

## **SPECIAL CONDITIONS RELATING TO SITE DATA & SPECIFICATIONS**

**Name of Work : - .....**

### **1.00 SPECIFICATIONS AND CODES**

- 1.1 CPWD Standard Specifications -2019 vol.I & II” shall govern the specifications of all items of DSR-2021 appearing in the tender schedule. In case, specifications of any item are not covered in above, the relevant IRS/BIS Code shall be applicable.
- 1.2 All material to be used in the works shall be in conformity with the requirement laid down in the “Indian Railways Unified Standard Specifications -2010” Vol. I & II or the relevant BIS Code/or any other relevant code applicable.
- 1.3 The decision of the Chief Engineer/Construction of the project shall be final and binding regarding the interpretation of various provisions of the Codes and Specifications as well as the provisions/clauses of the contract and no claim whatsoever shall be entertained on this account.

### **2.0 EMPLOYMENT OF TECHNICAL STAFF:-**

- 2.1 The contractor shall employ the following minimum technical staff during the execution of work.
  - a) One graduate engineer and at least one diploma holder Engineer when the cost of work is more than ₹ 5.00 Crore.
  - b) One graduate Engineer when the cost of work to be executed is between ₹ 1.00 Cr and upto ₹ 5.00 crore.
  - c) One qualified Diploma holder Engineer , when cost of the work to be executed is more than ₹ 30 lacs but less than ₹ 100 lacs.
- 2.2 Technical staff should be available at site whenever required by the Engineer-in-charge or his authorized representative to take instructions. In case, the contractor fails to employ the Technical staff as aforesaid, he shall be liable to pay ₹ 30,000/- ( ₹ Thirty thousand only) for each month of default or part thereof in case of each Graduate Engineer and ₹ 20,000/- ( ₹ Twenty thousand only) for each month of default or part thereof in case of each qualified diploma holder.
- 2.3 The contractor shall submit the copy of bio-data and Degree/ Diploma certificate of the above technical staff employed by him for the scrutiny by Railway and for the record. Railway reserve the right to scrutinise the

- records of the contractor to ascertain as to whether the qualified staff has been actually employed by him and is paid for.
- 2.4 While passing each "on" account bill, the AEN/XEN in-charge will certify the availability of technical staff as above, otherwise the recovery as above shall be made from every bill.
- 2.5 The decision of the Engineer In-charge, whether the required Technical staff was not employed by the contractor shall be final and binding upon the contractor.
- 3.0 APPROVED RAILWAY DRAWINGS
- 3.1 The work shall be carried out as per approved railway drawings. The copies of the approved plan and additional information as required by the tenderers may be obtained (subject to availability) from the office of the concerned Dy.Chief Engineer/GSU, during office hours on any working day by prior appointment.
- 3.2 In addition to the drawings, if any, enumerated above, copies of various drawings may be supplied on application by the contractor at the under noted rates as applicable, subject to availability:
- a Copies of standard Northern Railway type plans as prepared for the work – ₹ 50.00 per copy.
  - b Copies of plans prepared especially for project of major works like major building, L-sections, longitudinal plan etc. @ ₹ 75.00 Per copy.
  - c All plans which are prepared especially on account of contractor's request like copies of cross section etc. ₹ 150.00 per copy.
- 3.3 Additional information as required by tenderers may be obtained from the office of Chief Project Manager/GSU or concerned Dy. Chief Engineer/ GSU, during office hours on any working day by prior appointment.
- 3.4 The Chief Project Manager/GSU shall have full power to make any alteration in the drawings and to give such further instructions and directions as may appear to him necessary or proper for the guidance of contractor and for the efficient execution, completion and maintenance of the work. The contractor should plan the execution of various works in close co-ordination with the engineer or his authorized representative.
- 3.5 The design of foundations including depth of foundations below the bed level as well other drawings may have to be varied during the progress of the work according to actual site conditions. The drawings already prepared and which may be prepared afterwards are not to be taken as final or binding on the Railway in any respect. The contractor shall have no claim on Railway, if any change is made in the approved drawings. Also his inability to make timely arrangement for necessary plant and machinery due to any such change which the Engineer may make, will not be taken as an excuse for slow performance or non-performance of the work.

#### **4.0 RECORDS OF CONSTRUCTION WORK:**

- 4.1 The contractor is required to take and supply to Engineer-in-charge, coloured photographs and films on construction activities including the one prior to the work.
- 4.2 The coloured photographs shall be taken by the contractor of all the construction activities pertaining to the work at regular intervals as directed by Engineer-in-charge. Three sets of 5" x 7" prints of each snap shall be supplied. Out of the above, the contractor shall be required to supply, as directed by Engineer-in-charge, blow up size colour prints of upto 36" x 36" size upto 5 photographs of each important site (minimum 03 copies of each). The negatives of all the photographs taken shall also be supplied to the Engineer-in-charge. The contractor shall show extreme promptness in taking, supplying of the photographs on directions of Engineer-in-charge.
- 4.3 All the cost of reels, taking and recording, developing and printing etc., shall be deemed to have been included in rates quoted against various items and nothing extra shall be paid for the items of work under this clause as above.
- 4.4 The Railways shall have full ownership and copy right of all these photographs and the contractor/ tenderer shall indemnify the Railways against any claim of any sort. The contractor shall maintain accurate plans and charts showing the dates and progress of all main operations and the Engineer shall have access to this information at all reasonable times. Records of tests shall be handed over to the Engineer's representative after carrying out the tests.

#### **5.0 SITE REGISTERS:**

- 5.1 The following registers will be maintained at site by the contractor/s:
  - (i) Site Order register:  
The contractor shall promptly sign orders given therein by the Engineer or his representative or his superior officers and comply with them. The compliance shall be reported by the contractor to the Engineer in reasonable time so that it can be checked / verified.
  - (ii) Cement register:  
This register will be maintained to record daily receipt and issue of cement, thus indicating the balance quantity. The quantum of work done for the cement issued on particular date will also be mentioned.
  - iii Steel register:  
This register will be maintained to record the receipts of steel items and details of reinforcement and members wherever steel is used.
  - iv. Labour register:  
This register will be maintained to show daily strength of labour in different categories employed by the contractor.

