

**EXPLANATORY NOTES OF SCHEDULE- I, II, III, IV & V**

Name of the work: OHE works in connection with provision of one loop lines each in both UP & DN Grid and one sick siding line of 70M length at MIK station of CKP Division in S.E.Railway.

**GENERAL:**

- Wherever an Item of works covers supply of materials and / or erection such Item shall include all bolts, nuts, washers, pins & split pins etc. to complete the Items of the works.
- Erection of any Item of equipments, whether supplied by the purchaser will include testing, commissioning and bringing the equipment into operation to the entire satisfaction of the purchaser.
- The basic quantity of components and materials required to make up the unit of work for the selected Items are indicated for guidance. In estimating the price for various Items of work provision of loss and wastage in transit and during erection including cost of freight handling, taxes, duties, insurance if any etc. shall be quoted for the works mentioned in the schedule.
- All OHE/PSI components are to be supplied by the contractor as per latest specification & drawing of CORE or RDSO and from Part-I sources of RDSO/CORE whether specifically mentioned or not, if any such Items are not covered in the approved sources then, the Sr.DEE/TRD/CKP is authorized to approve the specific Items after complete satisfaction.
- All works shall be carried out as per latest/modified standard code of practice (I.E.Rule) & specifications and Drawings approved by the Railways.
- The materials which will be required for execution of the complete work are not in Schedule-I, II & III will be supplied by Railway. However, the cost of transportation, loading & unloading of materials from nearest depot or RRD/CKP to work site will be born by the contractor.
- Material will be supplied to SSE/OHE/SINI or as per the direction of Sr.DEE/TRD/CKP.
- The consignee of the work will be SSE/OHE/SINI
- The erection or dismantling of different OHE/PSI equipments will be executed under SSE/OHE/SINI Depot jurisdiction of CKP Division as per the direction of concerned depot In-charge or his authorized representative.
- As per site requirement or as advised by Railways contractor should have to deploy multiple gangs at different work sites with skilled manpower, tools & tackles, ladder, plant and other machineries etc for optimal utilisation of shadow blocks during Mega Block Programmes if any. Contractor should also deploy sufficient gangs for foundation work and other non-power block OHE works so that power block related OHE modification works may be completed during shadow block. Failing which a penalty of **Rs.25,000/- per case** will be imposed for non-deployment of gangs / manpower on that particular day. Railway will inform the requirement of the gangs / manpower to the contractor in advance through Mobile Phone, SMS and Whatsapp etc.
- The rates in the Tender schedules are including GST. Tenderer is required to quote the rates inclusive of all taxes including GST for items of above Tender schedules.

Item No. 1 of Sch-I	Supply of fabricated traction mast /main mast and opposite gantry mast (Galvanised).
Item No. 2 of Sch-I	Supply of TTC (Galvanised).
Item No. 3 of Sch-I	Supply of fabricated and galvanised portals with boom.
Item No. 2 of Sch- V	Erection of traction mast/TTC/Portal upright/Main mast and opposite gantry mast. (Galvanised).

The price shall cover supply of traction mast/main mast/feeder mast/gantry mast/TTC upright including boom/portal up right including boom (Galvanised), RSJ or Fabricated etc with all accessories from RDSO approved source with latest RDSO/CORE specification & drawing. The price shall also cover erection of traction mast/main mast/feeder mast/gantry mast/TTC upright/portal upright (Galvanised), released/Cut Traction mast at site, switching station and mast for LT supply transformer station whether rolled or fabricated. Payment for erection of masts/TTCs/portals will be made only after cutting and removal of the old released masts/TTCs/portals from site.

  
Sr.DEE/TRD/CKP

  
(JE1 TRD/CKP)

  
DEE/TRD-II/CKP



**NOTE:**

For the purpose of payment, the weight of individual traction mast and masts of head span shall be determined for each type on the basis of the payable weights per meter length of traction mast for standard types or as per latest weight schedule of different galvanized OHE structures issued by RDSO. For special types, the payable weight per meter length will be indicated by the contractor at the time of approval of design.

The price shall cover the charges for transportation of materials to Rlys stores / Consignee's depot including loading & unloading of masts/TTC/Portal/other OHE structures etc. The price shall also cover the transportation, loading and unloading of traction mast /TTC/portal/OHE structures from Rlys stores / Consignee's depot to work site. No any extra payment will be made by Rlys against the cost of transportation, loading and unloading of materials. The price shall also include the cost of stenciling of location number on mast/portal upright/ TTC upright in the manner as directed by the Railways.

The price shall also include the straightening of masts portal/TTC uprights bent during transit and cutting of masts/portal uprights/TTC upright to suit the site condition. The price shall also include supply of GI fasteners etc wherever required as per approved design & drawing and weight schedule.

- |                     |   |
|---------------------|---|
| Item No. 3 of Sch-V | Erection of TTC boom. (Galvanised).                 |
| Item No. 4 of Sch-V | Erection of fabricated and galvanised portal booms. |

The price shall cover erection of TTC boom/fabricated & galvanised portal boom of different sizes as advised by the Railways. The price shall cover all arrangements like crane, derrick will be done by the contractor to carry out the work. However, the erection charges of TTC upright/portal upright will be covered in Item No. 3 of Sch-V. Payment for erection of masts/TTCs/portals will be made only after the cutting and removal of the old released masts/TTCs/portals.

