



**CENTRAL RAILWAY
OFFICE OF THE
Sr. Divisional Electrical Engineer
(Traction Distribution)
Central Railway, Bhusaval**

E-Tender No. BSL_ELECT_TRD_29_2026

Name of work:

Design, supply, erection testing and commissioning of 25 KV, Single Phase, AC OHE works in connection with the following works:

- 1) Provision of Cover over shed (COP) end to end platform (5270 sqm) at Niphad Railway station.**
- 2) Construction/ Extension of Track Machine Siding at Lasalgaon, Kajgaon, Dhule & Bhadli station.**

Bid Security:

- (1) Guidelines of GCC Apr'2022 uploaded with tender are applicable for payment of Bid Security. In addition, following information is given in case, submission of Bid Security is to be made in the form of Bank Guarantee.

S.N.	Item	Clarification
1	Acting Through	SrDEE/TRD/Central Railway/BSL
2	Beneficiary Name	Senior Divisional Finance Manager, Central Railway, Bhusaval
3	Beneficiary A/C No.	SBI Mumbai main branch, IFSC Code – SBIN0000300, A/C No. 10996718659.
4	Beneficiary phone no. and Email ID	Phone No. 7219611100, Email ID- srdfm@bsl.railnet.gov.in
5	Designation & Address of Contract signing Authority	SrDEE/TRD/Central Railway/BSL, DRM Office, Central Railway, Bhusaval.
6	Name and address of authority for Physical Submission of Original Bank Guarantee (EMD).	Office of SrDEE/TRD/Central Railway/BSL, DRM Office, Central Railway, Bhusaval.
7	Date and time for submission of Physical Submission of Original Bank Guarantee (EMD).	The original Bank Guarantee should be delivered in person to the official nominated as indicated in the tender document before closing date for submission of bids (i.e. excluding the last date of submission of bids).

If any firm recognized by Department for Promotion of Industry and Internal Trade (DPIIT) as 'Startups' seeks exemption from payment of Bid Security under Para 5(1)(a)(ii) of GCC Apr'2022, must submit Annual Turnover for each financial year wef. its incorporation/registration.

Part -I GUIDELINES FOR OHE WORK

Foundations

Scope: This chapter deals with the designs of foundations & anchor blocks for traction structures carrying overhead equipment (including those on bridges), structures at switching stations and other concrete work. It also deals with the specification for concrete.

Design of foundation:

- a. Soil Pressure:** The proposed foundation for OHE modification are required in the already electrified area having OHE structures at approximate interval of 50 mtrs. Therefore normally, details of type of soil are already available. The same information can be utilized for design of foundation. **OR**
For design of foundations for traction structure carrying overhead equipment, the Contractor shall determine the type and allowable bearing pressure of soil at suitable intervals and adopt the type and size of foundations, suitable for particular locations with the help of the approved employment schedules. In cases of particularly weak soil, the bearing pressure may have to be determined for each location where so advised by the purchaser. Soil bearing pressure, using SPT (Falling weight equipment should be determined generally for every 5 Kilometer interval or less wherever change of soil is encountered. In general IS code of practice (IS: 6403) should be followed. In addition, at every 250 m the soil bearing pressure should be determined by dial gauge type penetrometers. Dial gauge type penetrometers shall also be made available by the Contractor at each foundation site so as to facilitate cross check at each individual location. For design of foundations for masts and gantries at switching stations and booster stations, the Contractor shall determine the type and allowably bearing pressure of soil at the locations of such stations and shall prepare designs for the foundations suitable for each location to suit the bearing pressure of the soil in consultation with the Purchaser.
- b. Structure carrying overhead equipment:** Foundation for traction structures carrying overhead equipment shall be either of the side bearing, side-gravity or new pure gravity type according to their location, formation of the sub-grade and bearing pressure of the soil. In new filled up soil or cinder formation, new pure gravity sand-filled core foundations, or foundations with cast-in-site reinforced concrete piles, or cantilever type foundation with counter-weights or guyed foundations may be adopted.
- c. On Bridge Piers:** Complete design of foundation for traction structures on bridges to suit different locations and local conditions shall be prepared and submitted by the Contractor along with detailed calculation, justifying the design for purchaser's approval will be furnished by the Purchaser.
- d. Masts and Fabricated Structures at Switching Stations Fencing:** Foundations for the masts of gantries at switching stations shall be of the pure gravity type, the base of which shall rest on consolidated soil.
- e.** Foundations for fencing posts shall rest on consolidated soil if the depth of unconsolidated soil is less than 1.5 m below the datum level and shall be rectangular parallel piped, in shape. If the depth of unconsolidated soil is more than 1.5 m the foundation block shall rest on reinforced concrete piles cast-in-site or the Purchaser may adopt reinforced concrete foundation as desires.
- f. Typical Design:** Typical designs and drawings of side bearing and new pure gravity and side gravity type foundations etc., employment schedules for standard foundations for traction structures for various locations and types are as per standard RDSO drawings.
- g. Special Foundations:** In the case of foundations at locations not covered by the employment schedules furnished by the Purchaser, the Contractor shall prepare special designs and furnish full design calculations justifying the choice of the type of foundations for such locations. In black cotton soil specially pile foundations of under reamed type as per RDSO's standard designs (Reference RDSO drawing no. ETI/C/0062 Mod 'A') or any other approved design may have to be cast at limited locations for trial purpose. The tenderer may furnish the technical details of alternative design, construction methods proposed to be adopted and their previous background/experience, if any. The decision of the Purchaser with regard to feasibility and suitability of adoption of the alternative design for each type of foundations will be final.
- h. Equipment Pedestals:** Pedestals for interrupters and LT supply transformers where required, shall be of mass concrete with the base resting on consolidated soil.
- i.** Deleted.
- j. Cable trenches:** The cable trench shall rest on original ground if the depth of unconsolidated soil is less than 0.5 m. If the depth of unconsolidated soil is more 0.5 m the cable trench shall be made of reinforced cement concrete of approved design supported at suitable intervals on concrete pillars.

Bearing pressure: The following allowable bearing pressures may generally be expected for kinds of soil. The information is given for guidance only.

Average good soil in banks and cuttings	11,000 Kg/sq. m
Murum soil in cuttings	22,000 Kg/sq. m
New Banks and bad soils bank & cuttings	5,500 Kg/sq. m

Black cotton soil: Pure gravity foundation shall normally be adopted. However, under reamed pile foundations may be adopted at the option of the Purchaser in limited locations for trial purpose. In case of dry black cotton soil, the soil should be subjected to bearing pressure as close as possible but not exceeding 16, 500 kg/sq. m the depth of the foundation block being not less than 2.8 mtr. In the case of wet black cotton soil, the soil should be subjected to a bearing pressure as close as possible but not exceeding 8000 kg/sq. m. In the case of hard rock, a hole should be blasted in the rock or by means of any other drilling and pneumatic method and the mast sealed into it with concrete.

Concrete: Concrete for foundations shall be nominal mix of grade M-15 as per IS 456 or latest version. Concrete for grouting, muffing, embedding of structures in foundations shall be normal mix concrete of M-20 grade as per IS 456 or latest version. A proportion of mix given in IS 456 or latest.

Size of grading and aggregates: The graded coarse aggregate 20 mm nominal size shall be used for foundation. A coarse aggregate for grouting muffs and embedding shall be of 20 mm graded nominal size. Fine aggregate shall be graded from 10 mm downwards. The maximum size of aggregate for under reamed pile foundation shall be 20 mm graded nominal size.

Sand cored foundations: After erection of masts in sand cored foundations, the core hole of the foundation blocks shall be filled with dried sand & covered with a layer of bitumen of 80 mm thickness below 30 mm from top level of the block. A hemispherical shaped muff shall be provided on such foundations in lieu of standard type.

Sinking of concrete shells: Where the water table is high, one or more sections of reinforced concrete shells may have to sunk before casting concrete. The size of each shell shall be 1200 mm outside dia. x 50 mm thick x 600 height reinforced with 6 mm (1/4") dia. rods spaced 150 mm apart, both longitudinally & circumferentially.

