehicles shall be allowed to work during night hours only in the presence of an authorized Railway's representative and where adequate lighting arrangements are made and where adequate precautions as mentioned earlier have been ensured.
- (vii) Road vehicles/machinery/plant etc. when stabled near running tracks shall be properly secured against any possible roll off and always be manned even during off hours.

**42. EXECUTION OF WORKS CLOSE TO OR ON RUNNING LINES:**

- (i) Any work close to or on running tracks shall be executed under the presence of a Railway's Supervisor only.
  - (ii) Precaution to be taken to ensure safety of trains while execution of work close to the running line or on running lines.
- a. Such works shall be planned and necessary drawings particularly with regard to infringement to moving dimensions shall be finalized duly approved by competent authority before execution of work. The work shall be executed only as per approved procedure and drawings.
  - b. All temporary arrangements required to be made during execution of work shall be made in such a manner that moving dimension do not infringe.
  - c. Suitable speed restriction shall be imposed or Traffic block shall be ensured as required.
  - d. The site shall be protected as per provisions of Para No. 806 & 807 of Indian Railway P-Way Manual as case maybe.
  - e. Necessary equipment for safety of trains during emergency shall be kept ready at site.
- (iii) Precaution to be taken to ensure safety of electrical/signal/ telephone cables while excavating near tracks.
- a. Particular care shall be taken to mark the locations of buried electrical/signal/telephone cables on the plans jointly with S & T/Electric supervisor and also at site so that these are not damaged during excavation.
  - b. Copy of the cable plan should be given to the contractor's authorized representative before handing over the site to start the work.
  - c. Due care shall be taken to ensure that any part of the equipment or machinery or temporary arrangement does not come close to cables while working.

**NOTE-** To safeguard the underground cables (signaling, telecommunication and electrical cables) care should be taken during execution of work in accordance with as per Railway Board's JPO circulated vide letter No.2003/Tele/RCIL/1PtIX New Delhi dated 24.06.2013 and N.C. Railway JPO circulated vide letter No. S&T/NCR/JPO/CABLE dated 18.01.2016 and accordingly in case of damage to the cables action will be taken.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- (iv) Precaution to be taken during execution of works requiring traffic blocks.
- a. Any work, which infringes the moving dimensions, shall be started only after the traffic block has been imposed.
  - b. Before closing the work, the track shall be left with the proper track geometry so that the trains run safely.
  - c. After completion of work the released sleeper and fittings should be properly stacked away from the track to be kept clear of moving dimensions.
  - d. Block shall be removed only when all the temporary arrangement, machineries, tools, plants have been kept clear of moving dimensions.
- (v) Precaution to be taken during execution of works during night. The work close to running line, generally, shall be carried out only during day hours. At locations, however, where night working is unavoidable, proper lighting arrangement should be made. The engineering indicator boards shall be lighted during night hours as per the provisions of IRPWM.

The staff deputed for night working should have taken adequate rest before deploying the min night shift. We can specify duration of night shift from 20.00hrs to 04.00 hrs. All other safety precautions applicable for day time work should be strictly observed during night working.

- (vi) Precautions to be taken to ensure safety of workers while working close to running lines.
- a. Necessary lookout men with red flags and whistles shall be provided to warn the workmen about the approaching train.
  - b. Railway's supervisor shall issue suitable caution order to Drivers of approaching train for whistling to warn the workers about the approaching train. Whistle boards shall be provided wherever considered necessary.
  - c. A "First aid kit" shall always be kept ready at site.
- (vii) Precaution shall be taken for safety of public or passengers, while executing works at locations, used by passengers and public,. The worksite shall be suitably demarcated to keep public and passengers away from work area. Necessary signage boards such as "Work in progress Inconvenience is regretted" etc. shall be provided at appropriate locations to warn the public/ passengers. Adequate lighting arrangement of worksite wherever required shall be done to ensure safety of public/passengers during night.
- (viii) Precaution to be taken before stacking materials alongside the track to ensure that safety of trains is not affected. The following precautions shall be taken before stacking the materials along the track for stacking of ballast, rails, sleepers etc.
- a. The sites for material stacking should be selected in advance in such a manner as to ensure that no part of the material to be stacked is infringing the Standard Moving Dimensions. A plan of proposed stacking locations be made and signed jointly by an authorized Railway's representative and contractor's representative.
  - b. The selected locations shall be marked by lime in advance.

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- c. Presence of an authorized Railway's representative while unloading and stacking shall be ensured.
- d. The material shall be stacked in such a height so as to not to infringe SOD in case of accidental roll off.

In addition, instructions issued through various PCE/Rly circulars with all amendments regarding barricading, protection of running lines while working in vicinity of it should be strictly followed. For safety PCE Circular no 103 R issued on 20.11.19 by NCR should be followed

#### **43.PROTECTION OF TRACK DURING EMERGENCY:**

- (i). Action to be taken when a contractor's supervisor or vehicle operator apprehends any unusual circumstances likely to infringe the track and endanger safe running of trains.

At any time if a contractor's supervisor or vehicle operator observes any unusual circumstances likely to infringe the track and apprehend danger to safe running of track, he shall take immediate steps to advise a Railway official of such danger and assist him in protection of track.

The track shall be protected as under.:- One person shall immediately plant a red flag (red lamp during night) at the spot and proceed with all haste in the direction of approaching train with a red flag in hand (red lamp during night) and plant a detonator on rail at a distance of 600m from the place of obstruction of BG track (400m for MG track) after which he shall further proceed for not less than 1200m from the place of obstruction from BG track (800m for MG track) and plant three detonators at 10m apart on rails. After this he shall display the red flag (red lamp during night) at a distance of 45m from the detonators. Attempts shall also be made to send an advice to nearest Railway station about the incident immediately.

- (ii). Action to be taken if train is seen approaching to site of danger and there is no time to protect the track as per guidelines mentioned above. In such a case the detonators shall be planted on rails immediately at distance away from place of danger as far as possible and attention of driver of approaching train shall be invited by whistling, waving the red flag vigorously, gesticulating and shouting.
- (iii). Action shall be taken if more than one track is obstructed: a. In case of single line protection as above shall be done in both the directions from place of danger. b. In case of double line or multiple lines, if other tracks are also obstructed, the protection as above shall be done for other track also. The protection shall be done in that direction and on that track first on which train is likely to arrive first. c. The Contractor's Supervisors, Operators and lookout men shall be properly explained about the direction of trains on running tracks.
- (iv). Equipment required for protection of track. Minimum compliment of protection equipment i.e. 10 detonators, 4 red hand flags, 4 red hand lamps, 4 banner flags and whistles etc. shall always be kept ready at worksites for use in case of emergency. Railway will arrange to provide detonators, whereas Contractor shall arrange other equipment at his own cost. Arrangement of lookout men and competency required for lookout man to warn labour about approaching train.



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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- a. Contractor will provide lookout men.
- b. The lookout men shall be properly trained in warning to staff at worksite about approaching train.
- c. Only those lookout men shall be provided at site who have been issued with a competency certificate by the Railway's Supervisor.
- d. In case, it is felt necessary to provide lookout men by Railway, the charges for the same as fixed by Railway Administration shall be recovered from Contractor.

44. Special conditions for working of cranes and hoisting arrangements:

(Ref: RB L No. 2015/CE-IV/RUB/206 dated 15.02.2016 & 11.08.2016) To ensure safe working of cranes/hoisting arrangements used in works, following items shall invariable be ensured before putting these arrangements to use:-

- (a) No machine shall be selected to do any lifting on a specific job until its size and characteristics are considered against the weights, dimensions and lift radii of the heaviest and largest loads.
- (b) Based on site conditions i.e. maximum boom length and operating radius, safe working load of crane shall be assessed which should be more than 1.5 times of load to be handled.
- (c) Before actually commencing the work near track, trial at site shall be done by actually lifting the heaviest segment to be tackled with required boom length and required operating radius. Once, the trial is successful, then only crane shall be brought to site of actual work.
- (d) The stability of slope under imposed load of crane prop under worst loading conditions and point nearest to edge of slope shall be checked. The location of prop, location of working of crane and other relevant factors shall be clearly indicated on plan.
- (e) At locations near crane propping, the strengthening of slope by driving the rails/ salballi piling shall be done to prevent any chance of slope failure. Also, the proper compaction/strengthening of soil at prop location shall be done to prevent any settlement of prop.
- (f) Stone/quarry dust may be filled by side of precast units with hand compaction before resorting train.
- (g) The contractor shall ensure that a valid Certificate of Fitness is available before use of Road Cranes.
- (h) Contractors should utilize the services of any competent person as defined in Factories Act, 1948 and approved by Chief Inspector of Factories.
- (i) The laminated photocopies of fitness certificate issued by competent persons, the operators' photo, manufacturer's load chart and competency certificate shall always be either kept in the operator cabin or pasted on the visible surface of the lifting appliances.
- (j) All lifting appliances including all parts and gears thereof, whether fixed or movable shall be thoroughly tested and examined by a competent person once at least in every six months or after it has undergone any alterations or repairs liable to affect its strength or stability.



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

45. Emergency works: In the event of any accident or failure occurring in, on or about the work or arising out of or in connection with the construction, completion or maintenance of the works, which in the opinion of the Engineer requires immediate attention, the Railway may bring its own workmen or other agency to execute or partly execute the necessary work or carry out repairs if the Engineer considers that the contractor/s is/are not in a position to do so in time and charge the cost thereof, which will be determined by the Chief Project Manager, Agra, North Central Railway, to the contractor.
46. Vehicle and equipment of the contractor can be drafted by Railway Administration in case of accidents/natural calamities involving human lives. For payment purpose, the item may be operated as new non-schedule item (NS Item) as per existing norms and powers delegated.
47. Contractor shall provide suitable manpower to Engineer in-charge or his representative at all times during currency of the contract for assisting him in giving layout of work, carrying out quality checks, taking measurements and other associated activities for effective supervision of work.
48. Work prepared away from the site:  
The contractor shall give the Engineer written notice of the preparation or manufacture at a place away from site, of any materials or components to be used on the works, stating the place & time of preparation or manufacture, so that the Engineer may inspect all stages of the production process. Failure to give such notice may result in the rejection of the materials or components. Facilities for the inspection of such work shall be provided by the contractor.

**ADDITIONAL SPECIAL CONDITIONS & SPECIFICATIONS (PART- II)**

**1. Field laboratory:**

The contractor shall be required to provide a site laboratory with adequate space for equipment for carrying out testing aggregates, water, cement, sand, and testing of concrete for compressive strength and workability, sieve analysis of aggregates, soil and blanketing materials. OMC and MDD of Earthwork and other parameters. Contractors shall deploy in site laboratory facilities such as computer, communication etc. for analysis of test results, reviewing and reporting of progress of work.

The lab should be manned, managed & maintained by suitable, qualified personnel from the contractor.

Field laboratory shall preferably be located adjacent to the site office of the Engineer and provided with amenities like water supply, uninterrupted electric supply etc. The laboratory should be at least 4.5mx4.5 m in size to have space for the installation of equipment, laboratory tables and cupboards, working space for carrying out various laboratory tests and a curing tank for the curing of samples.

**2. Laboratory Equipment:**

The following items of laboratory equipment duly calibrated shall be provided in the field laboratory:

1. Balance 20 kg capacity self-indicating type.
2. Electronic Balance 5 kg capacity accuracy 0.5 gm.
3. Electric hot plate

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

4. Glass wares, spatulas, wire gauzes, steel scales, measuring tape, casseroles, karahis, enameled trays of assorted sizes, pestle-mortar, porcelain dishes, gunny bags, plastic bags, chemicals, digging tools like pickaxes, shovels etc.
5. Set of IS sieves with lid and pan 20mm, 19mm, 10mm, 4.75mm, 2 mm 600mic, 425mic, 212mic, 75mic.
6. Water testing kit.
7. Soil test equipment's.
  - i. Core cutter with dolly.
  - ii. sand replacement equipment.
  - iii. Liquid Limit apparatus & Shrinkage limit apparatus Stainless.
  - iv. Steel spatula - 25cm long.
  - v. Frying.
  - vi. Pans Stove.
  - vii. Janta.
  - viii. Straight edge 300mm long.
  - ix. Desiccators as per IS 6128.
  - x. Specific gravity test apparatus.
  - xi. Thermostat Oven to maintain a temperature.
  - xii. Sodium carbonate.
  - xiii. Hammer.
  - xiv. Rapid Moisture meter or kit for determination of moisture content CBR testing machine.
8. First aid box.
9. For aggregates.
  - i) Flakiness and Elongation Test Gauges.
  - ii) Sieve sets
10. For cement and cement concrete.
  - i) Vicat apparatus for testing setting times
  - ii) Slump testing apparatus
  - iii) Compression testing machine
  - iv) Needle Vibrator

Note: The items and their numbers listed above shall be finally decided by the Railways Engineer as per requirements of the Project and modified accordingly

3. RECORDS AND REGISTERS: The contractor shall maintain accurate records, plans and charts

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

showing the details and progress of main operation and Engineer shall have access to this information at all reasonable times. The following registers will be maintained at site by the Engineer-in-charge, which will be signed by representative of the Engineer and the contractors:

- a. Site Order Register
- b. Cement Register
- c. Steel Register
- d. Labour Register
- e. Plant & Machinery Register
- f. Measurement Register
- g. Material Testing Register
- h. Cube Testing Register
- i. Mix Design Register
- j. Prestressing Register.
- k. Check Request Register

4. Sampling & Testing:

Various tests with their frequency have been mandated in IRUSS, CPWD Specification, IRS Codes, BIS Codes etc. Contractor shall establish a field laboratory-cum-site office at site of work at his own cost. This field laboratory must be equipped with calibrated test equipments for tests on soil, aggregate, concrete and its components, blanket material, earthwork etc., survey equipments like TS, levels and keep a minimum set of staff to man this lab to carry out the number of tests required as per specifications for quantum of works as per agreed work plan. He shall ensure that equipments provided are of latest specification and are in good working order and got calibrated from authorized firm. Contractors shall also provide facilities such as computer, communication etc. for analysis of test results, reviewing and reporting of progress of work. He will provide full assistance to Engineer or Engineer's Representative for testing in field lab. Cost of recurrent calibration, repair, maintenance of these equipment will be borne by contractor.

The contractor shall get certain percentage of samples tested at other approved laboratories/colleges as may be directed by the Engineer-in-charge as confirmatory tests at his own cost. Contractor will arrange to send samples to external testing laboratory and collecting test reports.

Tests which cannot be conducted at contractor's laboratory at site, will be conducted at approved colleges/laboratories as mentioned in these conditions. Complete cost of testing will be borne by contractor.

In exceptional circumstances, Railway may allow, on request of contractor, to get some tests executed from approved laboratories/colleges, till the laboratory is setup or if the equipment goes out of order, in the interest of work. However, this should be an exception instead of the norm, with intent only to not allow progress of work to suffer.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

Rate of all SOR/NS items is deemed to have been included cost of all testing to be performed as per IRUSS/CPWD Specifications/IRS Codes/BIS Code either in contractor's site laboratory or in approved outside laboratories / colleges unless otherwise specified in item or Special Conditions of Contract.

5. List of Approved laboratories for testing of Engineering Materials.

A list of approved laboratories for testing of materials is as under:

- a. Moti Lal Nehru Regional Engineering College Allahabad
- b. Institute of Engineering and Rural Technology, Allahabad.
- c. CSP/N.C.Rly./Subedarganj, Allahabad.
- d. IIT (BHU), Varanasi.
- e. KNIT, Sultanpur.
- f. HBTI, Kanpur.
- g. IIT, Kanpur.
- h. Material Test Laboratory, Civil Engg. Deptt., AMU, Aligarh.
- i. National Test House, Kamala Nehru Nagar, Gaziabad.
- j. IIT, Delhi.
- k. Delhi College of Engineering, Delhi.
- l. Sri Ram Test House, Delhi.
- m. Dayalbagh Engineering College, Agra.
- n. Madhav Institute of Technology, Gwalior.
- o. Bundelkhand Institute of Technology, Jhansi.
- p. Forest Research Institute, Dehradun (For wood work)
- q. Any NABL approved laboratories.

Contractor is free to get the material tested from any above laboratories with prior approval of engineer's representative which will be final. For specific specialized items, tests not being done in above laboratories, decision will be taken by DyCE/Gati Shakti, Agra, on reference from contractor. 5(a). LIST OF BRANDED MATERIAL OF NORTH CENTRAL RAILWAY IN WORKS TENDER ISSUED ON 22/03/2022 as per Letter No. NCR-HQ0ENGG/132/2021-O/o CE/Works/HQ/NCR.

Under the system improvement over NCR, an exhaustive list of following Branded materials to be used in the Works contract for implementation. This Branded items of list will invariably be applicable in all the tenders in which the tender schedule have been prepared based on CPWD-DSR with exceptions as given below.

If certain isolated sections of structural steel, not being rolled by ISPs/ is required in very small quantity, the same can be procured from the authorized re-rollers of ISPs or authorized licenses of BIS having traceability system and who use billets produced by ISPs. Traceability shall be ensured by an officer specially authorized by the concerned SAG officer of the Zonal Railway on case to case basis for this purpose.

In case of non-availability of other materials at a particular time of brands appearing in NCR list and for which RDSO approved list is not available, Engineer in charge can permit supply of material from brands having similar reputation.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

Sr. No.	Name of Product/ Material	CPWD Brand Names	Railway Brand Name	Proposed brand Name for Railway
1	ORDINARY PORTLAND CEMENT (GREY) (43 GRADE)	ACC, ULTRATECH, VIKRAM, SHREE CEMENT, AMBUJA, JAYPEECEMENT, CENTURY CEMENT & J.K. CEMENT.	Nil	ACC, ULTRATECH, VIKRAM, SHREE CEMENT, AMBUJA, JAYPEE CEMENT, CENTURY CEMENT & J.K. CEMENT.
2	PORTLAND POZZOLONA CEMENT (GREY)(43 GRADE)	ACC, ULTRATECH, VIKRAM, SHREE CEMENT, AMBUJA, JAYPEE CEMENT, CENTURY CEMENT & J.K. CEMENT.	Nil	ACC, ULTRATECH, VIKRAM, SHREECEMENT, AMBUJA, JAYPEE CEMENT, CENTURY CEMENT & J.K. CEMENT.
3	WHITE CEMENT	J.K.WHITE, JAIPUR SUPREM PACKAGING PVT. LTD ULTRATECH CEMENT LIMITED.	Nil	J.K.WHITE, JAIPUR SUPREME PACKAGINGPVT. LTD., ULTRATECHCEMENT LIMITED.
4	REINFORCEMENT STEEL	SAIL, TATA STEEL LTD., RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD.	Nil	SAIL, TATA STEEL LTD., RINL, JINDALSTEEL & POWER LTD. AND JSW STEEL LTD.
5	ADMIXTURES	CICO, FAIRMATE, HINDPLAST SUPER, SUPAPLAST, SIKAA	Nil	CICO, FAIRMATE, HIND PLASTSUPER, SUPAPLAST, SIKAA
6	WATER PROOFING COMPOUND	FOSROC, CICO, KRYTON, BUILDMATE, PIDLITE, PRIYA ENTERPRISES, FAIRMATE, SIKAA	Nil	FOSROC, CICO, KRYTON, BUILDMATE, PIDLITE, PRIYA ENTERPRISES, FAIRMATE,SIKAA
7	AUTOCLAVED AERATED BLOCKS	BILTECH, ECO GREEN, FINECRETE, J.K. LAKSHMI CEMENT LTD.	Nil	BILTECH, ECO GREEN, FINECRETE, J.K. LAKSHMI CEMENT LTD.
8	POLYMER MODIFIED ADHESIVE FOR AAC BLOCKS	MYK LATICRETE, FERROUS CRETE, ARDEX ENDURA, ULTRATECH, SIKAA.	Nil	MYK LATICRETE, FERROUS CRETE,ARDEX ENDURA, ULTRATECH, SIKAA.
9	FACTORY MADE PANELLED & WIRE GAUGE WOODEN DOOR/ WINDOW SHUTTERS.	M/S JAIN WOOD INDUSTRIES, KUTTY DOORS, SAMRAT PLYWOOD, NEW JAGDAMBA DOORS, MERINO, KITPLY, ASTIMBER	Nil	M/S JAIN WOOD INDUSTRIES, KUTTY DOORS, SAMRAT PLYWOOD, NEW JAGDAMBA DOORS, MERINO, KITPLY,ASTIMBER