- Item No. 1 of Sch- II | Supply of Stay insulator.

The price shall cover supply of Procelain stay insulators from RDSO/CORE approved source as per latest specification and drawing of CORE/RDSO.

- Item No. 2 of Sch- II | Supply of Bracket insulator.

The price shall cover supply of Procelain Bracket insulators from RDSO/CORE approved source as per latest specification and drawing of CORE/RDSO.

- Item No. 3 of Sch- II | Supply of 9 Tonne insulator.

The price shall cover supply of Procelain 9 Tonne insulators from RDSO/CORE approved source as per latest specification and drawing of CORE/RDSO.

- |                        |  |
|------------------------|--|
| Item No. 1 of Sch- III | Supply of fabricated & galvanised small steel works other than traction mast including DA.   |
| Item No. 5 of Sch-V    | Erection of fabricated & galvanised small steel works other than traction mast including DA. |


The price shall cover cost of supply & erection of fabricated & galvanized small parts steel work (other than Mast / TTC / Portal) including dropped arm, super mast with cross arm, M.C. Cross arm, chair and adaptor for bracket Assly. Suspension Bracket for feeder, all other small parts steel works including dwarf mast and stub mast from RDSO approved source with latest RDSO specification.

Supply & erection of G.I. fasteners holding down nut & bolts shall be paid as per approved weight schedule & drawings.

- Item No. 2 of Sch- III | Supply of single bracket assembly complete for conventional OHE including fabrication.

  
Sr.DEE/TRD/CKP

  
DEE/TRD-II/CKP

  
JE/TRD/CKP




The price shall cover supply of single bracket assembly including all components as tubes, mast fitting for hook insulator, bolts, nuts and washers, tubular stay arm hook bracket, suspension clamp, reg. arm hook assembly complete with bolts and nuts, register arm dropper assembly, bend steady arm, anti wind clamp assembly, RRA assembly, etc but excluding the supply of SPS and insulators.

Sr.No.	Part of Cantilever Assembly for Conventional OHE	Qty	RI No.
1	Mast fitting for hook insulator (with 02 Nos of GI bolts, nuts & split washers).	1	As per latest specification & drawing of CORE or RDSO
2	Stay tube assembly (fabricated).	1	
a	Telescopic tube	1	
b	TT bolts & nuts (SS 10x65x30)	2	
c	Backing Angles with essential fasteners complete for different types of OHE structures as per site conditions.	2	
d	TT Sleeve	1	
e	Set Screws with lock nuts	2	
f	TT adjuster	1	
3	Large suspension bracket.	1	
a	Part-1	1	
b	Part-2	1	As per latest specification & drawing of CORE or RDSO
c	GI 'U' bolts with nuts & Split washer	2	
4	Single suspension clamp assly.	1	
a	Single suspension clamp	1	
b	SS 'U' bolts with Nuts 10 mm dia	2	
c	Copper lock plates	2	
d	SS pin 10x35 with flat steel washer and copper split pin	1	
	OR		
	Double suspension clamp assembly	1	
a	Double suspension clamp	1	
b	SS 'U' bolts with Nuts	2	
c	Brass plate	1	
d	Copper lock plates	2	
e	SS pin with flat steel washer and copper split pin	1	
f	Copper sleeve	1	
5	Bracket tube assembly. (Fabricated).	1	As per latest specification & drawing of CORE or RDSO
a	Bracket tube large.	1	
b	Tube cap	1	
c	SS 'U' bolts, nuts, lock nuts for bracket insulator.	2	
d	38 mm adopter (186 mm).	1	
6	Bottom attachment assembly	1	
a	Bottom attachment -1	1	
	OR		
	Bottom attachment-2	1	
b	Suitable GI fasteners	2	

  
Sr.DEE/TRD/CKP

  
DEE/TRD-II/CKP

  
(JE (TRD/CKP))



7	Large Hook Clamp Assembly	1	As per latest specification & drawing of CORE or RDSO
a	Part-I	1	
b	Part-II	1	
c	Suitable GI bolt with Nut & Lock Nut	2	
8	Registration Tube assembly (Fabricated).	1	
a	Registration tube	1	
b	RT Cap	1	
c	RT eye	1	
d	RT dropper clip with GI bolt, L/nut & washer.	1	
e	Drop bracket with SS stud bolt & L/Nut.	1	
	OR		As per latest specification & drawing of CORE or RDSO
	Raised Register arm assembly (Fabricated).	1	
a	RRA Tube	1	
b	RRA eye	1	
c	RRA dropper clip	1	
d	RRA adjuster	1	
e	TT Sleeve	1	
f	SS set screws with L/Nuts	2	
9	Swivel clip assembly	1 set	
a	Swivel clip part	1	
b	Swivel clip pin	1	
	OR		As per latest specification & drawing of CORE or RDSO
	RRA or push arm clamp	1	
	GI bolt & L/Nut	2	
10	BFB Steady arm (with registration tube assly only ) (Fabricated)	1	
a	Section BFB(Al.Alloy) 31x32	1	
b	BFB Steady arm swivel	1	
c	BFB Steady arm hook	1	
11	Antiwind clamp assembly for BFB S/A (with registration tube only)	1	
a	Aluminium strap	1	
b	Strip		
c	SS bolt, Nut, flat washer (10x70x30).	1	

**NOTE:-**

1. The price shall include supply of revetting materials as per specification.
2. The price shall also include supply of all type/size of GI or SS fasteners as per requirement whether specification mentioned or not.
3. All types ERW galvanization tube shall be supplied by the contractor include bracket sleeve wherever required.
4. ERW large bracket tube 40/49 mm dia shall only be supplied and used for bracket assembly.