Type of foundation in black cotton soil: The foundations in dry black cotton soil should be of type BC or NBC as per RDSO drawings/designs.

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Structures

Scope: This chapter deals with the design of steel structures and steel work for over head equipment, switching stations, booster transformer stations and LT supply transformer stations and the specification for steel mast and pre-stressed concrete trial mast.

Types: Structures and gantries may consist of any or more of the following types:

- i) Broad flange beams.
- ii) Rolled Steel joists.
- iii) Fabricated steel structures like B/K/150, 175, 200, 225, 250, TTC/G/O/N/R portals structures. Structure/uprights shall generally be embedded in concrete foundation blocks; in special cases structures may be secured by means of holding down bolts.

Steel Structures: Design for steel structures shall, except where otherwise provided, comply with the "Indian Standard Code of Practice for use of structural steel in general building construction" IS 800: 1984 or its latest version. The thickness of smallest steel section used shall be 5 mm for galvanized members.

All steel structures and small part steel for carrying overhead equipment are to be fully galvanized after drilling and fabrication as per specification no. ETI/OHE/13(4/84) & to the latest amendments and no painted structures are to be used.

Minimum average weight of zinc coating on all steel structures and small part steel shall be 1000 gm/sq m

Cantilever masts:

a) For purpose of design the worst possible combination of all loads that may occur shall be considered. The load shall include the following (weights to be assumed for design of structures are shown against important items)

- i) Weight of OHE (1.60 Kg/m for each conventional and 1.32 Kg/m for each composite OHE)
- ii) Weight of bracket supporting the OHE (60 Kg/normal bracket)
- iii) Weight of a man (60 Kg)
- iv) Weight of feeder, return conductor or other special equipment wherever they occur as per RDSO.
- v) Weight of earth wire (0.32 Kg/m)
- vi) The affect of eccentricity of vertical and horizontal loads on the bracket due to variation in temperature.
- vii) Radial forces on the mast, due to stagger, curvature, anchorage, etc.
- viii) Winds load perpendicular and parallel to the track. The wind pressure adopted shall be taken as that indicated in part – II, Chapter – I.
- ix) Weight of the mast upright itself; and
- x) Any other load or loads that may occur due to the special location of the structure

b) Deflection: Notwithstanding the provisions contained in IS 800: 1984 referred to in para 2.3.3 above regarding permissible deflection, the following shall apply:

- i) The deflection at the top of the mast due to permanent load shall not exceed 8 cm. and the mast shall be so erected that it becomes reasonably vertical after application of permanent loads; and
- ii) Additional deflection under maximum wind pressure shall not exceed 8cm at the level of the contact wire.

c) Torsion: The torsion rotation of the mast due to permanent load shall not exceed 0.1 radian.

d) Typical Design: The typical design of a traction mast is included in the set of standard drawings. Employment schedules for standard masts for various locations and types are as per standard RDSO drawings.

Anchor mast:

- a) Mast at which overhead equipment will be anchored shall also normally be of the same type as those in other locations. Anchor masts shall normally be provided with suitable guys but struts may be permitted in special cases.
- b) Dwarf Mast: At certain locations where due to local conditions it is not feasible to anchor the guy rod on a foundation block in the ground, a dwarf mast shall be used in accordance with approved design.

Head spans:

- a) Load: The loads to be considered shall be as detailed as far as applicable and at their worst combination.
- b) Sag for Head Span wire: The sag for the head span wire shall be approximately one-tenth (1/10) of the span.
- c) Minimum Tension in Cross Span and Steady Span Wires: For purpose of design, a minimum tension of 200 Kg. shall be ensured in the span wires for worst combination of temperature and wind load.
- d) Deflection of Mast: - Deflection at the top of the mast or structure shall be limited to one eightieth (1/80th) of its height above foundation.

Portals:

- a) General: - Portals shall be of fabricated steel of standard types to RDSO designs/drawings.
- b) Load: - The loads shall be as detailed as applicable.

Structures on bridges:

- a) The structures may be either cantilever mast or portal (hinged or fixed at base) depending on the type & condition of bridge pier capping. As far as possible cantilever mast grouted in foundation on pier will be

used. Where this is not possible cantilever mast with holding down bolts or suitable portals (hinged or fixed at base) may be adopted.

- (b) Designs of structures on bridges to suit different locations and local conditions will be furnished to the Contractor by the purchaser. In case of bolted structure on bridge piers Contractor has to submit the detail design for base arrangement for approval of purchaser.

Special structures: In the case of structures at locations not covered by the employment schedules furnished by the purchaser, the Contractor shall furnish complete design calculations justifying the choice of the type of structures for such locations.

Setting of structures:

- a) The setting is the distance from the centre line of the track, on straight or curve to the face of the mast/structure of fitting located on mast.
- b) On straight and outside of curve, the standard setting shall be as per the relevant RDSO drawing. Minimum setting of structures shall be 2.5 m plus curve allowance as required. Wherever this distance cannot be provided specific approval of Purchaser shall be obtained before erection. Setting of portal upright, overlap/turnout structures, anchoring structures and other masts carrying more than one OHE will be 3.0 m wherever possible.
- c) Extra clearance in curves: - The minimum setting of structures on curves shall be determined by adding to the above minimum figures an extra clearance as per RDSO's guidelines.
- d) Structures with counter-weights: - In case of structures carrying counter-weight assemblies, the term "setting" shall refer to the minimum distance of the counter-weight from the track centre under the worst conditions of wind.
- e) Structures on Platform: - The setting of structures on platforms will be not less than 4.75 m.
- f) Structures near Signals.

In the vicinity of signals, structures shall be located in a manner, which shall ensure good visibility where necessary; the setting shall be as per RDSO drawings/designs.

- g) Setting of Structures: - The value of setting of masts/structures shall be painted on each mast/structures. The figures shall be 25 mm in size in white on a red background. In addition, the track level shall also be marked on the mast/structure by a horizontal red painted stroke.

h) General: -

1. This specification provide for fabrication, galvanization and supply of structures as mentioned in Schedule for supporting traction overhead equipment of permanent way and distribution lines of the Central Railway. The Contractor shall carryout the manufacture and supply the structures as mentioned in schedule of rates and quantity.

2. The work shall be strictly in accordance with the following standard specification, rules and codes of practice. All steel used for manufacture shall be as prescribed below:

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|----|----------------------|---|--|
| a) | Quality of steel | - | IS 2062 Grade - A |
| b) | Fabrication etc. | - | IS 800 |
| c) | Electric Arc Welding | - | IS 816 |
| d) | Galvanization | - | RDSO Specn. No.ETI/OHE/13(4/84) or latest. |

- 3 Latest edition of the above codes/specifications with correction slips issued from time to time shall be applicable to the work except to the extent it is modified.

Numbering of structures carrying OHE: All structures shall be numbered in accordance with the numbering given in the approved overhead equipment layout plans. Number plates shall be provided on each mast or structure as per RDSO standards.

Checking of steel work: The fabricated steel work will be inspected and passed by a Railway Engineer but such passing shall in no way relieve the Contractors from the responsibilities under the contract.

