

Eastern Railway
Office of the Senior Divisional Electrical Engineer (TRD)
DRM office/Eastern Railway, Malda -732102.
E-tender no.: EL-MLDT-TRD-E-Tender-101

SPECIFICATIONS AND SCOPE OF WORK

Name of the Work: "OHE modification work in connection with removal of lean, damaged/hited & critical Mast/Portals over Malda Division".

Under Non Power Block

Item No. 1 & 2 : Concrete for foundation & plinth in other than hard soil and rock (for concrete mix of M15 & M20 Grade in Foundation) (Materials & Erection)

The price shall cover excavation, supply and handling of all materials and accessories. temporary arrangements for excavation in hard soil and concrete/masonry drains/walls requiring use of chisel and hammer or requiring blasting, Shoring where necessary casting concrete including frame work where necessary, tamping of concrete, grouting of masts and finishing the top of concrete foundation or anchor blocks. The price also includes dismantling of all connected temporary arrangements, back filling with earth and compacting the same to the required height and width as per drawing to ensure safety of foundation. confining the exposed height of foundation block to within 10 cm., and removal of spoil.

The Purchaser's Engineer shall certify where use of chisel and hammer or blasting has been blasting operations at his own cost. If half or more of the depth or width of excavation is in hard soil/concrete/masonry drains/walls or in rock, the entire foundations shall be paid for under and all tools ting plants for the case may be. The price shall include the cost of cement.

Notes for Items 1 & 2:

1. The prices under Item 1 & 2 shall be the same for any shape or size of concrete blocks. In calculating the individual volume of concrete, fraction of a cubic metre beyond the third decimal shall be rounded off to the next nearest third decimal.
2. The prices under Items 1 & 2 shall apply for concreting of all foundations for mast, gantries, portals, anchor blocks for guy rods, and fencing uprights.
3. For purposes of computation of volume of concrete under Item 1 & 2, the volume of steel work embedded in the foundation block shall be ignored.
4. Cost of all concrete will be paid for only under Item 1 & 2 and the prices of other Items shall not include cost of concrete except for single earth electrode & earth bus.
5. For the purpose of computation of volume of concrete under Item- 1 & 2. The volume of concrete shall include the volume of sand and bitumen in sand cored foundation. However, for the purpose of computation of the quantity of cement utilised in sand core foundations, the volume of the sand and bitumen used in the core hole should be deducted from the total volume of the foundation.
6. For purposes of computation 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 each column of portal, each headspan mast, 2 or 3 track cantilever masts, and special fabricated masts for

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which the volume of muff shall be taken as 0.08 cum. irrespective of the size and shape of muff, on a flat basis.

7. The prices under Items 1 & 2 shall also include the cost of concrete cable trenches and trench covers at the switching stations as well as embodiment of drain pipes, where required.

8. The prices under Items 1 & 2 shall also cover the cost of diversion of masonry/earth drain wherever necessary for casting of foundations.

9. Concrete mix for foundation and grouting/muffing under Item 1 will be as per para 2.2.4.

10. In case Ready Mix concrete is used, no extra payment shall be payable to the contractor. Payment shall be done at the rates given in the contract irrespective of whether the concrete is nominal or Ready Mix.

11. For the purpose of excavation, JCB has to be arranged by the firm.

12. The Make of cement used must be: ACC, Ambuja, Binani, Birla Gold, Century Gold, Lafarge and Ultra Tech.

Item No. 3: Supply of fabricated and galvanised structures (O, N & R type portals) with necessary components other than masts.

The price shall cover the cost of supply of O, N and R type portals with components as per RDSO's Drg. No.:

(i) ETI/C/0008 Sheet No.1 latest Mod for 'N' type

(ii) ETI/C/0017 Sheet No.1 latest Mod for 'O' type

(iii) ETI/C/0011 Sheet No. 1 latest Mod for 'R' type

The structures shall be fabricated from steel conforming to IS-2062/2011 (or latest) Grade - E250, Quality-A, IS-808/1989 and galvanised as per RDSO's specification No.ETI/OHE/13 (4/84) with A&C slip Nos 1 to 4 (or latest).

The price shall cover, cost of erection, alignment and setting before grouting, wherever required, of portals assembly of boom components and erection of the same. The prices shall also include supply and erection of galvanised bolts, nuts washers etc. wherever required as per approved designs and drawings. The price shall cover assembling, adjustment and erection of all types of booms including TTC booms and any special structures across the track, not covered under Item nos. 5. The price shall also include the cost of repairing platform shelters in case the shelter is dismantled/removed/damaged during the course of erection of a portal at platforms.

