

SCHEDULE of RATE/QTY

TENDER No. 05-TRD-JU-ETENDER-26-27

Name of work: TRD work in connection with provision of Interlocking of 08 Nos. of manned LC gates i.e. LC-143, 147A, 147, 137 in MTD-JU section, LC-25, 18, 16 in LN-MJ section and LC-80 in RTGH-DNA section over JU Division.

S. No.	Description of Item	Unit	Qty	Rate	Amount
1	Concrete for foundation and plinth in all type of soil including hard / rocky soil (including excavation and supply of all material viz. sand, cement and ballast, padding etc.)	cum	50	7982	399100.00
2	Supply of rolled or fabricated and galvanized traction mast, TTC, Portals, AT masts, feeder mast, bridge masts, DA, SPS etc.	MT	17	139525	2371925.00
3	Erection of rolled or fabricated and galvanized traction mast, TTC, Portals, AT masts, feeder mast, bridge masts, DA, SPS etc.	MT	17	11021	187357.00
4	Supply of material for single earth electrode with earth pit complete as per RDSO Drg. No. ETI/OHE/P/7020 or latest	Nos.	16	4228	67648.00
5	Erection of single earth electrode with pit as per RDSO Drg. No. ETI/OHE/P/7020 or latest.	Nos.	16	1684	26944.00
6	Supply of structure bonds	Nos.	60	911	54660.00
7	Erection of structure bonds	Nos.	60	163	9780.00
8	Supply & erection of various types of enamel caution boards (approx. area in range of 500-1000 sq. cm. per board).	Nos.	100	326	32600.00
9	Supply of enamel/retro reflective structure plate/boards for traction use (approx. area in range of 1000-1200 sq.cm. per board).	Nos.	50	1101	55050.00
10	Erection of enamel/retroreflective structure plate/boards for traction use (approx. area in range of 1000-1200 sq.cm.).	Nos.	50	115	5750.00
11	Supply of enamel/ retroreflective danger/caution, unwired turnout, engine stop, sigma boards and other similar type of boards (approx. area in range of 1200-6000 sq.cm. per board).	Nos.	30	2376	71280.00
12	Erection of enamel/ retroreflective danger/caution, unwired turnout, engine stop, sigma boards and other similar type of boards (approx. area in range of 1200-6000 sq.cm.).	Nos.	30	588	17640.00
13	Supply of 10 KVA, 25 KV/ 240 V Single phase, Oil filled Auxiliary Transformer with all fittings as per RDSO Specification No.ETI/PSI/15 (08/2003) or Latest.	Nos.	12	101942	1223304.00

14	Oil filtration, erection, testing and commissioning of 25KV/240 volts, 10 KVA LT supply transformer	Nos.	12	5809	69708.00
15	Supply of 5 KVA, 25 KV/ 240 V Single phase, Oil filled Auxiliary Transformer with all fittings as per RDSO Specification No. ETI/PSI/15 (08/2003) or Latest.	Nos.	4	85210	340840.00
16	Oil filtration, erection, testing and commissioning of 25KV/240 volts, 5 KVA LT supply transformer	Nos.	4	4102	16408.00
17	Supply of 25kV drop out fuse switch assembly complete with fuse carrier & fuse element	Nos.	16	24180	386880.00
18	Erection of 25kV drop out fuse switch assembly complete	Nos.	16	1759	28144.00
19	Supply of solid core (9T) suspension insulator assembly including suspension clamp double strap & suspension device with nut bolt & washer	Nos.	16	7502	120032.00
20	Erection of solid core (9T) suspension insulator assembly including suspension clamp double strap & suspension device with nut bolt & washer	Nos.	16	657	10512.00
21	Supply of complete set of Copper jumper of 50 mm ² & hard drawn copper wire of 7 mm dia with terminal lug	Nos.	16	3752	60032.00
22	Erection of complete set of Copper jumper of 50 mm ² & hard drawn copper wire of 7 mm dia with terminal lug	Nos.	16	852	13632.00
23	Supply of 50 x 6 mm MS flat earth bus.	m	640	220.0	140800.00
24	Erection of 50 x 6 mm MS flat earth bus.	m	640	74.00	47360.00
25	Supply of Copper strip size 25x3 mm for AT LV Terminal earthing	m	320	868	277760.00
26	Erection of Copper strip size 25x3 mm for AT LV Terminal earthing	m	320	97.65	31248.00
27	Supply of Anti climbing device for AT Station	Nos.	16	1976	31616.00
28	Erection of Anti climbing device for AT Station	Nos.	16	431	6896.00
29	Supply of LV terminal box suitable for termination of XLPE cable	Nos.	16	2793	44688.00
30	Erection of LV terminal box suitable for termination of XLPE cable	Nos.	16	517	8272.00
31	100% extra for work under power block				
a	Erection of complete set of Copper jumper of 50 mm ² & hard drawn copper wire of 7 mm dia with terminal lug	Nos.	16	852	13632.00
b	Erection of solid core (9T) suspension insulator assembly including suspension clamp double strap & suspension device with nut bolt & washer	Nos.	16	657	10512.00
	Total				6182010.0