Minimum average weight of zinc coating on all steel structures and small part steel shall be 1000 gm/sq m

Steel work for switching stations and gantries:

- a) Horizontal members of main as well as auxiliary gantry carrying isolators switches, insulators, potential transformers etc. shall be made from steel sections viz. channels, angles and small joints, single or fabricated. They shall preferably be attached to masts by means of clamps to avoid drilling of mast section.
- b) For purpose of design, all possible loads, which may occur in the worst combination, shall be considered. The loads shall include the following: -
- i) Weight of insulators, instrument transformers, isolator switches, bus bars and their accessories
 - ii) Loads caused by feeders, along and across tracks, return feeders etc.
 - iii) Loads caused by anchorage due to guying of anchored masts (where applicable)
 - iv) Pull or push on the structure due to anchorage and radial tension (where applicable)
 - v) Wind load on the different structures, conductors and equipment. The wind pressure shall be taken as per relevant IS specification
 - vi) Weight of man working on the structures
 - vii) Weight of structure itself

- viii) Erection of loads
 - ix) Any other load or loads which may occur due to special equipment wherever they occur
- c) Tension of conductors: - For purpose of designs, the maximum tension of different conductors, without wind load, shall normally be as under: -
- i) Maximum tension in the incoming feeder from traction sub-station to the auxiliary gantry at the feeding posts under worst conditions. 600 Kgf.
 - ii) Maximum tension in the cross feeders at switching stations under worst conditions.
 - 1. For spans less than 18 m100 Kgf.
 - 2. For spans more than 18 m200 Kgf.
 - iii) Maximum tension in longitudinal feeders running parallel to the track at the switching stations under worst conditions – 1500 Kgf.
 - iv) Tension in anchored OHE case of sectioning and paralleling stations. -200Kgf.
- d) Deflection of Gantry Masts: - Deflection under the permanent loads (as an average temperature of 35 deg. C without wind) at the top of the fabricated structures of mast shall be limited to the one eightieth ($1/80^{\text{th}}$) of its height above foundation.
- e) Anchor mast :- Masts of the gantry at which feeder or overhead equipment will be anchored at the switching stations shall normally be provided with suitable guys, but struts not be permitted.
- f) Chairs and Brackets: - Chairs, brackets and supporting steel work carrying potential transformers, lightning arrestors, insulators etc. shall be made of fabricated steel and be mounted on the main or auxiliary gantry preferably by means of clamps to avoid drilling of mast section.
- g) Uprights and Fencing Posts: - Uprights carrying operating handles of isolators and fencing posts shall be made from steel sections, viz. channels, angles or joints, either single or fabricated.

Steel section and specification: The rolled steel joists, plates, channels, flats, angles and other rolled steel sections and rivets if any used in execution of the contract shall be of quality Grade – A and shall conform to IS 2062: 1992 or its latest revision for structural steel. The steel sections shall be free from blisters, scales, laminations or other such defects. No filling or plugging of defective steel section will be permitted. No joints either welded or bolted type shall be provided in any of the members.

Drawings and designs:

- 1. The structure shall be fabricated from rolled steel section plates and bars generally in accordance with the RDSO's drawings.
- 2. The dimensions shown in the structure drawings are in metric system. In the event of equivalent metric size steel sections being not available, the Contractor may use the nearest rationalized size of steel sections with the prior approval of Central Railway. When the use of alternate steel sections is approved, the resulting increase in weight up to 5 % on overall quantum of work is permitted, for which payment will be made by the Purchaser. Over and above 5 % increase in over all weight permitted as above, in case of any increase in weight is involved, it will be to the account of the Contractor. The Purchaser will not be liable to make payments on this account.

Workmanship: Unless otherwise approved the main angles, channels and joists used in the fabrication of structures shall be as shown in the drawing and all holes shall be drilled to templates. The back angles and light steel sections may be sheared to gauge and shall be accurately drilled or punched to templates. All parts shall be carefully cut and holes shall be cut and holes accurately drilled so that when the members are in position the holes shall be truly opposite each other for accurate assembly of the various sections. For the purpose of calculating structure weight, the actual length used in fabricating the structures will be taken into consideration which excludes wastages, if any, while cutting/shearing the rolled steel sections. The drilling, punching, cutting and bonding of all fabricated steel work shall be such as to prevent any possibility of irregularity occurring to introduce difficulty of erection of steel assembly in the field.

Built members shall, when finished, be true and free from all kinds of twists or open joints and the material shall, when finished, be true and free from all kinds of twists or open joints and the material shall not be defective or strained in any way. All latticework on the main structures shall be riveted/welded together; Main members should be bolted together. No rivets or bolts shall be used in tension, except where specifically approved by the Railway. No bolt hole shall be more than 8 mm larger than the diameter of the bolt.

Minimum average weight of zinc coating on all steel structures and small part steel shall be 1000 gm/sq m

Dispatch of structures:

- 1. The manufactures shall assemble the complete structure in a horizontal position before dispatch from their works as may be required by the Railway for inspection.
- 2. The structure shall be dispatched in sections of approved sizes and where possible shall be bundled with similar sections and tied securely for safe transit. As far as possible, full capacity of the wagon should be utilized to avoid under loading.

Setting of structures: The value of setting of mast/structures shall be painted on each mast/structures. In addition, track level should also be marked on steel structures.

Inspection and testing

Scope: This Chapter deals with the inspection and testing of completely erected overhead equipment and LT supply transformer stations.

Overall performance: The overall performance of the overhead equipment should be such as would permit collection of current by electric rolling stock with full load, at speeds upto and including the maximum specified for the design of overhead equipment, smoothly, with out mechanical shocks prejudicial sparks and without undue heating in the case of other equipments.

General tests on OHE: As soon as a section is ready for inspection and testing, the Contractor shall advise the Purchaser in writing. Tests to be carried out by the Purchaser will be done in the presence of the Contractor's representative and shall include the following apart from other reasonable tests that the Purchaser may like to conduct with a view to ensure, himself of the soundness of the equipments and their erection in strict compliance with the specifications.

Insulation: The strength of the insulation and the di-electric strength of the entire equipment as installed shall be tested with a 2500 V Megger, if it is new work.

Tests on the continuity: The electrical continuity of the line and the existence of bad contacts, if any, will be tested with a Megger, if it is new work and not modification.

Electrical impedance: The electrical impedance of individual of elementary sections in relation to one another shall also be tested with a Megger.

Switches: All isolators shall be tested for smooth and trouble-free operation.

Tension devices: All automatic tensioning devices installed shall be tested for sensitive functioning and adjustment.

Stagger and height: The stagger and height of contact wire over the entire section of completed overhead equipment and the clearances available shall be measured and the measurement shall be checked as per RDSO's approved drawings and designs. These measurements shall be carried out at low speed with a vehicle or device to be arranged by the Purchaser, the movement of which will follow the track levels as closely as possible. Tolerance that will be permitted on the dimensions indicated in the approved drawings. The actual position of the two contact wires, relative to each other, at overlaps and turnouts shall also be checked. Special attention shall be paid to a smooth movement of pantographs under section insulators, particularly those that are likely to be frequently traversed.

Mechanical behavior: The mechanical behavior of the entire equipment shall be tested at various speeds under normal pantographs pressure without energizing the overhead equipment, if installation is completely new.

Earthing:

- (a) Clearance between out-of-run wires, wire and earth wires, earth of over line structure and signals shall be checked.
- (b) Earth resistance shall be measured separately for each earth electrode. In the case of inter-connected earth electrodes, the net resistance of the inter-connected electrodes shall also be measured.

Erection and installation of equipments

Scope: This chapter deals with the methods of erection and installation of traction equipment, including casting of foundations and erection of structure.

Method of erection: All work shall be done in accordance with methods of erection and installation of equipment approved by the Purchaser. In the case of LT supply transformer stations, standard methods adopted for erection and installation of electrical equipments shall be adopted.

Sectioning: The entire equipment shall be erected in accordance with the finally adopted sectioning diagram and in such a way so as to facilitate sectioning which may be required in future and which will be indicated by the Purchaser.

Inspection: All erection and installation work shall be subject to inspection by the Purchaser to ensure that the work is done in accordance with the specification, approved designs and drawings and is of the best quality suitable for the purpose.

Measurements: All measurements for location of structures and foundations shall be made with the aid of non metallic tapes. On curves, these measurements shall be taken on the outer rail of the middle track in the case of odd number of tracks and on the inner rail of the first outer track from the center of the formation in the case of an even number of tracks. Structures on curves shall be located in the radial off set of the location as determined.

Bolts, nuts etc: All bolts, nuts, locknuts, screws, locking plates and split/cotter pins etc. shall be properly tightened and secured and the Contractor shall carry-out systematic inspection of this aspect of work after all adjustments to overhead equipment are completed and prior to offering completed sections of equipments to the Purchaser for inspection and testing.