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

10	FLUSH DOOR SHUTTERS	KUTTY FLUSH DOOR, SAMRAT LAMINATE, NATIONAL PLYWOODS, JAIN WOOD INDUSTRIES, MERINO, MINIMAX, CENTURY, AS TIMBER.	Nil	KUTTY FLUSH DOOR, SAMRAT LAMINATE, NATIONAL PLYWOODS, JAIN WOOD INDUSTRIES, MERINO, MINIMAX, CENTURY, AS TIMBER.
11	BLOCK BOARD	MERINO, MINIMAX, NATIONAL, ARCHIDPLY, CENT PLY, JAYNA, CENTURY.	Nil	MERINO, MINIMAX, NATIONAL, ARCHIDPLY, CENT PLY, JAYNA, CENTURY.
12	LAMINATES	SAMRAT, VIRGO, MERINO, ARCHIDPLY, CENTURY LAMINATES, GREENLAM	Nil	SAMRAT, VIRGO, MERINO, ARCHIDPLY, CENTURY LAMINATES, GREENLAM
13	PRE-LAMINATED PARTICLE BOARD	ARCHIDPLY, CENTURY PLY BOARDS, BALAJI ACTION BUILDWELL, ECOBOARD	Nil	ARCHIDPLY, CENTURY PLY BOARDS, BALAJI ACTION BUILDWELL, ECOBOARD
14	PARTICLE BOARD (MEDIUM DENSITY)/ VENEER PARTICLE BOARD	CENTURY PLYBOARDS (INDIAN) LTD., BALAJI ACTION BUILDWELL, EVERGREEN BOARDLAM, ECOBOARD INDUSTRIES LTD.	Nil	CENTURY PLYBOARDS (INDIAN) LTD., BALAJI ACTION BUILDWELL, EVERGREEN BOARDLAM, ECOBOARD INDUSTRIES LTD.
15	PRE-LAMINATED MEDIUM DENSITY FIBRE BOARD	CENTURY PLYBOARDS, GREEN PLY, BALAJI ACTION BUILDWELL	Nil	CENTURY PLYBOARDS, GREEN PLY, BALAJI ACTION BUILDWELL
16	OMS/ MS DOOR FITTINGS	ASHISH, AGGARWAL STEELS, DOOR DEVICES MANUFACTURING COMPANY, MANU ENGINEERING COMPANY, M.C. MOWJEE & CO., SHRI GANPATI DOORS	Nil	ASHISH, AGGARWAL STEELS, DOOR DEVICES MANUFACTURING COMPANY, MANU ENGINEERING COMPANY, M.C. MOWJEE & CO., SHRI GANPATI DOORS
17	ANODISED/ ZINC ALLOY/ ALUMINIUM HARDWARE DOOR/ WINDOW FITTINGS	PULSE, SAVIO, HOPPE, ALUTECH	Nil	PULSE, SAVIO, HOPPE, ALUTECH
18	FRP DOOR FRAMES & SHUTTERS	ASHISH INDUSTRIES, JAYNA, SAINIK (CENTURY PLYWOOD), SELECTED PRODUCTS CO.	Nil	ASHISH INDUSTRIES, JAYNA, SAINIK (CENTURY PLYWOOD), SELECTED PRODUCTS CO.
19	WIDOWS BLINDS	VISTA, MAC, HUNTER, DOUGLAS, DE-DÉCOR	Nil	VISTA, MAC, HUNTER, DOUGLAS, DE-DÉCOR
20	STRUCTURAL STEELS SUCH AS MS FLATS, SQ. BARS ANGLES ETC.	SAIL, TATA STEEL, RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD.	Nil	SAIL, TATA STEEL, RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD.
21	MILD STEEL DOOR, WINDOWS & VENTILATORS MANUFACTURES	FRIENDS MANUFACTURING COMPANY, KOTKAPURA, PD INDUSTRIES, SHAKTI INDUSTRIES, STEELMAN INDUSTRIES, SKS STEEL INDUSTRIES, SHIVAM	Nil	FRIENDS MANUFACTURING COMPANY, KOTKAPURA, PD INDUSTRIES, SHAKTI INDUSTRIES, STEELMAN INDUSTRIES, SKS STEEL INDUSTRIES, SHIVAM



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

22	PRESSED STEEL DOOR FRAMES MANUFACTURERS	KRISHNA STEEL FABRICATOR SIRSA, LAXMI STEEL WORKS BAHADURGARH, ASHISH INDUSTRIES GHAZIABAD, ASHWANI & SONS.	Nil	KRISHNA STEEL FABRICATOR SIRSA, LAXMI STEEL WORKS BAHADURGARH, ASHISH INDUSTRIES GHAZIABAD, ASHWANI & SONS.
23	HOLLOW STEEL SECTIONS	JINDAL INDUSTRIES HISAR, TATA STEEL, STEEL & METAL TUBES (INDIA) PVT. LTD.	Nil	JINDAL INDUSTRIES HISAR, TATASTEEL, STEEL & METAL TUBES (INDIA) PVT. LTD.
24	STEEL TUBES FOR STRUCTURAL STEEL	JINDAL INDUSTRIES HISAR, TATA STEEL, STEEL & METAL TUBES (INDIA) PVT. LTD.	Nil	JINDAL INDUSTRIES HISAR, TATA STEEL, STEEL & METAL TUBES (INDIA) PVT. LTD.
25	DASH/ ANCHORING FASTENERS, BOLTS, SCREWS AND NUTS.	HILTI , FISCHER, CKW, ATUL, PRIYA	Nil	HILTI , FISCHER, CKW, ATUL, PRIYA
26	STAINLESS STEEL RAILING	DORMA, KICH, OM STEEL , D-LINE.	Nil	DORMA, KICH, OM STEEL , D-LINE.
27	CHEQUERRED PRE-CAST CC TILES	NTC, SWASTIK TILE, POOJA CONCRETE FABRICATORS, GTC.	Nil	NTC, SWASTIK TILE, POOJA CONCRETE FABRICATORS, GTC.
28	CERAMIC TILES	SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD.	Nil	SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD.
29	VITRIFIED TILES	SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD.	Nil	PODDAR, SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD.
30	ADHESIVE/ GROUTING FOR USE WITH TILES	FERROUS CRETE, MYKLATICRETE, ARDEX EDURA, FAIRMATE, DURA BUILD CARE, SIKKA	Nil	FERROUS CRETE, MYK LATICRETE, ARDEX EDURA, FAIRMATE, DURA BUILD CARE, SIKKA
31	UNPLASTICISED RIGID PVC PIPE & FITTINGS	SUPREME, FINOLEX, PRINCE, KISAN, DIPLAST.	Nil	SUPREME, FINOLEX, PRINCE, KISAN, DIPLAST.
32	FALSE CEILING- GYPSUM	SAINT GOBAIN, VANS GYPSUM, USG BORAL, LLYOD	Nil	SAINT GOBAIN, VANS GYPSUM, USG BORAL, LLYOD
33	FALSE CEILING- METAL	ARMSTRONG, DEXUNE, SAINT GOBAIN, HUNTER DOUGLAS, GYPTECH	Nil	ARMSTRONG, DEXUNE, SAINT GOBAIN, HUNTER DOUGLAS, GYPTECH
34	FALSE CEILING- CALCIUM SILICATE	HILUX, AEROLITE, ARMSTRONG	Nil	HILUX, AEROLITE, ARMSTRONG
35	FALSE CEILING- MINERAL FIBRE	ARMSTRONG, DEIKEN, DEXUNE, SAINT GOBAIN.	Nil	ARMSTRONG, DEIKEN, DEXUNE, SAINT GOBAIN.
36	ACCOUSTIC: GLASS / WOODEN FIBRE FALSE CEILING AND WOODEN/ FABRIC WALL LINING	ARMSTRONG, DEXUNE, ACCOUSTIBLOK, HIMALYAN ACOUSTICS, ANUTONE, GYPTECH	Nil	ARMSTRONG, DEXUNE, ACCOUSTIBLOK, HIMALYAN ACOUSTICS, ANUTONE, GYPTECH
37	FALSE CEILING- ALUMINIUM POWDER COATED	ARMSTRONG, DEXUNE, SAINT GOBAIN, HUNTER DOUGLAS	Nil	ARMSTRONG, DEXUNE, SAINT GOBAIN, HUNTER DOUGLAS



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

38	OIL BOUND DISTEMPER/ ACRYLICDISTEMPER	NEROLAC ACRYLIC DISTEMPER, TRACTOR ACRYLIC DISTEMPER (ASIAN PAINTS), MAXILITE ACRYLICDISTEMPER (ICI), BISON ACRYLIC DISTEMPER (BERGER).	Nil	NEROLAC ACRYLIC DISTEMPER, TRACTOR ACRYLIC DISTEMPER (ASIAN PAINTS) MAXILITE ACRYLIC DISTEMPER (ICI), BISON ACRYLIC DISTEMPER (BERGER).
39	INTERIOR EMULSION/ PLASTIC EMULSION	DULUX ACRYLIC EMULSION/ SOLITAIRE A- 1000 (ICI), APCOLITE PREMIUM EMULSION (ASIAN), BEAUTY GOLD (NEROLAC), SILK (BERGER)	Nil	DULUX ACRYLIC EMULSION/ SOLITAIRE A-1000 (ICI), APCOLITEPREMIUM EMULSION (ASIAN), BEAUTY GOLD (NEROLAC), SILK (BERGER)
40	ACRYLIC SMOOTH EXTERIOR PAINT	APEX ULTIMA (ASIAN),DULUX WEATHERSHEILD MAX (ICI), EXCEL(NEROLAC), WEATHERCOAT ALL GUARD (BERGER)	Nil	APEX ULTIMA (ASIAN), DULUX WEATHERSHEILD MAX (ICI) EXCEL (NEROLAC), WEATHERCOAT ALLGUARD (BERGER)
41	DRY DISTEMPER	NEROLAC, BERGER, ASIAN PAINTS, ICI, JENSON & NICHOLSON (J&N)	Nil	NEROLAC, BERGER, ASIAN PAINTS, ICI, JENSON & NICHOLSON (J&N)
42	SYNTHETIC ENAMEL PAINTS	DULUX HI-GLOSS (ICI), APCOLITE PREMIUM GLOSS (ASIAN), NEROLAC HIGH GLOSS (NEROLAC), LUXOL HI-GLOSS (BERGER)	Nil	DULUX HI-GLOSS (ICI), APCOLITE PREMIUM GLOSS (ASIAN), NEROLAC HIGH GLOSS (NEROLAC), LUXOL HI- GLOSS (BERGER)
43	WOOD PRIMER	NEROLAC, BERGER, ASIAN PAINTS, ICI	Nil	NEROLAC, BERGER, ASIAN PAINTS, ICI
44	STEEL PRIMER	NEROLAC, BERGER, ASIAN PAINTS, ICI	Nil	NEROLAC, BERGER, ASIAN PAINTS, ICI
45	EXTERIOR WALL PRIMER	EXTERIOR NEROLAC PRIMER, EXTERIOR BERGER PRIMER, EXTERIOR ASIAN PAINTS PRIMER, EXTERIOR ICI PRIMER	Nil	EXTERIOR NEROLAC PRIMER, EXTERIOR BERGER PRIMER, EXTERIOR ASIAN PAINTS PRIMER, EXTERIOR ICI PRIMER
46	WALL PUTTY (WHITE CEMENT BASED)	BIRLA WALL CARE, JK WHITE	Nil	BIRLA WALL CARE, JK WHITE
47	POLYMER MODIFIEDSELF CURING PLASTER	MYK LATICRETE, FERROUSCRETE, ARDEX ENDURA, ULTRATECH	Nil	MYK LATICRETE, FERROUS CRETE,ARDEX ENDURA, ULTRATECH
48	PAVER/ GRASS PAVER BLOCKS& KERB STONES	NATIONAL TILES CORPORATION, METRO PAVERS, KRISHNA TILES, POOJA CONCRETE FABRICATORS, DALAL TILES.	Nil	NATIONAL TILES CORPORATION, METRO PAVERS, KRISHNA TILES, POOJA CONCRETE FABRICATORS, DALAL TILES.
49	VITREOUS CHINA SANITARY WARE	HINDWARE, CERA, PARRYWARE, JOHNSON PEDDER, SOMANY.	Nil	HINDWARE, CERA, PARRYWARE, JOHNSON PEDDER, SOMANY.
50	PLASTIC FLUSHING CISTERN FOR WC ANDURINALS	JINDAL, STEEL BIRD, SEEMLINE, VIKRAM PLASTIC, PRAYAG POLYMERS (P) LTD.	Nil	JINDAL, STEEL BIRD, SEEMLINE, VIKRAM PLASTIC, PRAYAG POLYMERS (P) LTD.
51	PLASTIC SEAT COVEROFW.C.	AJANTA POLYMERS, JINDAL MALPINE, JAIN POLYMERS	Nil	AJANTA POLYMERS, JINDAL MALPINE, JAIN POLYMERS
52	STAINLESS STEELSINK	ALLEX, JAYNA, JMD INTERNATIONAL, STEEL CRAFT	Nil	ALLEX, JAYNA, JMD INTERNATIONAL,STEEL CRAFT
53	MIRROR GLASS	ATUL, MODIGUARD, GOLDEN FISH	Nil	ATUL, MODIGUARD, GOLDEN FISH

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

54	CENTRIFUGAL LY CAST (SPUN) IRON PIPES	NECO, BENGAL IRON, DURGAPUR ISPAT UDYOG, SINGHAL IRON FOUNDRY (SKF), KAPILANSH DHATU UDYOG PVT. LTD., RPMF, HIF.	Nil	NECO, BENGAL IRON, DURGAPUR ISPAT UDYOG, SINGHAL IRON FOUNDRY (SKF), KAPILANSHDHATU UDYOG PVT. LTD., RPMF, HIF.
55	HUBLESS CENTRIFUGA LLYCAST (SPUN) IRON PIPES	NECO, RAJ PATTERN MAKERS & FOUNDERS, SINGHAL IRON FOUNDRY (SKF).	Nil	NECO, RAJ PATTERN MAKERS & FOUNDERS, SINGHAL IRON FOUNDRY (SKF).
56	CP FITTINGS & ACCESSORIES	JAQUAR, HINDWARE, PRIMA, JAINKO,CERA,	Nil	JAQUAR, HINDWARE, PRIMA, JAINKO,CERA,
57	BRASS STOP & BIBCOCK	DHAWAN SANITARY UDYOG, JAINKO, SHAKTI, VARDHMAN INDIA PRODUCTS	Nil	DHAWAN SANITARY UDYOG, JAINKO, SHAKTI, VARDHMANINDIA PRODUCTS
58	FERRULES FOR WATER SUPPLY	HIND METAL WORKS, KRITIKA, DRP, SHAKTI	Nil	HIND METAL WORKS, KRITIKA, DRP, SHAKTI
59	BALL COCK WITHROD	RESP FAUCET INDUSTRIES, DHAWAN SANITARY UDYOG, NEW METAL WORKS, KPR, PRAYAG.	Nil	RESP FAUCET INDUSTRIES, DHAWAN SANITARY UDYOG, NEW METALWORKS, KPR, PRAYAG.
60	POLYETHYLE NE WATER STORAGE TANK	SINTEX, VECTUS, KAVERI	Nil	SINTEX, VECTUS, KAVERI
61	STONEWARE PIPES &GULLY TRAPS	SORKHI INDUSTRIES, RK INDUSTRIES, NAVNEET, MOL I CERAMICS, OCR, ANAND	Nil	SORKHI INDUSTRIES, RK INDUSTRIES, NAVNEET, MOL CERAMICS, OCR, ANAND
62	PRE-CAST CONCRETE PIPES(NON- PRESSURE)	RAMNIK, BFSP, JAGDAMBAY SPUN PIPE, GURKIRPA SPUN PIPES	Nil	RAMNIK, BFSP, JAGDAMBAY SPUNPIPE, GURKIRPA SPUN PIPES
63	GI PIPE	JINDAL (HISSAR), TATA, BST, BHUSHAN POWER STEEL	Nil	JINDAL (HISSAR), TATA, BST, BHUSHAN POWER STEEL
64	GI FITTINGS	UNIK, AVR, ZOLOTO, SANT, HBI, C-BRAND, NVR	Nil	UNIK, AVR, ZOLOTO, SANT, HBI, C- BRAND, NVR
65	C-PVC PIPE	PRINCE, JINDAL (FLOWKEM), ASTRAL, AJAY POLYMERS, SUPREME, FINOLEX.	Nil	PRINCE, JINDAL (FLOWKEM), ASTRAL, AJAY POLYMERS, SUPREME, FINOLEX.
66	GUN METAL GATE,GLOBE, CHECK VALVES & NON- RETURN VALVES	LEADER, ZOLOTO, SANT, RAJAN METAL INDUSTRIES, H.B. METALS, HVI, NVR.	Nil	LEADER, ZOLOTO, SANT, RAJAN METAL INDUSTRIES, H.B. METALS, HVI, NVR.
67	CENTRIFUGALLY CAST (SPUN) IRONPIPES (CLASS LA).	TRU FORM ENGINEERS, KAPILANSH, ELECTROSTEEL, HITECH METAL CASTINGS.	Nil	TRU FORM ENGINEERS, KAPILANSH, ELECTROSTEEL, HITECH METALCASTINGS.
68	C.I SLUICE VALVES&REFLEX VALVES	ZOLOTO INDUSTRIES, SANTVALVES, AMCO INDUSTRIES, KIRLOSKAR, RATAN INDUSTRIAL CORPORATION, HVI, NVR.	Nil	ZOLOTO INDUSTRIES, SANT VALVES, AMCO INDUSTRIES, KIRLOSKAR, RATAN INDUSTRIAL CORPORATION, HVI, NVR.
69	STAINLESS STEELPIPES & FITTINGS	JINDAL STAINLESS STEEL, OM STEEL GROUP, V STEEL, VIEGA, RAMPART INDIA PVT. LTD.,	Nil	JINDAL STAINLESS STEEL, OM STEEL GROUP,V STEEL, VIEGA, RAMPART INDIA PVT. LTD.,

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

54	CENTRIFUGAL LY CAST (SPUN) IRON PIPES	NECO, BENGAL IRON, DURGAPUR ISPAT UDYOG, SINGHAL IRON FOUNDRY (SKF), KAPILANSH DHATU UDYOG PVT. LTD., RPMF, HIF.	Nil	NECO, BENGAL IRON, DURGAPUR ISPAT UDYOG, SINGHAL IRON FOUNDRY (SKF), KAPILANSHDHATU UDYOG PVT. LTD., RPMF, HIF.
55	HUBLESS CENTRIFUGA LLYCAST (SPUN) IRON PIPES	NECO, RAJ PATTERN MAKERS & FOUNDERS, SINGHAL IRON FOUNDRY (SKF).	Nil	NECO, RAJ PATTERN MAKERS & FOUNDERS, SINGHAL IRON FOUNDRY (SKF).
56	CP FITTINGS & ACCESSORIES	JAQUAR, HINDWARE, PRIMA, JAINKO,CERA,	Nil	JAQUAR, HINDWARE, PRIMA, JAINKO,CERA,
57	BRASS STOP & BIBCOCK	DHAWAN SANITARY UDYOG, JAINKO, SHAKTI, VARDHMAN INDIA PRODUCTS	Nil	DHAWAN SANITARY UDYOG, JAINKO, SHAKTI, VARDHMANINDIA PRODUCTS
58	FERRULES FOR WATER SUPPLY	HIND METAL WORKS, KRITIKA, DRP, SHAKTI	Nil	HIND METAL WORKS, KRITIKA, DRP, SHAKTI
59	BALL COCK WITHROD	RESP FAUCET INDUSTRIES, DHAWAN SANITARY UDYOG, NEW METAL WORKS, KPR, PRAYAG.	Nil	RESP FAUCET INDUSTRIES, DHAWAN SANITARY UDYOG, NEW METALWORKS, KPR, PRAYAG.
60	POLYETHYLE NE WATER STORAGE TANK	SINTEX, VECTUS, KAVERI	Nil	SINTEX, VECTUS, KAVERI
61	STONEWARE PIPES &GULLY TRAPS	SORKHI INDUSTRIES, RK INDUSTRIES, NAVNEET, MOL I CERAMICS, OCR, ANAND	Nil	SORKHI INDUSTRIES, RK INDUSTRIES, NAVNEET, MOL CERAMICS, OCR, ANAND
62	PRE-CAST CONCRETE PIPES(NON- PRESSURE)	RAMNIK, BFSP, JAGDAMBAY SPUN PIPE, GURKIRPA SPUN PIPES	Nil	RAMNIK, BFSP, JAGDAMBAY SPUNPIPE, GURKIRPA SPUN PIPES
63	GI PIPE	JINDAL (HISSAR), TATA, BST, BHUSHAN POWER STEEL	Nil	JINDAL (HISSAR), TATA, BST, BHUSHAN POWER STEEL
64	GI FITTINGS	UNIK, AVR, ZOLOTO, SANT, HBI, C-BRAND, NVR	Nil	UNIK, AVR, ZOLOTO, SANT, HBI, C- BRAND, NVR
65	C-PVC PIPE	PRINCE, JINDAL (FLOWKEM), ASTRAL, AJAY POLYMERS, SUPREME, FINOLEX.	Nil	PRINCE, JINDAL (FLOWKEM), ASTRAL, AJAY POLYMERS, SUPREME, FINOLEX.
66	GUN METAL GATE,GLOBE, CHECK VALVES & NON- RETURN VALVES	LEADER, ZOLOTO, SANT, RAJAN METAL INDUSTRIES, H.B. METALS, HVI, NVR.	Nil	LEADER, ZOLOTO, SANT, RAJAN METAL INDUSTRIES, H.B. METALS, HVI, NVR.
67	CENTRIFUGALLY CAST (SPUN) IRONPIPES (CLASS LA).	TRU FORM ENGINEERS, KAPILANSH, ELECTROSTEEL, HITECH METAL CASTINGS.	Nil	TRU FORM ENGINEERS, KAPILANSH, ELECTROSTEEL, HITECH METALCASTINGS.
68	C.I SLUICE VALVES&REFLEX VALVES	ZOLOTO INDUSTRIES, SANTVALVES, AMCO INDUSTRIES, KIRLOSKAR, RATAN INDUSTRIAL CORPORATION, HVI, NVR.	Nil	ZOLOTO INDUSTRIES, SANT VALVES, AMCO INDUSTRIES, KIRLOSKAR, RATAN INDUSTRIAL CORPORATION, HVI, NVR.
69	STAINLESS STEELPIPES & FITTINGS	JINDAL STAINLESS STEEL, OM STEEL GROUP, V STEEL, VIEGA, RAMPART INDIA PVT. LTD.,	Nil	JINDAL STAINLESS STEEL, OM STEEL GROUP,V STEEL, VIEGA, RAMPART INDIA PVT. LTD.,

