

SCHEDULE OF WORK QUANTITY AND RATES								
SCHEDULE			3	Tender No :		EL-TRD-TENDER-25-26-36R2		
Name of Work			ANND-GDA : OHE modification work and other allied work in connection elimination of LC Nos 2,10,13,17,38,48,54A&64 by RUB					
IRPSM ID				15063025355001				
S N	Description	Qty.	Unit	Unit Rate		Total Rate		Total
				Supply	Erection	Supply	Erection	
1	Supply of fabricated / rolled GI steel structures & SPS	3	MT	133967	0	401901	0	401901
2	Erection of fabricated / rolled GI steel structures & SPS	3	MT	0	13908	0	41724	41724
3	Digging, casting, grouting of concrete foundation including supply of material.	75	Cu.M	0	7377	0	553275	553275
4	Supply of conventional cantilever assembly including 25kv LCP insulator	12	Nos.	26214	0	314568	0	314568
5	Erection of conventional cantilever assembly including 25kv LCP insulator	12	Nos.	0	3460	0	41520	41520
6	Supply of conventional type regulating equipment	1	Nos.	51507	0	51507	0	51507
7	Erection of conventional type regulating equipment	1	Nos.	0	15809	0	15809	15809
8	Supply of Guy Rod assembly complete	3	Nos.	11062	0	33186	0	33186
9	Erection of Guy Rod assembly complete	3	Nos.	0	2318	0	6954	6954
10	Supply of copper anticreep wire arrangement for conventional OHE with insulator	1	Nos.	43595	0	43595	0	43595
11	Erection of copper anticreep wire arrangement for conventional OHE with insulator	1	Nos.	0	14794	0	14794	14794
12	Supply of new droppers complete with clips etc for the new span for modification and shifting of OHE to new structure/cantilever	15	Nos.	4805	0	72075	0	72075
13	Modification and shifting of OHE to new/another structure/cantilever, removal of old droppers, catenary and contact wire etc. if any, erection of contact and catenary wire and S & E of new droppers complete with clips etc. for the new span.	15	Nos.	0	4140	0	62100	62100
					Total			1653008

S N	Description	Qty.	Unit	Unit Rate		Total Rate		Total
				Supply	Erection	Supply	Erection	
14	Splicing and extension of anchored OHE	2	Nos.	0	7894	0	15788	15788
15	Supply of retro-reflective structure number plate	15	Nos.	943	0	14145	0	14145
16	Erection of retro-reflective structure number plate	15	Nos.	0	113	0	1695	1695
17	Supply of bonds of various types	740	Mtr.	335	0	247900	0	247900
18	Erection of bonds of various types	740	Mtr.	0	61	0	45140	45140
19	Supply of material for earthing station	10	Nos.	4448	0	44480	0	44480
20	Erection of material for earthing station	10	Nos.	0	1512	0	15120	15120
21	Breaking of RCC foundation	3	Cum	0	4617	0	13851	13851
22	Transportation of released material	4	MT	0	2974	0	11896	11896
23	Dismantling of cantilever assembly Complete	10	Nos.	0	1554	0	15540	15540
24	Dismantling of Regulating equipment Complete	1	Nos.	0	8786	0	8786	8786
25	Dismantling of anti-creep complete	1	Nos.	0	1751	0	1751	1751
26	Dismantling of mast by cutting	10	Nos.	0	4019	0	40190	40190
27	Supply & erection of 400 mm x 350 mm dia anti bird disc made of Polycarbonate material as per SMI TI/MI/0059- Rev.03 for stay , bracket and 9 Ton porcelain/composite insulators	1515	Nos.	1398		2117970		2117970
				Total				2594252

Sheet 1	1653008	Sheet -3	0	
Sheet 2	2594252	Grand Total	4247260.00	

Notes:

Items details shall be read in conjunction with explanatory note of schedule of tender for respective items.

EXPLANATORY NOTE FOR SCHEDULE OF WORK (QUANTITIES/RATES)

- 1 Items details in the Schedule of Quantity and rates shall be read in conjunction with explanatory note of schedule of tender for respective items.
- 2 All items of provision mentioned in SOR covers Design, Manufacture, Supply of materials, Erection, Testing and commissioning as required including small parts such as bolts, nuts, lock nuts, washers etc.