Item No. 4 & 32: Supply and erection of structural steel (traction mast) fabricated and galvanised, of all type : B-Series Mast.

The price shall cover the cost of supply of B-Series traction mast 9.5 m and/or 11.4 m long ie. B-Series Mast fabricated and galvanised as per RDSO Drg No. ETI/C/0071 (Mod-E). TI/DRG/CIV/B-Mast/00001/13/0 with latest mod and specification No. ETI/OHE/13 (4/84) with A&C slip Nos 1 to 4 (or latest).

Steel shall be conforming to IS-2062/2011 (or latest) Grade E250, Quality-A, and Zinc conforming to IS-209 (or latest).

The price shall also cover the supply of all size of B-Series mast required which has not been mentioned.

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The price shall cover the cost of erection, alignment and setting before grouting of individual traction masts and main masts of Switching and Booster Transformers stations including those for head spans. The price shall also include the cost of repairing platform shelters in case the shelter is dismantled/removed/damaged during the course of erection of a mast at platforms.

Note: 11.4 m long masts shall have provision for erection of Brackets (Cantilevers) for conventional as well as for High Rise OHE.

Item No. 5 : Supply of special fabricated & galvanised steel structure other than portals and traction masts not covered under Item 3 & 4.

The price shall cover the cost of supply and erection of special fabricated & galvanised steel structures (other than BFB/RSJ/B-Series masts and portals) for conventional and High Rise OHE. The structure to be supplied under this Item shall be TTC, G-type, BFB type portals, Bridge masts, emergency masts and double/fabricated "S" series masts such as S3, S5, S7, S8, S-100, S-101, T-150, Dwarf Masts etc. Any other similar structure required during the execution of work shall also be supplied under this Item.

The price shall include the cost of steel, fabrication, galvanisation, and supply at site for erection. Steel shall be conforming to IS-2062/2011 (or latest) Grade - E250, Quality-A, Zinc conforming to IS-209/1997 (or latest) and galvanization to RDSO's specification No. ETI/OHE/13(4/84) with A&C slip No.1 to 4, with latest spec. The various structures covered under this Item are:

SN	Description	Drg. No.	Mod
1	TTC with 5.5/8.0m boom	ETI/C/0009 Sheet 1	Latest
2	G-type portal upright & end pieces	ETI/C/0056	Latest
3	BFB portal	ETI/C/0026 Sh. 1	Latest
4	S-7, 12.4 m	ETI/C/0182	Latest
5	S-8, 12.4 m	ETI/C/0183	Latest
6	S-100, for LT, transformer at SWS.	ETI/C/0043	Latest
7	S-101, for Isolators inside SWS.	ETI/C/0044	Latest
8	S-3, 11.4 m	ETI/C/0180	Latest
9	S-5, 11.4 m	ETI/C/0042	Latest
10	T-150, for LT supply transformer	ETI/PSI/037	Latest
11	Dwarf Mast	ETI/OHE/G/1402	Latest
12	Special BFB Portal for 5 tracks (General Arrangement) for High Rise OHE.	TI/DRG/CIV/BFB-POTAL/00001/13/0 Sh. No. 1	Latest

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13	G-Type Portal Special Upright and End Piece for High Rise OHE.	TI/DRG/CIV/G-PORTAL/00001/13/0	Latest
14	Two Track Cantilever Structure (TTC) General Arrangement for High Rise OHE	TI/DRG/CIV/TTC/00001/13/0 Sh.- 1	Latest

The price shall cover, cost of erection, alignment and setting before grouting, wherever required, gantries, including tower/ steel 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 irrespective of whether they are supplied by the Purchaser or the Contractor. The prices shall also include supply and erection of galvanised bolts, nuts washers etc. wherever required as per approved designs and drawings. The prices shall also include the cost of repairing of platform shelters in case the shelter is dismantled/ removed/damaged during the course of erection of a mast/portal at platforms.

Note for Item nos. 3, 4, 5 & 32:

(i) The price for the Items 3, 4, 5 & 32 shall also include the cost of stenciling of location number on masts/portal uprights in the manner as directed by the Purchaser. The price shall also include straightening of masts/portals uprights wherever approved by the purchaser and cutting of mast/portals/upright to suit the site condition.