Note: -

1. Rates should be inclusive of GST as applicable and other applicable expenses.
2. The work should be carried out as per applicable rules & regulations, manuals and applicable code of practices.
3. The tender offer submitted should be complete with financial status, previous experience, and other documents.
4. Contractor/Firm should have Valid Electrical contractor license.
5. Contractor/s is/are bound to execute formal agreement on the documents available in this office.

**Sr. Divisional Electrical Engineer/TRD
North Western Railway, Jodhpur**

TECHNICAL SPECIFICATION AND OTHER CONDITIONS

(A) GENERAL TECHNICAL SPECIFICATIONS

1.0 Scope of Work: TRD work in connection with provision of Interlocking of 08 Nos. of manned LC gates i.e. LC-143, 147A, 147, 137 in MTD-JU section, LC-25, 18, 16 in LN-MJ section and LC-80 in RTGH-DNA section over JU Division.

- 1.1 The work shall be carried out in accordance with the approved standard of electric traction works over Indian Railways.
- 1.2 After completion of Electrical work, the contractor will undertake the Civil Engg. work to repatch the wall/floor plaster and fill up the recesses etc. occurred during execution of work.
- 1.3 Released material: Old released material will be returned to concern SSE/JE TRD at nearest TRD depot.
- 1.4 The material supplied shall be of good quality and of reputed make / approved sources if any.

2.0 Additional Specification

- 2.1 The work shall be carried out strictly as per applicable rules & regulations, manuals and applicable code of practices.
- 2.2 If any minor alterations are found necessary the contractor will do the same within the quoted rates.
- 2.3 The work shall be carried out in best workman like manner and any defect in the work of changes in the design etc. as pointed out by Inspecting authority shall be carried out by the contractor within quoted rates.
- 2.4 Proper shutdown of OHE supply if required to be approved from concern JE/SSE.
- 2.5 If required & felt necessary by Railway, the Tower wagon / rail crane shall be provided to contractor during the power block work, free of cost by Railway.
- 2.6 Manual erection of OHE may be required to be done as per site conditions for which no extra payment will be done by Railway.
- 2.7 In case of any dispute regarding the lay out and any other technical matter, the decision of Sr. Divisional Electrical Engineer (TRD) will be final and binding on the contractor.
- 2.8 Contractor may be required to work at night time also depending upon site condition and traffic movement at site for which no extra payment will be made by Railway.

3.0 Procurement and inspection of material

- 3.1 All material shall be procured from RDSO/CORE approved vendors wherever approved sources are available.
- 3.2 All the equipment, material, fittings etc. shall be subjected to inspection by RDSO/RITES/Railways. The inspection authority (RDSO/RITES/Railways) will be nominated by Sr. DEE (TRD), normally in accordance with Rly. Bd. letter no. 2000/RS(G)/379/2 dt. 06.09.2017 (Pre-inspection of material by RITES/RDSO – Minimum value of Stores), however in the event of exigencies Railway reserves the right to change the inspecting authority from RITES/RDSO to consignee.
- 3.3 The contractor will seek nomination of inspecting authority & inspection site from Sr. DEE (TRD) duly submitting the details of order given to concern vendor.
- 3.4 RITES/RDSO inspection charges shall be borne by the Railways.
- 3.5 Inspection of material may be done at manufacturer's premises/ manufacturer's test facilities /Contractor's Depot / work site as decided by Sr. DEE (TRD).

- 3.6 Contractor shall provide at his own cost all necessary assistance, T&P and bear the cost for carrying out testing of material at nominated location as per requirement.
- 3.7 Any sample, if necessary, may be sent by Railway's representative to manufacturer/test house for ascertaining originality/parameters as per specifications and cost of test shall be borne by the contractor.
- 3.8 Pre commissioning test if needed on various equipment may be carried out jointly by the contractor.