**Item No. 6 of Sch - V | Erection of single bracket assembly complete for conventional OHE including fabrication.**

Price shall cover erection of single bracket assembly with all components including Stay insulator, bracket insulator and dropper wires but excluding small parts steel works if any.

  
 Sr.DEE/TRD/CKP

  
 DEE/TRD-II/CKP

  
 JE/TRD/CKP



**NOTE:-**

1. The price shall include fabrication of 5 mm dropper wire.
2. The price shall cover fabrication of bracket assembly i.e. cutting, drilling, revetting and welding of ERW as per each location requirement. Rivets etc are to be supplied by the contractor.
3. The price shall include erection of all type/size of GI or SS fasteners as per requirement whether specification mentioned or not.
4. ERW large bracket tube 40/49 mm dia shall only be supplied and used for bracket assembly and accordingly suitable fittings shall be supplied and used.

**Item No. 3 of Sch- III** | **Supply of section insulator assembly including core and cut in insulator.**  
**Item No. 7 of Sch-V** | **Erection of section insulator assembly including core and cut in insulator.**

The price shall cover supply & erection of all components including core and cut in insulator required for a standard section insulator assembly including special arrangement for supporting the equipments & all terminal fittings for conductors & the section insulator assembly including PG clamp & section insulator number tag etc. (Adjustable dropper wire will be supplied by Railways).

The price shall cover erection and adjustment of all components including section insulator assembly, 9 Tonne insulator on the catenary and shaping provision of adjustable droppers.

**Item No. 4 of Sch- III** | **Supply of regulating equipment (3:1) with all components including counter weight assembly and SS rope for conventional OHE.**

The price shall cover supply of regulating equipment (ATD) 3:1 ratio complete with counter weight assembly including 9T adjuster with double strap Assly and normal / antitheft guide tube assembly, complete attachment for AFD for normal mast /fabricated mast as per site requirement, S.S. wire rope of regulating equipment and counter weights 40kg/20kg with counter weight plate.

Sr. No.	Description of Item	Quantity	Part No.
1	Regulating Equipment (modified 3:1 ratio) with 250 dia pulley set, clevis and eye SS rope end fittings and wedges, AFD, SS wire rope 8.50 mm dia, 8.00 meter length with required bolts, nuts, lock nuts and washers.	1 set	As per latest specification & drawing of CORE or RDSO.
2	9 Ton adjuster	1 No	
3	Double Strap complete	1 set	
4	Counter weight assembly	1 set	
a	Cast iron base weight with ring 40 kg.	1 No	
b	Cast iron base weight 40 kg	15 Nos	
c	Cast iron base weight 20 kg	1 No	
d	Counter weight plate	1 No	
e	Counter weight eye rod 1.55 mtr	1 No	
5	Guide tube assembly	1 set	
a	Guide tube 5.60 mtr	1 No	
b	Guide tube bracket	2 No	
c	Guide tube support angle	2 Nos	
d	GI bolt , nuts 16 x 260/360 x 100	4 Nos	
6	Attachment for AFD	1 set	As per latest specification & drawing of CORE or RDSO.
a	Anchor attachment for fabricated mast	1 set	
b	Backing angle	2 Nos	
c	GI Bolt, Nut, Lock nut -20 x 230/260/320 x 57	4 Nos	

  
 Sr.DEE/TRD/CKP

  
 (JE/TRD/CKP)

  
 DEE/TRD-II/CKP



The payment will be made only to the extent of material required at site. The contractor will safeguard the theft etc of materials till the completed assets are taken by the Railway.

**Item No. 8 of Sch-V | Erection of regulating equipment (3:1) with all components including counter weight assembly and SS rope for conventional OHE.**

The price shall cover erection of regulating equipment (ATD) 3:1 ratio (Modified) complete including 9T adjuster with double strap Assembly and normal / antitheft guide tube assembly, complete attachment for AFD for normal mast/ fabricated mast/TTC/Portal as per site requirement, S.S. wire rope of regulating equipment and counter weight assembly complete set of 40kg/20kg with counter weight plate. Erection of regulating equipment (ATD) 3:1 ratio (Modified) should be done as per RDSO approved drawing No. TI/DRG/OHE/ATD/RDSO/00001/99/1 dt. 16.03.2005.

The price shall also cover adjustment of entire regulating equipment. The price shall not include erection of termination.

**Item No. 5 of Sch- III | Supply of Guy rod assembly with all accessories.**

**Item No. 9 of Sch-V | Erection of Guy rod assembly with all accessories.**

The price shall cover supply and erection of guy rod assembly of various lengths complete with all accessories including parts grouted in anchor block including bolt & nuts etc. excluding dwarf masts. The components comprises of:

- 3232 or 3242: Mast guy rod fittings suitable for masts / TTC / Portal as per site requirement with suitable fasterns.
- 3231 / 3241: Mast anchor fittings suitable for masts / TTC / Portal as per site requirement with suitable fasterns.
- 5220-2: Guy rod double strap assembly.
- 5004/5005/5006-1: Guy rod with nut, washer and split pin.
- 5001-3, 5002: Guy rod stirrup.
- 5007-1 / 5001, 5001-1: Anchor V Bolt / Anchor bolt complete with nuts, lock nuts and split pins. (Double threaded).
- 5008: Anchor loop or Dwarf Mast Attachment.