Damage to galvanizing/painting: In loading, transport and erection, all galvanized/painted materials shall be handled with care to avoid damage to galvanizing/painting. If galvanizing/painting is damaged in spite of all care taken, the damaged part of component shall be put up for inspection, to obtain permission from the Purchaser to carry out repair. **Minimum average weight of zinc coating on all steel structures and small part steel shall be 1000 gm/sq m**

Rectification at site: In case of modification, which would damage the protective coat, repair to such damage would be allowed only in exceptional circumstances. The part damaged shall be protected in accordance with the method indicated in specification no. ETI/OHE/13 (4/84) with A & C slip of 5/86 or latest or any other method approved by the Purchaser.

Foundation:

- a) Location: The location of each foundation or anchor blocks shall be set out correctly in accordance with approved structure cross-section drawings or foundations layout drawings, as the case may be, in the presence of the Purchaser's representative.
- b) Methods of installation: The Contractor shall adopt mechanized method (concrete mixer) for installation of foundation in the station areas with five lines or more. The Contractor may adopt either manual or mechanized method for installation of foundations in the other areas. He may erect traction masts or structures in the same operation as casting of foundations or blocks and grout them separately. In any case, the method of casting of foundation blocks and erection of masts or structures shall be subject to the approval of the Purchaser.
- c) Excavation: Normally, excavation of soil for foundations on anchor blocks along side the track may be done up to length of 1 to 1.2 m and depth of 0.8 to 1 m without shoring, provided and excavated hole is concreted immediately and not left over night. Shoring shall otherwise be done unless the hole is refilled with soil and tamped. In case the length of excavation is 1 to 1.2 m and depth of excavation for foundations and anchor blocks along side the tracks is more than 0.8 to 1 m, the excavation may be undertaken only after certification by the Purchaser's representative to be safe and concrete is cast on the same day. Shoring shall be done to the satisfaction of the Purchaser's representative. All waterlogged locations will come under the purview of this para. In poor soil or ash banks, no excavation shall be done without adequate shoring and piling. For large foundations and water-logged locations shoring shall be done in accordance with drawings submitted by the Contractor and approved by the Purchaser shoring/shuttering of the pits should be provided effectively to the satisfaction of the Purchaser. Core hole covers should be provided promptly on casting of foundation (within 48 hour) and their edges cemented to the foundation blocks. Prior to doing so, water should be filled in the core holes so as to assist in curing. The date of casting should be inscribed on the foundation block. In case of platform areas and level crossing, the core holes should be filled with sand before provision of core hole covers so as to prevent any injury to rail users even if the core hole cover gets damaged or is displaced. The track ballast should be restored to its original form promptly after casting of the foundation block. The excavated earth should be removed well clear of the area so as to avoid the mixing up with the track ballast or any obstruction to the track drains. In case of cuttings, the earth drains should be thrown well away from the shoulders so that there is no risk of its flowing back to the drain during the rains.
- d) Concreting: All concreting or grouting shall be done in accordance with tender technical specification. The concrete shall be poured and tamped properly in accordance with the method approved by the

Purchaser. The Contractor shall arrange to provide concrete testing samples for tests as per specified intervals to determining crushing strength after 7 days or 28 days curing as required.

- e) **Anchor Blocks:** All anchor blocks and foundations of structures carrying overhead equipment shall be provided with concrete muffs. The top of these muffs shall be above the level of ground of the track formation and of adequate height of not less than 15 cm to afford reasonable protection during rainy weather. Muffs may be installed at the same time the masts are grouted or after the masts/structure is loaded with equipment. The top of such foundations shall be given a slope of 1 in 50 towards the edge to ensure that water does not collect at the base of the structure of the framework of the equipment.
- f) Suitable grooves or niches shall be provided in the foundation blocks, wherever required at the time of casting to enable embedment of earth strips etc., to avoid the necessity of chipping of concrete.
- g) Conduits for cables should be embedded in the foundation blocks, wherever required to avoid consequent chipping off and breaking of the foundation blocks.

Mast and structure erection:

- a) In case of traction masts or structures are erected in cored foundations, till such time they are grouted, they shall be properly wedged to prevent them leaning towards the track and endanger safety of moving vehicles. In case traction masts or structures are erected, simultaneously with the casting of the foundations, the Contractor shall provide suitable temporary supports approved by the Purchaser. The masts shall be embedded in the foundation blocks for the correct length specified in the approved drawings.

Note: Masts/uprights should be grouted on the same day they are dropped in the foundations.

- b) **Reverse Deflection:** All traction masts and structures shall be erected with the correct reverse deflection so that they become reasonably vertical after they are loaded. The method of erection of masts with the correct reverse deflection shall be submitted to the Purchaser for approval.
- c) **Infringement to Standard Dimensions:** In erection, care shall be taken to ensure that no part of the traction mast, structure or any fitting located on such mast or structure infringes the Schedule of Dimensions 1676 gauge printed in metric units in 1973.
- d) **Alignment of Masts at Gantries:** The main masts of gantries shall be carefully aligned to enable easy and good assembly of fabricated steel work.

Overhead equipment:

- a) A suggested method for erection of traction overhead equipment, which would ensure good speed, and quality erection. The Contractor, may, however follow other methods, which they consider would speed up, and ensure good quality work, subject to the approval of the Purchaser. Any wiring method should take into consideration appreciable stretch of the catenary and contact wires in the initial days after they are string and put under tension.
- b) **Bracket Tubes:** In the erection of bracket assemblies, it shall be ensured that the free length of the bracket tube beyond the catenary suspension bracket is at least 150 mm to facilitate adjustment during maintenance.
- c) **Stay Arms:** The choice of stay arms shall be such that their adjuster are capable of adjustments of minimum of 90 mm in either direction except as otherwise relaxed.
- d) **Insulators:** Before insulators are used in bracket assemblies or dispatched to work site for erection from the OHE Stores/Depot, they shall be tested as specified for routine mechanical test. No chipped or cracked insulators shall be installed. All insulators shall be cleaned before erection.
- e) **Stringing of catenary:** Care shall be taken to avoid kinking or bird caging of the catenary wire in stringing and subsequent operations. While stringing, the wire shall be suspended from pulley blocks hung from the suspension clamp eye of bracket assemblies. The pulleys shall be fitted with ball bearing and shall be of the swiveling type to permit free movement in all directions to prevent damage to the strands of the wire. The design shall also be such that it will prevent slipping off of the wire during stringing operations. The designs of the pulley shall be submitted to the Purchaser for approval. After initial stringing of the catenary, it shall be maintained at the 'no load tension' for a minimum duration of 48 hours before the pulley blocks are removed and the catenary is clamped to suspension clamps of bracket assemblies. Shorter periods may, however, be allowed by the Purchaser.
- f) **Stringing of contact wire:** Care shall be taken to avoid formation of kinks, twists and damage to contact wire in stringing and subsequent operations. While stringing the contact wire, it shall be suspended from pulleys hung from dropper fitted to the catenary in their final position. In curves, the contact wire shall be run in pulleys located at traction masts or supports, corresponding to the approximate final position of the wire.
- g) **Location of droppers:** Droppers shall be correctly positioned in each span to ensure correct level of contact wire as per dropper chart applicable to the span.
- h) **Auto – tensioning device:** The auto-tensioning device shall be erected with the correct height of the counter weight above rail level with corresponding distance between the pulleys of the device for a temperature of 35 deg. C before it is connected to the overhead equipment and put into action. The

installation of the devices shall be such as to permit free, easy and unobstructed movement of the counter-weight.