- v. Plant and machinery register:  
This register will record daily particulars of machinery with the contractor and will be signed jointly by the Engineer's representative and the contractor.
- i. Compaction register (for Earthwork in filling)
- ii. Soil samples test register (for Earthwork in filling)
- iii. Quality control register for various materials
- iv. Cube testing register.
- v. Daily progress register.
- vi. Hindrance register: This register will maintain the number of days when work could not progress / remained suspended and reason thereof.

The list given above is not exhaustive, contractor may be asked to maintain additional registers, if required by Engineer-in-charge.

#### 6.0 CONTRACTOR'S RESPONSIBILITY FOR TEMPORARY WORKS/MATERIALS, SITE OFFICE AND FIELD LABORATORY.

- 6.1 The contractor shall from time to time provide at his own cost all dams, cofferdams and all other temporary works of whatever nature and temporary materials necessary for the construction, completion and maintenance of the works which are the subject of the contract and shall from time to time submit for the information of the Engineer, drawing showing in detail, the type and construction of temporary embankment and other works which he proposes to adopt and construct and the exact position in which he proposes to construct and employ them during the progress of the works as directed by the Engineer, furnish particulars and drawings of any other temporary works and details of other temporary materials in use for the sufficient security and safety of all embankment, temporary railway connections and other temporary works or temporary materials which he may construct and/or employ and for all claims for damage to property or injury to persons arising out of any failure or accident to such materials from whatever cause such damage, injury, failure or accident may arise or happen and shall replace, construct, repair and maintain the whole or such embankments or other temporary works or temporary works or temporary materials until they are certified by the Engineer to be no longer required for the purpose of the contract.
- 6.2 Dewatering or any other suitable arrangements may be required for carrying out the foundations of works and part of the sub structures up to water level. It should be clearly noted that nothing extra shall be paid for all these arrangements and rates are deemed to be inclusive of all labour and materials and working under water etc. including timbering, shoring, strutting etc. if required. However, extra rate, wherever applicable as per USOR, might be paid for items of works executed below water level.
- 6.3 For the works costing more than ₹ 8 Crores, the Contractor should construct the temporary site offices & toilets for the proper working of

Railway staff at required location, of appropriate size commensurate with the magnitude of work but not less than 15 sqm. & not more than 50 sqm. & also provide all necessary furniture, almirah, clock, display boards, phones, curtains, computer, printers, electricity, fans, AC etc. for the use of Railway staff, within 03 months of acceptance. However, this office will be the property of contractor and he can take back the released material after completion of work. Failure to provide site office shall attract a penalty of ₹ 25000 per month, recoverable from running bill.

- 6.4. The Engineer shall be at liberty to modify any or all of the drawings submitted by the contractor in connection with any of the aforesaid temporary works and the execution of such temporary works shall not be commenced until the said drawings or modified drawings have been approved. But examination by the Engineer of the contractor's drawings or any approval expressed by him with regard to the rate, or to the materials, thereof or therefore either with or without modification shall not absolve or relieve the contractor from any of his liabilities in connection there with under the contract.
- 6.5 The contractor shall before handing over the works or any part thereof to Railway, dismantle and remove all temporary works and temporary materials but such removal shall not be effected without the previous written approval of the Engineer and the contractor shall comply with the directions, if any, given by him as to the method of removal and/or disposal.

#### **6.6 SETTING UP OF FIELD LABORATORY**

For works costing above ₹ 5 crores, the Contractor shall be required to set up a well-equipped field laboratory of suitable size in proportion to the magnitude of work and to suit the nature of work, at his own cost at the work site which shall be open for use and inspection by the Railway at any time. The laboratory shall be equipped with necessary equipment's as directed by Engineer, to carry out the various tests required based on nature of work involved & their conforming to relevant codal provisions and specifications. All the pressure gauge, machines, equipment's and other measuring equipment's of the laboratory shall be of BIS approved makes and will be got checked / calibrated regularly as directed by the Engineer and necessary certificate furnished to the Engineer by the contractor. The contractor shall render all reasonable assistance and help in carrying out the checks and tests. In contracts having quantity of earthwork more than 2 lacs CUM, the contractor will be required to arrange the nuclear testing gauge of approved make to measure the in-situ moisture content and field density.

All the equipment's, machinery etc. shall be kept in good working conditions. The cost of setting up the laboratory, equipping and maintaining the same including the cost of Electricity/lights & conducting of tests on materials and cubes shall be borne by the contractor.

Failure to provide Field Laboratory within 2 months of commencement of work, shall attract a penalty of ₹ 25000 per month, recoverable from the running bill.

## **7.0 STRUCTURAL STEEL FOR SUPER STRUCTURE OF RAILWAY BRIDGES/ROBs/RUBs/FOBs:**

- 7.1 The Structural steel for above works is to be procured from primary producers having integrated steel plants namely SAIL, TISCO, RINL, JINDAL or as per latest RDSO guidelines as approved by Engineer in charge and shall conform to stipulated BIS /IRS Specifications applicable.
- 7.2 Steel from secondary producers (mini steel plants) or re-rollers who are having valid & approved license from BIS for manufacture of specific product (i.e. angles, I-sections, channels and plates etc.) on the date of steel supply shall also be acceptable if they comply with para 1.3 below. Validity of license to be checked as per web site “www.bis.org.in or from BIS office. with the approval of Engineer in charge
- 7.3 Steel of only those BIS approved re-rollers who have system of traceability from transfer of cast mark (from ingots, billets and blooms to the finished produces) will be accepted /is also permitted subject to use of ingots/blooms/billets from integrated steel plants accompanied by identification marks/cast marks which are required to be transferred to finished product even in case of small quantity. These provisions should be ensured by Contractor at the time of procuring and offering the steel for passing”. In case of any dispute, the decision of CPM/GSU will be final.
- 7.4 Before use, contractor/s will be required to get the test certificate from the manufacturer pertaining to the various quality tests on steel as specified in the relevant BIS Code.
- 7.5 In addition, Railway will also take sample during the course of work at requisite frequency and get the steel tested to ascertain its conformity to the laid down Specifications at contractor's cost. Frequency of testing shall be as prescribed by the relevant Code and approved by engineer in charge
- 7.6 Fabrication of girders including fabrication & erection shall be as per provision contained in IRS BS-110(R) & RDSO's guidelines B-1/2001(as amended up to date).

## **8 Welding**

- 8.1 The welding of all girders and structural members shall be fillet weld 8 mm size unless otherwise specified size.
- 8.2 Welding in main girders shall be done only by Automatic submerged arc welding (SAW). For other places wherever possible SAW welding is to be done. If SAW welding is not possible, then FCAW or CMAW welding as per provision given in the IRS welded bridge code and relevant specifications referred in it.