- 3 Basic Quantities and component of material required making up a unit of work for items mentioned in the explanatory notes are indicated for guidance purpose only. It is the sole responsibility of the contractor to supply the system as per design and therefore he shall work out the exact quantities of component required for completing the work and satisfactory operation of the system.
- 4 All the equipment and materials to be supplied by the Contractor against various schedule items should confirm to RDSO's / CORE's/CEE W.RLY's/I.S. specification and drawings. Material should be procured from sources approved by RDSO/CORE/CEE-W.Rly. Where such list is not available decision of the engineer in-charge is final and acceptable.
- 5 Contractor should note that all specifications as per the latest amendments to RDSO's/CORE/W.Rly./IS and other relevant standard specifications shall be applicable unless specified otherwise.
- 6 The Contractor shall arrange all necessary tools, equipment's, instruments and other facilities for execution liaison, checks and tests and commissioning as specified and decided by The engineer in-charge.
- 7 Testing and Commissioning: The successful tenderer shall demonstrate various efficiency and other related parameters as specified in the specification but not limited to during testing and commissioning validated with calculations and / or software as desired by the representative of the Electrical Engineer.

Section -2		SPECIFIC TO THE ITEMS OF SCHEDULE OF QUANTITY AND RATES	
Schedule	3	Tender No :	EL-TRD-TENDER-25-26-36R 2
Name of Work	ANND-GDA : OHE modification work and other allied work in connection elimination of LC Nos 2,10,13,17,38,48,54A&64 by RUB		
Item	DESCRIPTION		
1	Supply of fabricated / rolled GI steel structures & SPS		
Explanation	<p>The price shall include the supply of traction main masts of OHE comprising rolled, broad flanged beams, fabricated K series, B series, portal upright, boom pieces & associated fittings, D.A., extension chairs etc.</p> <p>In case, required size of channels are not available as per approved drawing, higher size of channels can be used with approval of Sr. DEE/TRD, Western Railway, Pratapnagar, Vadodara and payment as per actual black weight will be paid.</p> <p>Galvanization thickness shall be as per Railway specification No. ETI/OHE/13(4/84) with A & C slip No. 1-3 or latest with galvanization thickness of 1000 gram per sq. meter and steel will confirm IS-226-62 Gr. A (1984) latest and IS 808 1989 or its latest version for steel</p> <p>However in case the unit sectional weight of any member indicated in RDSO 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 Sr. DEE/TRD, Western Railway, Pratapnagar, Vadodara.</p> <p>There will be no addition for increased weight due to galvanizing or painting or reduction for holes or screw cut.</p> <p>The price shall also cover supply of galvanized small steel parts as well as fasteners, nuts and bolts etc. for different type of masts, portals, DA, isolator, boom etc. confirming to the relevant RDSO/CORE drawings. The material to be procured from the RDSO/CORE approved sources.</p>		
2	Erection of fabricated / rolled GI steel structures & SPS		
Explanation	<p>The price shall include erection, alignment and setting before grouting of traction main masts of OHE comprising rolled, broad flanged beams, fabricated K series, B series, portal upright, boom pieces & associated fittings, D.A., extension chairs etc.</p> <p>The price shall cover cost of fabrication, erection, alignment and setting before grouting of individual tractions masts/structure. The prices shall also include the cost of stenciling of location number, height of contact wire, implantation, R.L. etc. on masts/portal uprights in the manner as directed by supervisor incharge of railway.</p> <p>The price shall also include the straightening of masts/portal uprights etc. bent during transit and cutting of masts/portal uprights to suit the site condition.</p> <p>For standard fabrication of steel work or structures for which RDSO/CORE approved drawing are available, the black steel weight of steel work as specified in RDSO/CORE drawing, shall be considered for payment.</p> <p>Galvanization damaged during transportation/carting will be touchup with cold ZINC paints by tenderer.</p> <p>As erected OHE structure namely Mast, TTC, Portal which are newly erected, the SED/AED of such location are to be prepared in Auto Cad and submitted to this office in original tracing and five set hard copy</p> <p>The price shall also cover erection of galvanized small steel parts as well as fasteners, nuts and bolts etc for different type of masts, portals, DA, isolator, boom confirming to the relevant RDSO/CORE drawings. This activity is to be done under power block.</p>		