- i) Cut-in-Insulators:** All insulators in out of run shall be so positioned that they are away from the swept zone of the pantographs and will not foul with them. The live parts of these insulators shall also be so located that they are at least 2 m away from the structures other than those supporting traction overhead equipments.
- j) Section Insulators:** All section insulators shall be so located that they are beyond the swept zone of the pantograph running on adjacent tracks and there is not unusual sag due to the same. Where section insulators are installed, the contact plane of the runners of the insulators as well as those of overhead equipment connected to it shall be parallel to the track plane.
- k) Anti - wind clamp:** Anti-wind clamp shall be provided as per RDSO's standard drawing.
- l) Connections:** All jumper connections including anti-theft jumpers shall be made properly with parallel clamps and finished neatly without any loose wire or cables. The length of flexible jumper shall be adequate to avoid any disturbance to overhead equipment to restraint in the relative movement of conductors but the jumpers should not be excessively long. The end of jumpers shall be tinned including the portion inside the first parallel clamp.
- m) Separation between OHE:** In erection, the physical separation required between overhead equipments and bracket assemblies on the same structure, as insulated overlaps shall be ensured.
- n)** The gradient of the contact wire on either side of over line structures with restricted clearances shall be correctly adjusted and adequate clearance maintained between the over line structure and live equipments.
- o) Adjustment at turn-outs, etc:** Careful adjustment of equipment shall be made on equipment at turn-outs, cross over, diamond crossings, overlaps in special locations, for position of bracket assemblies stay arms and height of contact wire to ensure that pantographs of electric rolling stock on the run will not foul with any parts of the bracket assemblies and changeover of the contact wire is effected smoothly.
- p)** For wiring in large yards, the Contractor shall, prior to the execution of works, submit to the Purchaser's Engineer for his approval the sequence of stringing of catenary and contact wires to arrange for proper crossing of wires. Endeavor will be made to arrange for traffic blocks to suit approved sequence of wiring.

Isolators: Isolator switches shall normally be so mounted that when the switches are operated, the operator faces the directions of the motion of trains. The operating handles and contact blades shall be correctly aligned for easy operation.

Bus bar and connections: Bus bars and connections shall be neatly shaped and bent to give a good appearance.

Tolerance: The permissible tolerance in dimensions for erection from those included in the appropriate drawings or schedules for different items are given below:

- a) Measurements:** The span length shall not vary more than ± 50 mm as measured along the appropriate rail. The cumulative error of measurement of all spans in a kilometer shall be not more than 1000 mm.
- b) Setting of structures:** The setting of structure shall not be less than that included in the appropriate cross - section drawings, specially those with the minimum setting of 2.8 m plus curve allowance will be permitted subject to minimum specified value if the structure is not located in between tracks.
- c) Height of contact wire:** ± 20 mm will be permitted on the height of contact wire at points of supports as shown in the relevant structures erection drawings, except under over line structures where no tolerance will be permitted.
- d) Stagger:** Generally ± 20 mm will be permitted for stagger.
- e) Dropper length:** ± 15 mm will be permitted for dropper length.
- f) Dropper location:** ± 100 mm will be permitted for dropper locations.

Supplementary instructions: Further working instructions will be issued if considered necessary by the Purchaser, should be considered that the standard of work of the Contractor required to be improved.

Wiring procedure: This section deals with the wiring procedure, which may be adopted for erection of normal overhead equipment.

The following procedure for erection of overhead equipment has been formulated with a view to ensure that

- i) Bracket assemblies (brackets) and regulating equipment are correctly installed in their final position.
- ii) The conductors are correctly tensioned, and
- iii) The need for final adjustment of overhead equipment immediately before energization and commissioning is virtually eliminated.

Erection of brackets: After the brackets are fabricated correctly in the Contractor's depot, in accordance with the approved structure erection drawings, and provided with indelible labels or/painted marking indicating the intended locations for each bracket, they are removed to the site of work and erected on traction masts or supports. The brackets are swiveled to position straight angles to the track and secured in that position by means of steel wires tied to similar brackets located on the opposite side of the track or other suitable means.

Stringing of catenary: The catenary is initially terminated in the ending clamp of the temporary arrangement at one end of tension length. The catenary is then paid out from the reel of the wiring trolley [of Contractor] and run on pulley blocks hung from the suspension clamp eyes of brackets until the terminating point at the other end of the tension length is reached.

Tensioning of catenary: The catenary is strained upto the stringing tension corresponding to the 'equivalent' span of the tension length and the ambient temperature at the time of stringing with the aid of dynamometer, and terminated at the tension point. For this, the ambient temperature shall be deemed to be the temperature registered by a thermo-meter tied to a length of catenary wire 3 to 4 meters long, laid flat on the top platform, on one of the wagons of the wiring train. Subsequently the tension in the wire is checking by measurement of sag with the help of leveling gauge attached to suspension points and to the catenary at mid span by a ladder working party. The sag shall be measured in two spans, each preferably greater than 54 meters, and situated on either side of anti-creep and the termination points. The value of sag measured by this method should be within 5 % of the critical value for the corresponding stringing tension, and the temperature at the time of this measurement. In case the discrepancy is more, the tension should be adjusted again and sag rechecked as above. After the sag is checked the catenary is terminated at the ending fitting of the temporary arrangement at the terminating point.

In order to restrict the duration of traffic blocks to the minimum, in the first block, the catenary is strained to the stringing tension with the aid of dynamometers and the catenary is terminated. In a subsequent block, the sag is checked and the tension readjusted with ladders, if necessary.

Clamping the catenary: - The catenary is clamped on the brackets placed at right angles to the track.

Dropper: - Droppers are fitted to the catenary at the correct locations. At the contact wire ends these droppers may be provided with small pulleys or hooks to set as temporary supports when the contact wire is strung.

Hooks made of scrap contact wire, suspended from the catenary wire, may also be used as temporary supports.

Stringing of contact wire: - The contact wire is initially terminated in the contact wire-ending clamp of the temporary arrangement at one end of the tension length. The wire is then paid out from the reel put on the wiring trolley [of Contractor] and supported on the pulleys hung from droppers or on hooks until the terminating point at the other end of the tension length is reached. In curves, the contact wire shall be registered or pulleys located at traction masts or supports corresponding to the approximate final position of the wire. The axes of these pulleys should be more or less vertical.

Tensioning of contact wire: - The contact wire is strained to a tension on approximately 1.2 times the tension corresponding to the ambient temperature and terminated in the ending clamp of the temporary arrangement.

Final adjustment: - The entire installation is left in this condition as long as it is possible, preferably for a period not less than 15 days. The temporary pulleys are removed and the conductors terminated in the permanent ending fittings, compensating plates, insulators and turn buckles. The equalizer plate is kept vertical or at a slightly inclined position (by 2 or 3 cm the contact wire being shorter than the catenary) and the position of the regulating equipment is checked in relation to, the temperature at the time. The contact wire is clipped on to droppers (in the vertical position) and on the steady arms. Contact wire height at the bracket is adjusted as also the stagger and register arm clearance.

Concluding remarks: - If the above method is followed with care, no further adjustment may be needed.

Part- II

Special conditions of Contract

The Special conditions shall supplement and be read together with the General Conditions of Contract, April 2022 or latest of the Indian Railway and the extant orders along with the amendments, if any, issued by the Government of India, Ministry of Railways (Railway Board) from time to time.

- 1. Engineer's Representative:** The Engineer's Representative shall be decided at the time of issuing of LOA. Concerned SSE/TRD of the section will supervise and certify the work executed in respective jurisdiction and submit all relevant papers to Engineer's Representative for recording measurement. The work executed will be test checked by concerned ADEE/TRD for their respective jurisdictions.
- 2. Electrical Contractor License:** Contractor's "Electrical Contractor License" must be valid during currency of contract.
- 3. MINIMUM ELIGIBILITY CRITERIA:**

3.1. Special Technical Criteria:

- 3.1.1.** In case a tenderer is participating as Sole Proprietor in a tender, it is mandatory for him to submit an undertaking on suitable stamp paper to this effect clearly mentioning PAN number also along with tender document at the time of submission of tender. (CEGE/CRly's letter no.CR.PCEE.Secy.Genl.Corresp, dated 13-10-2022.). Sole proprietor Certificate Format is uploaded herewith. (This certificate is mandatory for Proprietor firm and not required from other than Proprietor firm. Other than Proprietor firm may upload a pdf with remark "Not applicable")
- 3.1.2.** Bidder should submit the documents as prescribed in para 14 of second sheet of GCC-2022 to establish constitution of firm as well as legality of the person submitting the tender.