- 8.3 The manufacturer shall have at his disposal sufficient and competent personnel for the planning, performing and supervising the welding production according to specified requirements.
- 8.4 **Welders:** Welders shall be qualified by an appropriate test as per ISO 9606 -1 and got approved from the Railways.

## 9.0 SPECIFICATION FOR HSFG BOLTS

- 9.1 HSFG Bolts shall confirm to BS 111 (Revision 2): Salient provisions of BS 111 (Rev 2) are as under:
- 9.2 HSFG bolts shall not be used in conjunction with rivets or welds.
- 9.3 All holes for fixing HSFG bolts shall to be made by drilling only. Normal dia of holes shall be 1.5mm more than bolt dia for less than 25mm dia bolts and 2mm more than dia bolt for larger dia meters. In case hole dia exceeds bolt dia by 2mm, hardened washers shall be used.
- 9.4 Only high strength structural bolts having yield stress as 800/1000 MPa and confirming to IS: 3757 shall only be used. Property class and manufacturer identification mark shall be embossed on every bolt.
- 9.5 Length of bolt – the length of bolt should be sufficient to hold steel members with nuts washers and some projection beyond bolt. At least four full threads shall remain clear between bearing surface of nut and unthreaded part of shank. Minimum one full thread pitch shall protrude from the nut after tightening. Grip length shall be as per table one of IS: 4000. For 22mm bolts allowance for grip shall be 34mm. Maximum grip length shall not exceed 10 times of the dia of bolts.
- 9.6 Bolts shall be tightened by high strength nut confirming to IS: 6623. The thread of nut shall be matching with threads of bolts and height of nut shall be more than 0.8 times dia of bolts.
- 9.7 Every nut shall have identification mark having manufacturer's symbol and property class of nut. In order to ensure that nut is not accessible by anti social element, nuts of top flange shall be inside concrete. In web of girder the nut shall be towards outside of girder and in flanges towards bottom of girder.
- 9.8 **Washers** - Plain hole circular washer with identification by 2 nibs (small projection) and manufacturer's identification symbol shall be provided along with direct tension indicator (DTI) for each bolt. DTI washer shall normally be placed below the head of bolt (with projection towards bolt head) in case nut is rotated or vice versa. If bolt is longer than required, plain washer can be used as packing washers but maximum number of packing washers shall be limited to 3 and their combined thickness shall be limited to 12mm
- 9.8.1 DTI are special type of washers with projections which get pressed when tension is applied. 0.4mm thick feeler gauge shall be used to check 100% of the bolts for proper tightening and if it cannot be inserted between indicator positions it shall be called refusal indicating full tightening. If a 0.1mm feeler

gauge cannot be inserted it will be termed as full compression of indicator.  
Not more than 10% indicator shall exhibit full compression of indicator.

- 9.8.2 Steel interface between plies forming joint shall have special surface preparation for ensuring sufficient slip factor is available. The interface between ply shall be metalized without any over coating.
- 9.8.3 Bolt shall be tightened to minimum load specified IS:4000. For M22 bolts minimum tension shall be 182 KN for property class 8.8 and 251 KN for property class 10.9.
- 10.0 **Sequence of tightening** – Hole shall be brought in alignment using drifts and shall be held in position by insertion of few bolts up to 1st stage only. After alignment of member is verified to be correct, balance bolts shall be inserted and tightened to 1st stage. Final tightening shall proceed only after gap between plates has been closed in central portion and gap less than 2mm at edges. To minimize loosening of already tight bolts, tightening in two stages shall be done starting from stiffest part i.e. center of joint. After 2nd stage tightening checks with 0.4mm thick filler gauge shall be done for 100% bolts for ensuring proper tightening.
- 10.1 A bolt completely tightened shall not be re-used under any circumstances. A fully tensioned bolt opened out for any reason shall be rejected and removed from site of work.
- 10.2 Torque wrench shall be calibrated periodically once in a year to an accuracy of +/- 10%. Wrench shall also be re-calibrated in case of accidental fall of wrench.
- 10.3 All bolts, nuts and washer brought at site shall be accompanied with manufacturer test certificate. In addition to MTC, one sample of 3bolt/nut/washer from each lot shall be sent to reputed independent NABL accredited laboratory.
- 10.4 The rate of DSR-2021 items are also applicable even for heights more than 6 meter and nothing extra will be payable on this account.

## **11.0 FABRICATION OF GIRDERS AND MEMBERS**

- 11.1 The tenderer/s shall have to submit the Quality assurance plan(QAP) and Welding Procedures and specification sheet(WPSS) for approval of competent authority before starting the work. For preparation of QAP, the assistance of sample QAP issued by RDSO can be taken (uploaded on site as well) and Model QAP for plate Girders issued by RDSO under no. RDSO/Infra-II/B&S/RG/PG.
- 11.2 The fabrication work for FOB/Ramps/Stair cases shall be done in centralized workshop having adequate area and all facilities of tacking/handling /cutting and welding processes.
- 11.3 The detailed erection drawings for side slewing / longitudinal launching and erection methodology will be prepared by the contractor through a qualified



designer & got approved from Railway. The necessary design calculations will be submitted for the purpose of approval. Changes considered necessary by the railway during checking will be carried out by the contractor's designer.

- 11.4 The detailed fabrication drawings for span girders and gap girders shall be prepared by the contractor and no extra payment will be made on this accounts required for the work.
- 11.5 The fabrication includes all the types of battens, bracings, ties, stiffeners, packing, diaphragms with contractors own shop rivets, T&F bolts, drifts, shop welds, templates, jigs, fixtures, back up supports, accessories etc., and marking each member for site identification and transporting various components from fabrication shop to site, in packages, bundles and other means with due care and safe guards as described in the specification including loading, leading and unloading, sorting, member wise systematic matching etc., complete with contractors labour, material, machinery, tools & plants all lead, lift and taxes complete as per tender conditions.
- 11.6 The erection includes transportation of the materials to assembly platform at site, assembly of girders on drifts/bolts, field riveting/ welding/ bolting and load testing of one girder with contractors labour, material, tools & plants etc., as required for the work.
- 11.7 The longitudinal launching/ side slewing/ Launching by crane and other arrangements for side slewing/ longitudinal launching, Launching by crane raising of girders to the bed block level, providing sliding arrangements and slewing/longitudinal launching the girder progressively in position as per the approved erection scheme /methodology including lowering of girders on bearings and bed plates. This also includes cost of fabrication, erection and dismantling of all temporary arrangements like temporary structures sliding, beams/ rails wire ropes including anchorages, pulling machines etc., wire ropes, sliding arrangements, slings, chain jacks rollers winches, cranes etc.
- 11.8 Any other tools & plants required for the work will be arranged by the contractor at his cost rates include the cost of the same.