3	Digging, casting, grouting of concrete foundation including supply of material.
Explanation	<p>The price shall include all works mentioned in all classes of soil except hard soil, concrete or, masonry/drains/walls and rock. The price shall also include the cost of digging, cement concrete & soil refilling. Cement so procured by the contractor shall be fresh OPC latest to IS codes. The cement manufactured by any one of recognized brand i.e. Ultratech, Gujarat Ambuja, JK Laxmi or Jaypee useful for casting purpose shall be procured.</p> <p>The price shall be same for any shape and size of concrete blocks for foundation, 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>The price shall apply for concreting of all foundations for masts, gantries, portals, anchor blocks for guy rods and fencing uprights. For purposes of computation of volume of concrete, the volume of steel work embedded in the foundation block shall be ignored. For purposes of compilation of volume of concrete, the volume of concrete shall include the volume of sand and bitumen in sand core foundation. For purposes of compilation of volume 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 muff shall be taken as 0.08 cum. irrespective of the size and shape of muff on a flat basis.</p> <p>Mixture for casting of concrete foundation will be 1:3: 6 and for grouting and mugging shall be 1: 2: 4 Grade of concrete of M-10 for foundation & M-15 for core for Moderate and all foundation concrete work will be done as per IS- 456-1978 or latest. Curing of foundation shall be done by contractor for 28 days. No scroll will be supplied by Railway; contractor will use his scroll. Contractor has to prepare standard cube of size 150x150x150 mm 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 456/1978. The test result of cube may be submitted to Railways in duplicate. In case the qty. of concrete is less than 25 cum then at least one cube to be prepared and tested. To make cubicle for OHE structure foundation, digging, earth excavation should be carried out very cautiously so that Electrical/Telecommunication/Signaling cable passing through underground enroute the rail periphery do not get damage.</p>
4	Supply of conventional cantilever assembly including 25kv LCP insulator
Explanation	<p>The price shall cover for supply of material of cantilever/bracket assembly (Conventional type) including ST and BT long creepage path porcelain insulators to be used to hold 25 kV Overhead equipment on traction mast or support on drop arm.</p> <p>The price shall cover supply of parts/components as per arrangement given in RDSO drawing No. ETI/OHE/G/02106 sheet 1 to 3 or latest.</p> <p>The price shall also include supply of all type of fasteners including that of mast top and bottom fittings and SS bolts for ST & BT insulators etc.</p> <p>The price shall include the cost of supply of all components including galvanized steel tube, ST and BT long creepage path porcelain insulator with the required fittings, fasteners etc as per approved plan.</p> <p>(Note: Forge type fittings shall be used instead of MCI wherever approved source(s) are available)</p>
5	Erection of conventional cantilever assembly including 25kv LCP insulator
Explanation	<p>1) The price shall also cover fabrication of the cantilever assembly in accordance to the RDSO's drawing no. ETI/OHE/G/02106 sheet 1 to 3 or latest.</p> <p>2) The price shall cover erection of cantilever/bracket assembly (Conventional type) including ST and BT long creepage path porcelain insulators and items mentioned in 4 to be used to hold 25 kV Overhead equipment on traction mast or support on drop arm.</p> <p>3) The price shall also cover erection of all components excluding small parts steel work like MCC channel, adaptors, clamping angle & backing angle etc. This activity is to be done under power block</p>