3.2. Standard Technical Criteria

The tenderer must have successfully completed or substantially completed any one of the following categories of work(s) during last 07 (seven) years, ending last day of month previous to the one in which tender is invited: (i) Three similar works each costing not less than the amount equal to 30% of advertised value of the tender, or (ii) Two similar works each costing not less than the amount equal to 40% of advertised value of the tender, or (iii) One similar work costing not less than the amount equal to 60% of advertised value of the tender. Note: (1) Work experience certificate from private individual shall not be considered. However, in addition to work experience certificates issued by any Govt. Organization, work experience certificate issued by Public listed company having average annual turnover of Rs. 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange or Bombay Stock Exchange, incorporated/registered at least 5 years prior to the date of closing of tender, shall also be considered provided the work experience certificate has been issued by a person authorized by the Public listed company to issue such certificates. In case tenderer submits work experience certificate issued by public listed company, the tenderer shall also submit along with work experience certificate, the relevant copy of work order, bill of quantities, bill wise details of payment received duly certified by Chartered Accountant, TDS certificates for all payments received and copy of final/last bill paid by company in support of above work experience certificate

3.3. Standard Financial Criteria

The tenderer must have minimum average annual contractual turnover of V/N or 'V' whichever is less; where V= Advertised value of the tender in crores of Rupees N= Number of years prescribed for completion of work for which bids have been invited. The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years, as per the audited balance sheet. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover. The tenderers shall submit requisite information as per Annexure-VIB(available in GCC), along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

(In case, the tenderer fails to submit Annexure VIB and/or Audited Balance Sheets, the offer will be summarily rejected).

4. Supply of material:

Note: Contractor shall note that approval/extension of approval for items pertaining to traction installations, which are in the scope of CORE/RDSO, are being given for certain period. It is essential to ensure while purchasing any material from approved supplier, the approval/renewal of the supplier is valid. No order for procurement of materials should be given to any firms having expired validity of approval period. The Contractor will ensure that they will supply all materials / items from only Part-I, Approved Suppliers of RDSO/CORE as per RDSO's specifications & drawings and original certificate for proof of procurement for purchase of materials from approved suppliers is to be submitted at the time of delivery/inspection of materials.

Approval to be obtained from SrDEE/TRD/BSL if approved drawings needs to be changed as per site condition.

Contractor will submit the delivery challan form in the office of SrDEE/TRD/BSL, indicating supplied quantity of material duly certified by concern SSE/TRD of the section that supplied material is received from approved supplier of RDSO/CORE.

The fittings which are available in forged type, for such fittings forged type fittings only shall be used.

5. Transportation of material:

The transportation & handling charges to bring the material at work site will be borne by the Contractor. If required, Contractor can supply & store materials at suitable/convenient place. However, the loading, transportation & unloading of Contractor supplied material from concerned Railway Depot to work site shall be done by the Contractor.

Railway supplied materials will be transported by Railways from depot to work site including loading & unloading.

6. Released Material:

Released Material will be retained by Railways and during execution of work, it will be ensured that "Released Material" is handed over by contractor to Railways at concerned OHE depot including transportation, loading & unloading.

7. Testing and Inspection of Material:

Testing & inspection of materials / components / equipments to be supplied against high value schedule items, will be carried out by M/s RITES at manufacturer's premises as per RDSO / CORE / Tender specifications & drawings. Notwithstanding anything stated above, material / equipment in small quantity with order value up to Rs. 5 Lakh or any remaining items may be inspected by the Purchaser/Consignee at manufacturer's premises / Depot / Site. Testing & inspection report of material duly signed by Inspecting Official will be submitted by the Contractor at the time of delivery of material to Railway Representative. The Contractor, for accepting the material should ensure the assurance of quality and technical parameters. For GI/MS Flat, Consignee inspection shall be done, irrespective of the lot value. Inspection charges shall be borne by Railways.

8. Completion period:

As per uploaded NIT on IREPS portal.

9. Quality of staff:

Properly skilled staff under the supervision of a qualified Supervisor or Engineer shall execute all the work. The Contractor on the demand by the Railway Engineer shall produce such evidence of qualification of his workmen/supervisors either at the time of award of contract or during execution of work.

Contractor will issue identity cards, duly signed by Railway representative to the labours engaged for execution of work.

Contractor will solely responsible for safety & security of their labors which will be engaged for execution of work because the work will be carried out in 25 KV AC electrified section.

10. Guarantee: The Contractor shall give the guarantee for the period of **01 YEAR** from the date of completion of work. Any rectification or repairs or replacement required, if any during the guarantee period shall be carried out by the Contractor free of cost within reasonable time, not exceeding two weeks. All the to & fro transportation charges, loading & unloading of the material will be born by the Contractor during the guarantee period .No additional payment will be paid by the Railway for the same in the guarantee period.

11. Arrangement of power and traffic block:

Power block / Traffic block (PB/TB) normally be granted any time during day/night time to suit convenience of traffic operations.

In case of any accident/derailment/abnormality in the section, no PB/TB will not be arranged by the Railway to the Contractor. The protection required for block working i.e. Flagman, flags and discharge rods etc. shall be provided by the Railway.

Traffic detention charges:

- (A) Contractor will ensure that granted PB/TB is never busted under any circumstances unless it affects the safe working of trains. Because bursting of PB/TB invariably affects the punctuality of the trains.
- (B) Each incidence of PB /TB busting resulting in detention to traffic will result in penalty of ` 5000/- per hour & the same will be deducted from Contractors bill.

Recoveries: If any existing parts of the old installations are damaged / broken during execution of work at location, the cost of the same will be recovered from the Contractor's bill as per latest market prices.

Safety measures by TRD Contractors and field units:

- (i) Power supply Arrangement, Sectioning diagrams, Location plan, Cable route plan, equipment layout plan SED be approved by open line HQ before execution of the work. Approval of drawing, design, Specification of material having deviation from RDSO/CORE drawing/ design/specification be approved from open line HQ.
- (ii) Joint discussion of Construction/ Conversion activities with drawing, LOP, SED, sectioning diagram one day in advance by Conversion / Construction and open Line Supervisors and recording the methodology to execute the work in register which will have Joint signatures of all the Sr. Supervisors. No execution of the work without following the above procedure.
- (iii) Filling up of check-sheets at work site and joint signature by Construction and Open line TRD supervisors duly recording the defects and deficiencies in check – sheets attending such defects and deficiencies and balance work on the same day or at the first available block. Further work will only progress on completion of these defects.
- (iv) Monitoring of movement of EMU and Mail/ Express trains minimum 2 nos each after completion of work and repeating the details to the TPC who in turn will maintain a register for verification.
- (v) Modification of overlap, cross over/ turnouts, section insulator by tower wagon duly supervised by Open line SSE /SE and certified as per check sheet for operation of traffic.
- (vi) Scrutiny and certification of Competency certificate issued by Contractors for his employees on safety and technical skill by Railway so that failure due to inadequate technical knowledge and non-observance of safety norms is avoided.
- (vii) Contractor shall ensure that no staff is working on line/tracksides without proper permission by Railway. Work shall be commenced only after obtaining necessary traffic & power block required and in the presence of authorised Railways representative.
- (viii) Only eligible and competent staff shall be employed by Contractor and they must wear identity card while working on line no person without identity card should be aloud.
- (ix) Contractor's site in-charge must keep 2 red flag & 1 green flag during day time multi colored lamp / torch light (having red & green color) during night time and a whistle. Contractor must make adequate light arrangement at work site.
- (x) Site in-charge of the Contractor must ensure proper discharging of line and grounding/ earthing of required lines on both side of the work place. While using metallic ladders in multiple lines section staff must careful as the OHE of the adjoining line is alive so that accidental touching should not lead to fatal accident.
- (xi) While unloading/ stacking/ loading, released or new material along the track, the Contractor must ensure that the material is not infringing the schedule of dimensions and keep them safely away. Also, care shall be taken to keep the material in such way that due to vibration or slight movement, it should not come near the track and infringe the movement of the train and stacked as per the specified height and distance from the Railway track.
- (xii) Where the Road vehicle and / or machinery are required to work in the close vicinity of railway line, the work shall be carried out that there is no infringement to the Railways schedule dimension even for a short period. For this purpose, the area where road vehicle 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 vehicle/ machinery without infringing the running track. Barricading shall be provided wherever justified in fusible as per site conditions.
- (xiii) Strict adherence to the relevant provisions of the 'General condition of Contract and the 'Special Condition of Contract' pertaining to safety of both men and material not only of the Contractor but also of the Railways. All staff must wear required safety gadgets such as helmets, phosphorescent jackets, identity badges, safety belts & shoes as required.
- (xiv) Power traffic block must be restored in time after completion of work and after ensuring safety.
- (xv) Contractor must keep First Aid Box at work place for emergency.