## 12.0 ROUTINE TESTS AND ADDITIONAL TESTS

Routine tests on various materials shall be carried out as per the "IR Unified Standards Specifications for works & materials/CPWD Specifications " or the relevant BIS Codes. In addition to the tests required under clauses thereof, the Engineer or his representative may order tests to be carried out by an independent person appointed by him at such place or in such laboratory as he may determine in accordance with the appropriate clauses of relevant Standard Specifications and the cost of such tests shall be borne by the contractor.

## 13.0 INSPECTION OF MATERIALS

- 13.1 Whenever the Engineer or his representative gives notice to the contractor that materials are to be inspected at the site, the contractor shall having regard to the inspection, test or examination required, give to the Engineer or

his representative sufficient notice of such materials being ready for inspection.

- 13.2 Delay to works arising from the late submission of such notice will not be acceptable as reason for delay in the completion of the works.

#### 14.0 REJECTION OF MATERIALS

- 14.1 Factory made material shall have to be tested before leaving the manufacturer's premises. However, appropriate materials may also be tested on 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 works or elsewhere or test certificate.

- 14.2 The Engineer or his representative shall have the right to order, at any time, that any construction materials which do not meet with his approval shall not be used in the works. Such rejected materials shall be removed from the site by the contractor at his own expenses, notwithstanding any prior approval which might have been given earlier. Once a particular material is rejected by Engineer, an entry to that effect should be made in material passing register.

- 14.3 The instructions to the contractor to remove the rejected material within reasonable time as given by the Engineer should be complied by the contractor/s at his own cost.

- 14.4 In case of default on the part of the contractor in removing rejected materials within the time specified in notice, the Engineer shall be at liberty to have them removed by other means at the cost of the contractor. In addition, a penalty of upto ₹ 50,000/- per case for above default may also be levied on contractor.

#### 14.5 MISCELLANEOUS

The railway shall not be responsible for any loss or damage to the contractor/s men, materials, equipment, tools and plants etc. from any cause whatsoever. No claim for idle labour, idle machinery and plant etc., on any account will be entertained. Similarly, no claim shall be entertained for business loss or any such loss.

#### 13.0 GENERAL

- 13.1 The Railway shall not be responsible for any loss or damage to contractor's men, material, equipment, tools and plants etc. due to any cause what so ever.

- 13.2 If any work (whether temporary or permanent) or materials, the value of which has been included in an on account bill is destroyed or damaged or has/have, for any other reasons, to be replaced or restored by the

contractor, the value of the work or other materials as destroyed may be recovered by the railway administration from any payment due to the contractor or may be recovered at any time from the contractor as debit due to the contractor and no payment made by the Railway to the contractor after the aforesaid amount becomes due and recoverable shall in any way prejudice Railway's right for lawful recovery.

- 13.3 The contractor will ensure that if minimum water way of the bridge is blocked during the course of construction then such blockage is removed by him at his own cost before the middle of June every year or as directed by the Engineer. Any damage to the bridge on this account will be the contractor's responsibility.
- 13.4 In any case, in which by virtue of section 20(a) and 21(4) of the Contract Labour Regulation and Abolition act, 1970, the Railway is obliged to provide amenities and/or pay wages to labour employed by the contractor directly or through petty contractor/s or sub contractor/s under this contract, then the contractor shall indemnify the Railway fully and the Railway shall be entitled to recover from the contractor, the expenditure incurred on providing the said amenities and/or wages so paid by deducting it from the security deposit or from any sum due to the contractor provided that if any dispute arises as to the expenditure incurred by the Railway or provision of the said amenities, the decision of the Engineer thereof shall be final and binding.
- 13.5 The contractor shall arrange for effective technical supervision of the work and shall be represented by the authorized representative at the site of work during the currency of the contract. He will arrange to receive all the correspondences at the site of work during execution of work.
- 13.6 No claim for extra payment shall be entertained on account of interruption to work due to rain, floods or due to delay in acquisition of land in some portion, delay in arranging closure of water channels etc.
- 13.7 The pathways for the piers in water and elsewhere will have to be made and maintained by the contractor and nothing extra shall be payable on this account.
- 13.8 There may be a water supply/sewerage/any other underground/overhead line passing at the site of work and any delay in its shifting/adjusting will not entitle the contractor to any claim whatsoever.
- 13.9 Work will have to be done in close co-operation with the other departments/agencies if any.
- 13.10 Contractor shall protect the site of work right from start at all times by means of wooden bamboo/ballies and duly painted M.S. sheets. The height should not be less than 1.8 metre and shall be strong enough to prevent unauthorised entry etc.

14.0 TIMELY NOTICE FOR INSPECTION OF FOUNDATIONS ON WORKS TO BE COVERED UP:

The contractor shall give notice to the Engineer when and as soon as the excavation of any portion of site for obtaining foundation or bottom, whether above or below water, has reached the depth and width shown on the drawings. The contractor shall also give further notice to the Engineer, when ever any foundation or bottom is ready for inspection and whenever it is necessary to cover up a work in respect of which previous inspection is desired by the Engineer, so that the engineer may inspect the same before it is covered up. No foundation or bottom of work shall be covered up or filled or built upon without the previous consent in writing of the engineer. In default of such notice and consent in writing aforesaid, the foundation or bottom of work shall on the order in writing of the Engineer, be uncovered and any filling put in or work built thereon be removed or pulled down by the contractor at his own cost.

15.0 NOTICE TO PUBLIC BODIES

The contractor/s shall give to the municipality, police and other authorities, all notices that may be required by law and obtain all requisite licenses for temporary obstructions, enclosures and pay all fees, taxes and charges, which may be levied on account of his operations while executing the contract. He should make good any damage to adjoining premises whether public or private and supply and maintain any lights etc. required at night. Nothing extra shall be payable on any such account and accepted rates of various items in the schedule of items, rates and quantities shall be deemed to cover any such aspect.