(ii) For the purpose of payment for supply and/or erection, the black weights as per respective RDSO drawing for individual traction masts (RSJ, BFB & B series, S-1, S4, S-6 & S-9), head span, Portal structures (O, N & R-type), special-steel structures (TTC, BFB, G & P type portal, Dwarf masts, S3, S5, S8, S100, S101, T-150 etc) shall be payable to the contractor.

(iii) For the purpose of payment for supply and/or erection, of bridge mast or any other structures which are not covered in RDSO's drawings, if any, the black weights of such structures including all components as shown in respective approved drawing, shall be payable to the contractor by purchaser.

(iv) No payment is permissible for increased weight of any structure or their components on account of galvanization.

(v) The payment shall be made on the basis of the final lengths/weight of the structures, in case the same are cut or modified as indicated above before erection.

(vi) In case of any dispute in unit weights mentioned in drawings, the matter will be decided by the Engineer incharge of the project/Purchaser and the decision taken in the matter will be final and binding on to the contractor.

Standard weights of Galvanized structures

(RDSO latest drawings and specifications will prevail over following data)

S.No.	Structure Type	Standard length in Meters	Black Wt. (Kg) as per Drawing	Weight of finished Galvanized (Wt. of galvanization 610 g/sqm) Structure (kg)
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A	B	C	D	E
1	RSJ	9.50	494.00	499.77
2	BFB	9.50	352.45	357.64
3	B-150	9.50	369.69	378.67
4	B-175	9.50	422.89	432.40
5	B-200	9.50	474.19	483.95
6	B-250	9.50	659.27	672.34
7	NU	10.445	365.26	385.30
8	NE 1	5.38	183.88	193.63
9	NE 2	5.88	199.18	209.80
10	NB 1.5	1.5	68.83	70.33
11	NB 3.0	3.0	110.99	113.69
12	NB 4.5	4.5	160.58	164.47
13	NB 6.0	6.0	210.20	215.14
14	NB 7.5	7.5	252.36	258.50
15	NB 9.0	9.0	301.95	309.28
19	RU	10.58	627.48	651.87
20	RE-1	11.6	634.33	662.13
21	RE-2	12.1	660.56	689.75
22	RB 7.5	7.5	432.58	440.78
23	RB 9.0	9.0	507.71	517.15
24	RB 10.5	10.5	586.49	597.65
25	RB 12.0	12.0	665.26	677.78
26	RB 13.0	13.0	717.88	731.60

Note : The tolerance of (+/-) 2.5% of the weight of finished galvanized structures as per column-E above will be the limit.

Note:- This list is only indicative in nature and weight of finished galvanized structures or weight of galvanisation in structures shall be governed by latest guidelines issued by RDSO in this regard.

Item No. 6 & 33. Supply & Erection only of fabricated steel work other than mast

The price shall cover the cost of supply only of all fabricated steel work excluding fasteners which are required to be supplied by the Contractor. The cost of erection for such steel work, carried out by the Contractor shall be paid for under item No. 33.

For standard fabricated steel work for which RDSO'S approved drawings are available, the weight of steel work as specified in RDSO'S drawing shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not

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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 non-standard 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.

The price shall include the cost of supply of bracket top and bottom mast fittings suitable for PSC masts.

Notes for Items 3, 4, 5, 6, 32 & 33 -

1. For the purpose of payment against Items 3, 4, 5, 6, 32 & 33, weight of structures or fabricated steel work will be calculated according to the weight of black steel given in section books for the lengths of various members shown in the approved drawings. There will be no addition for increased weight due to galvanizing or painting or weld material or reduction for holes or skew cuts.

2. The rates against Item 33 shall be applicable to the erection of small part steel work, which are not covered under the various other Items of work. Unless specifically indicated none of the other Items of work shall include the cost of supply and/or erection of small part steel work, which will invariably be paid for under Item 5 or and 6 & 33 as applicable.

Item No. 7 & 34 : Supply and erection of a Guy Rod Assembly.

The price shall cover supply and erection of Guy Rod Assembly, for both conventional and High Rise OHE, of various lengths for traction masts, feeder line towers or supports complete with mast guy rod fittings, guy rod with adjustments and part/s be grouted in the anchor block. The price shall not include the cost of supply and erection of a dwarf or stub mast with anchor plates drilled and welded in position, where required, for anchorage, and small parts steel work, complete with bolts and nuts etc., if any for attaching the mast guy rod fittings to the mast/structure which shall be paid for separately under the relevant Item. Prices indicated against all other Items should be exclusive of the price of supply and erection of guy rod, if any which will be paid for under this Item.