- (xvi) In no case manual shifting/ transportation of structures, bulky material and fitting be done without proper power and traffic block and in the presence of authorized Railway representative.
- (xvii) Material at site shall be got transported on same day by Contractor. If material is stored at site in advance a watchmen must be kept. Also unused/released material, if any, should be moved away from site on the same day. No material is kept at site and un-attended/ unclaimed.
- (xviii) Proper arrangement of mobile communication with TPC should be provided by Contractor as per the contract.
- (xix) During emergency, block must be cleared in minimum possible time. Adequate communication, preferably over walkie-talkie, should be available within the gang at work site.
- (xx) Necessary safety equipment and tools to be used by Contractors staff must be checked and tested periodically as per norms. Record to be maintained for this purpose.
- (xxi) Contractor shall give necessary training to their Supervisors and staff & ensure that they know about safety norms to be followed for working in Railway premises and in the vicinity of Railway track in electrified territories.
- (xxii) Proper care shall be taken in storing inflammable substance to avoid any fire.
- (xxiii) Supplementary site-specific instructions, whenever considered necessary shall be issued by the Supervisor in-charge as applicable.

The above list is only indicative and all Contractors must ensure protective and safety measures given in contract agreement and the relevant acts, codes & manuals of Railways and civil authority.

It is advised that safety precautions enumerated shall be ensured in all contractual works. Railway's supervisors & staff shall also ensure and follow the safety instructions strictly while supervising contractual works including departmental works.

Contractor should note vehicles and equipments of Contractors can be utilized by Railway administration in case of accidents/natural calamities involving human lives.

12. Conditions for execution of contract:

Power and traffic block required for erection of any OHE, PSI & other components, the same shall be arranged by Railway.

Labour, which is engaged by the Contractor for execution of this work at site, should be invariably insurance covered. The work shall be carried out under the supervision of Railway supervisor at site. During execution of work if any dispute involved such as variation in quantity, approval of Sr.DEE/TRD/BSL is required before initiating the work. No additional work should be done without taking prior approval of Sr.DEE/TRD/BSL in this regard.

Contractor found using sub-standard or unapproved material shall be on the spot stopped from the executing the further work and suitable action will be taken against the Contractor.

Railway has right to decrease/increase the quantity of schedule of prices or delete some portion of work at the time of execution of work if feels necessary.

In case the work is carried out at site without concerned TRD supervisor, Contractor will be debarred from the Railway's contract.

The Contractor will not ply his vehicle for transport of material crossing the track or very close to the track, which is likely to endanger to lives and cause to accident failing which he shall be suitably penalized.

The rates quoted by the tenderer and accepted by Railway shall hold good till completion of work and no additional individual claim will be admissible on account of fluctuation in market rates, increase in taxes/levies/toll etc.

Scope of work, detailed tender technical specification for schedule items is attached herewith. However, in case of changes needed as per site condition permission from SrDEE/TRD/BSL is needed before the work is done.

The President of India has the right to accept the lowest or any tender without giving any reason for doing so.

No ambiguity once the offer is submitted is allowed.

The Contractor shall maintain the site register with his supervisors who shall keep the record of work done and get the same jointly inspected and tested by Engineer's representative. Engineer's representative and SrDEE/TRD/BSL or his authorized representative shall do final inspection. Copy of inspection report shall be submitted along with bill.

The Contractor shall jointly record all completed work with Railways in "Measurement Book" which will be available with Railways Engineer's representative. No other work than those recorded in MB will be recognized.

Complete work shall be carried out at site as per RDSO's specification, RDSO's drawings, relevant IE Rules and acts confirming to relevant IS specification. If any RDSO's drawings related to schedule of work and approved drawing for execution of work required by the Contractor for reference purpose,

Contractor can see or collect per bearer blue print/zerox copy of the same from drawing section of the office of SrDEE/TRD/BSL on cash payment of Rs. 200/- per drawing.

No claim whatsoever will be entertained by the Railway on account of any delay or hold up the work(s) arising out of delay in approval of drawings, changes, modifications, alterations, omission and side layout plan or detailed drawings and design and or late supply of such materials as are required to be arranged by the Railway or due to any other factor on Railway account.

No claim for idle labour and idle machinery etc on any account will be entertained. Similarly no claims shall be entertained for business loss or any such loss.

13. Price Variation Clause (PVC):- As per GCC April-2022 along with latest amendments.

14. Deviation: No deviation with respect in tender condition shall be entertained.

15. Penalty :-

- 1) As per relevant clause of GCC April 2022.
- 2) A suitable token penalty shall be imposed if any deficiency in workmanship or quality of work is noticed during inspection by competent authority.

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Part-III

Prices and payments

Scope:

This chapter deals with prices to be paid for the various items of work and other amounts payable in accordance with accepted schedule of prices and rates and terms and conditions of payment here in mentioned.

Schedule of prices:

The unit prices of various items of work shall be included in schedule. All unit prices shall be firm and minor changes in basic designs shall not affect unit prices so long as such changes are agreed to by the Railway's. All unit prices shall be in Rupees.

Incidental charges:

The unit prices shall provide for loss, wastage incidental charges for transport, loading and unloading and handling of materials. It shall also include commission for dispatch by rail, completing all necessary formalities in this respect, arranging payment of wagons, collection of Railway receipt, all insurance premium, bankers' charges etc.

Payment terms & Submission of Contractor's bill:

Subject to any deduction or recoveries, which the Purchaser may be entitled to make under the contract, the Contractor shall, unless otherwise agreed to, be entitled to get following payment subject to conditions stipulated in subsequent paragraphs.

On Account Payments:

- On-Account payment for equipments, components & material required for erection will be made to the Contractor. The on-account payment for supply shall be made at the rates given in **Payment Schedule**.

All the invoices / Bills shall be accompanied by the following:

1. Supplier's Challans.
2. Inspection certificate granted by the purchaser's representative.
3. Certificate of receipt of material duly accepted by the Purchaser's Engineers.

- **Foundations:**

Payment will be made on casting of foundations blocks, with or without core holes, preparation of cable trench to the extent of 70 % of the price on the total volume of foundation blocks inclusive of muffs, as included in the approved cross-section drawings or as installed at site with permission of the Purchaser's representative.

Progress payment for supply & erection:

On completion of each items the Contractor shall be due payment to the extent of 95% of price for supply & or erection included in the **Payment Schedule**.

- **Foundations: -**

On completion of erection of mast / portal / boom and their grouting or erection of equipments on foundation blocks the Contractor shall receive payments to the extent of 95 %, less payment made earlier.

- **Other items of supply & or erection: -**

On completion of erection of other items included in tender schedule the Contractor shall receive payment to the extent of 95 % of the erection prices. For supply portion of respective item progress payment to the extent of 95 % shall be payable, less payment made earlier.

Final Payment:

On completion of all works, the Contractor shall receive payment of:

- i) Balance 5 % of the price for supply and / or erection / dismantling as per Payment Schedule.
- ii) 5 % performance guarantee submitted by the firm will be released.

Final Settlement:

On expiry of the guarantee period and issue of the certificate of final acceptance of the entire installations, the security deposit will be refunded or Bank Guarantee released to the Contractor after adjustment of any dues payable by the Contractor.

The above payment will be made to the Contractor on submission of the bill accompanied by required documents in accordance with the procedure of contract, such as verification of power of attorney from Legal department of Railway, bank guarantee for security deposit, measurement book entries and bill in Railway standard form, Contractors challans, inspection certificate granted by the Engineers, certificate of completion of work etc. All the payments shall be subject to recoveries which may be due, if any.

Taxes and duties: The rates given in tender are inclusive of all taxes, duties and 18% GST.