16.0 SAFETY MEASURES/PRECAUTIONS AND PENALTIES FOR VIOLATIONS

- 16.1 Contractor shall take all precautionary measures in order to ensure the protection of his own personnel, machinery and equipment moving about or working on the railway yard/premises and shall have to conform to the rules and regulations of the Railway. If any unforeseen accident or injury happens at site of work, the contractor shall be solely responsible for the same. If and when in the course of the work, there is likely to be any danger to persons in the employment of the contractor due to running traffic while working in the railway yard/premises, the contractor shall apply in writing to the Railway to provide flagmen or lookout men for protection of such persons. The Railway will however decide as to whether it is necessary to post such flagmen for various types of work and also the number of such men required to protect the gang or gangs of the contractor/s working at site. The Railway shall remain indemnified by the contractor in the event of any accident occurring in the normal course of work, arising out of the failure of contractor or his men to exercise reasonable precautions at all places of work whether or not the Railway decides to post flagmen at any particular site of work. Notwithstanding the above provision, it should be clearly understood that the

safety of men and material at the worksite will be the sole responsibility of the contractor.

- 16.2 The contractor shall abide by the railway regulations in force for the time being and ensure that the same are followed by his representatives, agents or sub contractors or workmen. He shall give due notices and training to his employees and workers about provision of the above para.
- 16.3 While working within station limits especially on passenger platforms, the contractors shall ensure that at all time sufficient space is left for free movement of passenger traffic. He must cover and/or barricade the excavations carried out in such areas and continue to maintain these till the work is completed with a view to avoid any accident to public or to railway staff or his own workmen, machinery and equipment.
- 16.4 The work must be carried out most carefully without any infringement of the Indian Railway Act or the General and Subsidiary Rules in force on the Railway in such a way that they do not hinder to railway operation or affect the proper functioning or damage any railway equipment structure or rolling stock except as agreed to by the Railway provided that all damages and disfiguration caused by the contractor to any railway property must be made good by the contractor at his own cost failing which cost of such repairs shall be recovered from the contractor. The work must be carried out in the yard without any infringement to the Schedule of Dimension applicable for BG as issued by the Railway Board. It will be responsibility of the contractor to ensure that there is no infringement to the track which will affect the smooth and efficient running of traffic.
- 16.5 Moreover, if at any time the works to be carried out directly concern the safety to trains & locos, the contractor's staff must comply fully with the railway regulations given to him by authorised railway staff. The contractor's employee and workers may for no reasons operate an installation concerning train safety or train movement. They shall notify the authorised representative of the Railway who will take all necessary steps in this regard. Special attention of contractor/s is drawn to relevant clause of General conditions of Contract, 2022 and advised to take all precautions for the safety of public, railway staff, property and his own personnel.
- 16.6 If the work is to be executed in proximity of the running railway track, the contractor will be required to follow 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 any inconvenience or interruption caused to the contractor or for the rescheduling of the operations or for any other reasons on this account.
- 16.7 The contractor shall be responsible for safe custody of tools and for the safety of his labour. He should ensure that labour on work removes their tools clear of the track on the approach of any trains. After the day's work,

the contractor should ensure that the tools are deposited in proper tool box before the labourers proceed for their home. Tool issued should not be allowed to fall in unwanted hands who can tamper with the railway track. The contractor shall employ 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.

- 16.8 In case of failure to adhere to above provisions or if unsafe practices/ safety violation by contractor/his staff are noticed at the site of work, the contractor shall be levied with a penalty of ₹ . 20,000/- for the 1st incident, ₹ 50,000 for the 2nd incident and ₹ 1,00,000 for subsequent such incident. Repeated safety violations shall become a valid ground for initiating the contract termination proceedings under clause-62 of GCC-2022.
- 16.9 In the event of occurrence of an 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. Further, the railway administration reserves the right to terminate the contract with immediate effect if the contractor is found responsible for causing an accident after giving "show cause notice/notices" to the contractor in addition to lodging of criminal case under Railway Act/IPC.
- 16.10 In the event of contractor not completing the work or leaving it unsafe at the end of day's work, warranting speed restrictions to be imposed, track shall be attended by the Railway immediately at the contractor's cost without any further notice. In addition to the labour cost recoverable from the contractor, supervision charges @ 12 ½% and train detention charges @ ₹ 5000/- every half hour of delay or part thereof shall also be recovered.
- 16.11 In case of any damage to Signal/Tele/OFC/Cable occurred due to fault of contractor, the guidelines as enumerated in JPO no. 256-Sig./O/Signal Cable/Pt.-I(e-5502) dated 19.04.23 will be followed.
- 16.12 Following Annexures enclosed with these special conditions site data & specifications will form an integral part of the contract.

**IRPWM C/S NO. 69 DT. 23.5.2001**

(Authority RB letter No.98/CE-II/PRA/32, dated 23.5.2001)

A new Para No.826 be added to Chapter VIII of the IRPWM, 1986 to read as under:

826. Safe working of contractors – 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 Railways 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 as per proforma annexed shall be issued by AEN, 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.

Competency Certificate.

Certified that Sh.\_\_\_\_\_ P. Way supervisor of M/s.\_\_\_\_\_ has been examined regarding P. Way working on \_\_\_\_\_ work. His knowledge has been found satisfactory and he is capable of supervising the work safety.

Asstt: Engineer

Signature of the tenderers

**Special conditions of contract**

**Training to Supervisors and Operators of the 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 about the safety measures to be adopted while working in the vicinity of running track. Engineer in 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, as decided by Railway shall be recovered from contractor. A competency certificate to this effect to the individual Supervisor / Operator shall be issued as given below, by a Railway Officer not below the rank of Assistant level. No Supervisor / Operator of the Contractor shall work or allowed to work in the vicinity of running track who is not in possession of valid competency certificate.

All the labour, materials, tools, plants etc, required for ensuring safe running of trains shall be provided by Contractor at his own cost.

**Competency Certificate**

Certified that Shri.\_\_\_\_\_ Supervisor/Operator of M/s\_\_\_\_\_ has been trained and examined in safety measures to be followed while working in the vicinity of running Railway track for the work \_\_\_\_\_. His knowledge has been found satisfactory and he is capable of supervising the work safely.

This certificate is valid only for the work mentioned in this certificate only.

Signature and designation of the Officer.

Signature of the tenderer/s.