COMPONENTS REQUIREMENT

Rly. Id. No.	Description of components	Qty. per unit
3232	Mast guy rod fitting (welded) complete with 4 short bolts, nuts, lock nuts and washers for attachment to mast /S.P.S including appropriate fittings.	1 off
5001/5001-1/5001-3	Anchor bolts (complete with nuts lock nuts and split pins)	1 set
5002	Guy rod stirrup	1 off
5004 or 5005 or 5005-2 or 5006-1 or 9070 or 9071 or 5006-2	Guy rod with nut, lock nut, washer and split pin.	1 off

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5007-1	Anchor 'v' bolt	2 off
5008	Anchor	2 off
5220	Guy rod double strap assembly.	1 off or 2 off (as required)

NOTE: 1. In case the Contractor desires to adopt a different design for guy rod assembly, the same shall be indicated by him in the Tender and the components required should be clearly listed under this Item as deviation

2. Supply and erection of guy rod assembly at anticreep portals will also be paid for under this Item.

Item No. 8 : Supply without insulator of Single Bracket Assembly.

The price shall cover on a flat rate basis any bracket assembly on a traction mast or support on drop arm and shall include those on high/low level platform, in the vicinity of turnouts, over bridges or and at locations with reduced encumbrance or terminating wires. The price shall include the cost of supply of all components including galvanised steel tube, dropper wires, bolts and nuts etc. but excluding small parts steel work and solid core insulators, Cost of insulators will be paid under item no. 25 & 26 and cost of SPS will be paid under Item 6. The price shall cover erection of all components including insulators, small parts Siner work and dropper wires. However, this does not include the anti-creep arrangement at masts/structures. The price shall include:

Rly. Id No.	Description of components	Qty. per unit
3021-1	Mast fitting for hook insulator (Forged) with 2 off bolts, nuts, lock nuts and washers of 16 dia.	1 set
2400	Tubular stay arm assembly (including galvanized steel tube).	1 set
2110/2130/2380	Catenary suspension bracket assembly or hook bracket	1 off
1160)	Suspension clamp	1 off
2120,2140,2040,2080	Bracket tube assembly complete with tube cap and sleeve where required (including galvanized steel tube).	1 set
3070-1/2)	Mast bracket fitting assembly including 2 off bolts, nuts, lock nuts and washers of 16 m for attachment to structure or to small part steel work.	1 set
2151-2, 2152-2, 2161-2, 2162-2	Register arm hook Top & Bottom complete (Forged) with bolts, nuts and lock nuts.	1 off
2420 or 2430, 2270-4 or 5	Register arm assembly or raised register arm assembly (including galvanised steel tube).	1 set

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2460 Style 02 or 2470 Style 02	Register arm dropper assembly including dropper wire complete with bolts, nuts etc.	1 set
2391-1, 2540/2520	Steady arm hook (BFB) (Forged) or bent steady arm (where required)	As required
2361-1, 2491-2, 2492-2	25 mm drop bracket (Forged) with bolts & locknuts. 25 mm Steady arm clamp (Forged) -do-with bolts & locknuts.	-do-
1220/1370/-1	Contact wire swivel clip or raised register arm clamp	1 off
2550-1/2	Antiwind clamp	As required

Item No. 9: Supply of regulating equipment (3 pulley type) with Counter weight assembly for conventional/composite OHE.

The price shall cover supply and erection of counter weight assembly (for both conventional and High Rise OHE) including 9 ton adjuster with double strap assembly and normal/anti-theft guide tube assembly, the supply of regulating equipment and stainless steel wire rope (of various length as required) required for the regulating equipment and small part steel work, if any. The price shall also cover adjustment of the entire regulating equipment. The price shall not include supply and erection of termination, which will be paid for under Item No. 10 & 49.

Item No. 10: Supply without Insulator of materials for termination of double conductors.

The price shall cover supply of all materials necessary for the yoked termination of two overhead equipment conductors on a traction mast or structure, including appropriate mast anchoring, clevis assembly, two adjusters, ending clamps for catenary and contact wires, anchor double strap assembly, equalising/ compensating plate and fittings including 9 ton insulator (Cost of insulator will be paid in item no. 28), assembly and terminating wire, if any. However, the price shall cover erection of all materials including the 9 ton insulator assembly.