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

70	DUCTILE IRON PIPES&FITTINGS	JINDAL SAW LTD, ELECTRO STEEL, CHANDRANCHAL INFRA, ELECTROTHERAM	Nil	JINDAL SAW LTD, ELECTRO STEEL, CHANDRANCHAL INFRA, ELECTROTHERAM
71	C.I./ D.I. MANHOLE COVERS & FRAMES	SWASTIKA ENTERPRISES, BENGAL IRON CORPORATION, NECO, BINAY UDYOG, CHANDERANCHAL	Nil	SWASTIKA ENTERPRISES, BENGAL IRON CORPORATION, NECO, BINAY UDYOG CHANDERANCHAL
72	WATER REPELLANT SILANE CHEMICAL	PIDILITE, FERROUS CRETE, ARDEX ENDURA	Nil	PIDILITE, FERROUS CRETE, ARDEX ENDURA
73	ALUMINIUM SECTIONS	HINDALCO, JINDAL, INDIAN ALUMINIUM CO.	Nil	HINDALCO, JINDAL, INDIAN ALUMINIUM CO.
74	BASIC/ TOUGHENEDETC. GLASS	SAINT GOBAIN, ASAHI, MODI, GOLD PLUS GLASS, PILINGTON.	Nil	SAINT GOBAIN, ASAHI, MODI, GOLD PLUS GLASS, PILINGTON.
75	APPROVED PROCESSORSFOR PERFORMANCE GLASS/ TOUGHENED GLASS/ HERMETICALLY SEALED/ LACQUERED GLASS etc.	ART & GLASS, MIRAGE TOUGHENED GLASSES (P)LTD., AAR PAR GLASS VERMA GLASS.	Nil	ART & GLASS, MIRAGE TOUGHENED GLASSES (P) LTD., AAR PAR GLASS, VERMA GLASS.
76	Plywood/ Veneer	Green Ply, Century, Merino, Duro, Durian.	Nil	Green Ply, Century, Merino, Duro, Durian.
77	Melamine Polish	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux.	Nil	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux.
78	Floor Spring	Godrej, Dorma, Dorset, Kich.	Nil	Godrej, Dorma, Dorset, Kich.
	(a) Aluminium section	Hindalco, Jindal, Indian Aluminium Co.	Nil	Hindalco, Jindal, Indian Aluminium Co.
	(b) AnodisedAluminium Hardware (Heavy Duty)	Kilong, Alualpha, Ebco, Classic.	Nil	Kilong, Alualpha, Ebco, Classic.
79	Ployster Powder Coating Shades	NEROLAC, BERGER, J&N	Nil	NEROLAC, BERGER, J&N
80	Clear/ Float/ Frosted/ Refractive/ Coated Glass	Saint Gobain, Modiguard, Ashai Float.	Nil	Saint Gobain, Modiguard, Ashai Float.
81	Aluminium composite Panels	Reynobond, Alpolic, Aluco Bond	Nil	Reynobond, Alpolic, Aluco Bond
82	Friction Stay Hinges	Earl-Bihari, Ebco, Rotoor approved equivalent	Nil	Earl-Bihari, Ebco, Rotoor approved equivalent
83	EPDM Gasket	Hanu/ Anand ,Raven,Zero.	Nil	Hanu/ Anand ,Raven,Zero.
84	Silicon Based water repellant/ weather sealant	G.E. Plastics, Dow Corning, Wacker, BASF, Pidilite (Dr. Fixit/Roff)	Nil	G.E. Plastics, Dow Corning, Wacker, BASF, Pidilite (Dr. Fixit/Roff)
85	EPS	Snow pack Polymers, Reliable Insupacks, Fairmate	Nil	Snow pack Polymers, Reliable Insupacks, Fairmate
86	Cement Based wall putty	Birla Wall care, JK white	Nil	Birla Wall care, JK white
87	1st Quality Acrylic Distemper (washable/Readymix/Low VOC)	Asian Paints (Tractor Aqua Lock Paint) Berger: Commando Or Equivalent paints of Nerolac or ICI-Dulux.	Nil	Asian Paints (Tractor Aqua Lock Paint)Berger: Commando Or Equivalent paints of Nerolac or ICI-Dulux.
88	Premium Acrylic EmulsionPaints (Interior)	Asian Paints (Royale LuxuryEmulsion) Nerolac: Impression Berger: Silk ICI-Dulux: Velvet touch.	Nil	Asian Paints (Royale Luxury Emulsion)Nerolac: Impression Berger: Silk ICI-Dulux: Velvet touch.
89	Premium Acrylic Smooth Exterior Paints with SiliconAdditive.	Asian Paints (Apex Ultima) Nerolac: XL Total Berger: Weather Coat all guardICI-Dulux: Weather Shield Max	Nil	Asian Paints (Apex Ultima) Nerolac: XL Total Berger: Weather Coat all guard ICI-Dulux: WeatherShield Max



दी ब्रेथवेटर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

90	Cement Primer	Nerolac, Berger, BP White (Beger), Decoprime WT (Asian), White primer (ICI).	Nil	Nerolac, Berger, BP White (Beger), Decoprime WT (Asian), White primer (ICI).
91	Epoxy Paint	Asian, Nerolac, Berger, ICI, Kansai Akzo Nobel.	Nil	Asian, Nerolac, Berger, ICI, Kansai Akzo Nobel.
92	G.I. Fittings	Unik, AVR, Zoloto, KS, AMCO	Nil	Unik, AVR, Zoloto, KS, AMCO
93	Float Valve	IVC, Leader, Prayag, Kalsi Pump Pvt. Ltd., Dhawan Sanitary Udyog (Prima)	Nil	IVC, Leader, Prayag, Kalsi Pump Pvt. Ltd., Dhawan Sanitary Udyog (Prima)
94	Gun metal Valves, globes	Leader, Zoloto, Kilburn, CIM Valves, Sant, ANNAPURANA	Nil	Leader, Zoloto, Kilburn, CIM Valves, Sant, ANNAPURANA
95	Brass stop & Bib Cock	Zoloto, Sant, L&K, Leader, JAINKO, Kalsi Pump Pvt. Ltd., Dhawan Sanitary (PRIMA)	Nil	Zoloto, Sant, L&K, Leader, JAINKO, Kalsi Pump Pvt. Ltd., Dhawan Sanitary (PRIMA)
96	Non Return valve (Check valve) 1/2" to	Kalsi Pumps Pvt. Ltd. Zoloto, Annapurna	Nil	Kalsi Pumps Pvt. Ltd. Zoloto, Annapurna
97	Stainless steel sliding door bolts	Dorma or Geze or Hafele	Nil	Dorma or Geze or Hafele
98	White vitreous china Wall Mounted type water closet (European Type W.C. pan)	Jaquar, Hindware, Cera	Nil	Jaquar, Hindware, Cera
99	3/6 litre slim wall mounted concealed cistern with dual flushing cistern	Jaquar, Hindware, Cera	Nil	Jaquar, Hindware, Cera
100	Flushing plate of with flush pipe	Jaquar, Hindware, Cera	Nil	Jaquar, Hindware, Cera
101	White vitreous china flat back half stall urinal.	Jaquar, Hindware, Cera	Nil	Jaquar, Hindware, Cera

6. The contractors will be fully responsible for the safeguard of the construction material brought at site like cement, steel, aggregate, bricks, T&P etc. Railway will not compensate for any damage, loss or theft of such material from site.
7. If in the opinion of the Engineer, equipments/ plants/T&P brought by the contractor are not suitable for the work concerned, the Engineer shall have the right to order the contractor to replace them by suitable equipments/ plants/ T&P. In the interest of public convenience, Engineer may insist on a specific way of execution of the work.
8. Contractor will procure and use materials from IS (BIS) approved firms. Independent tests should also be conducted to ensure that the materials conform to IS (BIS) specifications. This will be done as built in method statements and will be in accordance with relevant codes.
9. To ensure quality control, test certificate from the manufactures should be produced by the contractors, which should confirm to the relevant specifications/codal provisions.
10. In case of designed mixes of concrete, the contractor will submit the design of mix duly done by any approved Engineering Institute or Laboratory given in relevant clause in these conditions. Design of the mix will be carefully done from representative sample of aggregate and mix design calculations should be sent to the Engineer-in-charge for his approval. Unit weight of materials shall generally be as per IS-1911 and actual weight proposed to be adopted for designing shall be got approved by Engineer-in-charge.
11. The Tenderer/s will modify/carryout the mix design to the satisfaction of the Engineer, if so,

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

required and get his final approval. Such approved design mix however, does not absolve the tender/s of his/their primary responsibility and obligation regarding the minimum strength to be obtained. Change in source of material will require redesign of concrete. Mix design shall be reviewed as per provisions of Concrete Bridge Code/IS 456 and IS 10262.

12. It may be noted that payment of excavation in foundation of bridges/retaining wall will be made in accordance with a Good For Construction (GFC) drawing showing the authorized working space for works to be done from outside as specified in Clause 4.2.5 of IS 1200 (Part 1): 1992. This GFC drawing will be approved by Railway and decision of Railway will be final. Nothing extra will be payable to the contractor for additional extra width or slope beyond authorized working space, he/they may have to excavate for any reasons whatsoever during execution of work. Also, payment for any shoring etc., required, will be paid only as if found necessary and will be paid as shown in approved GFC drawing.

**(A) SPECIFICATION FOR CONCRETING**

1. Specifications for concreting.
  - I. Specifications given in this part shall apply to the construction of sub structure and super structure & shall be read in conjunction with Special conditions of contract.
  - II. Construction and concreting of sub structure shall conform to the requirements as laid down in Concrete Bridge Code updated to latest Correction slips and IS 456- 2000 and the requirements specified hereunder.
  - III. All concrete work shall be with controlled concrete satisfying the strength and quality requirements and other conditions specified in the codes and specifications mentioned in special specifications. The contractor is responsible for the design of concrete mix and getting it approved by the Engineer.
  - IV. Mix design is required to be submitted twice at the beginning of each working season first in October and then in the February. Mix design shall also be reviewed in the event of change in source of cement, sand and aggregate or for any other reasons as and when so required by the Engineer, Contractor is required to carry out concreting work in all types of conditions, dry wet, above water level, below water level, requirement above ground level, below ground level, at all locations and heights as required for the work.
  - V. Design of concrete mix shall be in accordance with any of the methods given in the Indian recommended guide lines for concrete mix design given in "**Handbook of Concrete Mix Design**" issued by Bureau of Indian Standard.
  - VI. Concreting in girders/Box /Slabs shall be organized in such a way that no end joints are poured during the course of concreting. Scheme for girders/ Box /slab concreting shall be submitted by contractor for approval of Engineer-in-charge.

3. CEMENT:

Cost:

The cost of cement for the work is included/not included in the rates for aster schedule items of USSOR-2019 and CPWD DSR vol I,II mentioned in the tender as per notes/instructions given in USSOR2019 and CPWD DSR vol I,II. The cost of cement for the work is included/not included in the rates for NS items as mentioned in the relevant item.



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

2. The Railway will not supply any cement for the works. The contractor has/ have to procure the cement required for the work from the market and transport the same to the site of work at his/ their own cost including all taxes, octroi, etc, and / including all lead and handling etc.
3. Purchase: The cement should be purchased by the contractor only from the Authorized / Approved manufacturers or their authorized agent. The contractor should produce the documented proofs such as bill Challan, etc, from such authorized manufactures/ Agents from whom the cement is purchased for every lot of cement bought at site and to be verified by Railway representative. **The cement brought at site without such documental proofs will not be permitted to be used in the works.**
4. Storage: The cement as approved by Railway's representative will properly stack at site in the godown constructed by the contractor at his own cost. The contractors should keep the cement under their safe custody and will be made accessible to the railway and railway's representative to physically verify and check at any time. The contractors will be fully responsible for the safeguard of the cement along with other materials and the Railways will not compensate for any damage, loss or theft of the cement or any other materials at site.
5. Any delay in procurement of cement will not be considered as cause for granting extension for the date of completion.
6. Quality and testing: The cement used shall be used with the prior approval of the Engineer in accordance with the Para 4.1 of Concrete Bridge Code.
  - a) The cement should be net weight 50 Kg. In bags, cement bags should be preferably in paper bag/ polyphane bag packing and should bear the following information in legible markings.
    - i) Manufacturer's name
    - ii. Registered Trade Mark of Manufacture, if any.
      - iii) Type of cement with ISI Code No.
      - iv) Weight of each bag in Kgs.
      - v) Date / Month of Manufacture with Year
  - b) Random specimen samples of cement taken from the lot brought at site should be tested at any authorized / approved Engineering Institute/ reputed laboratory, for its physical and chemical properties as specified in the IS specifications (IS-4031) and any other tests as specified by the Engineer or his representative. Some of the tests which should be carried out are:-
    - i) Compressive Strength.
    - ii) Initial and final setting time.
    - iii) Consistency.
    - iv) Soundness

The test will got carried out by the Railway's representative and arrangement and cost of the test including cost of cement for testing will be borne by the contractor. such test should be done at time when it is found necessary at the discretion of the engineer / his representative at site.

- c) To ensure quality control test certificate from the manufactures should be produced by

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

the contractors, which should confirm to the relevant specification.

d) Rejected lot should be removed from the site immediately by the contractors.

7. Consumption Use and accountal:

- a. The consumption or use of cement in the works will be at the rate of quantities specified for each item requiring nominal mix and as required for design mix.
- b. In case of designed mixes of concrete, the contractors should submit the design of mix duly done by any approved Engineering Institute or Laboratory and the cement required as specified in the design should be used to achieve the specified strength of the concrete.
- c. Proper accounts of the cement for receipt, consumption balance etc. should be maintained at site duly verified and signed by the contractors and the Railway Representative / Engineer. It is entirely contractor's responsibility to safeguard the cement from damage loss and theft etc. and railways will not pay any compensation for any such loss, damage or theft.
- d. In case, the cement consumed in the work is lesser than specified, the cost of such cement used less, will not be paid in the contractor's bill not with standings the fact that required strength is achieved by less quantity of cement used and also provided such works are qualitatively otherwise acceptable to the Railways. In case of excess consumption, no extra cement will be paid to the contractor.
- e. The cement should be fresh and generally consumed within three months of its age. If the cement is older than three months, test should be carried out for its loss of strength and other properties and additional/ extra quantity of cement will be used, as decided by the site Engineer, to achieve the required strength. No extra payment will be made by the Railway/ for such additional quantity used by the contractor.
- f. Cement brought at site by the contractor for a particular work should not be taken to other works/ site without written approval / permission of the railway's site engineer.
- g. Any cement left out on completion of works will be the property of the contractor. The contractor will be at liberty to dispose off the left over cement. Railway will neither take over the left over cement nor will compensate the contractor in any manner what so ever.

4. Special condition for using Contractor's steel

1. Cost: The cost of the steel will be paid under a separate suitable item as provided in the tender schedule. Railway will not supply any steel for the works included in this tender.
2. Transport: HSD (TMT) steel bars of various dia meters for reinforcement in RCC works and for other items of works as required, and structural steel for fabrication items of works will be procured and transported to site by the contractor/s at his/their own cost.
3. Code: HSD (TMT) steel shall be used. The steel bars/ structural steel shall confirm to the relevant I.S. specifications. M.S. Bars should confirm to I.S. 432 (Part-I) 1982 and tor steel should confirm to I.S. 1786:2008 in standard lengths.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

4. Storage: The steel brought at site should be properly stacked diameter wise separately and protected from contact with earth water etc. Wherever the treatment of the steel against corrosion is specified, the same should be done as specified in the items and specification. Steel supplied for reinforcement shall be kept free of loose mill scales, loose rust and coats of oil, mud or other material which may destroy or reduce bond till concreting.
5. Quality And Testing:
  - a. All reinforcement steel TMT bar and structural steel shall be produce as per specification mention in BIS's Documents IS:1786 and IS:2062 respectively. Independent tests shall be conducted, wherever required to ensure that the material procured conform to the specifications.
  - b. These steel shall be procured only from those firms which are Established, Reliable, Indigenous & Primary Producers of Steel, having Integrated Steel Plants (ISP) using Iron ore as the basis raw material and having in-house iron rolling facilities, followed by production of liquid steel and crude steel, As per ministry of steel's guidelines such as SAIL/TATA/RINL.
  - c. However, in case steel from these firms is not available at a particular time, Engineer in charge can permit supply from RDSO Registered firms for supply of TMT Reinforcement steel bars in Indian Railway as circulated by RDSO from time to time within their validity period.
  - d. However only certain isolated section of structure steel, not being allowed by ISP's can be produce from the authorized re-rollers of ISP's or authorized licensee of BIS having traceability system and who use billets produced by ISPs. Traceability shall be ensured by an officer specially authorized by the concern SAG officer of Zonal Railway on case-to-case basis for these purposes"

(Authority RB L No. 2008/CE-I/CT/8 dated 01.05.2012 and NCR HQ letter No.278-W/CE/C/CTL/Steel dated 06.08.2018)

Rejected material should be removed from the site by the contractor/s.

6. Consumption and Accountal:

- a) The steel should be used in the work as shown in the approved drawings. Overlaps if necessary should be provided as required by design & specification.
- b) Proper account will be maintained in the registers regarding consumption, balance etc. duly signed by the contractor and railway representative
- c) For the purpose of payment, linear measurement of reinforcement used for the work will be converted into mass/ unit weight. No rolling margin will be considered. The cut pieces, wastage and the left out material will be disposed off by the contractor. Railways will not pay any compensation for such cut pieces, wastage or balance left out material.
- d) The steel brought at site by the contractor for a particular work should not be shifted to other works/ site without the written approval/ permission of the Railway's site Engineer.

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- e) Welding of reinforcement will not be permitted except in special circumstances under the written approval of the Engineer.
- f) Every bar shall be inspected before assembling on the works and any defective, brittle, levelling rusted or burnt bars shall be removed. Cracked ends of bars shall be cutout.

7. Placing Supporting and Cleaning:

- a. Binding wire shall be used as approved by Engineer in charge. All frames crossing one another shall be bound with this wire twisted tight to make the skeleton on network rigid so that the reinforcement is not displaced during placing of concrete. All ends of binding wires shall be carefully turned inside so that they do not project out of concrete to cause starting of rusting action.
- b. Cleaning: Bars must be cleaned before concreting commences of all scale, rust or partially set concrete which may have been deposited there during placing of a previous lift of concrete.
- c. The bars shall be cleaned with dry gunny bags if they are coated lightly with rust or other impurities. On no account shall the bars be oiled or painted nor shall mould oil used on the formwork be allowed to come in contact with the bars. Cement wash to bars will not be permitted.
- d. Cover/Cover Blocks for reinforcement: The cover shall be uniform. Minimum clear cover shall be 50 mm or otherwise mentioned in the drawing. Suitable size of cover blocks of the same grade as that of concrete shall be cast in controlled conditions with binding wire fixed initially. All cover blocks shall be of cement and of the same strength as that of the surrounding concrete and properly compacted and vibrated on a vibrating table. They shall be cured for a minimum period of 21 days before they are used in the works.
- e. Placing and Spacing of reinforcement shall be according to drawings supplied by Railway. However, the spacing shall be sufficient to facilitate easy concreting and compaction. Proper detailing is essential as any cracking caused by defective detailing will cause Corrosion. All reinforcement shall be placed and maintained in the positions shown on the drawing. The Contractor shall provide approved types of supports as specified on the drawings for maintaining the top bars of the slab in position during concreting.

5. AGGREGATES

- 1. Only aggregate conforming to IS 383-1970 shall be used in concrete works whether it be plain or RCC. The provisions in IS-2386-1983 (Pt.-2) shall prevail when dealing with deleterious material and organic impurities.
- 2. Prior to deciding on the source for procurement of constituents of concrete, viz. Fine and coarse aggregate, the contractor shall specifically assess the soluble chloride any sulphate contents of fine and coarse aggregates (at source) and their permissible limits shall be got approved by Railway, Regular checks as directed, shall also be carried out not only at the source of supply (of such materials) but also prior to their use in the permanent works to ensure that the aggregate do not contain impurities exceeding the permissible limits.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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 (भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

3. The special requirements to be satisfied are as under:-

Sl no.		Fine (Upper limits)	Coarse (Upper limits)
1	Chloride content (Cl.) Max	0.04 % by wt.(Acid soluble)	0.02 % by wt. (Acid soluble)
2	Sulphate (SO <sub>3</sub> )- Max	0.04 % by Wt. (Acid Soluble)	0.4 % by Wt.
3	Potential alkali reactivity	Absent	Absent
4	Water absorption Max	3 % by wt.	3 % by wt.
5	Particle shape Mix	Shape Index 53% or Angularity N0.9	5 Flake-ness index/ Elongation index should not beyond 25%
6	Mica-Maximum	1%	-
7	Silt-contents	3 % by weight	-
8	Soundness with Na <sub>2</sub> SO <sub>4</sub> MG SO <sub>4</sub>	10% Max 15 % maxi	-
9	Particles less than 75micron - Max.	3 % by wt.	1 % by wt.

4. The other requirement as regard to the overall limits of harmful salts contents, physical properties of aggregates, deleterious substances in aggregate and concrete etc. shall conform to the requirements of IS 2386(Part I & II)-1963.

5. However, the final decision of acceptance criterion/rejection for aggregate to be used for permanent works shall lie with Railways.