**Note:**

1. Supply & erection of guy rod assembly at anticreep, ATD on portals will also be paid under this Item.
2. Supply of all components should be suitable as per site requirement for all type of OHE Masts / structures.
3. Suitable fasterns required for assembling different components of guy rod will also included in this Items.

**Item No. 6 of Sch- III | Supply of anticreep arrangement with Rly supplied catenary wire.**

**Item No. 10 of Sch- V | Erection of anticreep arrangement with Rly supplied catenary wire.**

The price shall cover the supply of all materials for anti-creep including adjusters (RI-5020), mast anchor fittings (RI-3231) with bolts & nuts etc, at its termination including materials required for 03 Nos. antitheft jumpers on either side on structures, ending clamps and other fittings viz. 18 mm single clevis assembly (RI-5040/3010), anchor double strap assembly (RI-5030), double suspension clamp (RI-1170), double eye distance rod (R1-5183) and 9T insulator but excluding anti-creep wire. Catenary wire for anti-creep and antitheft jumper wire which will be supplied by Railways.

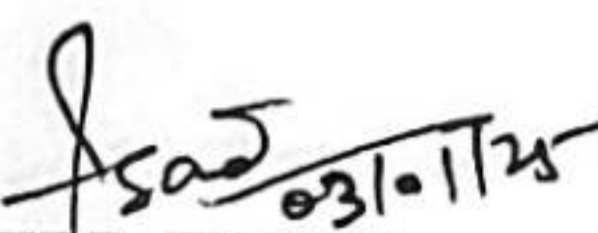
Price shall also cover erection of anticreep with all components including erection of catenary wire for anti-creep and anti theft jumper wire supplied by Railway.

**Item No. 7 of Sch-III | Supply of Aluminium feeder conductor.**

**Item No. 11 of Sch-V | Erection of Aluminium feeder conductor.**

  
Sr. DEE/TRD/CKP

  
(JE/TRD/CKP)

  
DEE/TRD-II/CKP



7

The price shall cover supply and erection of Aluminium 25 Kv feeder conductor (along or across tracks) made of a single all aluminium bare hard drawn conductors 19/3.99 mm (SPIDER). The price shall not include the cost of suspension assembly and small parts steel works complete with bolts & nuts.

Item No. 8 of Sch- III	Supply of single earth electrode.
Item No. 12 of Sch-V	Erection of single earth electrode.

The price shall cover supply and erection of an earth electrode including provision of a protective concrete box with removable cover as per RDSO approved drawing and latest specification. The price shall include the testing of earth value and painting the particulars on the box. The price shall be inclusive of concrete box with cover for this item.

Item No.9 of Sch- III	Supply of 25 kV single pole Isolator without earth contact assembly.
Item No. 13 of Sch-V	Erection of 25 kV single pole Isolator without earth contact assembly.

The price shall cover supply & erection of 25 KV, 1600 ampere single pole isolator complete without earthing heel. The price shall cover supply and erection of all the components required for installation and to bring into operation a single pole isolator, in OHE, excluding only the supply of large jumper wire required for connecting the isolators with the OHE, but including its erection. The components consist of:-

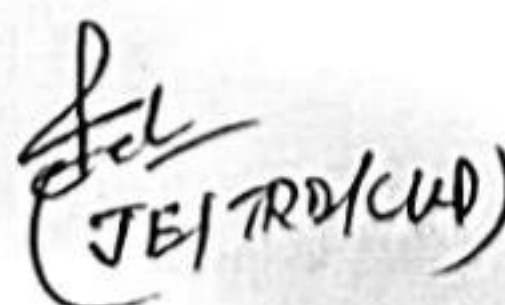
1. 25 KV, 1600 ampere single pole isolator complete with mounting base, male female components, operating lever, cam, operating rod, operating guides, operating rod handle – 01 Set.
2. Operating rod insulator – 01 No.
3. Pedestal insulator – 02 Nos.
4. Terminal connector bolted type with both side steel fasteners 1009 or similar – 02 Nos.
5. Parallel clamps 1030-3 or suitable for jumper connection from isolator to OHE. – 08 Nos.
6. Modified triangular isolator lock with key – 01 No.
7. Number plate – 01 No.
8. Materials for pedestal insulators with fasteners - 04 Nos.
9. Outtrigger 9036 or (9031-9045) – 01 No.
10. Outtrigger back angle 9037 or (9031-9045) – 01 No.
11. Isolator channel 9039 or (9031-9045) – 01 No.
12. Isolator channel 9039A or (9031-9045) – 01 No.
13. Back angle 3076-4 / 6 / 7 – 05 Nos.
14. Operating guide support angle – 03 Nos.
15. Base plate for mounting isolator handle – 01 No.
16. G.I.Bolt nut 16 x 40 / 50 x 30 / 38 – 20 Nos.
17. G.I.Bolt nut 16 x 220 / 260 x 57 or "J" Bolts– 10 Nos.

Note: Extra channels / outriggers / back angles required for supporting jumper / bus bars on pedestal insulators at TTC / portal booms will be covered under SPS.