Item No. 11 & 35: Supply and erection of a structure bond.

The price shall cover supply of all materials including mild steel flat required to provide a structure bond connecting a traction mast or structures to the nearest non-track circuited rail, or earth electrode, including all fasteners at both ends. The price shall include shaping and drilling of the bond and erection of all materials including the bond. The price shall also include provision of heat shrinkable PVC tube for structure bond under track circuited rail. This would also cover connection or earthing terminals of equipment like L.T. Transformers with structure and then to rails as per relevant drawings. The price shall also include painting of bond with single coat of red oxide and two coat of black paint.

The price shall cover provision of buried rail to running rail as per RDSO drawing No.ETI/OHE/G/05306, with latest mod and shall include supply, fabrication and erection of all connections (including drilling at both ends) and refilling of buried rail pit. The digging up of 1 m deep pit for the purpose of buried rail shall be done by the Railways.

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Item No.12 & 36: Supply and erection of transverse and special bond.

The price shall cover supply of all materials including mild steel Flats, fasteners etc. required to provide transverse bond connecting rails of the same/ adjacent tracks at the locations to be specified by the Purchaser. The price shall also cover the supply of all materials including mild steel flat to provide special bonds at a level crossing, foot over/road over bridge/protective screen etc. for which the location will be specified by the Purchaser. The price shall include shaping and drilling of the bond and erection of all materials including the bond. The price shall also include painting of bond with single coat of red oxide and two coat of black paint.

Item No. 13 & 37: Supply and erection of single earth electrode.

The price shall cover supply and erection of an earthing station with a single pipe embedded into the ground by driving or otherwise complete with protective concrete box and lugs suitable for directly connecting two mild steel flats of minimum size 50 mm x 6 mm.

Item No. 14 & 38: Supply and Erection of 25 kV Caution Boards/Plates

The price shall cover price of material including Caution Boards, SPS Items, nuts, bolts etc. as required and erection charges Caution Boards shall be of two types.

(i) General Caution Notice at entrance to Railway station (Hindi & English).

No. ETI/OHE/G/7551 Mod-C (or latest).

(ii) Caution Plate 25000 V. No. ETI/OHE/G/7531 Mod-C (or latest)

Price shall be inclusive of Sales tax. Excise duty, Freight etc. Boards shall required to be installed on a steel structure/Rail post/wall of a building therefore mode of erection shall be as per requirement of the site.

Item No. 15 & 39: Supply and erection of Danger Plate on a Height Gauge.

The price shall cover supply of Danger Board (as per RDSO drawing No. ETI/C/0069 Rev-C) including necessary Bolts, Nuts, Washers etc and erection thereof on the boom of each Height Gauge.

Item No.16 & 40: Supply and Erection of retro reflective type Number plate.

The price shall cover Supply and Erection of retroreflective type Number plate for locations of existing line to be converted as DN/UP line. The price shall include supply of number plate as per RDSO specification and nut, bolt etc whichever is required for fixing the number plate.

Item No. 17: Supply of overhead equipment only.

The price shall cover the supply of all copper conductors including dropper wire (5 mm), jumper wire (50 sq.mm, 19/1.80 mm) as per the specifications indicated under para 2.4.9 of the tender paper. The price shall be excluding the cost of supply of contact wire (107 sq.mm HDGCC), catenary (65 sq.mm 19/2.10 mm, to be supplied by the purchaser).

The price shall cover supply of all components including dropper clips, parallel clamps for jumpering and splices (where their use is approved) and small parts steel works complete with bolts and nuts etc. for attachment of number plates to mast/structure, if any. The price shall cover erection of all components and wires and conductors including contact wire, catenary wire, droppers, jumpers and terminating wires, if any, but excluding small parts steel work, if any. The price shall be excluding the cost of erection of large span wire, which will be paid under Item nos. 41 & 55.

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The price shall include provision of Retro reflective number plates on traction masts or structures. The prices shall exclude supply of small parts steel work for fixing of retro reflective number plate (like as Clamps & plates) will be paid under Item no. 6. The price shall include bolts and nuts for attachment of Retro reflective number plates to masts/structures. The price shall also include the cost of painting the setting distance and rail level on direction of emergency telephone socket. The price shall not include termination of conductors which will be paid for under Item 10 & 49.