4.0 Progress and time of completion

- 4.1 The work will commence immediately after receipt of the detail acceptance letter and currency of contract is **12 months** from the date of issue of advance acceptance letter.
- 4.2 The agreement is to be signed within SEVEN DAYS after receipt of detailed acceptance letter.

3.2 Completion Test

On completion of installation, the following tests confirming to the relevant specification, I.E. Rules, applicable code of practices and manuals shall be carried out.

- 6.0 If any damage is caused to the railway assets/properties during execution of schedule work, it shall be the responsibility of the contractor to repair/make good the loss promptly at his own cost to the entire satisfaction of the Electrical Engineer (TRD)/SSE/JE/ In charge.
- 7.0 All the waste material shall have to be removed on the same day after execution of work, by the contractor.
- 8.0 All the rejected material should be removed from the site immediately by the contractor.
- 9.0 No part of work shall be got executed from any alternative Agency.
- 10.0 Bad workman ship pointed out by the Sr. Divisional Electrical Engineer (TRD) or his representative shall be rectified by the contractor at his own cost.
- 11.0 The contractor shall sign the site order.
- 12.0 Wherever an item of work covers erection, such item shall include all bolts, nuts and washers of GI/SS etc. as per CORE/RDSO latest specification & drawing.
- 13.0 All works shall be carried out strictly in accordance to the CORE/RDSO drawings, specifications and guidelines if any. However, any modified arrangement if in vogue in North Western Railway or suggested by Sr.DEE/TRD/JU, the work shall be executed accordingly without any alteration in accepted rates.
- 14.0 Explanatory note for various items of works in the Schedule of item, quantities and jobs are given. In case of disputes between above standards if any, the decision of concerned Sr.DEE/TRD is the final and contractor is bound to act accordingly.
- 15.0 The special condition & Technical specifications for schedule items are enclosed and Tenderer shall go through them thoroughly before submitting offer.
- 16.0 Inspection:** After completion of work, the same shall be inspected by the Sr. Divisional Electrical Engineer (TRD), or his representative for the quality, and completion of the work.

(B) EXPLANATORY NOTES OF NS ITEMS AND TECHNICAL SPECIFICATIONS

Technical specification: - For the purpose of this work following are the specifications, terms/conditions.

Item No.	Detail Description of items in Schedule of Quantity and Rates
NS-01	<p>Concrete for foundation and plinth in all type of soil including hard / rocky soil (including excavation and supply of all material viz. sand, cement and ballast, padding etc.)</p> <p>1.1 The price shall cover excavation, supply and handling of all materials and accessories, temporary arrangement for excavation in all type of soil (hard/rocky/normal/black cotton), casting concrete including framework wherever necessary, tamping of concrete, grouting of OHE structures and finishing the top of concrete foundation or anchor blocks as per approved designs/drawings. The price shall also include dismantling of all connected temporary arrangements, back filling with earth and compacting the same to the required height and width as per drawings to ensure safety of foundation and removal of soil out of the railway boundary. The payable volume of the foundation shall be design one as shown in the approved drawings, irrespective of the actual configuration assumed by the later. The depth of the excavation shall be measured from the foundation level to the maximum excavated point. For the computation of volume, the volume of steel work shall be ignored. The prices shall also cover the cost of diversion of masonry/earth drain wherever necessary for casting of foundation.</p> <p>1.2 OHE structures foundation shall be cast as prescribed in RDSO letter no. TI/CIVE/FND/0 Dtd. 9/9/02 or latest.</p> <p>1.3 Foundation casting shall be done in compliance of IS: 456:2000 in each & every respect particularly material quantity, mixing, casting curing, frame work etc. Material used i.e. cement, aggregate and water shall be confirming to latest versions of IS 458 and relevant IS.</p> <p>1.4 The graded coarse aggregate 40 mm nominal size table 2 of the latest version of IS: 383-1970 shall be used for foundation. A coarse aggregate for grouting and muffing shall be 20 mm grade nominal size as table 2 of the latest version of IS: 383-1970 (Specification for coarse and fine aggregate for natural sources for concrete). Fine aggregate shall be graded from 10 mm down words.</p> <p>1.5 The price shall be same for any shape for size of concrete blocks. In calculating the individual volume of concrete, fraction of a cubic meter beyond the third decimal shall be rounded off to the next nearest third decimal.</p> <p>1.6 The prices shall apply for concreting of all foundations for masts, gantries, portals, anchor blocks for guy rods, and fencing uprights.</p> <p>1.7 Cost of all concrete will be paid for only under this item and the prices of other item shall not include.</p> <p>1.8 For purposes of compilation of volume of concrete under item, the volume of concrete shall include the volume of sand and bitumen in sand cored foundation.</p> <p>1.9 For purposes if compilation of concrete the volume of each muff for all masts shall be taken as 0.02 cum., except for masts with balance weights and for column of portal, each head span masts, 2 or 3 track cantilever masts and special fabricated masts for which the volume of</p>