**COMPENDIUM OF INSTRUCTIONS ON SAFETY AT WORK SITES**

1. The contractor shall not allow any road vehicle belonging to him 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 flagman and supervisor and will give written permission giving names of road vehicles 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:
  - 1.1. The road vehicles will ply only between sunrise and sunset.
  - 1.2. Nominated vehicles & drivers will be utilized for work in the presence of at least one flagman and one supervisor certified for such work.
  - 1.3. The vehicles shall ply 6m clear of track. Any movement/ work at less than 6m and upto minimum 3.5m clear of track centre, shall be done only in the presence of railway employee authorised by the Engineer in charge. No part of the road vehicle will be allowed at less than 3.5m from track centre. Cost of such railway employee shall be borne by the railway.
  - 1.4. The contractor shall remain fully responsible for ensuring safety and in case of any accident, shall bear cost of all damages to his equipment's & men and also damages to railway & its passengers.

Engineer in charge may impose any other condition necessary for a particular work or site

(Ref. Rly. Bd.'s letter No.98CE-I/CT/15, dated 13.8.98 Annexure VIII)

- 2.1. Assistant Officer / Sr. scale Officer shall be the overall Incharge for the safety at the site of work. It will be personal responsibility of the Inspectors (both Incharge and supervisory) to ensure safety.
- 2.2. Contractor shall provide 150 mm thick white line with lime at a distance of 3.5 m from centre of existing track. This white line shall be in the entire length where work is going on and/or the vehicles/ machineries are plying along the track. Nothing extra shall be paid for this.
- 2.3. 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 20 mm thick red nylon rope. The columns shall be of 1.2m height . This will be placed at a distance of 3.5 m from centre line of the nearest track. This shall be paid.

- 2.4. Assistant Officer/ Sr. scale Officer shall issue competency certificate after checking license and their working to all drivers of nominated vehicle /machinery. Inspector at site shall ensure that the driver who does not possess competency certificate will not work at site.
- 2.5. The area between running line and white line shall not be permitted to become slushy and adequate drainage must be ensured at all times.
- 2.6. Machine / vehicles shall ply 6m clear of track and movement / work at less than 6m and upto 3.5m clear of track centre, shall be done in the presence of railway employee authorised by Engineer in charge. The railway employee so deputed shall ensure safety of the track, with banner flags, hand signal lamps and detonators.
- 2.7. If vehicle/ Machinery/ materials are to come within 3.5m of the existing track, work must be done under the presence of an inspector authorised to do safety works. A caution order shall be issued and track will be protected with the banner flags, hand signal lamps and detonators.
- 2.8. Normally, night working shall be avoided. However, in certain areas like Delhi, the night working is unavoidable. The night working shall be permitted by AEN 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
- 3.0. An authorized OHE staff should invariably be present, when relaying work or any major work on track is carried out, in order to ensure the following points.
- 3.1. Power Block is correctly taken and "Permit to Work" (PTW) is issued.
- 3.2. The structure bonds, track bonds, cross bonds, longitudinal rail bonds etc are not disturbed and if disconnected for the work, they are reconnected properly when the work is completed.
- 3.3. The return feeder connections to the rails at the feeding posts are proper and not disturbed.
- 3.4. The setting distance of the structures is not disturbed affected during the slewing.
- 3.5. The track level is not raised beyond the permissible limits during the work.
- 3.6. Excavation or digging near a mast foundation is done in such a manner that the foundation is not exposed.
- 3.7. The clearance particularly at over line structure is maintained to the required standards.
- 3.8. Precautions for the safety of staff working under the OHE are taken correctly.
- 3.9. The Engineering officials in charge of such major works shall ensure that intimation to their counterpart for OHE maintenance work is given with adequate notice.

( Ref. Para 20714 of AC Traction Manual, Vol.II, Part.I)

- 3.10. All staff should be warned that contact within 2 metres (unless protected by the screen ) to live portion of 25 KV traction OHE is dangerous and shall be strictly avoided ( Ref. G.R. 17.04 and S.R 17 04 (I/a)
- 3.11. No work on overhead lines or in the zone within two metres of any live equipment, shall be carried out unless a regular "Permit to Work" is obtained from the authorized traction staff and line is made dead and earthed ( Ref. G.R 17 04 and their S.R.A.C.T.M. Chapter – X)
- 3.12. Before any overhead equipment of bonding is disturbed, provisions of G.R 17.05 and their SRs shall be complied with.
4. During the execution of works, unless otherwise specified the contractor shall at his own cost provide materials for and execute all shoring, timbering and strutting works as is necessary for the stability and safety of all structures, excavation and works and shall ensure that no damage, injury or loss is caused or likely to be caused to any person or property.
- (Ref. Clause 34.1 of GCC 2022)
5. Existing roads or water courses shall not be blocked, cut through, altered, diverted or obstructed in any way by the contractor, except with the permission of the Engineer. All compensation claimed for any unauthorized closure, cutting through, alteration, diversion or obstruction to such roads or water courses by the Contractor or his agent or his staff shall be recoverable from the contractor by deduction from any sums which may become due to him in terms of the contract, or otherwise according to law.
- (Ref. Clause 34.2 of GCC 2022)
6. During progress of work in any street or thorough fare, the contractor shall make adequate provision for the passage of traffic, for securing safe access to all premises approached from such street or thorough fare and for any drainage, water supply or means of lighting which may be interrupted by reason of the execution of the works and shall erect and maintain at his own cost barriers lights and other safeguards as prescribed by the Engineer for the regulation of the traffic, and provide watchmen necessary to prevent accidents. The work shall in such cases be executed night and day if so ordered by the Engineer and with such vigour so that the traffic way be impeded for as short a time as possible.
- (Ref. Clause 34.3 of GCC 2022)
- 7 The contractor shall be responsible to take all precautions to ensure the safety of the public whether on public or railway property and shall post such lookout men as may in the opinion of the Engineer be required to comply with the regulations appertaining to the work.
- (Ref. Clause 34.4 of GCC 2022)
8. The contractor shall be responsible for the safety of all employees directly or through petty contractors or sub- contractor employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the

work to the Engineer or the Engineer's Representative and shall make every arrangement to tender all possible assistance.