Rly. Ident No.	Description of components	Qty. for unit
1040-2 or SK-534/1 & SK-575/2 or SK- 576/1 & SK-535/2 or 1041-3.	Contact wire parallel clamp small	As required.
1180/SK572/1 & SK-572/2	Contact wire dropper clip (107)	-do-
1192	Catenary dropper clip complete with bolts, nuts etc.	-do-
7501/7503	Enameled/ Retro reflective number plates complete with 2 Galv. MS. Bolts m 10x35/30, nuts and lead washer for m 10 bolts but excluding SPS for attachment of number plate to masts/structures.	-do-
1110-2	Contact wire ending clamp.	-do-
1120	Catenary ending clamp.	-do-
1140	Large span wire clamp (130)	-do-
5020-1/5020-2	9-T, Adjuster (Forged)	-do-
5030	Anchor double strap assembly	-do-
5191/5192	Compensating plate/equalizing plate.	-do-

Note for Measurement:

1. For the purpose of payment against Items no. 17 & 50, the length of over head equipment, which shall include terminating wires, be measured from the center lines of the traction masts/structures at which the two ends of each tension length of over head equipment are anchored.

2 The length shall be the difference between the actual chainages of the two traction masts/structures at which the ends of each tension length are anchored or by the sum of the actual spans between the same two points whichever is higher as included in the "As Erected" layout plans. No extra payment will be made on account of either due to sag in these wires/conductors or scraps generated.

3. For the purpose of progress payment reference to layout plans "As Approved" shall be made. However, the price under this Item shall be adjusted according to the final length of OHE indicated in the "As Erected" layout plan.

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Item No. 18 : Supply (without insulator) of 25 KV Single pole isolator (1600 A).

The price shall cover the supply of 25kv Single Pole Isolator complete with all parts, Fittings and accessories including mounting frame work, operating rod, operating mechanism box and all accessories required for its smooth and trouble free operation. All such parts, fittings and accessories shall be deemed to be in the scope of supply, whether specifically mentioned or not. The price shall be exclusive of the cost of required 25kV Solid Core Post and operating rod insulators. The cost of insulators shall be paid under Item No. 30. The isolators shall be conforming to RDSO's specification no. TI/SPC/PSI/ISOLTR/0210 with A&C slip No.1&2 (or latest).

The price shall include cost erection of the Isolators including Post and Operating rod insulators along with mounting frame work, operating rod, operating mechanism box and all accessories, supply and erection of an enameled number plate and a pad lock for each Isolator.

Item No. 19 : Supply (without insulator) of 25 KV Double pole isolator (1600 A).

The price shall cover the supply of 25kv Double Pole Isolator complete with all parts, fittings and accessories including mounting frame work, operating rod, operating mechanism box and all accessories required for its smooth and trouble free operation. All such parts, fittings and accessories shall be deemed to be in the scope of supply, whether specifically mentioned or not. The price shall be exclusive of the cost of required 25kV Solid core post and operating rod insulators. The cost of insulators shall be paid under item No. 31. The Isolators shall be conforming to RDSO's specification no. TI/SPC/PSI/ISOLTR/0210 with A&C slip No. 1&2 (or latest).

The price shall include cost erection of the Isolators including Post and Operating rod insulators along with mounting frame work, operating rod, mechanism box and all accessories, supply and erection of an enameled number plate and a pad lock for each Isolator.

Item No. 20 : Extra for supply of an earth contact assembly in an isolator.

The price shall be payable as extra for supply and erection of an earth contact assembly in any isolator.

The price shall cover the cost of supply and erection of 3x25 mm copper connections between the earth contact assembly and the structures.

Item No. 21 : Supply of 50 sq. mm. copper jumper wire.

The price shall cover supply of 50 sq.mm. flexible Copper jumper in mtr. for "Anti-theft" and "F" jumpers.

Item No. 22 : Supply of PG clamp (1041-2) complete set.

The price shall cover supply of Parallel Clamp (1041-2) complete set as per latest RDSO specification and Drawing No. ETI/OHE/P/1040-2 (Rev. - E) including supply of SS bolts & nuts, lock nuts, spring washer etc. PG clamp complete with fasteners (1041-2) shall be procured from CORE/RDSO approved sources only and the contractor should submit documentary evidence for the same.