Item No. 10 of Sch- III	Supply of overhead equipment excluding catenary, contact, jumper and dropper wire.
Item No. 14 of Sch-V	Erection of overhead equipment including catenary, contact, jumper and dropper wire.

The price shall cover supply of all components including dropper clips, parallel clamps for jumpering and splices (where their use is approved), but excluding contact wire, catenary wire, dropper wire, jumper wire and terminating wire/small parts steel work complete with nuts and bolts etc, for attachment of number plate to mast / structure, if any.

  
Sr.DEE/TRD/CKP

  
(JE/TRD/CKP)

  
DEE/TRD-II/CKP



The price shall also cover erection of all components and wires and conductors including contact wire, catenary wire, droppers, jumpers and terminating wires, if any, but excluding small part steel work, if any. The price shall include provision for erection of number plates on traction mast or structures.

The price shall also include the checking of OHE for final adjustment & inspection of OHE, the cost of painting the setting distance of mast/ structure, contact height, rail level, location of emergency sockets on mast / structure. No additional payment will be made for manual stringing of conductor viz catenary, contact wire etc. Only for final adjustment and inspection tower wagon will be provided by Railways.

RI.No.	Description of item	Qty./TKM
1030-2	Contact wire parallel clamp with nut bolt & spring washer.	8 Nos.
1040-2	Contact wire parallel clamp with nut bolt & spring washer.	48 Nos.
1180	Contact wire dropper clip with 'U' pin.	140 Nos.
1192	Catenary wire dropper clip complete with bolts, nuts ,split pin etc.	140 Nos.
	Contact wire ending clamp with pin bolt and washer.	02 Nos.
1120	Catenary ending clamp with pin bolt and washer.	02 Nos.
1140	Large span wire clamp with pin bolt and washer.	02 No.
5020-1/2	Adjustor	02 No.
5030	Anchor double strap assembly with pin bolt and washer.	02 Nos.
5191/5192	Compensating plate / equalizing plate	01 No.

**NOTE FOR MEASUREMENT OF ITEM**

- For the purpose of payment against item above mentioned, the length of overhead equipment which shall include terminating wire shall be measured from the centre line of the traction mast/structures at which two ends of tension of OHE are anchored.
- The length shall be the difference between the actual chainages of the two traction mast/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 include in the "AS ERECTED" lay out plans for purpose of progress payment reference to lay out plans as approved shall be made.  
No additional payment for checking of OHE by Tower wagon on power block will be paid.
- The price also includes fabrication of 5 mm in-span dropper wire as per scheduled drawings.

Item No. 11 of Sch-III | Supply of Material for termination of single conductor/FTA with complete set (including supply of cut in insulator).  
 Item No. 15 of Sch-V | Erection of Material for termination of single conductor/FTA with complete set (including cut in insulator).

The price shall cover supply of all materials required for the termination of single conductor/cross feeder/ 25 kV aluminium/ACSR feeder with complete set including appropriate mast anchor fittings, adjuster, strain clamp and end fitting and splices as required including the 9 Tonne insulator assembly.

**NOTE:**

- The prices shall not include the cost of Small parts steel works complete with bolts and nuts wherever required.
- The prices not include the cost of jumper connection.
  - Between feeders or return conductors and
  - or feeders or return conductors to a bus-bar, overhead equipment or isolator switch etc.

  
 Sr.DEE/TRD/CKP

  
 JE/TRD/CUP

  
 DEE/TRD-II/CKP



The price shall cover erection of all materials required for termination of single conductor / cross feeder/aluminum 25 KV feeder with complete set including appropriate mast anchor fittings, adjuster, strain clamp and end fitting / splices as required the price shall cover erection of all materials including 9 Tonne insulator assembly.

- Item No. 12 of Sch- III | Supply of Material for termination of double conductor/FTA with complete set.  
 (Including supply of cut in insulator).  
 Item No. 16 of Sch-V | Erection of Material for termination of double conductor/FTA with complete set.  
 (Including cut in insulator).

The price shall cover supply and erection of all materials required for the yoked termination of two over head conductors on a traction mast or structure, including appropriate mast anchor fittings, clevis assembly, adjuster, ending clamps for catenary and contact wires, anchor double strap assembly, equalising / compensating plate and fittings including the supply & erection of solid core 9 Tonne insulator assembly.

Sr. No.	Description of Item	Quantity	Part No.
1	Single clevis	1 No	As per latest specification & drawing of CORE or RDSO.
2	Anchor Double strap with pin bolt and washer.	5 Set	
3	9 Ton Insulator	1 No	
4	9 Ton adjuster	3 Nos	
5	Equilising or compensating plate	1 No	
6	Catenary end fitting with pin bolt and washer.	1 No	
7	Contact end fitting with pin bolt and washer.	1 No	
8	Distance rod	2 No	
9	GI bolt, nut, lock nut 20x65x46	5 Nos.	

The price shall include all type/size of GI or SS fasteners as per requirement whether specification mentioned or not.

- Item No. 13 of Sch- III | Supply of Contact wire splice.  
 Item No. 14 of Sch-III | Supply of Catenary wire splice.

The price shall cover supply of Contact wire splice (107 Sq.mm) and Catenary wire splice (65 Sq.mm) from RDSO/CORE approved source as per latest specification and drawing of CORE/RDSO.