5. Water

- 1) Water used for mixing and curing shall be clean and free from injurious amount of oils, acids, alkalis, salt, sugar, organic, material or other substances that may be deleterious to concrete or steel. Potable water is generally considers satisfactory for mixing and curing of concrete.
- 2) The water to be used for these purpose should be conforming to clause 5.4 of IS-456. 2000. The permissible limits of solids in water tested as per IS.-3025 are given below:

Sr. No.	Type of Solid	Permissible Limits
1.	Organic	200 Mg per Liter
2.	InOrganic	3000 Mg. Per Liter
3.	Sulphate (as SO <sub>3</sub> )	400 Mg. Per liter
4.	Chlorides (asCl)	2000Mg. per liter for concrete not containing embedded steel & 50 Mg per Liters reinforced concrete work.
5.	Suspended matter	2000 mg. Per Liters.

6. ADDITIVES/ADMIXTURES

If contractor desires to use any additives/ admixtures from the consideration of strength and workability, it should be in accordance with Para No. 4.4 of IRS Bridge Code Of Practice For Plain, Reinforced And Prestressed Concrete for General Bridge construction and extra cost of such additives/ admixtures will be borne by the contractor and for which no extra payment will be admissible.

**7. FORM WORK AND FALSE WORK:**

1. Form work and false work are very important for all concrete structures in question for these have influence on strength and durability of the structures. For this reason form work must be correctly designed and installed. The design of the form work shall take in to account the required surface conditions also (appearance compatibility with the required finish). This form work and false work together must provide safe working conditions. Safe access must be provided using additional scaffolding as necessary.
2. Design: The choice of formwork and false work structure is very important, the majority of defects and accidents are attributable to structural deficiencies of form work. The strength and stability of formwork, false work shall be designed for the loads which they are liable to experience in service by method appropriate to their constituent materials. The design shall be checked by calculation, testing, application of accepted rules, and must be carried out by competent personnel. Formwork shall be so designed that it can be correctly removed without damage to the concrete. Consideration should be given.
  1. To the stresses due to the weight of the concrete and due to any imposed loads.
  2. To the striking operations.
  3. To environmental conditions.

The loads and pressure to which form works and false works are exposed originate mainly from the weight of concrete (specially the horizontal thrust component of fresh concrete) the weight of the form work itself, the laying and fixing of reinforcement, load transfer on Prestressing and as a result of wind, heat fluctuations, ground settlement etc. & therefore, it shall be properly considered in design of form work.

3. The deformations of work shall be compatible with the tolerance required of the structure, and shall not adversely affect its behaviour. Stiffening arrangements shall be provided as per design requirements.
4. Compatibility With Concreting Operation:
  - a) Formwork and false work shall be compatible with the method of placing and Vibration envisaged, with the requirements and with the curing scheduled for the concrete.
  - b) For vibration through the form work, excessive energy losses through the support (Plastic suspension of the shuttering) should be avoided.
5. Tightening Of Formwork
  - a) The form work shall be designed to prevent loss of material during concreting, particular care must be exercised to ensure the grout tightness of the joints between panels of the sheeting and between it and hardened concrete.



- b) Joints can be made grout-tight by ensuring proper contact between the edges of the panels, the shape of which may have been specially designed. In some cases joint will need to be sealed with compressible gaskets or tapes.
6. Fixing of Forms
- a) Where devices for holding the form work in place pass through the concrete these shall not affect the concrete.
- b) Ties and spacers left in-situ shall not impair either the durability or the appearance of the structure (For instance by leaving traces of rust or as a passage for water).
7. Erection Supports: Foundation, false work and form work shall be positioned by skilled personnel in accordance with plans and specifications.
8. Assembling False And Formwork: Particular attention must be paid to the making of structural joint, transmission of loads, structures equilibrium and resistance to bucking and subway.
9. Tolerances: Formwork shall be so constructed that the finished concrete is within the required tolerances. Cumulative tolerances shall be considered as well as tolerances on single member
10. Preparing The Form Work faces: The sheeting surface intended to come in contact with freshly made concrete shall be clean. Approved releasing Agent shall be applied in thin uniform layer and the concrete should be placed soon enough after this to prevent loss of its effectiveness.
11. Control Of Formwork:
- a) Indicator should be installed at critical points to detect excessive deflection of the form work.
- b) Forms should be anchored to the props below so that up or lateral movement of any part of the forms will be prevented.
- c) Where there is a possibility of movement, means of adjustment (welded or jacks) should be provided to permit realignment or readjustment of props.
- d) Where the form work is trafficked by operatives or equipment, traffic should neither cause significant deflection nor bear directly on reinforcing steel.
- e) During and after concreting, but before stiffening of the concrete, form work systems should be checked for position. Appropriate adjustments should be made promptly where necessary. If during concreting, any weakness develops or Form work shows any undue settlement or distribution, the work shall be stopped and remedial action taken. Form work shall be continuously watched so that any corrective measures found necessary may be taken always work to be done under safe conditions and have a method of communication with concrete placing crews in case of emergency.
12. Striking time: Forms should be retained in place until the concrete has hardened sufficient to withstand, without damage, the stresses imposed.
13. Striking Methods: Form work shall be struck, when the concrete is sufficiently hard, in accordance with The stages of construction as planned as without impact loading.

14. Stability: Removal of the shoring supports should take into account of the time needed for adequate hardening for the concrete the support and of that on which they rest Retention of certain shoring elements may also be dictated by the general stability of the structure (wind-bracing).

8. MIXING: Mixing shall conform to the requirements in Clause 9.3 and 9.3.1 of IS 456-2000.

9. COMPACTION OF CONCRETE:

1. Power vibrators including surface vibrator and form vibrator shall be used for compacting concrete.
2. All concrete members shall be compacted by vibration; Generally internal vibrators shall be used on all sections that are sufficiently large to admit them.
3. Vibrator shall have operating frequency of at-least 3600 impulses per minute. Higher frequencies up to twice the minimum are preferred.
4. The following techniques shall be followed for vibrations.
  - i) Vibrators shall be distributed so that the concrete becomes a uniformly dense and plastic mass.
  - ii) Vibrators shall be used for compaction only and not for moving concrete.
  - iii) For horizontal and vertical operations of vibrators, the spacing of points of vibration shall be such that the zones of influence overlap.
  - iv) For concrete deposited in layers the vibrators shall be inserted vertically and allowed to sink due to its own weight to the bottom of the layer and be slowly withdrawn. For succeeding layer, the vibrator shall penetrate the surface of the previous layer.
  - v) Compaction shall be according to clause 12.3 of IS.456-2000.

10. Curing:

- 1) Special attention shall be given to curing of concrete in order to ensure maximum Durability and to minimize cracking.
- 2) Concrete surface shall be kept continuously wet for a period of at least 15 days. Rapid lowering of concrete temperature, which may result in thermal shock, shall be avoided. Contractor will make all arrangement for curing of fresh concrete as per instructions in IS: 456-2000 or Concrete Bridge Code as applicable. If during inspections, it is found that curing is not being ensured, entry will be made in Site Order Book and penalty of Rs. 5000/- will be imposed for each incidence. Decision of Engineer will be final in this regard.
- 3) All concrete work/RCC work/Brick work in cement mortar plaster/pointing etc. shall be continuously cured for the prescribed period as per direction of the Engineer
- 4) Curing shall be done by covering the newly laid concrete with gunny bags and keeping them wet constantly.

- 5) Contractor will also have to, arrange for curing by approved curing compounds, steam curing in certain cases during the progress of work as directed by the Engineer-in-charge. The rates shall include the cost of all such arrangements.
- 6) In case Railways representative is not satisfied with the arrangements and is of the opinion that an effective robust system of water curing is not in place and rectification in line with curing related instructions are not being followed or adequate water-based curing is not feasible due to any reason, he may:
  - a. All the concrete cube test cubes to also be placed on the structure at suitable location as decided by the Railways, being cured and not in a curing tank, to closely simulate the actual curing being obtained.
  - b. Require the contractor to adopt membrane curing (curing compounds) and / or
  - c. Require additional confirmatory tests for concrete strength finally obtained by taking out cores or suitable non-destructive tests.
  - d. Decision of Railways will be final in this matter and no extra payment will be made.

Even after repeated imposition of penalty contractor does not carry out curing in proper manner, Engineer may stop the work till rectification is made or undertake the curing through another agency/labour without any notice to the contractor at the cost of the contractor. The cost incurred along with 2% incidental charges and supervision charges @ 12 ½% of the cost will be debited to the contractor. Intimation of the employment of another agency for curing will be given to the contractor as soon as possible. This intimation in writing to the contractor under the hand of the Engineer-in-charge of the work shall be conclusive evidence of the employment of another agency.

**11. Sampling , Testing & Acceptance Criteria :**

Sampling & Testing of the concrete cubes shall be conducted for all concrete works as per clauses of IS456 and IRS Concrete Bridge Code. The specimen will be tested in a field and occasionally in reputed Government-testing laboratory, in the presence of Railways representative and the report shall be binding house.

**12. Pumps and Plasticiser:**

- 1) Additives containing calcium chloride are forbidden in concrete.
- 2) Approval of an expert agency suggested by the Chief Project Manager, Agrashall be obtained prior to the use of admixtures or super - plasticizers if proposed by the Tenderer / Contractor. The contractor shall have to furnish the details/ chemical ingredients etc. duly tested for the approval of Engineer in-charge.
- 3) When concreting under water, the mix shall contain 10% extra cement than for a corresponding mix for concreting in the dry. Transporting and placing, shall be according to Clause 12 of IS 456-2000.
- 4) Transporting of the concrete shall be done so as to ensure monolithic and dense concrete without hollows honey comb needing thereafter. In case concrete is planned to be poured with the use of the concrete pumps as per provisions of I.S. code /American code.

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- 5) The concrete mix shall be designed and got approved by Engineer including use of particular plasticizer. The cost of plasticizer and extra cement, plant, fuel etc. if required, will be supplied by the contractor and for which no extra payment will be made.

**13. PLAIN/REINFORCED CEMENT CONCRETE**

- a) These items of work envisages cement concrete works (of approved design mix as specified) as appropriate in foundation and other components of the structure below ground level and above G.L.
- b) For the purpose of determining the quantities of the work the average ground level shall be determined by the Engineer or his representative as related to the original ground levels with the periphery of the work, his decision in this regard being final and conclusive.
- c) The measurement for the payment shall be worked out to the nearest 0.01 m<sup>3</sup> with the size of the cement concrete element being determined as per the dimension specific in the Railway's drawings /requirements as directed by the Engineer or his representative without any deductions for the Anchor rods or Dowal bars or the stone ware / A.C. pipe fixed as weep holes.

**(B) SPECIFICATIONS FOR STEEL GIRDER & FABRICATION WORK**

1. Fabrication of steel girder will be as per Railway's approved drawing specification. Fabrication has to be done with the help of approved Jigs. The Contractor will be required to submit quality assurance plan (QAP) and full details of welding procedure (WPSS) in prescribed proforma for approval of Engineer-In-charge. Entire welding to be done by approved welders using approved welding procedure and welding consumables.
2. Jigs/Assembly: Contractor will be required to develop jigs for each component, which will be approved by Engineer-In-charge/authorized inspecting official of railway. The fabricated girders will be required to be trial assembled at the premises of the contractor on camber jacks as per details out in Railway fabrication specification Serial No RDSO/B1-2001.
3. Cost: All the cost of developing and maintaining jigs, doing trial assembly of first girder and / or other subsequent girder or part of it will have to be organized by the contractor at his own cost inclusive of labour, plant and machinery etc.
4. Transport: After inspection & passing of the fabricated components appropriate surface treatment / priming painting as specified in the item and approved by Railway shall be rendered & components transported to site of work. Contractor will be responsible for making material dumping and girder erection yard as per the requirement for which no extra payment will be made by the Railway to the Contractor.
5. Site Fabrication Workshop for Steel Bridge Girders:
  - i. Contractor may fabricate steel girders at his own RDSO approved workshop or he/they can establish workshop at site, in railway land or if suitable railway land is not available, then with prior approval, in private land adjacent to railway land or in railway land, subject to approval of Railway. Decision of Railways regarding site will be final.
  - ii. Workshop will be established as per the guidelines given in STR for Fabrication of Steel Girders (w.e.f. 01.12.2019). It has to be approved by RDSO. All activities like site clearance, necessary approvals from state/local authorities, construction of

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Date: 14-May-2025

workshop, electric/power connection, water supply, T&P, machinery, process of RDSO approval etc. will be carried out by contractor on his own cost, in reasonable time fitting in overall timeline of project. Rates of steel fabrication are inclusive of all such activities.

- iii. If workshop is established at site or at suitable location in section, railway may provide available and sparable land free of cost. All development of area such as leveling, earth filling, drainage etc., will be done by the contractor at his own cost.
- iv. Probable site for fabrication workshop in railway land, is at station. Contractor must visit the site to assess his requirement and availability of railway land there.
- v. If in case railway is not able to provide land or land provided by railway is not sufficient in area, contractor will arrange private land at site approved by Railway, for fabrication workshop on his own. No extra payment will be made for this. Railway will approve such site considering security, ease of inspection etc.
- vi. Whether girders are fabricated at already established RDSO approved workshop elsewhere or in workshop at site, item rate of steel fabrication covers the cost of transportation of girders to site

**Inspection of steel girders shall be done by the RDSO certified fabrication inspection unit of NCR or RDSO itself. QAP will be prepared by fabricating agency and approved by inspecting agency. Inspection charges will be borne by Railway. (Ref: ACS No. 02 dated 11.07.2018 of Welded Bridge Code)**

6. The materials as well as execution of works shall be confirming to the following specifications and codes of practice (Latest Revision of the Specification /Codes & up to date correction slips to be referred).

Indian Railway Standard Codes And Specifications:

- (i) IRS :Bridge Rules
  - (ii) IRS : Welded Bridge Code(1972)
  - (iii) IRS : Steel Bridge Code
  - (iv) IRS : B1-2001 for Fabrication and erection of steel bridge girders.
  - (v) IRS : M-28 Specifications for electrodes.
- Indian Standard Specification

(i)	IS :2062-1999	Specification for structural steel
(ii)	IS : 814-1961	Specification of covered electrodes for manual metal arc weld
(iii)	IS :9595-1980	Specification for metal arc welding of carbon & carbon magnese steel.
(iv)	IS : 816-1968	Specification for metal arc welding for general const in mild steel
(v)	IS : 102	Specification for ready mixed paint brushing red lead non setting priming
(vi)	IS : 123	Specification for ready mixed paint brushing, finishing
(vii)	IS : 2004	Specification for carbon steel forging.
(viii)	IS: 822	Code of practice for inspection of welds
(ix)	IS : 1852	Specification for rolling and cutting tolerances for hot rolled steel.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

In addition to above any other IS or IRS specification as applicable and approved by Railway.

7. Material:

- i. Contractor has to procure all the raw materials from SAIL, TISCO & RINL, only.
- ii. All structural steel section should confirm IS-2062 Gr. B fully killed, fully normalized also if plate thickness is >12mm.
- iii. All material shall be free from surface defects like notches, dents, bends excess rolled material, over/under dimensions.
- iv. Rolling & cutting tolerances shall be in accordance with IS 1852.

8. Test certificates:

- i. For raw materials like structural steel, rivets, paints etc., the contractor shall furnish original copies of test certificates from the original manufactures. If any testing of material like test for ascertaining normalizing of steel, metallurgical/chemical composition, mechanical strength etc. is required by the Railway or their authorized inspecting agency, in respect of any items, this shall be arranged by the Contractor at their own cost from authorized Test House & submitted in the format given. No. of such tests for steel will be limited to no. of heats from which raw material has been manufactured for each type. Test for other material like paint etc will be limited to No. of manufacturing batches from which material has been supplied.
- ii. Any approval given by Railway inspection agency in sequence of subtest or analysis, shall in no way limit or interfere with the absolute right of the Railway to reject the whole or portion of such materials supplied, which in the judgment of the Engineer in charge do not comply with the conditions of the Contract. The decision of the Engineer in charge, in this regard, shall be final and conclusive for all purposes.
- iii. All Manufacturer's certificates of tests, proof sheet, mill sheets etc. showing that the materials tested conform to the requirement of the appropriate Indian Standard & other relevant Standard Specifications should be submitted to Railway.

9. Samples & Testing

- i. In addition, the Engineer shall have the right to ask the contractor at any time to draw samples of any materials from its stockpiles or any other locations to be inspected by the Engineer or his representative. The samples are to be drawn in accordance with IS:2062 and tested in laboratory approved by the Engineer in accordance with the appropriate clause of IS:2062 at the cost of the contractor.
- ii. Besides, the tests required under clauses quoted herein above, the Engineer or his representative may order tests to be carried out by an independent person or organization appointed by him at such place or in such laboratory as he may determine in accordance with the appropriate clause of IS: 2062 and the cost of such tests shall be borne by the Contractors. The results of all such tests mentioned herein above shall be forwarded to the Engineer or his representative for record

10. Fabrication process:

The contractor shall make his own arrangement at his cost for the full scale templating on



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high level steel/concrete platform under covered shed and making of steel template hereafter referred as masters of each and every component type. The Railway will supply no steel in this connection. The templates used throughout the work shall be of steel and will be used for making jigs and subsequent checking and repairs to jigs only. Work of fabrication shall be done as per relevant IRS specification and Codes

**A). Camber:**

- a. In order to ensure that the fabrication and erection of main girders shall be such as to eliminate secondary stresses in the loaded span, the nominal length (i.e. the length which will give no camber) of members shall be increased or decreased by the amounts shown on the camber diagram.
- b. All material plates, angle etc. shall have straight edge, flat surface and free from twist. The adjacent surface or edge shall be in close contact or at uniform distance throughout.
- c. The face of compression member shall be machined so that the faces are at right angles to the axis of the member and at the joint when made out will be in close contact throughout.
- d. Contractors have to use mechanically controlled torch for flame cutting. All flame cut edges shall be grind properly to remove all burrs etc. No drag line, bevel cut shall be permitted.
- e. Contractors have to take special care to ensure that ends of all plates and members are in close contact. No making up of surface etc. will be allowed without ascertaining its structural adequacy by radiography testing.
- f. Contractor shall have to arrange use of hydraulic yoke hammer for riveting wherever possible.
- g. Only full length of plates/angles/Rolled section shall be used & no joints will be allowed in any of the component.
- h. In the fabrication of girders, necessary arrangement and provision shall be kept for inspection facilities underneath the girder and for carriage of service cables, pipelines etc. as per approved drawing.

**B). Inspection and progress report:**

- i. The quality assurance will be drawn duly approved by Engineer-In-charge. The raw material and fabrication work shall be inspected by the Railway through Engineer-In-charge/authorized inspecting official of railway for which free accommodation and facilities will have to be by the contractor. The work of fabrication in contractor's fabrication shop will all time be open by provider for inspection by the railway or their authorized inspecting official. Before dispatch of fabricated steelwork from the shop they will be inspected in the contractors workshop by the railway or their authorized inspecting official who will thereafter issue inspection certificates. The tests will be carried out at contractor's cost. All factories as required carrying out the inspection will be provided free of cost by the contractor including those requiring the services of outside agencies & all measuring tools, gauges, template etc.
- ii. Any defects noticed during inspection in the execution of the work shall be rectified or replaced by the contractors at their own cost. The decision of the railways or its

inspecting agency as to the existence of defect, the manner in which the defective work to be rectified or replaced shall be final, conclusive and binding on the contractors. No extra claim, whatsoever, shall be entertained for the cost of such rectification or replacement.

- iii. The progress of fabrication of steelwork as well as execution of all works shall be subject to periodic review by the Railway Administration.
- iv. The contractor shall facilitate to make periodical detailed assessment of the progress of the works. Such information and progress reports as may be called for by the Railway and at such intervals as specified shall also be made available.

**C). Trial assembly:**

Fabrication of steel girders will be done by the RDSO approved firms only.

- i. Fabricated girders will be required to be trial assembled at the premises of the contractor on camber jacks as per details out lined in B1/2001. All the cost of developing and maintaining jigs doing trial assembly will have to be organized by the contractor at his own cost inclusive of labour, plant and machinery, leveling instruments, theodolite, piano wire etc.
- ii. After trial assembly of girders and their components, it will be inspected by authorized inspecting official of railway for ascertaining the desired quality & designed camber etc. After passing of the assembly the span will be dismantled and subjected to surface treatment as specified by contractor at his own cost.

**D). Interchangeability:**

For interchangeable members, as certified by the Inspecting Officer, a simplified scheme of marking will be permitted, i.e. all pieces, which are identical, shall bear one distinguishing mark irrespective of the span to which they belong. If the Inspecting officer is not satisfied the members are interchangeable, the whole of the spans must be erected complete and all parts marked to their place without additional charge.