Item No. 23 & 41 : Supply & erection of large span wire (130sq. mm. copper)

The price shall cover supply and erection of a large span wire (130) per meter. The payable length in case of head span wires shall be the horizontal distance between the inner faces of

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all traction masts/structure on which the mast attachments are mounted, and in case of Large Span Wire, the actual length shall be measured at the time of erection. No extra payment shall be made on account of the sag. Erections of a meter beyond the first decimal shall be rounded off to the nearest first decimal.

NOTE: The quantity for which the payment is made for the supply and erection of large span wire under this Item shall be deducted from the corresponding length in the span for which payment is made under schedule Item No.17 & 50.

Item No. 24 : Supply of Solid copper bus bars 18 mm.

The price shall cover supply and erection of solid copper bus bar 18mm including bending and shaping.

Item No. 25 : Supply of Bracket Insulator CD 1050 mm (Porcelain type).

The price shall cover only supply of the following Insulators mentioned against its relevant Item required for execution of work covered under Item No. 8. Erection cost of insulators are inclusive in Item No. 47.

Item No.	Insulator
25	Bracket Porcelain (CD-1050 mm)

Item No. 26 : Supply of Stay Insulator CD 1050 mm (Porcelain type).

The price shall cover only supply of the following Insulators mentioned against its relevant Item required for execution of work covered under Item No. 8. Erection cost of insulators are inclusive in Item No. 47.

Item No.	Insulator
26	Stay Arm Porcelain (CD-1050 mm)

Item No. 27 : Supply of 9-Tonne insulator Porcelain type (CD- 1050 mm) i.e., mounting arrangement for span wire.

The price shall cover only supply of 9-Tonne insulator Porcelain type (CD- 1050 mm) required for mounting arrangement for span wire.

Item No.	Insulator
27	Porcelain 9 Tonne (CD-1050 mm)

Item No. 28: Supply of 9-Tonne Insulator Porcelain type (CD-1050 mm) for Item no. 10 (i.e., Double termination of OHE)

The price shall cover only supply of following 9 tonne insulator assembly required for termination of OHE covered under Item no. 10. Erection cost of insulators are inclusive in Items no. 49.

Item No.	Insulator
28	Porcelain 9 Tonne (CD-1050 mm)

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Item No. 29: Supply of a 25 kV Post Insulator for Item 11(b) i.e., for supporting of copper jumper/Bus bar

The price shall cover only supply of 25 kV Post insulator to be supplied at site for execution of work under Item no. 11(b), i.e., for supporting of copper jumper/Bus bar.

Item No.: 30 & 31 : Supply of Post and Operating Rod Insulators for item nos. 18 & 19 (i.e., Single and Double Pole Isolator).

The price shall cover only supply of 25 kV Solid Core Post and Operating Rod Insulators for execution of work covered under Item 18 & 19 respectively. Erection cost of insulators are inclusive in Items 18 & 19 respectively.

Under Power Block

Item No. 42 : Erection of fabricated and galvanised structures (O, N & R type Portals) with necessary component other than Masts.

Erection of fabricated and galvanised structures (O, N & R type Portals) with necessary component other than Masts will be done as mentioned in explanatory note of schedule item No.3 under power block.

Item No. 43 : Erection of structure steel (traction mast) fabricated and galvanised of all type: B-Series Mast.

Erection of structure steel (traction mast) fabricated and galvanised of all type: B-Series Mast will be done as mentioned in explanatory note of schedule item Nos. 4 & 32 under power block.

Item No. 44 : Erection of special fabricated and galvanised steel structures other than portal & traction- masts not covered under items 42 & 43.

Erection of special fabricated and galvanised steel structures other than portal & traction- masts not covered under items 42 & 43 will be done as mentioned in explanatory note of schedule item No.5 under power block.

Item No. 45 : Erection only of fabricated steel other than Masts.

Erection only of fabricated steel other than Masts will be done as mentioned in explanatory note of schedule item Nos. 6 & 33 under power block.

Item No. 46 : Erection of Guy rod assembly.

Erection of Guy rod assembly will be done as mentioned in explanatory note of schedule item Nos. 7 & 34 under power block.

Item No. 47 : Erection of Single bracket assembly with insulator.

Erection of Single bracket assembly will be done as mentioned in explanatory note of schedule item No.8 under power block.

Item No. 48 : Erection of regulating equipment (3 pulley type) with Counter weight assembly for conventional/composite OHE.

Erection of regulating equipment (3 pulley type) with Counter weight assembly for conventional/composite OHE will be done as mentioned in explanatory note of schedule item No.9 under power block.