- Item No. 15 of Sch-III | Supply of Structure Bond made (40 mm x 6 mm).  
 Item No. 16 of Sch-III | Supply of Longitudinal bond.  
 Item No. 17 of Sch-III | Supply of Transverse/cross/special Bonds.  
 Item No. 17 of Sch-V | Erection of Structure bond/ Longitudinal bond/ Transeverse, Cross or Special bonds.

The price shall cover supply of all materials including mild steel flat required to provide a structure bond on platform or other than platform, cross bond/longitudinal bond/transverse or special bond connecting a traction mast or structure or between two rails or earth electrode including all fasteners at both ends. The price shall include shaping and drilling of the bond complete with fasteners duly manufactured in accordance to RDSO's approved drawings.

Price shall cover erection of different types of bonds with two coats of red oxide paint and bitumen paint. Price also includes drilling of hole of appropriate size in the rail and other structural member for fastening of bonds.

  
 Sr.DEE/TRD/CKP

  
 (JE (TRD/C&D))

  
 DEE/TRD-II/CKP



For supply of various types of Bonds the tenderer shall procure mild steel flat size (40 mm x 6mm) of approved quality as per latest I.S. These shall be produced for inspection before painting & approved by Sr. DEE (TRD)/CKP or his authorized representative before taking delivery. Each set of G.I. bolt, nut & spring washer & flat round washer (size 16 x 50 x 38mm) will have G.I. bolt of size (16 x 50 x 38mm) and suitable nut spring washer, & flat washer. The G.I. bolt, nut, washer shall be RDSO approved source only.

The price shall cover transportation and erection of structure / cross / transverse bond/ longitudinal bond. Price also includes drilling of hole of appropriate size in the rail and other structural member for fastening of bonds, if required. The price shall also cover erection of earthing terminals of equipments like L.T. Transformer, isolator mast with structure and then to Rails as per RDSO approved relevant drawings. The price shall also cover the painting of bond with two coat of red oxide and one coat of black paint. The contractor shall arrange their own tools & plants, connected with fabrication, termination, drilling & fixing.

Item No. 18 of Sch- III	Supply & erection of Retro Reflective type structure number plate as per RDSO specification.
Item No. 19 of Sch- III	Supply and erection of enamelled type Caution board for 25KV AC traction in three languages Hindi, English & Regional language.
Item No. 20 of Sch- III	Supply and erection of enamel Danger board for 25KV.
Item No. 21 of Sch- III	Supply and erection of enamel Public caution board in three languages in Hindi, English & Regional language.
Item No. 22 of Sch- III	Supply and erection of Electric engine stop board.
Item No. 23 of Sch- III	Supply and erection of Power block working limit board.
Item No. 24 of Sch- III	Supply and erection of enamel Unwired turn-out board.

The price under item No.18 to 24 of Schedule-III shall cover supply & erection of structure number plates / caution boards / danger boards/notices as per latest specification & drawings of RDSO / CORE viz. Retro Reflective type structure number plate, enamelled type Caution board for 25KV AC traction, enamel Danger board for 25KV, enamel Public caution board in three language in Hindi, English & Regional language, Electric engine stop board, Power block working limit board & enamel Unwired turn-out board etc. on OHE structures/gantry/wall as per CORE/RDSO approved drawing or as per the instructions given by the purchaser. The price shall also include cost of supply of G.I. /S.S. fasteners with fixture for erection of number plates/caution boards /danger boards etc on different types of masts/ OHE structures/gantry/walls etc as per requirement at site.

**Item No. 25 of Sch – III** | **Supply & erection of shock treatment chart in two languages.**

The cost shall include cost of supply & erection / installation of Shock treatment chart in two languages as per relevant IS/IE rules.

The price shall include GI/SS fasteners with fixture for erection of the same. The price shall also cover the cost of transportation of above items with all accessories from purchaser's store / depot to the work site where it will be fixed. The above schedule item will be erected as per the instruction of concerned Depot In-charge or his authorised representative.

**Item No. 26 of Sch – III** | **Supply & erection of enamel sectioning diagram.**

The price shall cover supply & erection of enamel sectioning diagram as per CORE/RDSO approved drawing and instructions given by the purchaser. The price shall also include cost of supply of fasteners & fixtures for fixing on wall as per requirement at site.

  
Sr.DEE/TRD/CKP

  
(JE/TRD/CKP)

  
DEE/TRD-II/CKP



**Item No. 18 of Sch. V | Adjustment of OHE by Tower wagon.**

The price shall cover adjustment and final checking of OHE by tower wagon at each location and each span for smooth running of Electric traffic and finally testing of OHE and commissioning of the same for commercial use.

All claims under this item have to be supported by the following certificate to be furnished by the contractor on the connected bills.

- a) The modifications are not on account of non - compliance of specifications approved and instructions given by the Railways for execution of works.
- b) The quantities of work involved for modification have been finalized jointly with the Railway's Engineers before taking the work in hand.
- c) The dismantled materials where applicable have been handed over to the purchaser's representative at store depot.

**Item No. 19 of Sch-V | Transfer of OHE from one support to another and adjustment of droppers.**

The price shall cover shifting/transfer of over head equipment to a bracket assembly on a new mast or support with removal of OHE and dismantling of the erected bracket assembly from the old mast or support and consequent adjustment to over head equipment required such as droppers leveling etc.

**Item No. 20 of Sch-V | Cutting of Traction Mast/leg of TTC uprights, portal upright.**

The price shall cover cutting & removal of Traction Mast/leg of TTC uprights, portal upright including all accessories and hand over to nearest OHE depot as advised by Rly Engineer at site.