**E). Surface Treatment**

- 1. No component is to be given any surface treatment without component being passed and embossed by Railway or Railway authorized inspection Authority.
- 2. Surface cleaning, for components not to be metalized, will be done by using mechanized grit blasting after grit blasting inspection shall be done by Railway or railway authorized inspection official to conform surface finish to Sa 2-1/2 of Appendix 'A' of IS 5909 . After passing of surface preparation priming coat shall be applied either manually with brushes or by mechanical means to the satisfaction of the Engineer-in-charge. No priming/painting work will be permitted during the monsoon period from June to September.
- 3. Protective painting: After inspection and passing of priming coat by Railway's authorized inspection official protective coat of paint shall be done as per item of work and relevant IS codes either manually with brushes or by mechanical means to the satisfaction of the Engineer in-charge.
- 4. Determination of local thickness of paint: The minimum local thickness of paint shall be determined by ELCOMETER. Minimum two digital Elcometer will have to be provided by the contractor at his own cost for determination of metalizing / painting thickness. One of the digital elcometer will have measuring range of 0 100 micron & other will have a measuring range of 50-250micron.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

F). Transportation:

1. No components are to be transported to site without being rendered surface treatment.
2. The contractor has to transport with loading/unloading and stacking all the fabricated material including loose fittings with his own truck/trailer, tools, plants & machinery and labour etc. at his own cost. While, the fabricated material will be transported to the depot at Bridge site demarcated by the Railway,
3. Though approach road is existing to the site of work, Railway does not take any responsibility of maintaining it in fit condition for movement of heavy/light transportation vehicles. Contractor will have to make his own arrangement at his own cost for maintaining motor ability of approach road.
4. The contractor has to arrange wooden sleeper to keep the material at least 12" above. Gutaka the ground level.
5. The contractor has to take all precaution during transportation/loading / unloading/stacking to avoid damage to fabricated material. If any damage to any of the members is caused, the particular components will be rejected by the Engineer-InCharge at site or his representative. Any material found damaged during transit and/or unloading will be stacked separately & damaged portion shall be marked by white paint. Contractor will have to organize rectification/replacement of all such defective component at his own cost to the entire satisfaction of the Engineer or his Authorized Representative.
6. Under special arrangement with the purchaser it shall be permissible for approved portions of the work to be dispatched before complete erection of the first span provided the contractor satisfies the Inspecting Officer that such portions of the work are strictly interchangeable and will assemble correctly and accurately in the complete structure.
7. All trucks/trailer are to be loaded in such capacity so as to ensure safe transport of fabricated materials.

G). Assembling and erection:

1. The Contractor shall observe sufficient accuracy in the assembling and erection of every part of the work to ensure that all parts fit accurately together on erection. The Contractor shall maintain a master steel tape of approved make for which he has to obtain a certificate of accuracy from the National Test House calibrated under a tension of 1.8 Kgs. At 16.7C.
2. Erection & Equipment:
  - a. The Contractor shall provide at his own cost, all tools, machinery, equipment and erection material necessary for the expeditious execution of the work and shall erect the structural steel and iron work, in every respect as covered by the contract and in accordance with the drawings and specifications.
  - b. Before starting the work the contractor shall submit detailed launching plan/erection scheme to the Engineer- in-charge with complete details of equipment he proposes to use which shall be subject to the approval of the Engineer- in-charge other railway officials, the approval of the Engineer shall not be considered as relieving the contractor of the responsibility for the safety of his method or equipment or from carrying out the work in full accord with the drawings and specifications.

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- c. All temporary works shall be properly designed and substantially constructed for the loads, which it will be called upon to support. Adequate allowance and provision of lateral forces and wind loads shall be made according to local conditions. Careful and periodical inspection of plant shall be made by the Contractor to ensure that all tackle, roops, chains and other important lifting gear and machinery are in good order and if for service and well up to the capacity for which they are required.
- d. When chains are used for lashing, care must be taken to protect the edges of members to avoid the marking and distortion otherwise caused
- e. Deflection test:  
All the arrangements required for carrying out deflection tests shall be made by the contractor of any of the span as decided by Engineer in charge and all required material, testing equipment's labour will be arranged by the contractor. The testing report shall be submitted in three copies to Railway, the deflection will be conducted in supervision of railway engineer.
- f. Bearing And anchorages:
  - a. Bed plates of bearings shall be set to required level and fixed accurately in position by giving full and even bearing by setting them on a layer of cement sand material as approved and directed by the Engineer.
  - b. The Contractor shall drill the holes where necessary and set the anchor bolts. The bolts shall be set accurately and fixed with cement grout or another grouting material as approved by the Engineer, completely filling the holes.
- g. Method of measurement:  
For purpose of payment, quoted rates apply to the weights of steel work, calculated from final working drawings based on theoretical standard weights given in the producers hand books and using minimum square overall dimensions, no deductions being made for skew cuts, holes or notches. Each gusset shall be on the dimensions of the smallest enclosing rectangle. In additions, for riveted components, 3% will be added to the estimated weights calculated as above.
- h. Quantity:  
If the tenderers make use of any estimated quantity, which may be given to them in the Schedules or Tender drawings or in any other way, they do so at his own risk and will not be entitled to make any claim or demand or to raise any question whatsoever on account of any errors or miscalculations in the said quantity.
- i. Bridge components shall be tested before leaving the manufacturer's premises Bridge components will also be tested at the site and they may be rejected if found not suitable or not in accordance with the specifications, notwithstanding the result of tests at manufacturer's work shop or elsewhere or test certificates.
- j. Record To Be Maintained

Contractor has to maintain the following records during execution of the work.

1. Inspection/test certificate for raw material (All sections) by the original producer of the material. Inspection Register for material used for fabricating various components, should give details of Heat No., Cant No. and relevant test certificate from SAIL/TISCO/RINL (original manufacturers) as per IRS Specification B1-2001.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

2. Record of Inspection of templates floor/ templating by the Internal Inspecting Authority as per IRS Specification B1-2001.
3. Jigs/fixture register: Incorporation inspection and clearance of Jig by Internal Railways inspection officials including details of subsequent checking of jigs and rectification thereafter as per IRS Specification B1-2001.
4. Register showing clearance of internal quality control organization for initial assembly, tack assembly, second initial assembly, final assembly for every component as per IRS Specification B1-2001.
5. Welding register-indicating No. and location of defective welding during initial inspection for each component, defects detected by Authorized Railway Inspecting Officials and compliance thereof.
6. Final passing register officials (embossment is essential on each component also before applying any surface coating.
7. Register for painting thickness and surface preparation.
8. Measuring Equipment Testing Register: All measuring equipment used should be regularly tested for proper accuracy and record of the same to be kept for inspection of Railway inspecting official. Every measuring equipment should have connectivity with equipment tested at National Test House.
9. Dispatch Register giving details of material dispatched span wise:
10. Material handing over register
11. Any other registers as required by Authorized Inspecting Agency.
12. Plant and Machinery Register: This register will record daily the particulars of machinery with the contractor and will be signed jointly by the engineer's representative and the contractor. This will also indicate the particulars of the machinery out of order/under repairs.
13. Material Offering And Inspection register  
This register shall be maintained separately for each work order for keeping record of material offered for inspection, inspection remarks and passing details. One page should be allotted for individual members of fittings. Proforma shall be as under:-

Description of component/ fitting: Shipping mark: Quantity required per span:

Span No.	Initial of Supervisor offering material for inspection	Rlys. inspecting officials Inspection Remarks	Compliance action	Seal & initial of Rlys Inspection Official	Despatch & Consignee details.
1	2	3	4	5	6

### **(C) SPECIFICATIONS FOR EXPANSION JOINTS**

1. This item includes designing supplying providing and fixing in position the approved type expansion joints for ROB/Bridges.
2. The item includes all lead, lift, testing charges and work at all location and inclusive of all material labour for fixing the joint at required and nominated place.
3. The measurement will be for the exact quantity used on work and not the part which is left over or left after fixing the joint. Contractor shall take prior approval from Railway's Engineer in charge after submitting details of drawing.
4. The expansion joints at fix end and free end shall be provided according to the details shown on the approved drawing and in presence of manufacture representative.
5. Suitable arrangement to prevent ingress of ballast inside ballast retainers shall be provided as shown the drawing.
6. Expansion joint shall be provided for full width of super structure and ballast retainer.
7. Inspection: Expansion joints shall not be used without the proper inspection certificate to be issued by the inspecting authority or any representative as directed by the Engineer in charge, certifying the approval of expansion joints. Testing charges including cost of material shall be borne by the contractor.
8. The expansion joints and accessories thereof shall be subjected to all the specified tests as per relevant standard specifications on raw materials as well finished products in presence of Engineer in charge or his authorized representative at the manufacturer's work or at other approved laboratory as decided by the engineer in Charge.
9. The contractor shall therefore, select a suitable expansion joints manufacturer having complete plant testing facilities so that the expansion joints under manufacturer can be tested at the place of manufacturer itself. Test certificates for the steel sections shall also be submitted by the manufacturer to the inspection agency.

### **(D) PRECAST RCC/PSCUNITS**

Concreting of the pre-cast units shall be done in right sequence and pouring shall be done in an approved manner in once complete operation. All holes for holding down bolts for temporary lifting arrangement, fixing ladders, ducts, vents, anchorage cones, sheaths etc. shall be provided in an approved manner according to the drawing. All pre-cast concrete unit shall be well vibrated, top surfaces of slab being finished with vibrating screens or plates to ensure a properly closed surface. All pre-cast units shall be moulded to exact shapes, sizes and dimensions as shown in the approved drawings or as instructed by the Engineer.

### **(E) PILE FOUNDATIONS**

1. Construction of bored pile foundations shall be strictly in accordance with the stipulations made in the building digest CBRI Indian 56 for bored piles for foundation and IS 2911-1979 part-I sec.2&3.



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Date: 14-May-2025

2. Wherever the tilt of the piles exceeds 2% or the piles shifts by more than what is specified area will have to be increased and also additional reinforcement will have to be added and expenditure involved including cost of cement and steel shall be borne by the contractor.
3. The tenderer shall have to remove all the released materials, debris etc. from the site of bridge, the same day it is dismantled, to keep the site clear of any infringement and shall stack the same as directed by Engineer in charge.
4. The work will have to be carried out only on the basis of final approved plans. Any increase in depth of Piles required as per design/drawing to bring them in conformity with the design criteria and specifications shall be carried out by the contractor.
5. Rates: The rate quoted by the contractor shall be inclusive of all rate for Boring Piles through all types of soil including boulder and such other obstruction etc. including all machinery and plants, all royalties, freights etc. required for efficient execution of work. No extra payment will be made on this account whatsoever.
6. For purpose of payment, then length of Pile will be measured from the bottom of the Pile to the bottom of the Pile Cap. The Engineer in charge will decide the exact level of the bottom of the Pile Cap. Any other Earthwork necessary for casting and boring Piles will not be paid for separately and the rates should be inclusive of all such Earthwork as may be necessary.
7. Testing of Piles: Initial and routine load testing of Piles shall be carried out for both vertical and lateral loading as directed by the Engineer and the same shall conform to IS 2911 Part IV of 1979.
8. Initial & routine pile load tests and installation of test piles for initial load tests are payable under this contract and will be paid under relevant SOR/NS item. In case, test pile fails prematurely, during testing, due to construction defects, no payment will be made for installation and testing. Number of initial and routine load tests will be decided by engineer in-charge, in accordance with codal provisions. If test procedure is faulty and/or loading capacity is found unstable/inadequate etc., causing a failure of testing procedure and abandonment of test pile, then cost of testing and test pile will not be paid.

**(F) WELL FOUNDATION**

Please refer concern IRS Code/IRC Code/IS Code for designing and execution purpose.

**(G) READY MIX CONCRETE**

Indian Railway Standard Code of Practice for Plain, Reinforced and Pre-stressed concrete for General Bridge Construction (Concrete Bridge Code)

Note : Based on Correction Slip No. 3 dated 01.08.2000 to Concrete Bridge Code 1997.

1. Ready mixed concrete (RMC) means concrete produce by completely mixing cement aggregates admixtures, if any, and water at a Central Batching and Mixing Plant and delivered in fresh condition at site of construction.
2. Use of Ready Mixed Concrete: Ready Mixed Concrete may be used, wherever required. It shall conform to the specifications of concrete, as laid down in Concrete Bridge Code. For other aspects, which are not covered in Concrete Bridge Code IS: 4926 (Specification for Ready Mixed Concrete) maybe referred.
3. Effect of transit (transportation) time on Ready Mixed Concrete: As Ready Mixed Concrete is available for placement after lapse of transit time, reduction in workability occurs, which may lead to difficulty in placement of concrete. In addition, in case of longer transit time,

initial setting of concrete may also takes place, which may render it unusable. Thus, while planning for using of Ready Mixed Concrete, these aspects should be kept in view.

4. Checking suitability of Admixtures: Generally admixtures, like water reducing agent, retarder etc., are used in Ready Mixed Concrete for retention of desired workability and to avoid setting of concrete. In such cases, admixtures should be tested for their suitability as per IS: 9103 at the time of finalizing mix design. Regarding specification of admixtures, clause 4.4 of Concrete Bridge Code maybe referred.
5. Re-tempering with Concrete: Under any circumstances, re-tempering i.e. addition of water after initial mixing, shall not be allowed, as it may affect the strength and other properties of concrete.
6. Time period for delivery of Concrete: The concrete shall be delivered completely to the site of work within 1½ hours (when the atmospheric temperature is above 20oC) and within 2 hours (when the atmospheric temperature is at or below 20oC) of adding the mixing water to the dry mix of cement. Special measures as approved by Engineer-in charge will be taken if transit time is more than 2 hrs.

Note: - RDSO Guide line (BS-23) shall be referred on use of Ready mix Concrete.

**(G) SPECIFICATION – INJECTION GROUTING  
(HYDRO -REACTIVE POLYURETHANE)**

General Furnish all labor, equipment, and materials necessary and incidental thereto to perform all required operations to eliminate the flow of water by pressure injection to fill cracks, voids, and joints in concrete substrates.

**INJECTION PROCESS:** Fully examine the existing site conditions to ensure that all associated work can be performed without removing or relocating existing utilities, structures or structural members.

Remove all standing water Drill at a 45° degree angle where possible to intersect the wall/floor joint interface halfway through the thickness of the substrate (e.g. 4" deep for 8" thick slab) Drilling depth should be half the thickness of the concrete member. Install mechanical injection ports and secure in place at a spacing of 6- 12" inches apart (6" for hairline and 12" for wider cracks). Alternate positioning from left side to right side as you move along the crack where possible.

Extremely wide cracks (if any exist) should be covered with a surface seal prior to injection in order to contain the injection resin until cured. Under proper pumping conditions in active leak injection, the following signs should be observed in the order listed: Water displaced from crack/joint by the resin Water and resin mix (foamy) appearing at the crack/joint area Pure resin from crack/joint

If the joint surface exhibits immediate free flow of resin while working the first packer, pause for a few minutes. In most cases the resin will react fast enough with the water and expand rapidly. The resulting resin product will heal the joint and provide a surface seal to contain the material to follow. The contractor is responsible for estimating what duration time is adequate for grouting the voids and is responsible to prove that the void is full by attempting to inject each port to refusal.

Once the contractor is assured that the resin has reached the next injection packer or has sufficiently stopped the water as evidenced by the grout oozing out of the joint area, he should shut off the resin flow and disconnect pump pressure line and proceed to the next packer.

Follow the injection process for one to three packers, the contractor shall return to the first packer and attempt to re-inject it again. Some of the packers will take more grout, filling up more of the crack/joint area and creating a higher density void filler and water stop.

The contractor shall continue this procedure until refusal.

**MATERIALS** Injection Ports provide suitable injection ports (stainless steel/brass/zinc/plastic), button head or zerk fittings, shaft and rubberized expandable grommet. Grout Injection Material Grout material is to be 100% solvent free and 100% solids. Gel time of the product is adjustable by adding a certain percentage of accelerator per the manufacturer's recommendations. Grout material shall not shrink or swell. Grout material shall cure to a semi-flexible foam structure which is not affected by water or dryness. 3 Grout materials shall have the capacity to expand upon contact with water to a volume of 30 to 40 times. The composition of the material is one that water is not a component of the cured foam structure. Pump Equipment

All chemical grouting equipment shall be of a type, capacity, and mechanical condition suitable for doing the work. The equipment shall be compatible with the chemicals to be handled and shall be maintained in proper operating conditions at all times.

**SUBMITTALS** submit all technical literature covering the chemical grout material including complete

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

manufacturer's specifications, recommendations and test data.

Provide Material Safety Data Sheets on any chemical products utilized during the work of this section. Injection port pattern and/or grouting method statement to Architect for approval prior to starting grouting operations. Samples (a) Stainless steel, brass, zinc, or plastic button/zerk injection packers.

### **Quality Assurance Qualifications:**

Company specializing in structural repairs, crack injection and waterproofing of cracks shall be trained by the waterproofing material's manufacturer and certified in the application of the materials. Delivery, Storage and Handling Deliver all materials in the manufacturer's sealed original containers bearing the manufacturer's name and product identification in a manner to prevent damage, breakage, water or moisture intrusion. Store and handle all products of this section in strict accordance with the manufacturer's instructions and product safety regulations.

All equipment shall meet or exceed all safety requirements and be of a size and nature which does not conflict with safe accessibility to the site.

Project Conditions Do not execute the Work of this section unless the Site Engineer or Authorized Representative is present and has authorized the work to commence.

Do not remove any utility equipment or piping in the area while executing the work. Environmental Requirements do not apply if the temperature is below 32°F or above 90°F unless the material manufacturer is consulted for recommendations.

Owner's Requirements Execute all work in accordance with all safety requirements, approved written procedures and with the least amount of interference with the work of other trades as possible.

Equipment should be confined to the delivery area and all components shall be in good working order as approved manufacturer for use with the specified materials.

Immediately notify the Site Engineer/Owner's representative in the event of any process interruption or environmental concerns which could affect the service or application conditions relative to this work.

Protection, Cleaning and Safety Following a complete injection of all mechanical packers to refusal and where the visible leakage has been completely eradicated, remove all injection packers. Remove cured material where applicable and fill injection hole with rapid cement. Clean all adjacent areas of excess material, powder, cement and/or droppings. Chemicals used for cleaning shall be non hazardous and non flammable.

Process grout materials using appropriate protective gear including gloves, masks, or goggles, and appropriate clothing as described and in accordance with the manufacturer's sheets. Follow manufacturer's recommendations for product safety and disposal of material. Comply with all regulations for drilling procedures using protective gear including highlighted vests, face shields, or goggles.

Field Quality Control The Engineer shall inspect the surface and reject any port holes that are unacceptably filled or any surface area which displays other defects related to the completion of this work. )

All work is to be done under the supervision of the jobsite supervisor or owner's representative.

**(J) SPECIFICATIONS FOR FABRICATION &ERECTION OF BOW STRING GIRDER**

1. Fabrication of steel girders will be done by the RDSO approved firms only.
2. All fabrication work shall as per guidelines of IRS B-1 and IRS welded bridge code BS-110R(Guidelines on fabrication of steel girdes) & BS-111( guidelines for use of HSFG bolts on bridges on IR) and other relevant codes or manuals with latest amendments.
3. Contractor has to submit detailed erection & launching scheme showing stage wise activities and phase wise working instructions along with detailed design & drawing duly proof checked by IIT/NIT for approval of Railway/RDSO. The scheme should be based on site conditions, and available working space required for temporary staging etc. with due consideration to minimum /least disturbance to movement of trains during launching.
4. Unless otherwise provided in the contract, the contractor shall supply and erect all necessary false work and staging and shall supply all labour, tools, plants, crane consumables etc. to carry out the work completely in all respect, up to satisfaction of Engineer in charge.
5. Prior to commencement of erection & launching all equipments, machinery, tools, plants, ropes, cranes etc. need to be tested to ensure their efficient working.
6. All steel plates used in fabrication of girder are of grade Fe 490 B/490 only ISMB600 is of grade Fe 410 or as indicated in approved drawing with latest alterations (if any).
7. All workshop fabrication shall be using SAW (submerged arc welding) process only.
8. All welding other than workshop welding shall be done through Gas shielded FCAW (Flux core arc welding) process only. SMAW (shield metal arc welding) also known as manual metal arc welding shall not be permitted anywhere in the structure.
9. The gas shield to be used in the FCAW process may be CO<sub>2</sub>, Argon or CO<sub>2</sub> Argon mixture.
10. In FCAW process wind screen and /or enclosures shall be provided around the welding location to prevent shielding gas from blown out.
11. Welding shall be performed on prepared metal surfaces free from rust, dust, moisture etc. and before every new pass slag must be carefully chipped off from welded surface. welded quality shall be tested as per welded bridge Code.
12. All welding to be done as per approved WPSS and by qualified approved welders only.
13. Notes mentioned on approved structural drawings will super seeds all other conditions mentioned in the tender document and contractor shall comply with these notes as per direction of engineer in charge.
14. Contractor should inform in writing to Engineer in charge from time to time regarding fabrication stages of the girders in the workshop and should provide all facilities to the representative of Engineer in charge for frequent inspections during fabrication Contractor is

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

responsible for ensuring inspection of the girder work in workshop at all stages from procurement of material to final fabrication, transportation, assembling and erection.

**(K) SPECIAL AND TECHNICAL CONDITIONS FOR WELDED GIRDERS.**

1. In the case of any conflict between conditions described hereunder and various specifications to be followed as mentioned in the contract documents at various places these conditions shall prevail over all conditions mentioned elsewhere.
2. Work of fabrication shall be done as per IRS Welded Bridge Code and IRS-B1.
3. Electrodes shall confirm to IRS Specifications No. M-28. The filler wire and flux combination of submerged arc welding shall confirm to IRS specification No. M-39.
4. Before starting, the work contractor shall submit detailed welding procedure sheet. The welding procedure sheet shall include specifications of the parent metal and electrodes and / or wire flux combination Voltage / amperage wire feed speed, travel speed pre-heating and post heating etc. Location, sizes, actual length and details i.e. from joint, angle between fusion faces, gap between parts etc of welds.
5. QAP & WPSS shall be got approved by the railway/ RDSO before commencement of the work.
6. The tolerances in manufacture of the girders shall be as per special fabrication tolerances as applicable to welded girders as laid down in IRS specification No. B-1 and IRS welded Bridge code.