	<p>muff shall be taken as 0.08 cum. irrespective of the size and shape of muff on a flat basis.</p> <p>1.10 Type/Grade of foundation shall be as per standard drawings/approved drawings by this office and Mixture for casting of foundation shall be as per standard of IS 456 – 2000 (explained as Part – II Chapter – II of foundation).</p> <p>1.11 Curing of foundation shall be done by contractor for 28 days.</p> <p>1.12 No scroll will be supplied by Railway, contractor will use his scroll.</p> <p>1.13 Necessary details like type, implantation, chainage shall be supplied by the contractor.</p> <p>1.14 All tests on the test cubes shall be carried out at approved institutes and cost of test shall be borne by the contractor.</p> <p>1.15 Contractor has to prepare standard cube of size 150x150x150 mm or as desired by testing laboratory, for every 25 cum of foundation cast & same is to be tested in the Govt. approved laboratory as per IS-516/1959 (or latest) to obtain the result as per IS 456:2000 or latest. The test result of cube to be submitted to Railways in duplicate. In case the quantity of concrete is less than 25 cum then at least one cube to be prepared and tested.</p> <p>1.16 To make cubicle for OHE structure foundation, digging & earth excavation should be carried out very cautiously so that Electrical / Telecommunication / Signaling cables passing through underground enroute the rail periphery do not get damaged.</p>
NS-02	<p>Supply of Rolled or Fabricated and Galvanized Mast, TTC, Portal, SPS etc.</p> <p>2.1 The price includes the supply of Fabricated steel structure with SPS, based on RDSO specification No. ETI/OHE/13 (4/84) with latest A&C slip.</p> <p>2.2 The price includes supply of traction main masts of OHE comprising rolled and broad flange beams and fabricated structures. The price shall cover cost of fabrication, Galvanization, alignment and setting before grouting of individual traction masts whether rolled or fabricated and shall include masts for head spans. The prices shall also cover cost of supply of the alignment and setting before grouting, wherever required of portals, TTC, gantries, 2/3 tracks cantilever structures including tower steel work for feeders for traction Sub-station drop arms, standard super masts and suspension brackets for feeders and return conductors, dwarf masts or stub masts for anchoring, complete with anchor plates drilled and welded in position, multiple cantilever cross arm, chairs, adopters for bracket assemblies and all other small part steel works the erection of which is carried out by the contractor. Galvanization thickness shall be as per Railway specification No. ETI/OHE/13 (4/84) with latest amendment. The price also includes supply of all type of SPS required in the whole work.</p> <p>2.3 For purpose of payment the weights of individual traction masts and masts of head span whether rolled or fabricated shall be determined for each type on the basis of the payable weight as per latest RDSO / CORE guidelines. The payment for fabricated SPS item will be paid as per weight schedule, if there any changes in I section / channel size payment will be made as per actual black weight used after approval of Railway. For special types, the payable black weight per meter length will be indicated by the purchaser at the time of approval of drawings. Weight of steel mentioned in RITES inspection sheet can also be</p>