6	Supply of conventional type regulating equipment (2000kg)
Explanation	The price shall cover supply of counter weight assembly including 9 Tone adjuster with double strap assembly, and normal/antitheft guide tube assembly with bracket angle and fastener including supply of regulating equipment three-pulley type as per Rly Specification No. TI/SPC/OHE/ATD/0060 (08/2006) with A&C Slip .1 to 3 or latest and stainless steel wire rope as per Rly Specification No. TI/SPC/OHE/WR/1060(06/2006) with A & C No. 1& 2 or latest required for regulating equipment and small parts steel work, if any. The price shall also include to supply anti slipping angle (stiffener) Angle on Anchoring.
7	Erection of conventional type regulating equipment (2000kg)
Explanation	The price shall cover erection of items mentioned in 6 . The price shall also cover adjustment of entire regulating equipment assembly, including anti-falling device, adjust X, Y value and painting of maximum and minimum ‘Y’ value on the mast. The price shall also include erection of anti-climbing (stiffener) Angle on Anchoring. This activity is to be done under power block. The erection of Regulating Equipment which are in excess of supply will be supplied by Railway or dismantled Regulating Equipment will be used for erection.
8	Supply of guy rod assembly
Explanation	The price shall cover supply of guy rod assembly of various lengths for traction masts complete with mast guy rod fittings, guy rod with adjustments and parts to be grouted etc in the anchor block including SPSas per latest RDSO drawing. The price shall not include the cost of supply and erection of dwarf masts.
9	Erection of guy rod assembly
Explanation	The price shall cover erection of guy rod assembly of various lengths for traction masts complete with mast guy rod fittings, guy rod with adjustments and parts to be grouted etc in the anchor block including SPS as per latest RDSO drawing.
10	Supply of copper anticreep wire for conventional OHE with insulator.
Explanation	The price shall cover supply of new copper anticreep wire (Catenary Wire 65 Sqmm) along with long creepage 9-tonne porcelain insulator with complete required termination arrangement & other fittings etc. to carry out above work.
11	Erection of copper anticreep wire for conventional OHE with insulator
Explanation	The price shall cover erection of new copper anticreep wire (Catenary Wire 65 Sqmm) along with long creepage 9-tonne porcelain insulator with complete required termination arrangement & other fittings etc. Before erection on lines each and every insulator shall be tested as per SMI No.TI/MI/0042 (12/2008) Rev. 0 or latest This activity is to be done under power block.
12	Supply of new droppers complete with clips etc. for the new span for modification and shifting of OHE to new structure/cantilever
Explanation	The price shall cover for supply of new droppers of each span of conventional OHE, clips, other fittings etc and any other component required in shifting of OHE to new structure.
13	Modification and shifting of OHE to new structure/cantilever, removal of old droppers, catenary and contact wire etc if any, erection of contact and catenary wire and erection of new droppers complete with clips etc for the new span

Explanation	The price shall include for modification and shifting of OHE to new structure including removal of old droppers, from catenary, contact wire	
	For all line	OHE profile adjustment as per conventional OHE profile i.e. 2000kgf Tension
	The price shall include for modification and shifting of OHE to new structure including removal of old droppers, from catenary, contact wire. The price shall cover fabrication and erection of copper dropper wire and erection of Contact, Catenary (existing or new), clips, other fittings etc for the whole span suitable for conventional 2000kgf OHE. This activity is to be done under power block. Contact and Catenary wire will be supplied by railways wherever required	
14	Splicing and extension of an anchored overhead equipment	
Explanation	The price shall include dismantling of the existing terminated OHE from anchor and the same OHE is to be extended and terminated to the new structure by splicing the contact and catenary wire (as per plan and site condition). The price shall also include the supply of required related fittings to complete the work. This activity is to be done under power block	
15	Supply of retro -reflective structure number plates	
Explanation	The price shall include supply of Retro-reflective structure number plates confirming to RDSO's spec. No. ETI/OHE/33 A (12/97) ,Rev. 8(11/2012) or latest and drawing No. ETI/OHE/ P/7503 Rev. E or latest. The price also includes supply of nuts, bolts, clamps, nylon washers for fixing the number plates and clamps suitable for structures of the locations. The number plate background i.e. traffic blue colour will be non-reflective type with no boarders. Only the letters and figures will be retro-reflective type in deep yellow colour.	
16	Erection of retro -reflective structure number plates	
Explanation	The price shall include erection of Retro-reflective structure number plates. The price also includes erection of nuts, bolts, clamps, nylon washers for fixing the number plates and clamps suitable for structures of the locations. The list of locations where number plates are required to be provided will be given to successful tenderer at the time of acceptance of the order. All the existing structure number plates are to be first removed along-with fasteners, clamp etc. and at the same place new number plate along-with new fasteners, clamps etc. shall be provided or the plates will be provided at new locations as the case may be.	
17	Supply of various types of traction bonds	
Explanation	The price shall also cover supply of 40 x 6 mm GI flat with all nut, bolts, washer, lock nut and any other fasteners required for completing the bonding connection arrangement as per site bonding requirement. All the nut, bolts, washer, lock nut and any other fasteners required to be procured from RDSO/CORE approved supplier	
18	Erection of various types of traction bonds	
Explanation	The price shall include fabrication and erection of various types of traction bonds with fasteners. The bonds shall be made with GI flat size 40 x 6 mm and fabricated in accordance to the respective drawings for the 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) and chamfering of holes. The price shall also cover removing of the existing bonds along with fasteners wherever replacement is involved.	
19	Supply of earthing station	