The cost of transportation, loading and unloading will be borne by the contractor for transportation of cut traction mast/ leg of TTC uprights, portal upright from work site to nearest OHE depot / Rly store. Contractor will stack the all cut traction mast/ leg of TTC uprights, portal upright etc. at work site and transported to nearest OHE depot / Rly store as advised by Rly Engineer. The price shall also cover shifting & loading of all cut traction mast / leg of TTC uprights, portal upright etc. and unloading at nearest OHE Depot / Rly. Store as advised by Rly Engineer.

**Item No. 21 of Sch-V | Dismantling & removal of Small parts steel works including portal/TTC boom.**

The price shall cover dismantling & removal of all small steel work including accessories other than mast including drop arm, boom / special type of boom etc. The price shall also cover transportation of released materials to nearest OHE depot as advised by Railway Engineer.

**Item No. 22 of Sch-V | Dismantling & removal of Cantilever assembly.**

The price shall cover dismantling & removal of cantilever assembly. The price shall also include transportation of released materials to nearest OHE Depot or as advised by Railway Engineer.

**Item No. 23 of Sch-V | Dismantling & removal of OHE terminal assembly complete.**

The price shall cover dismantling & removal of OHE terminal assembly. The price shall also include transportation of released materials to nearest OHE Depot or as advised by Railway Engineer.

**Item No. 24 of Sch-V | Dismantling & removal of regulating equipment (ATD) with counter weight assembly.**

  
Sr.DEE/TRD/CKP

  
(JE/TRD/CKP)

  
DEE/TRD-II/CKP



The price shall cover dismantling & removal of existing Regulating assly (ATD) with counter weight assembly including adjuster with double strap Assly and normal / antitheft guide tube assembly, S, S. wire rope of regulating equipment and counter weights 40 kg/20kg arresting gear arrangement from three/five pulley type ATD, Counter weight eye rod and all type/size of GI or SS fasteners. The price shall also cover transportation of the released equipment from work site to nearest OHE depot as advised by Railway Engineer.

**Item No. 25 of Sch- V | Dismantling & removal of section insulator assembly.**

The price shall cover dismantling and removal of section insulator assembly including PG clamps, core insulator, droppers and jumpers, contact/catenary wires splicing etc. including transportation of released materials to nearest OHE Depot as advised by Railway Engineer.

**Item No. 26 of Sch-V | Dismantling & removal of guy rod assembly.**

The price shall cover dismantling & removal of Guy rod assembly with all accessories form old locations. Price shall also include transportation of released Guy rod assembly to work site to provide at new location and remaining Guy rod Assembly to be handed over to nearest OHE Depot as advised by Rly Engineer.

**Item No. 27 of Sch-V | Dismantling & removal of overhead equipment including catenary, contact, jumper and dropper wire.**

The price shall cover dismantling of OHE equipments with all components and wires and conductors including contact wire, catenary wire, droppers, jumpers and terminating wires. The price shall also cover transportation of released equipment from work site to nearest OHE depot as advised by Railway Engineer.

**Item No. 28 of Sch-V | 100% Extra on erection rates for works under power block on Sr. No. 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25 & 27.**

The price under Sr. No. 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25 & 27 of schedule – V cover extra 100% charges over and above erection rates of power supply equipments or erection of equipment with joints equipment already energized or an energized equipment which calls for a power block (shut-off of traction power). The price payable under this Item shall be 100% extra over the erection rates of the Items 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. The extra erection rate under this Item will not be payable, if power block is given for a total duration of 4 hours or more in a day.

The contractor shall finalize the quantities of various Items of work to be done under the power block, jointly with the consignee prior to taking the works in hand.

**Item No. 1 of Sch – V | Preparation of OHE Design & Drawings.**

The price shall cover the following:-

- Preparation & submission of OHE layout plan.
- Verification of purchaser's pegging plan.
- Preparation of cross section drawing, SED for each location.
- Choice of type & size of foundation with soil investigation.
- Supply of drawings- on approval of drawings. Six copies of LOP & CSD shall be supplied.
- Preparation of as erected drawing.
- Supply of requisite no. of as erected drawing. One copy in original, 2 RTF + 4 Ammonia prints + CD.

  
**Sr.DEE/TRD/CKP**

  
**(JE/TRD/CKP)**

  
**DEE/TRD-II/CKP**



Item No. 1 of Sch-IV | Concrete for foundation and plinth in all type of soil including excavation, grouting, muffing etc and supply of sand, ballast & cement.

The price shall cover excavation, supply and handling of all materials and accessories temporary arrangements for excavation in all type of soil including hard & rocky soil, concreting and grouting thereafter including supply of cement, sand, ballast & other materials whatsoever. Price also includes supply & handling of arrangements for shoring and shuttering where necessary, casting, grouting of mast/structure & finishing the top of concrete foundations with muff. Price also includes dismantling of temporary arrangement and removal and dressing of soil.

The price shall cover excavation in rocky soil or RCC/PCC plinth and casting of foundation. Price also includes all reinforced concrete work for foundations, including supply of steel for reinforcement and other materials required for reinforcement, shoring and shuttering wherever necessary, casting, grouting & finishing the tops of the foundation blocks. The price also includes dismantling of all connected temporary arrangements, back filling as required and removal of excess soil, compacting the same to the required height and width as per drawing to ensure safety of foundation. The price shall also cover all concrete work for foundation or anchor block on bridge piers, irrespective of whether they are actually reinforced or not and those for pile foundation and counter weight foundations.