	<p>considered for payment.</p> <p>2.4 For standard fabrication steel work for which RDSO/CORE approved drawing are available, the weight of steel work is specified in RDSO/CORE latest drawing / instructions shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not in conformity with the unit sectional weight as per the latest IS specification, the weight of the fabricated steel work shall be calculated on the basis of latest IS specification, and the same will be considered for payment for the nonstandard fabricated steel work, the calculated weight to be considered for payment under this item shall be included in the relevant drawing based on latest IS sectional weight at the time of submitting the designs for approval of the purchaser. There will be no addition for increased weight due to galvanizing or painting or painting or reduction for holes or screw cut.</p> <p>2.5 In case, if required size of channels are not available as per approved drawing, higher size channels can be used with the approval of Sr.DEE/TRD and payment as per actual black weight will be paid.</p> <p>2.6 The material is to be procured from the RDSO/CORE approved sources.</p>
NS-3	<p>Erection of Rolled or Fabricated and Galvanized Mast, TTC, Portal, SPS etc.</p> <p>3.1. The price includes the erection of Fabricated steel structure with SPS, based on RDSO specification No. ETI/OHE/13 (4/84) with latest A&C slip.</p> <p>3.2. The price shall include erection of traction main masts of OHE comprising rolled and broad flange beams and fabricated structures. The prices also covers cost of the alignment and setting before grouting, wherever required, of portals, TTC, gantries, 2/3 tracks cantilever structures including tower steel work for feeders for traction Sub-station drop arms standard super masts and suspension brackets for feeders and return conductors, dwarf masts or stub masts for anchoring, complete with anchor plates drilled and welded in position, multiple cantilever cross arm, chairs, adopters for bracket assemblies and all other small part steel works the erection of which is carried out by the contractor. Galvanization thickness shall be as per Railway specification No. ETI/OHE/13 with latest amendment. The price shall also include erection of all type of SPS required in the whole work.</p> <p>3.3. The price also includes the cost of stenciling of location number, height of contact wire, implantation, RL etc. on masts/portal uprights in the manner as directed by the Purchaser. The price also includes the straightening of masts/portal Uprights bent during transit and cutting of masts/portal uprights to suit the site conditions.</p> <p>3.4. The price includes touching up of Galvanization damaged during transportation / carting with cold ZINC paint.</p>
NS-4	<p>Bonding & Earthing</p> <p>1.0 Bonding and earthing shall be done in accordance with the code for bonding and earthing for 25 kV, A.C. 50 Hz, Single Phase Traction System (ETI/OHE/71 (11/90)).</p> <p>2.0 All types of bonds shall be of mild steel of not less than 200 sqmm cross sectional area. Normally 40 x 6 mm MS flat shall be used for bonding.</p> <p>3.0 <u>Supply of bonds</u>: It includes supply of material for various types of traction bonds with fasteners. The price includes supply of MS flat size 40 x 6 mm, GI fasteners of size 16 x 50 x 38 mm and insulation</p>

	<p>sleeves where required. The fasteners shall be procured from RDSO/CORE approved sources only.</p> <p>4.0 <u>Erection of bonds</u>: It includes fabrication and erection of various types of traction bonds with fasteners. The bonds shall be made with MS flat size 40 x 6 mm and fabricated in accordance to the respective drawings for that type of bonds and erection of the same with 16 x 50 x 38 mm size GI fasteners at both ends and insulation sleeves to be provided wherever required, shaping of flats, drilling of holes size 17.5 mm (on rail & flats). Proper chamfering of holes in rail to be done and ensured by contractor. These bonds are to be painted with two coat of red oxide and two coat of black bituminous paint. The price also covers, wherever required, removing of existing bonds if replacement is involved, providing suitable clamps for clamping bond strip and making chase in floor and re-patch same after burial of bond strip.</p> <p>5.0 <u>Longitudinal & Transverse Bonding</u>: Longitudinal and transverse bonding of tracks, bonding of structures including traction structures to rails and associated earths shall be provided in accordance with the applicable code and manuals.</p> <p>6.0 <u>Traction Structure Bonding</u>: Every traction mast or structure shall be bonded to a non-track circuited rail unless it is provided with a continuous earth wire or it is individually earthed by means of an earthing station.</p> <p>7.0 <u>Earthing Station</u>: Earthing station shall be as per RDSO Drawing No. ETI/OHE/P/7020.</p> <p>8.0 Earth resistance value of each earthing station shall be in accordance with RDSO code of practice for earthing – TI/SPC/PSI/ERTHNG/0210. If value of earthing station goes beyond prescribed limit, the contractor shall make arrangement for earth treatment as per IS 3043-2018 till the value comes under limit.</p> <p>9.0 <u>Fixing</u>: Bonds shall be fixed in accordance with RDSO drawing no. ETI/OHE/P/7000.</p> <p>10.0 Bond should be opened with the permission of concern TRD supervisor or his representative, if required and shall be re-fixed immediately after painting. Surface of bond strip coming in contact of rail / OHE structure / earth electrode shall not be painted to ensure proper electrical connectivity between bond and rail / OHE structure / earth electrode.</p>
NS-05	Refer Sr. no. 04 above.
NS-06	Refer Sr. no. 04 above.
NS-07	Refer Sr. no. 04 above.
NS-08	<p>Supply & erection of various types of enamel caution boards (approx. area in range of 500-1000 sq.cm. per board)</p> <p>1 The price covers supply of various types of caution boards as per RDSO drawing and site requirement such as: General caution notice board for staff (drawing no. RE/33/P/7561 Mod-B or latest), General caution notice board for public (drawing no. RE/33/P/7551 Mod-C or latest), Caution plate (drawing no. ETI/OHE/P/7531 Mod-C or latest), Danger notice plate (drawing no. ETI/OHE/SK/104 or latest) etc. Enamelling shall confirm to RDSO specification no. ETI/OHE/33 or latest.</p> <p>2 The price also includes supply and erection of small part steel complete with nuts-bolts, clamps, fasteners, nylon washers etc. suitable for fixing the boards. It also covers removal of existing boards with fasteners etc. if required.</p>