Explanation	The price shall include supply of material for pipe earthing, connecting bonds as per Drawing. No.ETI/OHE/P/7020 or latest with modification. The price shall also cover supply of 40 x 6 mm GI flat as well as all nut bolts necessary for earthing connection.
20	Erection of earthing station
Explanation	The price shall also include erection of material for pipe earthing, connecting bonds. The price also includes digging/excavation of Earth, treatment of earth electrode by charcoal & salt, bonding with supply, Fabrication (shaping) and providing of 40 x 6 mm GI flat for earthing connection with making holes & bolting (Galvanized fasteners/bolts) for earth connections between earthing station & structure (mast)/equipment and from earth pit to Rail. The price shall include earth pit duly white wash & painting of earth value on the same.
21	Breaking of RCC foundation
Explanation	The price shall include breaking of the existing RCC foundation in the premises of the work site. All the debris are to be removed and transported at proper place in consultation with the concerned supervisor incharge. The area after removal of debris should be filled with earth up to ground level.

22	Transportation of released material
Explanation	The price shall include transportation of released material released under various dismantling schedule from work site to Vishwamitri depot or Vadodara periphery for DS8 purpose. The price shall also include loading of material from work site and unloading at OHE depot at proper place as directed by Railway representative.
23	Dismantling of Cantilever assembly complete
Explanation	The price shall include dismantling of existing complete cantilever assembly erected on the infringe OHE structure. While dismantling, care should be taken so that no ST/BT insulator is broken as same are to be reused at new locations. The dismantled cantilever structures are to be transported near Vadodara periphery for DS8 purpose at a suitable place as directed by Railway representative. The price of transportation of released material is covered under item:Transportation of Released material. This activity is to be done under power block.
24	Dismantling of RE
Explanation	The price shall cover Dismantling of counter weight assembly including 9 Tonne adjuster with double strap assembly, and normal/antitheft guide tube assembly including regulating equipment three-pulley, and stainless-steel wire rope with small parts steel etc. The dismantled Regulating Equipment are to be transported for erection purpose if required at a suitable place and remaining dismantled Regulating Equipment are to be transported near Vadodara periphery for DS8 purpose as directed by Railway representative . The price of transportation of released material is covered under item no :Transportation of Released material. This activity is to be done under power block.
25	Dismantling of anti-creep complete
Explanation	The price shall include dismantling of existing anti creep arrangement complete with insulator from site. The dismantled anti-creep are to be transported near Vadodara periphery for DS8 purpose at a suitable place as directed by Railway representative. The price of transportation of released material is covered under item : Transportation of Released material. This activity is to be done under power block.

26	Dismantling of mast by cutting
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Explanation	The price shall include the dismantling of the abandoned masts to be cut by gas cutter and stacked such dismantled mast at suitable place near site. Cutting of the masts shall be undertaken in such a way that the masts is cut at the point below 10 cm from the ground level since the work of cutting of the masts is to be carried out in close vicinity of the running track. The work shall be done under power blocks and ensuring utmost safety precaution during the work shall be the complete responsibility of the contractor. The released mast to be cut again in three pieces. The cut piece of masts and released material shall be removed from the vicinity of the track to a safe site. The dismantled pieces of masts are to be transported near Vadodara periphery for DS8 purpose at a suitable place as directed by Railway representative. The price of transportation of released material is covered under item :Transportation of Released ma
27	Supply & erection of 400 mm x 350 mm dia anti bird disc made of Polycarbonate material as per SMI TI/MI/0059- Rev.03 for stay , bracket and 9 Ton porcelain/composite insulators
Explanation	The price shall cove supply and erection of anti-bird disc made of Polycarbonate material for stay , bracket and 9 Ton insulator for prevention of bird fault as per SMI: TI/MI/0059- Rev.03.This activity is required to be done in Power Block