**7. FABRICATION PROCESS:**

Fabrication of steel girders will be done by the RDSO approved firms only. The contractor shall make his own arrangement at his cost for the full scale templating on high level steel/concrete platform under covered shed and making of steel template hereafter referred as masters of each and every component type. The Railway will supply no steel in this connection. The templates used throughout the work shall be of steel and will be used for making jigs and subsequent checking and repairs to jigs only. Work of fabrication shall be done as per relevant IRS specification and Codes

7.1 WELDING Provision of IS-4353-1967 shall generally be followed as applicable for welding procedure, details of workmanship, correction of weld faults, peeling, painting etc. In case, any of the provisions contained therein contravene the provisions made in Railway welded bridge code, the latter shall be followed.

7.1.1 All workshop fabrication shall be done using SAW (submerged arc welding) process only.

7.1.2 All welding other than workshop shall be done through Gas shielded FCAW (Flux core Arc Welding) process only. Manual metal arc welding shall not be permitted anywhere in the structure.

7.1.3 The sizes and length of welds shall be not less than those specified in the drawings nor shall they be subsequently in excess of the requirements without prior approval of the Engineer. The location of welds shall not be changed without prior approval of engineer. Welds shall preferably be made in flat position.

7.1.4 The preparation of fusion faces, angles of preparation root radius and root face shall be as specified in IS: 4353-1967. Where the gap between the root faces of a butt joint



is excessive, the gap shall not be bridged since this procedure often leads to cracking. The fusion faces of joint shall be buildup with weld metal to give the appropriate gap before the weld proper is commenced.

- 7.1.5 In making butt welded joints in rolled shapes, the sequences and procedure of welding shall be such as to take into account unequal amount of expansion or contraction in elements being welded. The welding in the thinnest elements of a section (usually the web in case of beams) shall be done prior to the welding of thicker elements (usually the flanges in case of beams)
- 7.1.6 In case of welding using direct current, earthing on the work piece to be welded shall be connected carefully at more than one location with a view to avoid Arc BI during welding.
- 7.1.7 The sequence of welding shall be such as to minimize distortion / deformation whenever possible the members which offer the greatest resistance to compression are welded first.
- 7.1.8 All slag shall be removed from each run before another run is super imposed and form the final run. When cold, the final run shall be protected with clean boiled linseed oil and shall not be painted until approved by the Inspector.
- 7.1.9 In case of welds in structure subjected to dynamic loading, adequate means of identification, either by identification stamp or other records, shall be provided to enable each weld to be traced to the welding operator by whom it was made.
- 7.1.10 During the entire welding and cooling cycle, the joints shall not be subjected to any external forces or shocks.

## 7.2 SUB-MERGED ARC WELDING

- 7.2.1 Main section of the components shall be framed only by sub-merged arc welding. Neither the depth of fusion nor the maximum width in the cross section of weld metal deposited in each weld pass shall exceed the width of the face of the weld pass.
- 7.2.2 All but welds by the sub-merged arc process shall be made in the flat position. Fillet welds may be made in either flat or horizontal vertical position. The size of the single pass fillet welds made in the horizontal/vertical position shall not exceeds 8mm. In addition to the provisions of IS 4353- 1967, the inspector may, where deemed necessary, require a sample joint having the same cross section as the joint to be used in construction and a length of at least 300mm to be welded with the wire, flux, current, arc voltage and speed of travel that proposed to be used and a micro etched cross section of the welded joint prepared as a demonstration that the specified requirements will be met. When the welding current arc voltage and speed of travel are established by a test made in accordance with requirements of this clause, they shall be kept within the following limits of variations Welding current ---- +10% Arc voltage +7% Speed of travel +15%
- 7.2.3 Sub-merged Arc welding machine for heavy duty bridge girders as per IRS Specification to be used.

- 7.3 EDGE PREPARATION AND SET UP OF PARTS 7.3.1 Edge preparation shall conform to the relevant drawings and meet the requirement of welded bridge code. Normally all edges to be welded will be mechanically planned before members being subjected to welding.
- 7.3.2 After the parts are assembled in position for welding, the inspector shall check for incorrect root gap, improper edge preparation and other features that might affect the quality of welded joint.
- 7.4 INSPECTION AND TESTING OF WELDED JOINTS
- 7.4.1 Inspection of the welded bridge girders shall be done by Railway / RDSO.
- 7.4.2 The inspector designated by the purchaser shall ascertain that fabrication by welding is performed in accordance with the requirement of welded Bridge code.
- 7.4.3 Contractor shall notify in advance of the start of any welding operation.
- 7.4.4 Contractor shall provide free access to the work being done at all reasonable time and facilities shall be provided to the inspecting authority so that during the course of welding, he may be able to inspect any layer of well metal. The inspecting authority shall be at liberty to reject any materials that does not confirm in the provision of welded bridge code and to require any defective welds to be removed and re-welded.
- 7.5 MARKING OF DEFECTIVE WELDS
- 7.5.1 The marking shall be positive and clear and in accordance with the method of marking followed and understood by the inspectors and shop personnel involved in making the repairs.
- 7.5.2 Marking shall be permanent enough to be evidence until the repair has been done and inspection completed.
- 7.5.3 After the repair has been made, it shall be inspected and properly marked to indicate whether the repair is satisfactory.
- 7.6 EXTENSION PIECES In fusion welds such extension pieces are to be welded which will serve the additional functions of running in/out pieces to ensure the soundness of full length of the weld. Extension pieces will be of the same composition and with the same weld preparation as the parent materials of the main weld.
- 7.7 RADIOGRAPHIC TEST All butt welds should be subjected to radiographic testing by authorized agency only. The film should be prepared for examination sensitivity, defect, interpretation and acceptance decision based on prescribed criteria.
- 7.8 DYE PENETRATION TEST Other weld may be examined by radiographic or any other non-destructive method like dye- penetration test, Magna flux and /or any other method at the discretion of the inspecting authority.
- 7.9 WELDING PARAMETERS Contractor has to keep a record of welding parameters piece wise, components wise and span wise.

## 8. METALIZING AND PAINTING

- 8.1 Scope includes metalizing and painting of loose fabricated components and girders in-situ/ in shop with contractor's own material, labour, scaffolding, consumables etc and including all handling, including jacking up of large members. For gaining access to all sides of members, changing support points etc as required for completion of this item. Work is to be carried out as per relevant IS codes and Indian Railway Bridge Manual Para 218 (1).
- 8.2 The components shall be sand blasted before metalizing so that surface is thoroughly clean from grease, oil, rust moisture and any other foreign matter.
- 8.3 Cleaning prior to blasting:- Grease, paint, and other foreign matter should be removed from the area to be sprayed as well as the adjoining areas.
- 8.4 Sand Blasting:
- i) The surface shall be thoroughly cleaned and roughened by compressed air blasting or centrifugal blasting with a suitable abrasive material like sharp coarse sand or grain size between 600 micron and 1.27 mm with a minimum of 40% retained on an 850-micron sieve.
  - ii) The surface shall be comparable in roughness with a reference surface produced in accordance with appendix "A" of IS 5909 and shall provide an adequate key for the subsequent sprayed metal coating.
- 8.5 Metal spraying: - The metal spraying shall be carried out as soon as possible after surface preparation but in any case within such period that the surface is still completely clean, dry and without visible oxidation. If deterioration in the surface to be coated is observed, by comparison with a freshly prepared metal surface or similar quality which has undergone the same preparation, the preparation treatment should be repeated on the surface to be coated. The wire method shall be used for the purpose of metalizing, the diameter of the wire being 3mm to 5mm. Specified thickness of coating shall be in multiple layers and in no case less than 2 passes of the metal spraying unit shall be made over every part of the surface. At least one layer of the coating must be applied within 4 hours of blasting and surface must be completely coated to the specified thickness within 8 hours of blasting.
- 8.6 Purity of aluminum: - The chemical composition of aluminum to be sprayed shall be preferably in accordance with BS: 1475 material 1-B (99.5%) aluminum otherwise as per IS: 739.
- 8.7 Appearance of the coating: - The surface of the sprayed coating shall be of uniform textures and free from lumps, coarse areas and loosely adherent particles.
- 8.8 Re-treatment of defective areas:- Any defective area shall be cleaned of all sprayed metal by blasting or other suitable means and re-prepared to confirm the requirement of Para-4 prior to re-spraying. Where the defect has been solely due to too thin a coating, sprayed metal of the same quality may be added, provided that the surface has been kept dry and is free from visible contamination, as specified in Para-6.1 of IS: 5905.
- 8.9 Additional protective coating of paints:- After aluminum metalizing, the surface should be covered with protective coating of paint as described below:

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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- a. First coat of Etch primer as per IS-5666, then one coat of Zinc chrome primer to IS: 104.
  - b. After hard drying of zinc chrome primer, one coat of aluminums paint to IS: 2339 (brushing or spraying as required) shall be applied. Corrosion pits and gaps between members connected together should be filled with putty before applying final coating. The putty shall conform to IS: 419-1967 or other suitable compound approved by the department. Linseed oil, raw or boiled, used for mixing paint shall correspond to IS: 77-1976
- 8.10 Site Painting:- After steel work is transported and assembled at site, a second cover coat of aluminum paint to IS:2339 (brushing or spraying as required) shall be applied after touching up the primer and the cover coat given in the workshop, if damaged in transit.
- 8.11 Thickness of metal coating: Minimum thickness of metalizing will be 115 microns, the average thickness being 150 microns. The thickness is to be measured by Elcometer.
- 8.12 Safety precautions: Safety precautions should be taken as specified in IS: 6586 which is described below. The normal precautions against fumes and dust hazards, such as wearing of mask and proper ventilation should be observed and that no special dangers arise during the spraying of aluminum and zinc. Any warnings printed on the containers by the paint manufacturer should be strictly observed and the user should consult him in all cases of doubt regarding health and fire hazards arising from the use of the product.
- 8.13 Painting work is to be carried out as per specifications of painting in bridge manual.

**(L) SPECIAL CONDITION FOR WORKING OF ROAD CRANES:-**

(-IV/RUB/206 dated 15.02.2016 circulated under HQ letter No.136- W/DYCE/C/HQ/Misc. dated 22.02.16) 1. 2. 3. 4.

1. No machine shall be selected to do any lifting on a specific job until its size and characteristics are considered against the weight, dimensions and lift radii of heaviest and largest loads.
2. The contractor shall ensure that a valid certificate of fitness is available before use of Road cranes.
3. Contractor can utilize the services of any competent person as defined in Factories Act, 1948 and approved by Chief Inspector of Factories.
4. The laminated photocopies of fitness certificate issued by the competent person the operator's photo manufacturers load chart and competency certificate shall always be either kept in the operator or pasted on the visible surface of lifting appliances.
5. All lifting appliances including all parts and gears thereof, whether fixed or movable shall be thoroughly tested and examined by a competent person once at least in every six months or after it has undergone by any alterations or repairs liable to affect its strength or stability.

**(M) SPECIFICATION FOR BEARINGS**

1. Bearings shall be provided under each girder as per approved drawings. These bearings shall be got manufactured from reputed manufacturer of bearings as approved by Railway.
2. The bearing shall be got tested by contractor at his own cost in presence of Railways representative if directed by Engineer in charge at approved test house as approved by Railway. The bearings shall be supplied at site with test certificates.
3. The bearing shall be correctly manufactured according to the approved drawings subject to the permissible tolerances as indicated in the drawings. The placement of bearings shall be got approved from the Engineer in charge.
4. The manufacturer and installation of bearing shall confirm to relevant IRC/UIC/BS codes.
5. The contractor shall also arrange all facilities and afford cost for the purpose of inspection and testing of all or any of the components of the bearings and metals used therein. Load test of the bearings shall be called out at contractor's cost if considered necessary by the engineer.
6. POT PTFE BEARING
  - a) POT PTFE bearing shall be provided under PSC girders (normally of spans > 25m) or steel composite girder as per approved drawings shall be got manufactured from reputed manufacturers of bearings as approved by Railways. The bearing shall be got tested by the contractor at his own cost in the presence of Railway representative at approved test house as approved by Railway/RDSO. The bearing shall be supplied at site with test certificate.
  - b) The manufacturing and installation of bearing shall conform to:
    - i). IRC-83-1987 Standard specifications and code of practice for road bridges (section-IX Bearings).
    - ii). UIC-772 R-Code of practice for bearing of Rail bridges (published by International Union of Railways).
    - iii). BS-5400 British Standard institution Code practice for bridge bearing. Section 9.1 Design Specification, section 9.2 Specification for material & installations.
  - c) Material for bearings: The material used generally conform to:
    - i). Mild steel shall conform to IS 2062. Cast steel shall conform to 27-54 of IS 1030.
    - ii). Stainless steel shall generally conform to grade 316 S 16 of BS 1449, Part-2.
    - iii). Unless otherwise specified elastomers shall conform to IS 3400 & IRC 83-1978. However, the confined elastomers inside POT bearing shall conform to BS 5400 having a hardness of 50+/- 5 IRHD with corresponding properties regarding tensile and compressive strength, ageing etc.
    - iv). PTFE shall comply with the requirements of BS.3484-1973 Grade A and shall be pure virgin PTFE without any addition of regenerated material or fillers. It shall be free sintered and not pressure cooled. Where lubricant retention cavities are included they shall either cold

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

pressed or hot pressed at a maximum temperature of 200 degree Celsius. The maximum PTFE sheet dimension shall not exceed 1200mm and 1500mm for bonded PTFE and confined PTFE respectively (for rectangular PTFE pads. Tile dimension refers to the diagonals and for circular PTFE pads to the diameter). The thickness of PTFE shall comply with the following requirement.

Maximum dimension PTFE diameter of diagonal ( in mm)	Maximum thickness of PTFE	
	Bonded application	Confined application
Up to 600	1.0	4.5
600 to 1200	1.5	5.0
1200 to 1500	-	6.0

The difference in PTFE sheet thickness between the center and the edge shall nowhere exceed 0.05% of the radius or half diagonal of the sheet, except that for sheet having radii less than or equal to 400mm the difference may be upto 0.02mm. For PTFE sheets split up into individual surface, these conditions shall apply to the entire PTFE surface of a bearing including the intermediate spaces.

- v). Dimples or grooves in a PTFE for lubrication shall comply with the following requirements.
- a) The plan area of the cavities shall be not less than 10% and not greater than 30% of the total PTFE bearing surface area including the area of the dimple or grooves.
- b) The volume of the cavities shall be not less than 3% and not greater than 25% of the volume of PTFE (calculated above the top of the recess for confined PTFE) including the volume of the cavities.
- c) The depth of the cavities shall not exceed half the thickness of the PTFE sheet for bonded PTFE and the height of the projections of the PTFE, above the top of the recess for confined PTFE.
- vi). Stainless steel mating surface: - The stainless steel plate shall comply with the requirements of grade- B16 S16 of BS 1449 Part-2, with a maximum surface roughness for planner surface not greater than 0.15mm CLA as specified in BS 1134 part 2:1972. the minimum thickness of the stainless steel shall comply with the following requirements.

Dimensional difference between PTFE and stainless steel in the direction of movement.	Minimum thickness of stainless steel (mm)
Up to 300 mm	1.5
300 mm to 500 mm	2.0
Above 500 mm	3.0

The diversion of the stainless steel plate from the intended profile over the length L of the PTFE bearing confined surface shall not exceed  $0.0002 Lh$ . Where "h" is either thickness of bonded PTFE or projection of PTFE as appropriate.

- vii). Adhesives for bonding: Adhesives for bonding PTFE to the stainless steel backing plate shall have a minimum bond strength of 6 N/mm width in a 90 degree peel test.
- viii). Lubricant: The lubricant used shall retain its properties within the temperature range of 5 degree Celsius to 50 degree Celsius. It shall not resinify or change its consistency, or after the constituent parts of the bridge bearings. The lubricants shall have the following properties. Worked penetration range of 240 to 280 determined in accordance with BS



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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

5296. Solidification point-40 degree Celsius. Bleeding-4% when tested in accordance with BS 5297, using 150 degree Celsius during 24 hrs.

- ix). Welding: Welding electrodes of suitable grade shall be selected as per IS:814 Pre-heating and post weld stress relieving shall be done to suit IS ASTM practice (ref. IS 9595-Recommendations for metal arc welding of carbon and carbond manganese steels).

**7. TOLERANCE:**

The tolerance shall be as per BS ; 5400 section 9.2 –

Plain dimension                      -0 and +3mm

Overall height                        -0 and +3mm

**8. PAINTING:**

All non-working surface shall be coated with 2 coats of epoxy and one coat each of epoxy intermediate and finish total thickness.

- Silicon grease shall be applied at PTFE/SS interface after testing.
- Anchors shall be protected with cement or otherwise.

9. TEST: Raw materials : All raw materials shall be sample tested conforming to relevant material standard required in order to ensure that there is probability of not more than 1 in 100 of its being exceeded. A partial load factor (BS-54-5400) value of 1.3 for the ultimate limit state and 1.0 for the serviceability limit state should be used in association with this load.

**10. INSTALLATIONS:**

- a. The bearings shall be installed with care to ensure their correct functioning in accordance with the design for the whole structure. Even and efficient contact between top and bottom plate of the bearing and the bedding material shall be ensured for successful performance of the bearing. Free flowing Non- shrink Groin between the concrete and top and bottom plates of bearing will be provided.
- b. In order that moving surfaces are not contaminated, bearings shall not be dismantled after leaving the manufacturers works but, if for any reason these shall only be done under expert supervision and manufacturers assistance to be sought.
- c. Transfer of super structure weight on to the bearing shall not be allowed until sufficient strength has developed in the bedding to resist the applied load. Temporary clamping devices shall be removed at the appropriate time before the bearings are required to accommodate movement.
- d. Temporary support when provided under bearing base shall be compressive under design loading or removed once the bedding material has reached the required strength. Any voids left as a consequence of their removal shall be made good using the same type of bedding material. Steel folding wedges and rubber pads are suitable for temporary supports under bearing base plate.
- e. Bedding material shall be as indicated in approved drawings.
- f. Fixing of bearings

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

1. The pedestal for seating of the bearing shall be cast with the following three provisions for accommodation the anchoring arrangements.
  - i). Block Outs.
  - ii). Threaded inserts.
  - iii). Metal bedding plates.
2. When block outs are provided they should be of such size that after installation of the bearing of a portion of the block out will be outside the plan area of the base plate for pouring grout mix. The dimension of the block must be sufficiently large to accommodate the tolerance of the bridge elements.
3. Threaded inserts to accept the anchor bolt can be kept in the bearing seating by use of a template. The clearance on the template hole must be of lower order than those provided all the bearing. The template must be sufficiently rigid to maintain the geometry and dimensions. Pre-cast insert on the pedestal is not suitable with pre-cast superstructure for lack of facilities for adjustment.
4. Metal bedding plates may be cast iron or bedded on top of the superstructure to the correct level and location.
5. The bearing which is to be installed on temporary supports should be firmly fixed to the superstructure by holding down bolts or other means to prevent disturbance during subsequent operation. The method of bolt tightening shall be such as not to deform the bearing. What so ever the method used for fixing of the bearing, the voids beneath the bearing shall be completely filled with bedding material using appropriate method.
6. For seating of the bearing or of the metal bedding plates only a thin layer of epoxy mortar shall be used for this purpose.
7. Hard spots shall be avoided, e.g. by removal of temporary packing seals and the shoe of sufficiently resilient washers over the inserts.
8. Nothing extra will be paid for any material required for fixing the bearing. If bearings are installed prior to form work as in cast in situ concrete, deck form work around bearing shall be carefully sealed to prevent grout leakage. However, it is essential that the bearing particularly the working surfaces are protected during concreting. Operational sliding plates shall be fully supported and care taken to prevent tilting, displacement or distortion of the bearing under the weight of wet concrete. Any mortar contaminating the bearing should be specially removed before it sets. Co efficient of friction for PTFE bearing shall not exceed 0.05 where stainless steel plates are used as mating surface and continuous lubrication is ensured.

**(N) PAINTING**

1. Painting to underside surface of PSC/RCC girders and deck slab is done as per specification given below.
2. The Bituminous Emulsion and Bituminous Aluminium paint to be used for this purpose will have the following compositions.

a) BITUMINOUS EMULSIONS		
Bitumen (85/40)	25.40	Parts by weight
Cashew nut shell liquid	3.70	-do-
Bentonite	0.20	-do-
Phosphoric acid	0.375	-do-
Water	39.525	-do-
b) BITUMINOUS ALUMINIUM PAINT		
i) Aluminium paste	20	-do-
Bituminous Medium	80	-do- 100
ii) Mexphalt 85/25	66	-do-
Coal Tar Naphtha	34	-do- 100

3. Bituminous emulsion to this specification mentioned above is available under Indian patent No.56192 for Railways. The aluminum paste and bituminous medium mentioned under item (b) of clause above should be obtained in separate containers. The aluminum paint is thoroughly mixed with the bituminous medium before application by a brush.
4. Application: All dust and dirt should be removed from the surface of the concrete slab by means of stiff broom. The surface should then be scrubbed with water and left damp (Not wet). The priming coat of emulsion diluted 50% with water and should then be scrubbed into surface. After about six hours drying two coat of emulsion should be applied with an interval of six hours drying between coats, at the rate of not less than half a liter per square meter (0.5 L/sq.m.). After about 12 hours a final coat of bituminous aluminium paint as specified above be applied with a soft brush.

**(O) TEMPORARY ARRANGEMENT**

1. The contractor will be required to submit design calculations along with the detailed drawings for temporary arrangements to be adopted by him for use, if there is delay in submission of temporary arrangement drawings/design calculations by the contractor, it will be considered delay on the part of the contractor. The Temporary arrangements shall be got designed from qualified Engineer/consultant and required to be got approved from the Railways, nothing extra will be payable if Railways asks the contractor to modify the drawing to suit local conditions and safety of running trains.
2. Contractor/s may clearly understand that cost of steel and other material to be used for temporary arrangement will be borne by him/them and no payment will be made on this account

**(P) DRAINAGE OUTLETS:**

1. The drainage outlets shall be in conformity to the requirements IRS specification and code of practice for the bridges. The spacing of drainage outlets shall be as per approved drawing or as directed by the Engineer.