NS-09	<p>Supply of enamel/retro reflective structure plate/boards for traction use (approx. area in range of 1000-1200 sq.cm. per board)</p> <p>1 The item covers the supply of caution live wire board (drawing no. ETI/OHE/P/7541 Mod-A or latest) etc. Enamelling shall confirm to RDSO specification no. ETI/OHE/33 or latest.</p> <p>2 The item also covers the supply of retro-reflective number plate/board on traction masts or structures based on RDSO specification No.- TI/OHE/33A (12/97) Rev 8 or latest & drawing no. ETI/OHE/P/7503 Rev. E or latest and nut bolt (ETI/OHE/18(4/84) Rev 5 with latest A&C slip. The number plate background i.e. traffic blue colour will be non-reflective type with no borders, only the letters and figures will be retro-reflective type in deep yellow colour.</p> <p>3. The price also includes supply of small part steel complete with nuts-bolts, clamps, fasteners, nylon washers etc. suitable for fixing the boards.</p>
NS-10	<p>Erection of enamel/retro reflective structure plate/boards for traction use (approx. area in range of 1000-1200 sq.cm.)</p> <p>The price covers erection of enamel/retro-reflective plates/boards including small part steelwork, nuts-bolts, clamps, fasteners, nylon washers etc. It also covers removal of existing boards with fasteners etc. if required.</p>
NS-11	<p>Supply of enamel/retro reflective danger/caution, unwired turnout, engine stop, sigma boards and other similar type of boards (approx. area in range of 1200-6000 sq.cm. per board)</p> <p>1 The item covers supply of danger plate in LC gauge (drawing no. ETI/C/0069 Mod-C or latest), unwired turnout board (drawing no. ETI/OHE/P/7573 Mod-A or latest), engine stop board (drawing no. ETI/OHE/P/7572 Mod-B or latest), power block limit board (drawing no. ETI/OHE/P/7574 Mod-B or latest) etc. Enamelling shall confirm to RDSO specification no. ETI/OHE/33 or latest.</p> <p>2 The item also covers supply of retro reflective Sigma on non retro reflective back ground plate (drawing no. TI/DRG/OHE/PLTBRD/RDSO/00036/120 or latest) and as per RDSO specification No-TI/OHE/33A (12/97) Rev 8 or latest.</p> <p>3 The price also includes supply of small part steel complete with nuts-bolts, clamps, fasteners, nylon washers etc. suitable for fixing the boards.</p>
NS-12	<p>Erection of enamel/retro reflective danger/caution, unwired turnout, engine stop, sigma boards and other similar type of boards</p> <p>The price covers erection of enamel/retro-reflective plates/boards including small part steelwork, nuts-bolts, clamps, fasteners, nylon washers etc. It also covers removal of existing boards with fasteners etc. if required.</p>
NS-13 & 14	<p>Supply, erection, testing and commissioning of 10 KVA, 25 KV/240 V AC single phase LT supply transformer complete with all accessories:</p> <p>The price shall include supply, erection, testing & commissioning of 25 KV/240V, 10 KVA LT supply transformer complete with all standard fitting, transformer oil, terminal connections on AT mast. The LT supply transformer shall confirm to latest RDSO specification. The price shall cover oil filtration (if</p>