(Ref. Clause 56 of GCC 2022)

9. The contractor shall be responsible for all risk to the works and for trespass and shall make good at his own expense all loss or damage whether to the works themselves or to any other property of the Railway or the lives, persons or property of others from whatsoever cause in connection with the works until they are taken over by the Railway and this although all reasonable and proper precautions may have been taken by the Contractor, and in case the Railway shall be called upon to make good any costs, loss or damages, or to pay any compensation, including that payable under the provisions of the workmen's compensation Act or any statutory amendments thereof to any person or persons sustaining damages as aforesaid by reason of any act, or any negligence or omissions on the part of the contractor the amount of any costs or charges including costs and charges in connection with legal proceedings ;which the Railway may incur in reference thereto, shall be charged to the Contractor. The Railway shall have the power and right to pay or to defend or compromise any claim of threatened legal proceedings or in anticipation of legal proceedings being instituted consequent on the action or default of the contractor, to take such steps as may be considered necessary or desirable to ward off or mitigate the effect of such proceedings, charging to contractor, as aforesaid, any sum or sums of money which may be paid and any expenses whether for reinstatement or otherwise which may be incurred and the propriety of any such payment, defence or compromise, and the incurring of any such expenses shall not be called in question by the contractor.

(Ref. Clause 24 of the GCC 2022)

10. Vulnerable locations where construction work adjacent to running line can cause accident should be protected by suitable strong barrier which should be included as a paid item in contract schedule. These locations should be decided by Executive Engineer Incharge of the work at the beginning of construction and intimated to contractor in writing. The barrier should be painted with retro reflective paint at suitable intervals to give warning at night.

(Ref. Rly. Bd's letter No.99/WI/S/Accident- Mangla Express dt. 23.8.1999 Annexure VII)

11. No work adjacent to running track should be carried out at night without express written authority from the Executive Engineer, incharge of the work. In fact, no contractor should do any kind of night working unless the Executive "Engineer in charge of the work gives the specified spots according to priority of work where night working has to be done. These spots should be well lit at night. In addition, the work should always be done under supervision of Railway Supervisors in addition to contractor's supervisors. Suitable Railway personnel should be posted at site with safety equipment's like banner, flags, hand signal flags, hand signal lamps and detonators to arrange protection of trains. The Railway supervisors incharge of such work should also give suitable message to adjacent stations as well as through

control for issuing caution orders to the trains approaching the work site. For this purpose he should be equipped with field telephone /walkie talkie set

(Ref. Rly. Bd's letter No.99/WI/S/Accident- Mangla Express dt. 23.8.1999 Annexure VII)

12. The training to the operators and supervisors of the work executing agencies in safe working along and on the track should be provided by railways. The training could be imparted to such supervisors at Zonal / divisional training schools or even by existing officers and staff of the Construction Organization itself. The intention is to ensure that the supervisors of the work executing agencies get acquainted with the safety practices that are required to be taken while executing all those works which have bearing on the safety of the running tracks. The cost of training shall however be borne by the Contractor.

(Ref. Rly. Bd's letter No.99/CE-II/PRA/32(CRS), dt. 5.7.2000 Annexure IV)

- 13.1 Drivers of train must be served with caution orders to look on for any obstructions at the place of work.
- 13.2. Arrangements should be made to protect the track in case of emergency at work sites.
- 13.3. The area of work should be demarcated by providing barricades and sign board which will enable the workmen posted at site and also the lorry drivers to have clear guidelines of movement of vehicles.
- 13.4 Movement of lorries near the track should be prohibited during night. In case it is unavoidable, adequate protective measures including lighting must be ensured.
- 13.5. Work should not be allowed to progress without the prior approval of the Engineer in charge in case movement of vehicles close to the track is involved.
- 13.6. Machines and vehicles should ply 6 metres clear of track. In case movement at less than 6 metres away from track is inescapable, it should be permitted in the presence of railway employee authorized by the Engineer in charge.
- 13.7. Contractor's representative should be issued a certificate by XEN/AEN to the effect that they have acquired sufficient knowledge about the safety precautions that are needed to be followed while working near the track.

(Ref. Rly. Bd's letter No.99/CE-II/PRA/32(CRS), dt. 21.7.2000 Annexure III)

- 14.1. All permissible or sanctioned infringements should be consolidated for each Division traffic section wise. The consolidated list should be in possession of DRM, ADRM, SR.DSO or DSO, Construction Officers Incharge of Division and relevant extracts with each Divisional and other Officers. These should be checked once a year at Assistant Officer's level and it should be ensured that there is no aggravation of any permitted infringement.
- 14.2 All works planned for execution close to the running lines and fixed structures, on bridges, inside tunnels, cuttings, constructed areas etc, should be carried out only

after preparation of detailed plans for the same, getting clearances from the Engineering Department of the Open line and approval of competent authority to ensure that the execution of the works will not in any way infringe the prescribed schedule of dimensions or aggravate existing permissible infringements.

- 14.3 Special training and counselling should be imparted to all field staff engaged in maintenance of railway assets regarding the safety at work sites and all of them should be in possession of a compendium.
- 14.4. Similar training should also be organized for Railway's Associates and contractors working in close proximity of the running track and specific Para to this effect should also be included in all future contracts requiring execution of work in the near vicinity of running lines.
- 14.5. All the work inside a tunnel, deep cuttings, on bridges, constructed areas etc, should be carried out in accordance to the provisions in Chapter VIII of IRPWM and Para 1009 of Bridge Manual 1998 and preferably under block protection.

( Ref. Railway Bd.'s letter No.2000/CE-II/PRA/12, dt. 16.5.2002 Annexure – II)

- 15. Wherever it is difficult to ply the trucks on road during day light hours for bringing building materials such as chips, sand, supply of ballast and bringing out earth in case of suburban sections, the additional staff should be posted during night working duly properly lighted to ensure safety of the running tracks. In order to ensure that no short cuts or unsafe practices are adopted at construction site, Sr. Officials should inspect the safety aspect in detail during their inspection and guide the staff in adopting safe practices. They should record corrective action to be taken in site order books / inspection books and their compliance followed up. In addition periodic drives should be carried out to ensure safety at construction sites. In order to ensure safety, provision of mobile phones based on the needs of the individual work sites and keeping the provision in the estimate may be provided. (Ref. Railway Bd.'s letter No.2001/CE-II/PRA/10 (CRS), dated 21.5.2002 Annexure –I )

**SAFETY PRECAUTIONS AND MEASURES TO BE OBSERVED DURING EXECUTION OF ROB/RUB /FOB WORKS IN RAILWAY AND ADJOINING AREAS.**

**1.0. Construction Activities and Safety:**

- (a) The 'Methodology of Working' shall be incorporated in GAD and Temporary Arrangement Drawings.
- (b) The activities of work to be taken up during the Railway traffic block/under speed restriction etc. should be clearly mentioned in such drawings.