**(Q) DECK SLAB FOOTPATH AND SLAB**

1. Element of deck slabs and footpath slab shall be cast at site with vibrated controlled concrete of grade as specified in approved drawings.

**(R) WEARING COAT**

1. Wearing coat shall be provided as shown in the approved drawings true to its thickness and camber. The wearing coat shall not be laid monolithic with the slab.

**(S). ARRANGEMENT:**

1. Inspection arrangement shall consist, of ladders on each abutment and pier as per approve drawings.
2. The ladders shall be fixed at top and bottom with required security device as directed by the Engineer.
3. The structure shall be painted with two coats of approved quality of anti corrosive paint over the shop coat.

**(T) LOAD TEST:**

1. The contractor shall be required to perform load test at mid span or as directed by the Engineer incharge as per the procedure and specifications of the relevant clauses of the IRS Bridge Rules/IRS concrete bridge code/IRC code. The intensity of loading shall be such as to produce maximum bending moment at mid span.
2. Load test of the span will have to be carried out by the contractor as directed by the Engineer in charge. This testing of the span will be entirely at the risk of the contractor and he shall make all arrangements and provide all necessary labour and materials for the same in time.

**(U) CASTING YARD AND STORAGE YARD**

1. The casting yard (invariably proposed at work site only) if decided shall be clean and shall have firm pucca level casting beds with adequate drainage channels between the beds. Contractor shall submit his detailed proposals for the setting up of his casting yard, casting beds, different operation and subsequent removal of pre-cast elements from casting bed to curing unit if any and finally launching to the storage yard for stacking. All these proposals supported by design drawings shall be got approved by the Engineer before any operation is actually resumed.

दी ब्रेथवेटर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**SPECIAL CONDITION OF CONTRACT**

1. **DEFINITIONS AND INTERPRETATION**

In this Tender Document, as hereinafter defined, the following words and expressions shall have the meaning as under:

- a) **"BBJ"** shall mean The Braithwaite Burn And Jessop Construction Company Limited having its registered office at 27, R. N. Mukherjee Road, Kolkata- 700 001.
- b) **"TENDER"** shall mean the proposal submitted by the Tenderer/ Bidder/ Supplier/ Dealer/Bidder in response to BBJ's Notice of Invitation to this Tender Document.
- c) **"ORDER"** shall mean a written Work/ Purchase Order issued by BBJ.
- d) **"TENDERER/ BIDDER"** shall mean the firm or Company under Companies Act (hereinafter called Tenderer/ Bidder) who duly submits the tender after accepting all the terms & conditions of the tender document.
- e) **"SUCCESSFUL BIDDER"** whose tender has been finally accepted by BBJ.

2. **ELIGIBILITY CRITERIA**

Supporting documents to be submitted in the Techno-Commercial part of the tender.

a) **Technical Criteria:**

The tenderer must have successfully completed or substantially completed similar works (not less than 75%) during last seven years ending last day of month previous to the one in which applications are invited and should be either of the following:

- (i) Successfully completed or substantially completed at least **3 (three)** such similar works each costing not less than **30%** of the advertised value of tender  
Or
- (ii) Successfully completed or substantially completed at least **2 (two)** such similar works each costing not less than **40%** of the advertised value of tender  
Or
- (iii) Successfully completed or substantially completed at least **1 (one)** such similar work costing not less than **60%** of the advertised value of the tender

**Note:**

- (i) **"Similar work"** shall mean successful/ substantial execution of any major or minor bridge/ viaduct/ flyover during last 07 (seven) years for any Government/ PSU and other Organization.
  - (ii) Completion certificate(s) of orders or ongoing up to date work done certificate/ Document as per the above criteria to be submitted by the bidder.
  - (iii) Substantial completion shall be based on 75 (seventy-five) percent (value wise) or more for the works completed under the contract. Certificate for 'substantial completion' of project/ work/ asset should contain two parts. Part-I shall contain 'financial value of work done' and part-II shall contain 'certificate of functional completion of project/ work/ asset'.
- b) Girders should be fabricated by a firm that has a full-fledged RDSO approved fabrication workshop and should have a **valid certification of RDSO (STR complied)** for fabrication of girders.
- c) **Financial Criteria:**
- i. Average Annual financial turnover during the last 03 (three) financial years, ending 31st March of the previous financial year **at least 30% of advertised**

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**value of the Tender.** However, in case balance sheet of the previous year is yet to audited, the audited balance sheet of fourth previous year shall be considered.

- ii. Certificates in the form of Audited Balance Sheet and Profit & Loss account shall be produced by the tenderer(s) to this effect duly certified by the Chartered Accountant.
- d) Other documents as mentioned on Para 5(d) of the Instruction to Bidders - Submission of Bid: Techno-Commercial Part is to be submitted.

3. **COMPLETION PERIOD**

Time is the essence of this contract. The duration of work is **15 (Fifteen) months**, and the date of commencement will be considered the date of issue of a Letter of Acceptance (LOA)/ Work Order, whichever is earlier.

This completion period includes the Monsoon Period.

If the overall completion schedule needs to be extended due to any reason which is solely beyond the control of the successful bidder, the said extension of the completion schedule shall be granted without L.D. subject to the receipt of an extension of the completion schedule by BBJ from RAILWAY without L.D.

4. **EXTENSION OF COMPLETION PERIOD:**

Application for the extension of time of completion will be dealt with as per the provision of Railway GCC with ACS no. 126, Clause 17A, 17B & 17C of GCC under Part-II Standard General Condition of Contract. However, for the sake of continuation of work BBJ may grant provisional extension.

**Note:**

- a) In case of any disputes regarding interpretation of any of the above clauses, the decision of the BBJ shall be final and binding on the Contractor.
- b) The work will be executed under the supervision of Railway / BBJ.
- c) Supply of all materials will be as per Railway's approved list.
- d) All types of testing will have to be carried out as per Railway / BBJ instructions.
- e) In case of any dispute arises, Railway / BBJ's decision will be final.
- f) If the client imposes a time extension along with liquidity damage, the same shall be applicable to the Bidder. However, BBJ shall not be held responsible for any liquidity damage.

5. **WORKMANSHIP:**

The workmanship for the job shall be closely monitored by the Bidder's supervisory staff as per the specification and as directed by the Engineer/ Engineer In-Charge of BBJ/Railway and/or any other authorized Bidder of Railway. Any work done by the successful bidder is found unsatisfactory or a major mismatch is observed at the site that should be rectified/redone as per the instructions, immediately after notifying the successful bidder. If the successful bidder fails to do so and the same is done by BBJ then BBJ will also recover the same amount from any due payment of the successful bidder. **Any rejection**



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**on grounds of quality shall be re-done at the successful bidder's cost.**

6. **QUANTITY OF WORK TO EXECUTE**

The total quantity of work as per Bill of Quantity (BOQ) can vary to any extent as decided by BBJ but the unit rate finalized will not change up to the completion of the project.

7. **RATE**

**The bidder must quote the Rate, in percentage above/ below/ at-par, including GST and all other taxes & duties for the items mentioned in BOQ. The price must be firm during the tenure of this contract.**

**Note:**

The award of the order or rejection of the Tenderer's offer and/or cancellation of the tender will be made at the absolute discretion of BBJ. BBJ reserves the right to cancel or accept or reject any or all tender(s), whether lowest or otherwise, without assigning any reason(s), whatsoever thereof. A tenderer whose tender is not accepted shall not be entitled to claim any cost, charges, or expenses incidental to or incurred by him through or in connection with the preparation and submission of the Tender/Offer to BBJ. BBJ also reserves the absolute right to split up and award the requirement between two or more Tenderers.

**The Rates will be valid and remain firm for the entire duration of the work order. No revision/alterations of unit rates shall be entertained.**

8. **TERMS OF PAYMENT:**

8.1 **MEASUREMENT OF WORK BY CONTRACTOR:**

1. This clause is to be read with clause 45(ii) of Railways GCC with ACS no. 1 to 6. Measurement of work by contractor is allowed in works tender having value Rs. 5 crore or more. (ref. RB L. No. 2017/Trans/01/Policy dt. 8/2/18) vide addendum & Correction Slip (ACS) no. 50 to Indian Railway code for engineering dept for introduction of measurement and record of 'Executed works' by contractor in Railway Construction works.
2. For details procedure and instructions please refer Addendum & Correction slip No. 50 to Indian Railways Code for Engineering Department in reference to Clause 1316 A of Indian Railways Code for Engineering Department.
3. Tax Invoice shall be submitted by the bidder monthly on or before the date fixed by BBJ for all works executed in the period of the month. Payment will be released stage-wise based on the certified bill as accepted by RAILWAY and this shall apply to the successful bidder.

**Note:**

1. Fabrication work shall be done either by RDSO approved vendors for fabrication of bridge girders or from the other vendors by following STR (Schedule Technical Requirements) and QAP (Quality Assurance Plan) approved by CBE, for fabrication works in workshop. The fabrication has to be done in a well-established factory/workshop having guided submerged arc welding facilities. The fabricated girder/column/other structural parts will be transported to site of work by contractor's own means at his own cost. Any decision by BBJ's representative regarding the minimum number of shuttering sets, jigs, plants, machinery etc. in this regard shall be final and binding on the contractor. The contractor shall ensure

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

free/uninterrupted access to fabricator workshop for inspection during execution of work and ensure all arrangements/ facilities for inspection (inspection, transport & stay etc., if required).

8.2 **PAYMENT SCHEDULE:**

- A. **Payment against Running Account (RA) bill will be released within Fifteen (15) days of certification of work done and measurement thereof by BBJ.**
- B. For releasing Final Bill - No Claim Undertaking confirming that the "The Successful bidder" has no claims of any nature against the work order and/or the work done against the work order.
- C. Unconditional acceptance of the final bill and measurements entered therein.
- D. Unconditional Undertaking that The Successful bidder has complied in full with the Legal/ Statutory obligations about the labour engaged by him on the job including payment of terminal benefits if any, and that he indemnifies BBJ of any obligation/ liability that may arise owing to any representation of any workmen employed by him.
- E. A Clearance Certificate from BBJ confirming that no job is left as per BOQ/Revised BOQ for the work.

9. **TAXES & DUTIES**

The successful bidder shall be exclusively responsible for payment of all Taxes, Royalties etc. (**including Goods and Service Tax**) that may be levied from time to time according to the Laws & regulations now in force & also hereafter to be imposed, increased or modified from time to time. Nothing will be payable extra by the Company in respect of any duties/ taxes to be imposed on the procurement of materials for execution of the contract.

10. **GOODS AND SERVICE TAX (GST)**

- a) The successful bidder shall be liable to pay all applicable taxes [**including Goods and Service Tax (GST)**] or any other tax or cess and show the amount of CGST, SGST, IGST, Cess or any other tax, as applicable, separately in the bill/ invoice/ debit/ credit notes. Successful bidder shall quote their GST Identification No. (GSTIN) in all its bills/invoices/ debit/credit notes.
- b) The successful bidder has to provide a proper invoice/ debit/ credit notes bearing QR Code wherever applicable in the form and manner prescribed under rules of the GST Act/ rules containing all the particulars mentioned therein. In the event the successful bidder fails to provide the invoice/debit/credit notes in the form and manner prescribed under GST, then in the event of such non-compliance of the GST Act/Rules, the successful bidder shall be liable to indemnify for any losses to the Company.
- c) The successful bidder shall raise their tax invoice in the regular interval as per contract condition and upload their supply invoice in GSTN Portal through GSTR-1 return with 10th of next month. Mismatch in return of BBJ due to any reason attributable to the bidder, the same shall be recovered from Bidder's bill.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- d) The successful bidder shall upload/ submit/ report all supply invoices/ debit/ credit notes details in the form of prescribed statements/returns on the GSTN portal on or before the prescribed due dates date as per GST act/rules. The successful bidder shall pay the balance payable GST amount against supplies made to the Company on a monthly basis within due date from the appointed date regularly. Successful bidder shall reconcile the differences/ mismatches in submissions on GSTN portal if any before submission of their final monthly return.
- e) The successful bidder shall issue a credit note or debit note (if any) with reference to an original invoice within the prescribed time limit as per GST Act/ rules only after acceptance from the Company and the same shall be uploaded by the successful bidder in the GSTN portal in the same month. Successful bidder shall issue and submit the supplementary invoices (if any) with reference to original invoices to the Company promptly and within the prescribed time limit as per GST act/rules and the same shall be uploaded by the successful bidder in the GSTN portal in the same month. In case there is any loss of credit or additional liability and/ or interest etc. arises due to non-compliance by the successful bidder, the same shall be reimbursed by the successful bidder to the Company. In case the successful bidder disqualifies in any of the above, please note that the input tax credit (GST) shall not be available to the Company and the Company has right to hold the GST amount without any intimation until the matter get resolved and credit is available to the Company.
- f) In the event where the input tax credit of the GST charged by the successful bidder is denied by the tax authorities to the Company, the Company shall be entitled to recover such amount from the successful bidder by way of adjustment from the next tax invoice/debit note. In addition to the amount of GST, the Company shall also be entitled to recover from the successful bidder interest along with applicable penalty imposed on the Company under GST laws. It is further agreed that in case the successful bidder fails to charge GST, if applicable, on the services/activities forming part of this agreement, at the time of raising invoices; the Company shall not be liable or responsible for reimbursing such tax, at any later date.
- g) The Company reserves the right to change the aforesaid GST/ Tax terms and conditions as notified from time to time by Government of India or respective State Governments. It is further clarified that all payments under this agreement shall be subject to withholding taxes, if applicable.
- h) At present GST-TDS is applicable. Deduction of GST-TDS at source would be enforced from the running bills at the rates prescribed. The GST (i.e., SGST, CGST or IGST) amount shall be shown separately in invoice and also submit proper Tax Invoice as per section 31 of CGST Act, and Rule 46 of CGST Rules, 2017 to get Input Tax Credit by BBJ.

11. **NEW LEVIES/ TAXES**

In case Government imposes any new levy/tax or modifies rate of existing taxes including GST after awarding of the work during the tenure of the contract, BBJ shall reimburse the same at actual on submission of documentary proof of payment subject to the satisfaction of BBJ that such new levy/tax applies to this contract.

12. **PERFORMANCE GUARANTEE**

- a) For due and faithful fulfilment of the contractual obligations, the successful bidder shall furnish a Performance Guarantee for an amount equivalent to **5% (five**

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**percent)** of the contract price/ value of work order either by Bank Draft/ NEFT/ RTGS or in the form of Bank Guarantee. In the event, the Performance Guarantee is submitted in the form of Bank Guarantee the same should be from any Nationalized/ Scheduled Bank of India in the prescribed format of BBJ with due validity period and claim period of 180 days. The aforesaid Bank Guarantee should be submitted within 21 (twenty-one) days from the date of issue of Letter of Acceptance (LOA). BBJ administration reserves the right to cancel the bid and withdraw the LOA if the Performance Guarantee is not submitted within 21 days.

- b) Provided further that after receipt of a specific formal request letter (in writing) from the successful bidder with valid justification/ reason for their non-submission of Performance Guarantee within the stipulated period, the said period of 21 (twenty-one) days for submission of Performance Guarantee may be extended at the sole discretion of the Competent Authority of BBJ. In such event of extension, a penal interest of 12% (twelve percent) per annum on Performance Guarantee value shall be charged for the delay beyond 21 (twenty-one) days, i.e., from 22nd day after the date of issue of LOA and up to the actual date of submission. In case the successful bidder fails to submit the Performance Guarantee even within the extended period, as aforesaid, the bid of the successful bidder shall be liable for rejection by the BBJ administration, and the LOA shall stand withdrawn.
- c) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case, the time for completion of work gets extended, the successful bidder shall get the validity of Performance Guarantee extended to cover such extended time for completion of work plus 60 days.
- d) In case the successful bidder fails to submit the requisite Performance Guarantee within the stipulated period as mentioned in the above paragraphs, the bid may consequentially be cancelled by BBJ, and the LOA shall stand withdrawn. The defaulting successful bidder shall be debarred from participating in Re-Tender for that work and his EMD/ SD/ PG/RA Bills shall be encashed/ invoked/ forfeited. In this regard, the decision of the Competent Authority of BBJ shall be final.
- e) The formal Order shall be issued/ contract agreement (if any) shall be executed within a reasonable time only after receipt of Performance Guarantee from successful bidder. Till such time the order is issued/contract agreement (if any) is executed the successful bidder shall execute the work on the strength of LOA, but no payment shall be made to the successful bidder without order/ contract agreement. In the event the bid is cancelled by BBJ, and LOA is withdrawn accordingly due to non-submission of Performance Guarantee, the successful bidder shall have no right to claim on the executed work if any as aforesaid or any other claim whatsoever.
- f) The value of Performance Guarantee originally submitted by the successful bidder need not be changed for a variation of contract price/ order value up to 25% (either increase or decrease). In case during the course of execution, value of the contract increases beyond 25% of the original value, an additional Performance Guarantee amounting to 5% (five percent) as applicable for the excess value over the original contract value shall be deposited by the successful bidder within 21 days from the date of receipt of intimation from BBJ.
- g) The Performance Guarantee shall be released after physical completion of the work plus after completion of 60 days thereafter based on 'Completion Certificate' issued by BBJ stating that the successful bidder has completed the work in all respects

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

satisfactorily. The Security Deposit shall, however, be released only after expiry of the maintenance period/ defect liability period and after passing the final bill based on 'No Claim Certificate' from the successful bidder.

- h) Whenever the contract is rescinded by BBJ due to failure of the successful bidder, the EMD/ Security Deposit of the successful bidder shall be forfeited, and their Performance Guarantee shall also be encashed. The balance work shall be got done independently without risk & cost of the failed successful bidder. The failed successful bidder shall be debarred from participating in the tender for executing the balance work. If the failed successful bidder is a JV or a Partnership firm, then every member/ partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV/partnership firm.
- i) BBJ shall make a claim under the Performance Guarantee for which the BBJ is entitled under the LOA/ Contract (notwithstanding and/or without prejudice to any other provisions in the LOA/ Contract Agreement) in the event of:
  - (a) Failure by the successful bidder to extend the validity of the Performance Guarantee as described herein above, in that event BBJ may claim the full amount of the Performance Guarantee from the successful bidder.
  - (b) Failure by the successful bidder to pay BBJ any amount due, either as agreed by them or determined under any of the Clauses/ Conditions of the LOA/ Order/ Contract Agreement, within 30 days of the service of notice to this effect by BBJ.
  - (c) In the event of the LOA/ Contract being rescinded by BBJ under provisions of any of the clause/ condition of the LOA/ Order/ Contract Agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the BBJ.

13. **SECURITY DEPOSIT:**

As security for the proper and faithful fulfilment of the obligation under the order, a Security Deposit equivalent to **5% (five percent)** of the Total Contract Value shall be deducted and should be kept valid till completion of the entire contract period plus 12 (twelve) months i.e., up to end of Defect Liability Period. Security Deposit shall be in the following manner.

The Earnest Money deposited by the bidder along with the tender will be retained by the BBJ as part of the Security Deposit. The balance amount to make up with the total amount of the Security Deposit may be deposited by the Successful bidder in the form of a Demand Draft/ Pay Order or may be recovered by percentage deduction from the contractor's bills.

Recovery of Security Deposit: The Security Deposit/ rate of recovery/ mode of recovery shall be as under:

- a) Security Deposit for work should be **5% (five percent)** of the Contract value and shall be recovered from the R/A bill.
- b) The rate of recovery should be at the rate of **10% (ten percent)** of the gross R/A bill amount till the full security deposit is recovered.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- c) Security deposits will be recovered only from the bills of the contractor and no other mode of collecting SD such as SD in the form of instruments like BG etc., shall be accepted towards security Deposit.

Security Deposit shall be returned to the contractor after successful completion of entire Order plus 12 (twelve) months i.e., after the end of Defect Liability Period and after the following:

- a. After passing the final bill based on the "No Claim Certificate" with the approval of the Competent Authority.
- b. Submission of an unconditional & unequivocal 'No Claim Certificate' from the concerned contractor. This certificate, inter alia, should mention that the work has been completed in all respects and that all the contractual obligations have been fulfilled by the contractor and that there is no due from the contractor to BBJ against the contract concerned.

14. **QUANTITY VARIATION**

- a) There may be quantity variation as approved by BBJ/Railway during the actual execution of work.
- b) The accepted variation in the quantity of each individual location and item of the contract would be up to **30%** (thirty percent) of the quantity originally contracted.
- c) The Contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever up to the limit of 30% variation in the quantity of the individual item of works.

15. **PRICE VARIATION CLAUSE (PVC):**

Price variation Clause (PVC) shall be applicable. Provide further that, in a contract where PVC is applicable, following shall be outside the preview of price adjustments (i.e. shall be excluded from the gross value of the work for the purpose of price variation. PVC Clause as under or amended up to date of closing of this tender shall be applicable) Please refer GCC (Year-2022) with ACS no. 1to6 Clause 46(A) under Part-II Standard General Condition of Contract.