	required) and pre commissioning tests as approved by the Railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.
NS-15 & 16	<p>Supply and erection of 5 KVA, 25 KV/ 240 V Single phase, Oil filled Auxiliary Transformer with all fittings as per RDSO Specification No. ETI/PSI/15(08/2003) or Latest.</p> <p>The price shall cover supply, erection, testing and commissioning of 25 KV/240V, 5 KVA LT supply transformer complete with all standard fitting, transformer oil, terminal connections on a mast. The LT supply transformer shall confirm to latest RDSO specification. The price shall also cover oil filtration (if required) and pre commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.</p>
NS-17 & 18	<p>Supply and erection of 25 KV drop out fuse switch assembly complete with fuse :</p> <p>The price shall cover supply and erection of 25 KV drop out fuse switch assembly complete with insulators, fuse, fuse wire, mounting accessories and terminal connections as required. The price shall not include the cost of SPS work, which shall be paid separately in item no. 02 of "schedule of work".</p>
NS-19 & 20	<p>Supply and erection of solid core (9-Tone) suspension insulator assembly including suspension clamp double strap and suspension devise with nut bolt and washer:</p> <p>The price shall cover for supply and erection of solid core (9-Tone) suspension insulator assembly including suspension clamp double strap and suspension device with nut bolt and washer. Price shall also cover for erection of solid core (9 Tonne) suspension insulators along with all fittings.</p>
NS-21 & 22	<p>Supply and erection complete set of Copper Jumper of 50 Sq.mm and hard drawn copper wire of 7 mm dia with terminal lugs:</p> <p>The price shall cover supply and erection of copper jumper with all components and fittings required for providing a flexible copper jumper connection.</p>
NS-23 & 24	<p>Supply & Erection of 50mm x 6mm MS flat earth bus:</p> <p>It covers supply and erection of 50mm x 6 mm MS flat earth bus including all material required for fixing of earth bus for earthing of Interrupters, Isolators, Structures, LA & PT, Structure, Main earth bus to rail & Main earth circuit with components i.e. Nut, Bolt and washers as required at site. The prices shall cover the erection of earth bus either buried at the depth 300mm below ground level painted with two coats of red oxide zinc chromate primer and two finishing coats of bitumen or fixed on wooden gutties on wall. It shall include connecting the earth bus to earth electrodes and to various floor on walls mounted equipments or structures to be earthed and also connections to non-track circuited rails where ever required. It shall also cover the cost of making recesses in concrete foundations block or floor or cubicle and covering them up. The connections of earth strip to various equipment structures shall be made with GI bolt and nuts and spring washers / lock nut as per RDSO specification.</p>
NS-25 & 26	<p>Supply and erection of copper strip size 25 mm x 3 mm for AT's LV terminal earthing:</p> <p>The price shall cover supply and erection of 25 mm x 3 mm copper strip for LV terminal earthing with nut, bolt and washer.</p>

NS-27 & 28	Supply and erection of anti climbing device on AT mast as per RDSO's drawing The price shall cover supply and erection of an anti-climbing device consisting of barbed wire, galvanized steel fixtures mounted on the masts below the transformer as per RDSO's drawing No.ETI/PSI/037.
NS-29 & 30	Supply and erection of LV terminal box The price covers supply and erection of LV termination on box assembly as per drawing no. ETI/PSI/0310 or latest. The size of box must be suitable for accommodating all the equipments suitable for 5/10/25kVA AT. The rating of all the busbar, switches, fuses, protective devices and indication connected in the box must be matched and suitable for AT as per RDSO guidelines. The board must be erected at the place as directed by Railway representative.
NS-31	100% extra for work under power block: This item covers payment of working under power block, which includes any erection work as per schedule done under power and /or traffic block provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the purchaser from time to time. Block working of more than 4hrs. would be considered as non-power block working and will not be paid under this item.

(C) OTHER TECHNICAL CONDITIONS

1.0 Tools and Plants

During the period of erecting, testing and commissioning the contractor on his own cost shall make arrangement for necessary tools and plants including hydra, road crane etc. required for transportation, handling, erecting, testing and commissioning of various equipment at site of work covered under the contract.

2.0 Standard Specification

Wherever a reference to any specification appears in this quotation paper, the same shall be taken as a reference to the latest version of the said specification.

3.0 Other Conditions

- A.** Contractor shall also employ following Qualified Engineers during execution of the allotted work:
 - (i) One Qualified Graduate Engineer when cost of work to be executed is Rs 200 lakh and above.
 - (ii) One Qualified Diploma Holder Engineer when cost of work to be executed is more than Rs 25 lakh, but less than 200 lakh.
- B.** GST/Sales tax octroi, Royalty, Toll Tax or any other taxes levied/leviable by the central or State Govt. Local Bodies shall be borne by the contractor. No such other taxes on contractor's labour or material will be paid by Railway. This should be kept in view while tendering.
- C.** The quantities given above are approximate and are subject to variation plus/minus as per variation clause mentioned in GCC applicable at the time of opening of tender.