Law charges: The Law charges for verification of legal documents such as Bank Guarantee, Partnership deed, Power of Attorney etc. is fixed as Rs. 200/- per case. The same can also be deposited in cash Rs. 200/- per case with chief cashier, Central Railway, Bhusaval and original Money Receipt is to be submitted to this office at the time of submitting the legal document, otherwise the same will be recovered from Contractors from on account or final bill.

This specification covers the essential requirement to ensure satisfactory, reliable service and safety from fire and shock. The specifications describes certain broad requirement to which the Contractor shall work, but the fact remains that every thing can not be fully specified and omissions are likely to remain in the specification as regards final finishing of the item. The tenderer are requested to consider the same while quoting and the same to be explained separately on letter and submitted along with the tender.

Conservancy Cess Charges: The tenderer should note that the revised conservancy cess charges will be recovered from contractual bills as applicable depending upon the labour appointed by the Contractor for completion of work. The labour appointed for such particular work will be certified by Engineer's Representative/concerned SSE/TRD and is to be sent along with MB for further processing. The revised circular can be seen in this office for tenderer's ready reference.

Correspondence: The correspondence related to this work is to be made with SrDEE/TRD/BSL and a copy to Engineer's Representative or concerned SSE/TRD.

Note: This contract is a combination of various separate sanctioned works. On completion of any individual work, its final payment can be released, however performance guarantee will be released only after completion of all works.

'Letter of Credit' as Mode of Payment :

Special Condition regarding Inclusion of 'Letter of Credit' as Mode of Payment in Works Tenders or Service Tenders having advertising Tenders value of **Rs.10 Lakh and above. (Railway Board Letter No.2018/CE-I/CT/9 Date 04/06/2018)**

(i)	For all the tenders having advertised cost of Rs.10 Lakh and above, the contractor shall have the option to take payment from Railways through a Letter of Credit (LC) arrangement .
(ii)	This option of taking payment through Letter of Credit (LC) arrangement has to be exercised in IREPS (Indian Railway Electronic Procurement System-the e-application on which tenders are called by Railways) by the tenderer at the time of bidding itself and the tenderer shall affirm having read over and agreed to the terms and conditions of the LC option .
(iii)	The option so exercised shall be an integral part of the bidder's offer.
(iv)	The above option of taking payment through Letter of Credit (LC) arrangement, once exercised by tenderer at the time of bidding, shall be final and no change shall be permitted, thereafter, during execution of contract.
(v)	In case tenderer opts for payment through LC, following shall be the procedure to deal release of payment through LC: <ol style="list-style-type: none"> The LC shall be a sight LC. The contractor shall select his Advising/Negotiating bank for LC. The incidental cost towards issue of LC and its operation thereof shall be borne by the contractor. SBI, New Delhi, Main Branch will be the nodal branch for issue of LCs based on online requests received from Railway Accounts Units for tenders opened in financial year 2018-19. SBI branches where the respective Railway Accounts Office has its Account (Local SBI branch) will be the issuance/reimbursing branch for LC issued under this arrangement. The Bank shall remain same for this tender till completion of contract. The incidental cost @0.15 % per annum of LC value, towards issue of LC and operation thereof shall be borne by the contractor and shall be recovered from his bills. The LC shall be opened initially for duration of 180 to 365 days in consultation with contractor. The LC shall be extended time to time as per the progress of the contract, on the request of the contractor. The value of LC to be opened initially as well as extended thereafter shall be finalised by the engineer in consultation with the contractor on the basis of expected progress of work. The LC terms and conditions shall inter-alia indemnify and save harmless the Railway from and against all Losses, claims and demands of every nature and description brought or recovered against the Railways by reason of any act or omission of the contractor, his agents or employees, in relation to the Letter of Credit (LC). All sums payable/borne by Railways on this account shall be considered as reasonable compensation and paid by contractor. The LC terms and conditions shall inter-alia provide that Railways will issue a Document of

	<p>Authorization (format enclosed as Annexure-2) after passing the bill for completed work , to enable contractor to claim the authorized amount from their bank .</p> <p>(g) The acceptable, agreed upon document for payments to be released under the LC shall be the Document of Authorisation.</p> <p>(h) The Document of Authorisation shall be issued by Railway Accounts Office against each bill passed by Railways.</p> <p>(i) On issuance of Document of Authorization, a copy of Document of Authorisation shall be posted on IREPS for download by the contractor . A digitally signed copy of Document of Authorization shall also be sent by Railway Accounts Office to Railway's bank (Local SBI Branch).</p> <p>(j) The contractor shall take print out of the Document of Authorisation available on IREPS and present his claim to his bank (advising Bank) for necessary payments as per LC terms and conditions. The claim shall comprise of copy of Document of Authorization, Bill of Exchange and Bill.</p> <p>(k) The payments against LC shall be subject to verification from Railway's Bank(Local SBI Branch).</p> <p>(l) The contractor 's bank (advising Bank) shall submit the documents to the Railway's Bank(Local SBI Branch).</p> <p>(m) The Railway's Bank(issuing bank) shall , after verifying the claim so received w.r.t the digitally signed Document of Authorisation received from Railway Accounts Office, release the payment to The contractor 's bank (advising Bank) for crediting the same to contractor's account.</p> <p>(n) Any number of bills can be dealt within one LC, provided the sum total of payments to contractor is within the amount for which LC has been opened.</p> <p>(o) The LC shall be closed after the release of final payment including PVC amount, if any to the Contractor.</p> <p>(p) The release of performance guarantee or security deposit shall be dealt directly by Railway with the Contractor i.e. not through LC.</p>
(2)	For opening of LC, executive department shall make a request Letter to concerned Accounts Department on a format placed as Annexure -1
(3)	Necessary Changes in IREPS and IPAS e-application have already been carried out. For having option for payment to contractors through LC.

		Annexure-1
Request Letter from Executive Branch to Accounts Office for opening of LC		
No.----- Office of -----, <div style="text-align: right;"> -----Railway Date----- </div> <div style="text-align: center;"> Sub:- Opening of LC Ref:- Supply Order/ Contract Agreement No. It is requested to open a sight LC against the above referred Order / Agreement in favour of -----The details of beneficiary are as under - </div>		
	(i)	Name of Contractor /Supplier -
	(ii)	Vendor Code
	(iii)	Address
	(iv)	Tender No.
	(v)	Contract Agreement No.
	(vi)	Description of Goods/Service
	(vii)	Value of Contract
	(viii)	Stages of payment
	(ix)	Expected payment within 6 months (LC Amount)
	(x)	Beneficiary bank details a) Bank name b) Address c) Account No. d) IFSC code
	(xi)	Validity/Period for which LC is to be opened
It is certified that the Supplier/ Contractor has exercised the option of taking payment due against the tender through LC arrangement in IREPS portal at the time of bidding itself and the option has been flagged in the IREPS. This has the approval of -----		
<div style="text-align: right;"> (Signature) Name----- Designation----- (Official Seal) </div>		

Annexure-2

LCDA No. (18 DIGIT IPAS GENERATED No.)

Date-----

DOCUMENT OF AUTHORIZATION

Reference (i) Works Contract / Supply Contract No.-----

-----Date-----

(ii) Inland Letter of Credit No.-----

----- Date-----

This document is issued against Contract No.----- (From IREPS) -----
- Dated----- for Supply/Work of----- Description
of Goods/ Work From IREPS-----

The beneficiary or the aforementioned Letter of Credit M/S.....(Name and Vendor code)----- (Vendor code-----as per IREPS -----) is entitled to receive payment aggregating INR---SSS----- (From Abstract of Bill Passed) out of a total LC Amount of -----INR----- (From Master Table of LC opened)-----against the first/second commercial Invoice No.(From IPAS-- -----Dated From IPAS---For INR (From IPAS-----raised against the above contract from State Bank of India----- (Branch) LC Master Table)----- on the strength of this Certificate.

The details of payment already made to the beneficiary under this Letter of Credit are as follows:						
S.No .	Invoice No.	Invoice Date	Invoice Amount (INR)	LCDA No.	LCDA Date	Amount Paid (INR)
Total Paid						

This Payment-----

LC Balance AFTER THIS PAYMENT-----

Signature of authorized

Railway authority

Name-----

Designation-----

(Official Seal)