**For calculation of PVC amount, Base month shall be decided one month prior to the tender closing date of Railway/ BBJ. The amount shall be payable whichever is less.**

**Clause 46A.6, Part II of GCC shall be read as under:**

46A.6 The percentages of various components in various type of works shall be as specified for all item(s)/Bill(s) of Quantities in tender document and the same shall be fixed as per table & classification given below:



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
 (भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

SN	Classification Components		1A, 2 & 3A	4A	5A	6A	7	8A	9A	1B, 3B, 4B, 5B, 6B, 8B & 9B	1C, 3C, 4C, 5C, 6C, 8C & 9C	3D, 4D, 5D, 6D, 8D & 9D	3E, 4E, 5E, 6E, 8E & 9E
1	Fixed	*	15	15	15	15	15	15	15	15	15	15	15
2	Labour	L <sub>0</sub>	20	25	30	20	50	20	20	0	0	10	25
3	Steel	S <sub>0</sub>	0	0	0	0	0	0	0	85	0	50	0
4	Cement	C <sub>0</sub>	0	0	15	0	0	0	0	0	85	0	0
5	Plant Machinery & Spares	PM <sub>0</sub>	30	15	5	20	15	20	30	0	0	10	30
6	Fuel & Lubricants	F <sub>0</sub>	25	15	5	15	15	20	15	0	0	10	20
7	Other Materials	M <sub>0</sub>	10	15	30	30	5	25	20	0	0	5	10
8	Detonators & Explosives	E <sub>0</sub>	0	15	0	0	0	0	0	0	0	0	0
Total			100	100	100	100	100	100	100	100	100	100	100

\*It shall not be considered for any price variation.

The classification mentioned in the table above represents following type of item(s) in the work(s)-

**1. Earthwork in Formation**

1A All Item(s) excluding 1B or/and 1C

1B Item(s) for supply of Steel

1C Item(s) for supply of Cement

**2. Ballast Supply Works**

**3. Tunnelling Works (Without Explosives)**

3A All Item(s) excluding 3B or/and 3C or/and 3D or/and 3E

3B Item(s) for supply of Steel

3C Item(s) for supply of Cement or/and Grout

3D Item(s) for Fabrication & Erection of Structures including supply of Steel

3E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

**4. Tunnelling Works (With Explosives)**

4A All Item(s) excluding 4B or/and 4C or/and 4D or/and 4E

4B Item(s) for supply of Steel

4D Item(s) for Fabrication & Erection of Structures including supply of Steel

4E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

**5. Building Works**

5A All Item(s) excluding 5B or/and 5C or/and 5D or/and 5E

5B Item(s) for supply of Steel

5C Item(s) for supply of Cement

5D Item(s) for Fabrication & Erection of Structures including supply of Steel

5E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**6. Bridges & Protection work**

6A All Item(s) excluding 6B or/and 6C or/and 6D or/and 6E

6B Item(s) for supply of Steel

6C Item(s) for supply of Cement

6D Item(s) for Fabrication, Assembly, Erection & Launching of Girders including supply of Steel

6E Item(s) for Fabrication, Assembly, Erection & Launching of Girders excluding supply of Steel

**7. Permanent Way linking**

**8. Platform, Passenger Amenities**

8A All Item(s) excluding 8B or/and 8C or/and 8D or/and 8E

8B Item(s) for supply of Steel item/fittings

8C Item(s) for supply of Cement Item

8D Item(s) for Fabrication & Erection of Structures including supply of Steel

8E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

**9. Any Other Works not covered in Classification 1 to 8**

9A All Item(s) excluding 9B or/and 9C or/and 9D or/and 9E

9B Item(s) for supply of Steel

9C Item(s) for supply of Cement or/and Grout

9D Item(s) for Fabrication & Erection of Structures including supply of Steel

9E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

Clause 46A.7 Formulae, Part II of GCC shall be read as under:

**46A.7 Formulae:** The Amount of variation in prices in various components (labour, material etc) shall be worked out by the following formulae:

$$(i) L = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (L_Q - L_B) \times L_C}{L_B \times 100}$$

$$(ii) M = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (M_Q - M_B) \times M_C}{M_B \times 100}$$

$$(iii) F = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (F_Q - F_B) \times F_C}{F_B \times 100}$$

$$(iv) E = \frac{(W) \times (E_Q - E_B) \times E_C}{E_B \times 100}$$

$$(v) PM = \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (PM_Q - PM_B) \times PM_C}{PM_B \times 100}$$

$$(vi) S = \frac{(W \text{ or } W_a \text{ or } W_{SF}) \times (S_Q - S_B) \times S_C}{S_B \times 100}$$

$$(vii) C = \frac{(W \text{ or } W_a) \times (C_Q - C_B) \times C_C}{C_B \times 100}$$

**PLEASE NOTE:**

(i) This price variation clause shall be applicable during the contract period mentioned herein and the extended period where extension was allowed for the reason of BBJ/ Railway.

(ii) Similarly, this price variation clause shall not be applicable where time extension was allowed by BBJ due to any action / inaction of the successful bidder/ contractor. In this regards decision of BBJ shall be treated as final.

**16. MOBILIZATION ADVANCE**

The mobilization advance, if agreed, shall be up to **10% (Ten percent)** of the contact value against Bank Guarantee of value comprising of advance amount plus 10% as per the format provided by the purchaser. Mobilization Advance to be interest bearing at the rate of SBI PLR plus 2% above.

**Recovery of Mobilization Advance:** The mobilization advance shall be recovered as under:

- Mobilization Advance, if applicable, for work shall be **10% (ten percent)** of the Contract value and shall be recovered from the R/A bill.
- The rate of recovery should be at the rate of **5% (five percent)** of the gross R/A bill amount till the full mobilization advance is recovered.

Bank Guarantee against mobilization advance shall be released after the recovery of full mobilization advance plus 30 days.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

17. **SUPERVISION & LABOUR:**

The bidder will be responsible for providing labour of adequate skill and supervisory staff for the timely execution of work.

18. **WATCH & WARD**

The successful bidder is responsible for the watch and ward of the materials. The price quoted by the Successful bidder is inclusive of the watch and ward expenses and no extra claim will be entertained for the deployment of watch and ward or loss, damage of machinery/ materials at the workshop. BBJ shall not be liable for the loss or damage of any of the successful bidder's equipment, machinery and temporary works.

19. **DEFECT LIABILITY PERIOD**

The Successful bidder shall fully guarantee all work as per the scope of this tender/order perform strictly in accordance with the drawings, specifications etc. The work shall be free from all defects. Should any work be not performed as intended or proved defective within **12 (twelve) months from the date of completion of Works**, the work shall upon notification of deficiency/ defect be promptly rectified by the Successful bidder to the satisfaction of BBJ and/or Railway and/or any other Inspection Bidder appointed by Railway without any delay and at no extra cost to BBJ.

If the successful bidder fails to effect proper replacement within a reasonable time of receipt of BBJ's notification to this effect, BBJ shall be free to take such corrective action on the successful bidder.

20. **EMPLOYEES COMPENSATION INSURANCE**

The successful bidder shall submit proof of Employees Compensation Policy for all their workmen/ supervisors and any other person whom the successful bidder will deploy for our Project work before the commencement of the work.

Workmen's Compensation and Employer's Liability Insurance: WC Policy/ Insurance shall be affected for all the employees of the successful bidder. If any of the work is sublet, the successful bidder shall require their Sub-Contractor to provide workmen's compensation and employee's liability insurance for the latter's employees, if such employees are not covered under the Sub-Contractor's Insurance.

21. **PROVIDENT FUND**

The successful bidder will be required to cover all their workmen engaged and eligible under the Employees Provident Fund Act by them under provident fund (P.F.) from the commencement of the work. The successful bidder will have to submit the challan of payment made towards P.F. for their labour and staff to BBJ's HR Department as and when asked for.

22. **STATUTORY COMPLIANCE**

The successful bidder shall ensure strict compliance with all relevant labour laws, Minimum Wages Act, Payment of Wages Act, Industrial Disputes Act, Payment of Bonus Act, Contract Labour (Regulation & Abolition) Act, E.S.I. Act, P.F. Act, Industrial Safety Regulations, laws pertaining to use/storage of explosives for the work. The successful bidder shall submit to BBJ' HR Department declaration as per format enclosed of compliance with payment of Minimum Wages, PF, ESI. Additionally, the proof of the same shall also be submitted to HR Department, as and when asked for as proof of compliance. the payment of wages & submission of ESI (if applicable) & PF law to be complied as per timelines defined under the relevant Acts & documentary evidence furnished to BBJ HR.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- 1) Minimum wages Act, 1948 & Rules there under.
- 2) Payment of wages Act. 1936 & Rules there under.
- 3) Industrial disputes Act. 1947 & Rules there under.
- 4) Payments of bonus Act, 1965 & Rules there under.
- 5) Contract labour (Regulation & Abolition) Act, 1970 & Rules there under.
- 6) ESI Act, 1948 & Rules there under.
- 7) Employees Provident fund & Miscellaneous provisions Act, 1952 & Rules there under.
- 8) BOCW Act, 1996 & Rules there under.

**CONFIDENTIALITY OF DOCUMENTS**

The successful bidder shall treat all documents, specifications, drawings and contents therein as private and confidential.

23. **SUBLETTING OF WORK**

No part of Work Order nor any share or interest thereof shall in any manner of degree be transferred, assigned, or sublet by the Successful bidder directly or indirectly to any firm or corporation whatsoever without the prior consent in writing of BBJ.

24. **INSPECTION OF WORKS**

Inspection & testing of work executed by the sub-contractor will be done by BBJ and/or Railway and/or their authorised representative and the sub-contractor is required to get the work passed through BBJ and/or Railway and/or their authorised representative.

25. **SAFETY AND ENVIRONMENT AT SITE/SHOP**

- a) The successful bidder shall strictly abide by all safety standards, specifications, practices, rules, and regulations in construction and also the instruction of our safety (EHS) Engineer. Any kind of unsafe action or unsafe method of work by The Successful bidder's workmen, which may lead to injury to the successful bidder's workmen, will be viewed seriously and a penalty for the same will be levied on the successful bidder for such unsafe actions.
- b) The successful bidder will be responsible for the safety of their staff and employees of other agencies working in the successful bidder's area of operation.
- c) The Successful bidders shall delegate the responsibility of implementation of safety rules to one of The Successful bidder's staff.
- d) All safety appliances required like safety helmets, safety belts, shoes, retro-reflective jackets and other Safety PPE, etc., shall be arranged by the successful bidder at The Successful bidder's cost.
- e) In the event of non-availability of such safety gadgets at the required point of time, we may, at the sole discretion of the Site in charge, procure such gadgets and issue the same to The Successful bidder on a chargeable basis on actual plus 20% overhead charges.
- f) The successful bidder's authorized representative shall attend all safety meetings convened by the site safety (EHS) Engineer and abide by his instructions and follow the site safety practices without failure.
- g) Night working: Utmost care shall be taken during night operations with proper illuminations and safety.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- h) Any other safety arrangement is recommended to be followed as per instruction of Railway.
- i) Further, the successful bidder should ensure compliance with COVID-19 protocols as applicable.

26. **LIQUIDATED DAMAGES**

The time for the execution of the work shall be deemed to be the essence of the contract and the works must be completed no later than the date(s) as specified in the contract.

If the contractor fails to complete the works within the time as specified in the contract for the reasons not attributable to the successful bidder, BBJ may, if satisfied, allow the contractor to complete the work for further extension of time without imposing LD.

If the successful bidder fails to complete the works within the time as specified in the contract for the reasons attributable to the successful bidder, BBJ allows, if satisfied that the works can be completed within a reasonable short time thereafter, the successful bidder for further extension of time. On such extension, BBJ will recover from the bills of the successful bidder, as agreed damages, a sum equivalent to ½ (half) of 1% of the contract value per week or part of the week of any supplied equipment/services not delivered within stipulated time period or total order value in the case where part delivery is of no use to the purchaser, subject to the maximum limit of 10% for contract value up to 2 (two) lakh and 5% for contract value above 2 (two) lakh.

For the purpose of this Clause, the contract value of the works shall be taken as the value of work as per contract agreement including any supplementary work order/contract agreement issued.

Provided further, that if BBJ is not satisfied that the works can be completed by the Successful bidder and in the event of failure on the part of the successful bidder to complete the work within the further extension of time allowed as aforesaid, BBJ shall be entitled to **encash** the successful bidder's Security Deposit and Performance Guarantee and also rescind the contract, whether or not actual damage is caused by such default.

27. **INDEMNITY**

Bidder shall indemnify BBJ against all claims & losses in respect of their contractual obligations in the event of non-compliance of any terms & conditions of this document or contract agreement / statutory rules/ obligations/ laws/ taxes & duties etc. The amount of claims & losses to be determined by BBJ only.

28. **TERMINATION OF CONTRACT**

In the event, BBJ finds that the successful Bidder's progress is consistently below the accepted pace based on the program scheduled mentioned in this document or fixed by BBJ and/or if the quality of works being executed by the successful Bidder falls below the expected standards laid down by BBJ, in such cases, in the interest of timely and successful completion of the project and to maintain the high quality of work, BBJ reserve the right to delete the Scope of Work of the successful Bidder, or, the entire balance work to be taken away from the successful Bidder and BBJ shall be at liberty to get such works done/executed by any other Bidder/ agencies. Moreover, BBJ shall not be liable to pay any compensation or make good any damage/s or to affect any other payment to the present successful bidder for any ground whatsoever.

In the above event, the successful bidder shall be debarred from participating in the tender

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

for executing the balance work. If the successful bidder is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.

The defaulting successful bidder shall not be issued any completion certificate for the contract.

All the statutory obligations including maintaining all other relevant Statutes, Laws/ Rules, Local Rules & Regulations/ Rules of Central/ Local Govt. bodies should abide & comply by the successful Bidder and any consequence comes out from the act or omission of the successful Bidder which can result in stoppage of work or the successful bidder fails to comply any of its respective Contractual obligation(s) within the stipulated time frame, in that event BBJ reserves the right to terminate the contract and to take any action against the successful Bidder (such as forfeiture of EMD/ Security Deposit, encashment of Performance Bank Guarantee, non-payment/ forfeiture of RA Bills etc.) and the decision of BBJ in this respect shall be final.

In the above situations, BBJ reserves the right to issue a notice in writing to that effect and if the successful bidder does not within seven days after the delivery to him of such notice proceed to make good his default in so far as the same is capable of being made good and carry on the work or comply with such directions as aforesaid of the entire satisfaction of the BBJ, then BBJ shall be entitled after giving 48 hours' notice in writing to rescind the contract as a whole or in part or parts (as may be specified in such notice) and after the expiry of 48 hours' notice, a final termination notice should be issued by BBJ.

29. **RESOLUTION OF DISPUTES AND ARBITRATION**

In case a dispute or difference of any kind whatsoever arises out of or relates to the Contract or ancillary/incidental as to the terms and conditions of it or relates to any matter for execution and/or performance of the contract, between the parties to the Contract, it is a term of the agreement by and between the parties herein that before invoking arbitration, the aggrieved party shall first & foremost refer the matter within sixty (60) days from the date of cause of action of the said dispute(s) or difference(s)arosed,to the Competent Authority of BBJ and the decision/recommendation/interpretation made by the said Competent Authority of BBJ shall be final & binding upon both the parties.

On the failure of the procedure prescribed above or if a party is dissatisfied with the decisions/recommendations aforesaid, and notwithstanding anything else contained elsewhere, the aggrieved party may by notice in writing to the Competent Authority of BBJ evince the intention to refer the disputes and differences that have arisen between the parties to Arbitration by the constitution of an Arbitral Tribunal. The Arbitral Tribunal shall consist of three arbitrators, one each to be nominated by the respective parties and the third to be appointed by the nominated arbitrators.

Pending submission of and/or decision on a dispute or difference as aforesaid or until the Arbitral Award is published, the parties (if the Contract is not terminated/ cancelled) shall continue to perform all of their obligations under this Agreement and the Contract, without prejudice to a final adjustment in accordance with such award.

The decision of the Arbitral Tribunal arrived at after hearing the parties shall be final and binding upon the parties. The Arbitration Proceedings shall be conducted in accordance with the Arbitration and Conciliation Act, 1996 or any statutory modifications or re-enactments thereof.



दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

It is also agreed by the parties that the Arbitration Proceedings shall be conducted in the English language. The seat & venue of Arbitration shall be Kolkata only and any proceedings arising out of this Agreement / Contract shall be subject to the jurisdiction of Courts at Kolkata only.

30. **FORCE MAJEURE:**

If any time, during the continuance of this contract, the performance in whole or in part by either party under obligation as per this contract is prevented or delayed by reasons of any war or hostility, the act of the public enemy, civil commotion, sabotage, fire, flood, explosion, epidemic, quarantine restrictions, strike, lockout or acts of God (hereinafter referred to as "eventuality"), provided notice of happening of any such eventuality is given by either party to the other within 21 (Twenty) days of the date of occurrence thereof, neither party shall because of such an "eventuality" be entitled to terminate this contract nor shall either party have any claim or damages against the other in respect of such non-performance or delay in performance and deliveries under the contract. The contract shall be resumed as soon as practicable after such "eventuality" has come to an end or ceased to exist.

In case of any dispute, the decision of BBJ shall be final and conclusive, provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed because of any such eventuality for a period exceeding 60 (Sixty) days, either party may at its options, terminate the contract.

Provided that if the contract is terminated under this clause, the Purchaser shall be at liberty to take over from the supplier at a price to be fixed by the purchaser, which shall be final, all unused, undamaged and acceptable equipment, bought out components and other stores in the course of manufacture which may be in the possession of the Supplier at the time of such termination, or such portion thereof as BBJ may deem fit except such equipment, as the Supplier may, with the concurrence of the Purchaser, elect to retain.

31. **NON-SCHEDULE ITEM OF WORK**

Settlement of rate of the extra item(s) of work which is/are not covered by the schedule:

The successful bidder shall notify any extra item(s) of work to BBJ immediately after he comes across the same during the execution of work and submits the rate for the same. Based on merit, BBJ shall take up with RAILWAY for settlement of the rate of the extra item(s) of work. If RAILWAY admits the said extra item(s) of work and settles the rate thereof then BBJ shall also admit the said extra item of work for the successful bidder and pass on 90% of the rate settled by RAILWAY.

32. **IMPORTANT NOTES:**

BBJ reserves the right to:

- i). Accept or reject any bid received at its discretion without assigning any reasons whatsoever.
- ii). Increase/ decrease/ alter the job description/ scope of work with the corresponding change in the value of the contract.
- iii). Postpone or extend the above-mentioned date, split and distribute the work among more than one bidder without assigning any reason whatsoever.
- iv). May ask for further qualification during techno commercial scrutiny of bids received.

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
**The Braithwaite Burn And Jessop Construction Company Limited**  
(भारत सरकार का एक उद्यम) / (A Government of India Enterprise)

NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

- v). BBJ shall not be liable for any expenses incurred by the bidder for delivery of materials or during the preparation of the bid irrespective of whether it is accepted or not.
- vi). Canvassing i.e., soliciting favour, seeking advantage etc. in any form is strictly prohibited and any bidder found to have engaged in canvassing shall be liable to have his bid rejected summarily.
- vii). If the bidder deliberately gives any wrong information in his tender to create circumstances for the acceptance to his bid, BBJ reserves the right to reject such application.

(पार्थ नंदी / PARTHA NANDY)  
मुख्य प्रबंधक (परियोजना) / CHIEF MANAGER (PROJECT)

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**ANNEXURE-I**

**FORMAT**

**CERTIFICATE**

(TO BE SUBMITTED ON BIDDER'S LETTER HEAD)

REF.:

DATE:

SUB: DEPLOYMENT OF WORKMEN FOR THE WORKAT UTTAR PRADESH STATE.

This is to certify that we have complied with all the Statutory Obligation for our workmen engaged for the subject work which includes payment of Minimum Wages, P.F. & E.S.I. contribution and other benefits as per prevailing Labour Laws and other Statutes/Rules in the State of UTTAR PRADESH.

We hereby indemnify our employer THE BRAITHWAITE BURN AND JESSOP CONSTRUCTION CO. LTD. regarding compliance of all statutory requirements of Labour Laws as stated above. THE BRAITHWAITE BURN AND JESSOP CONSTRUCTION CO. LTD. will have no responsibility in this regard.

(Authorized Signatory)  
Signature with Office Seal

दी ब्रेथवेटबर्न एंड जेसप कंस्ट्रक्शन कंपनी लिमिटेड  
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NIT No. eNIT/ROB/AGRA-PALWAL/T-09-2025

Date: 14-May-2025

**Annexure-A**

**DECLARATION BY AUTHORISED SIGNATORY OF BIDDER**

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

\_\_\_\_\_  
(Write Name and Designation of Officer of BBJ inviting the Tender)  
The Braithwaite Burn And Jessop Construction Co. Ltd.  
(A Government of India Enterprise)  
27, Rajendra Nath Mukherjee Road,  
Kolkata – 700001

Dear Sir,

**Sub: Declaration by Authorized Signatory regarding Authenticity of submitted documents.**

Ref: 1) NIT/Tender Enquiry No. & Date: .....  
2) All other pertinent issues till date

I/We, hereby certify that all the documents submitted by us in support of possession of "Qualifying Requirements" are true copies of the original and are fully compliant required for qualifying / applying in the bid and shall produce the original of same as and when required by The Braithwaite Burn And Jessop Construction Co. Ltd.

I / We hereby further confirm that no tampering is done with documents submitted in support of our qualification as bidder. I / We understand that at any stage (during bidding process or while executing the awarded works) if it is found that fake / false / forged bid qualifying / supporting documents / certificates were submitted, it would lead to summarily rejection of our bid / termination of contract. BBJ shall be at liberty to initiate other appropriate actions as per the terms of the Bid / Contract and other extant policies of The Braithwaite Burn And Jessop Construction Co. Ltd.

Yours faithfully,

**(Signature, Date & Seal of Authorized Signatory of the Bidder)**

**Date:**