The purchaser's Engineer shall certify where use of chisel and hammer or blasting has been necessary. The contractor shall arrange for supply of explosives and all tools and plants for 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 or as the case, may be. If half of the depth or width of the excavation is in hard soil / concrete / masonry drains / walls and the other half is in rock. The entire foundation shall be paid. The price shall include the cost of cement. Payment for work in hard & rocky soil and in other than hard & rocky will be made as per the rate of respective items under Schedule-IV of tender schedule.


**Notes for measurement for Items:-**

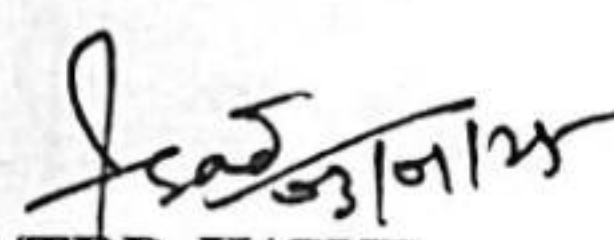
1. The payable volume of the foundation shall be designed one as shown in the drawings for which the hole has been blasted, irrespective of the actual configuration assumed by the latter due to the blasting.
2. The depth of the excavation shall be measured from the formation level to the maximum excavated point. The price shall include all works in all classes of soil.

**Notes:-**

1. The prices shall be same for any shape or 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.
2. The prices shall apply for concreting of all foundation for mast, gantries, portals, anchor blocks for guy rods and fencing uprights, TTC, dwarf mast etc.
3. For purposes of computation of volume of concrete, the volume of steel work embedded in the foundation block shall be ignored.
4. Cost of all concrete will be paid and the prices of other items shall not include cost of concrete.
5. For purpose of computation of volume of concrete, the volume of concrete shall include the volume of sand and bitumen in sand cored foundation. However, for the purpose of computation, of quantity of cement utilized in sand core foundation the volume of the sand & bitumen used in 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 head span mast, 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.

  
**Sr.DEE/TRD/CKP**

  
(JE17R)

  
**DEE/TRD-II/CKP**



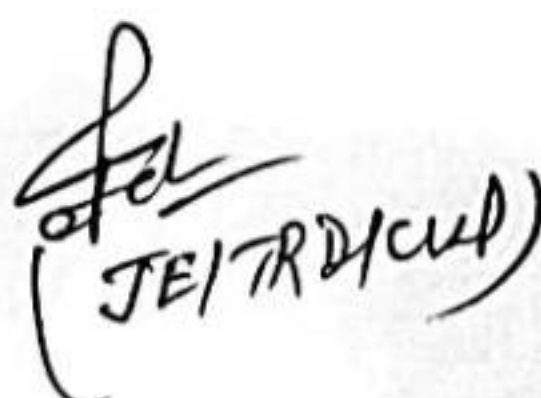
7. The prices shall also include the cost of concrete cable trenches and trench covers at the switching stations as well as embedment of drain pipes, where required.
8. The prices shall also cover the cost of diversion of masonry/earth drain wherever necessary for casting of foundation.
9. Cement for use in the works should be procured by the contractor from the main producers / their authorized dealers/authorized stock yards which should conform to BIS specifications and should be minimum 43 grades.
10. Cement bags preferably in paper bag packing should bear the following information in legible markings:
  - i) Manufacturer's name.
  - ii) Registered trademark of manufacturer, if any.
  - iii) Type of cement.
  - iv) Weight of each bag in KGs or No. of bags/Tonne.
  - v) Date of manufacture, generally marked as week of the year/year of manufacture, e.g. 30/99 which means 30th week of 1999.
11. To ensure quality control, test certificate from the manufacturers should be produced by the contractors, which should conform to the relevant specifications (latest may be incorporated).
12. Railways may also take samples during the course of work and get the cement tested to ascertain their conformity to specifications.
13. When such sampling is done, it should be as per IS specifications.
14. Tests on the samples to be carried out in field should be as per BIS specification.
15. Tests on cement to be as per IS 4031. Some of the tests which may be carried out.
  - i) Compressive strength.
  - ii) Initial and final setting time.
  - iii) Consistency.
  - iv) Soundness.

Foundation must be done according to RDSO approved drawing No. TI/DRG/CIV/FND/RDSO/001/04/Q Sheet-1 to sheet - 5 or latest for OHE & PSI works. Concrete for foundation shall be normal mix of grade M10 obtained by mixing of cement Portland grade 46 or as advised by Railways coarse aggregate, fine aggregate and water in accordance with proportion given vide table 3 of IS 456-1978. For grouting, muffing, embedding of structure in foundation and for cable trenches at switching station, normal mix concrete M15 obtained by mixing materials in proportion as indicated in Table 3 of IS-456-1978 shall be used.

**Cube test:** The contractor shall be arranged concrete cube test as per relevant BIS specification to be used in foundation. The cost of test shall be borne by the contractor i.e. price is inclusive. At least one cube test shall be carried out by the contractor for completion of each 50 Cu.M or its fraction of foundation casting for entire volume of work.

\*\*\*\*\*

  
Sr.DEE/TRD/CKP

  
(JE/TRD/CKP)

  
DEE/TRD-II/CKP