4.0 MINIMUM ELIGIBILITY CRITERIA

All Technical and Financial Criteria shall be governed by GCC of works 2022

A. Definition of similar nature of work:

Supply, erection, testing & commissioning of 25KV / 240V, 5KVA, 10KVA & above LT supply transformers.

or

Execution of single phase 50Hz 25 kV/2x25 kV AC OHE.

or
Execution of 66 KV or higher voltage 3 phase Grid Sub Station.

or
Execution of switching station (SP, SSP) on single phase 50 Hz 25 kV/2x25 kV AC.

or
Execution of Traction Sub Station work of 25kV/2x25 kV AC Traction Sub Station.
(Authority: PCEE/NWR office letter no. NWR-HQ 0ELCT(TR)/22/2020 Part-(1) dt. 10.02.2023).

B. The Contractor/firm should have a valid Electrical contractor license

5.0 Procedure for undertaking digging work in the vicinity of Signaling, Electrical and Telecommunication cables:-

Earth digging and soil excavation to be carried out very cautiously so that Electrical/Telecommunication/Signaling underground cables do not get damaged. If any Electrical/Telecommunication/Signaling underground cable gets damaged during work, then as per HQ/RB guidelines penalty amount of the same shall be borne by the contractor.

6.0 Warranty: -

Items for which the warranty offered by manufacturer is more than one year, contractor will submit the warranty card of the item duly filled in all respect to consignee.

- A** The contractor shall warranty that all materials & equipment's to be supplied and installed as per this tender shall be free from defects and faults in design, material, workmanship and manufacture and shall be of the highest quality and consistent with the established and generally accepted standard for materials of the type ordered and in full conformity with the contract specifications.
- B** The contractor shall give warranty / provide maintenance for satisfactory working of all the equipment's & installations erected & commissioned by him in this tender, for a period of **ONE YEAR** from the date of commissioning.
- C** During the period of Warranty, the contractor shall keep available experienced engineer & technician and necessary equipment to attend to any defective installation. The Contractor shall bear the cost of all modifications, additions or substitutions that may be considered necessary due to faulty material, decision regarding this shall rest with the Sr.DEE/TRD/NWR/Jodhpur.
- D** During the period of Warranty, the contractor shall be liable for the replacement of any equipment & any parts which may be found defective, whether such equipment be of his own manufactured or those of his sub-contractor, whether defect arising from faulty design, material, workmanship or negligence in any manner on the part of the Contractor, at his (Contractor's) own expenses. In case of defect of similar type detected in contractor's equipment & components during the warranty period, the contractor shall replace complete lot of the items irrespective of the fact that whether all such items have failed or not. The Contractor shall bear the cost of repair carried out on his behalf by the Purchaser at site due to urgent requirement. In such a case, the Contractor shall be informed in advance of the repair proposed to be carried out by the Purchaser.
- E** If it becomes necessary for the contractor to replace or renew any defective portion/s of the system under this clause, the provisions of this clause shall apply to the portion of equipment/component/system so replaced for further period of 12 months from the date of such replacement or renewal or until the end of the warranty period whichever may be later. If any defect is not remedied within reasonable time, the Railway may proceed to do the work at contractor's risk and expense, but without prejudice to any other rights, which the Railway may have against the contractor in respect of such defects.

- F** The repaired or renewed part shall be delivered and erected on site free of charge to the purchaser.
- G** The Railway shall have right for acceptance, rejection of materials at site if the same are not in accordance with the specifications.
- H** The terms and conditions of this contract shall also be governed with G.C.C. of Railways.
- I** SD will be release to tenderer after completion of warranty period of 1 year.

7.0 Payment Term

- 7.1 70 % against supply of material, on receipt & acceptance of material by Railway.
- 7.2 90 % of erection rates and balance 20% of supplied material erected, after successful erection of supplied materials.
- 7.3 Balance 10 % of supply and erection of material and 30 % of material supplied and retained by Railway but not erected in this contract, after successful completion of work.

**Sr. Divisional Electrical Engineer/TRD
North Western Railway, Jodhpur**

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