If at any stage of execution, any discrepancy is found in the drawing with respect to the site condition affecting safety or some new activity of work is required to be done, the same should be brought to the notice of Railway Engineer and such works should be done only after approval by Railways. In such cases, scheme may be modified and if required fresh CRS sanction shall have to be obtained.

- 1.1 The works required to be done under traffic block protection, are to be carried out only in the presence of Railway Engineering officials. The Railways supervisor has to certify safe conditions for passage of trains before resumption of traffic.

The works to be done under traffic shall be carried out under the provision of banner flag and protection of Engineering flagman. If considered necessary, the Railway flagman may be posted on account of the contractor.

- 1.2 Following important activities of works shall be carried out under supervision of Railway Engineer or his nominated Supervisor:

- a) Excavation at foundation/Ground level near to Railway track.
- b) Concrete Casting and/or masonry very close to Railway track.
- c) Erection of temporary structures near to running lines.
- d) Casting of structures like girder/slab over railway track.
- e) Stage-Prestressing of girders when placed across Railway tracks properly supported.
- f) Launching of precast/pre-assembled girders across Railway tracks.
- g) Any work of lifting, side shifting and slewing of girders over the Railway track.
- h) Dismantling of temporary structures, shutters, scaffolding etc. adjacent to and above the Railway track.

For carrying out activities of casting, erection, launching, handling and dismantling as listed above, the Contractor's Engineering shall furnish the Construction Programme in advance to Railway Supervisor engineer. No such work should be taken up in absence of the Supervising Railway Engineer. For the activities which are to be done in presence of the Railway Engineer, prior intimation shall be given in writing and acknowledgement obtained from Railway's representative. Such activities of work shall not be carried without the presence of Railway Engineer.

- 1.3 To ensure 'Safety' during construction activities, Railway Engineer may direct the Contractor/Supervisor Engineer or their nominated representative for safe working procedures/instructions, notwithstanding the contractual or MOU conditions prevailing between/amongst Railways/other departments like NHA/Contractors/Concessionaire.

- 1.4 All the records of Quality Assurance/Quality control, testing of the materials and satisfactory completion of an activity shall be maintained at site by the contractor's Engineer and Supervising Engineers. On the basis of these records, Railways' Engineer shall do stage-wise clearance of the works at following stages:

- i. Completion of foundation
- ii. Completion of substructure
- iii. Completion of superstructure

Without such stage clearance, the work in next stage of construction shall not be allowed by the Railway Supervisor, unless proper system of check and exercise is followed at the site.

- 1.5 Normally, the high beam PSC girders are designed with wider top flange and shorter bottom flange with very high beam which makes the girder unsuitable during lowering, slowing and launching time.

- 1.6 During launching of girders and subsequent adjustments for placement of bearing special attention and precautions are required at site to be followed rigorously without resorting to shortcut practices or leaving the work at site to untrained or inexperienced engineers. Normally, end diaphragms are not casted for the extreme both side girders. These shall to be casted min.300 mm. on both sides for all 'I' beam girders to provide temporary supports for ensuring stability.

Or

For side adjustments and bearing placements below 'I' section girders, end brackets made of steel angles should be provided for all 'I' beams sequentially to avoid side titling of individual girders. End brackets shall be removed only after placing girders on bearing and casting of diaphragms.

- 1.7 During lowering, the jacks shall be operated duly keeping wooden packing of various thicknesses fixing the amount of lowering to the barest minimum, so that even if the jack fails, the wooden packing will take load and further stability of girder is not endangered.

- 1.8 Temporary crib support staging shall be interlaced with clamps and angles. Adequate base width shall be maintained in proportionate to the height of stage, which is very essential for avoiding the oblong effect during launching of girders. During launching by RH girder method the movement of the PSC girders shall be controlled both from front and rear with synch mechanism having simultaneous operation, so that the speed of the launching is always under the control. Spare hydraulic jacks shall always be kept at side.

Lowering of girder shall always be carried out at one end only. Further, other end should be adequately secured by wire ropes, end brackets, etc. Thereafter, the alternate process shall be continued.

- 1.9 As far as possible launching of girders by temporary staging shall be avoided, and launching by heavy capacity cranes, wherever feasible, shall be adopted.
- 1.10 Steel girder launcher if used for launching of PSC girders, should be pre-tested for the critical loading (likely to be encountered during actual launching) before deployment on the approaches regarding its strength as well as amount of permissible deflection using actual test PSC girder as a testing load. Connections at supports shall be inspected



and certified prior to actual launching, it shall be adequately secured to the base support system on the pier cap.

## 2.0 General Construction Safety:

- 2.1. General Safety Precautions as applicable for bridge/civil works shall be adopted in field.
- 2.2 Working near running line: Safe practices at site and at all times non-infringement to moving trains shall be ensured. Road vehicles, material trollies, dollies with any tendency to roll off towards the running lines to be checked by providing chains, locking arrangements, blocks etc. shall be ensured and the Site In charge of the Contractor shall be primarily responsible.
- 2.3 Testing of cranes, lifting jacks and other equipment's: All equipment's like cranes, lifting jack shall be tested, duly calibrated and certified prior to use at construction site.
- 2.4 Construction workers at site shall be provided with personal safety gear like reflective vest, helmet, leather shoes, gloves, eye-wear-approved as per construction industry standards. For persons working at pier top/girder level, temporary supports, hand railing, protection with help of ropes, slings and temporary railings shall be provided.
- 2.5 Routine Safety Checks, validity of test certificates for load bearing equipment's especially for cranes outsourced from third party shall be ensured prior to deployment.

(Dy. Chief Engineer/GSU)  
Northern Railway/ M B  
For and on behalf of the President of India.

I/ WE agree to abide by the terms and conditions mentioned on page 1 to \_\_\_ in all as well as General Conditions of Contract and regulations and instruction to tenderer/s Standard Form of Contract-2022, Indian Railway Unified Standard Specifications (Works and Manual) 2021(CPWD Specifications 2019) Volume-I & Volume-II) and Northern Railway Unified Standard Schedule of Rates 2021 (DSR-2021 Vol.-I & II ) to the extent the latest three books are applicable as corrected up to date.

Signature of tenderer/s

Address\_\_\_\_\_