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Item No. 49 : Erection of materials for termination of double conductors with insulator.

Erection of materials for termination of double conductors with insulator will be done as mentioned in explanatory note of schedule item No.10 under power block.

Item No. 50 : Erection of overhead equipment.

Erection of overhead equipment will be done as mentioned in explanatory note of schedule item No. 17 under power block.

Item No. 51 : Erection of 25 KV Single pole isolator with insulator.

Erection of Single pole isolator will be done as mentioned in explanatory note of schedule item No. 18 under power block.

Item No. 52 : Erection of PG Clamp 1041-2 complete set.

The price shall cover the erection of the PG Clamp 1041-2 complete set with all accessories (like fasteners Alcu clip & Nut-bolt etc).

Item No. 53 : Erection of 25 KV Double pole isolator with insulator.

Erection of Double pole isolator will be done as mentioned in explanatory note of schedule item No. 19 under power block.

Item No. 54 : Erection of an earth contact assembly in an isolator.

Erection of an earth contact assembly will be done as mentioned in explanatory note of schedule item No. 20 under power block.

Item No. 55 : Erection of large span wire (130 sq. mm. copper)

Erection of large span wire (130 sq. mm. copper) will be done as mentioned in explanatory note of schedule item Nos. 23 & 41 under power block.

Item No. 56 : Erection of Solid Copper bus-bars 18 mm.

Erection of Solid Copper bus-bars 18 mm will be done as mentioned in explanatory note of schedule item No. 24 under power block.

Item No. 57: Re-adjustment of head span and tower wagon checking.

The price shall cover the re-adjustment of the head span polygon to enable the additional equipment/s to be suspended from the head span. Payment for the suspension of additional overhead equipment shall be made for under schedule Item 41 & 55 as extra to Item 57.

Item No. 58: Cutting of old mast/Head span Mast.

The price shall cover the cutting of traction masts/Portal upright/Head span mast by using gas-cutter only. Care should be taken at the time of execution of the work; no damage to Railway property takes place. The cut masts shall be handed over to the purchaser's depot. For cutting the mast necessary arrangement and precautions have to be taken by the contractor beforehand. The work will have to be carried out as per the instruction of the purchaser. During cutting of mast if power block is required on critical adjacent location, the same will be permitted by the purchaser.

Item No. 59: Dismantling of cantilever assembly/OHE support.

The price shall cover the dismantling of cantilever assembly from the existing system. Care should be taken that during dismantling of cantilever assembly the OHE should not be

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dislocated. The dismantled equipment shall be handed over to the purchaser's depot. The work will have to be carried out under power block. Dismantling of pull off, if any, will be treated as a cantilever.

Item no. 60: Dismantling of SPS.

The price shall cover dismantling of existing SPS from the existing system. Care should be taken that during dismantling of SPS, the other components should not be dislocated. The dismantled SPS shall be handed over to the purchaser's depot.

Item no. 61: Dismantling of guy rod assembly.

The price shall cover dismantling of guy rod assembly of various lengths including guy rod fitting anchor bolt, nut washer and V bolt etc.

Item no. 62: Dismantling of Termination fittings.

The price shall cover dismantling of all the parts of Terminal fittings. The dismantled equipment shall be handed over to the purchaser's depot as specified above.

Item no. 63: Dismantling of portal/TTC boom including cutting of upright.

The price shall cover cost of dismantling and cutting of released portal/TTC boom including drop arm from the section. The price shall also include the cost of Labour, tools and tackles required for such dismantling. In case, during dismantling work the purchaser feels that services of a road crane will be beneficial, then the same should be arranged by the tenderer. In such case, the tenderer will bear the operational cost of the road crane including the cost of crane operator. If purchaser is considered to use rail crane inescapable for easy and fast dismantling of TTC/portal, then in such case, the purchaser will bear the operational cost of the crane including the cost of crane operator. Provided further that failure to arrange a rail crane by the purchaser cannot be taken as a ground for extension of completion period. The dismantled material is to be stacked and handed over near work site as per instructions given by the purchaser's engineer.

Item no. 64: Dismantling of RE and guide tube assembly.

The price shall cover dismantling of RE and guide tube assembly wherever required. The dismantled equipment shall be handed over to the purchaser's depot as specified above.

Item no. 65: Dismantling of all types of Jumpers.

The price shall cover dismantling of jumpers including clamp wherever required. The dismantled equipment shall be handed over to the purchaser's depot as specified above.

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