

(4) Supply and erection of materials for termination of catenary wire on either side of the portals at anticreep locations, will also be paid for under this Item.

Item No. 8 (bx): Supply of 9-T Insulators for Item 8(b)(i), (ii), (iii), (vi), (vii), (viii) & (ix)

The price shall cover only supply of following 9 tonne insulator assembly required for termination of OHE covered under Item 8(b)(i), 8(b)(ii), 8(b)(iii), 8(b)(vi), 8(b)(vii), 8(b)(viii) & 8(b)(ix). Erection cost of insulators are inclusive in Items 8(b)(i), 8(b)(ii), 8(b)(iii), 8(b)(vi), 8(b)(vii), 8(b)(viii) & 8(b)(ix) respectively.

Item No.	Insulator
8(bx)(i)	Porcelain 9 Tonne (CD-1050 mm)
8(bx)(ii)	Composite 9 Tonne (CD-1050 mm)
8(bx)(iii)	Composite 9 Tonne (CD-1600 mm)

Item No. 9(a): Supply without Insulator and erection of anti creep with Galvanised steel wire.

The price shall cover supply of all materials for anti-creep including adjusters, galvanised steel wire, mast anchor fittings at its terminations on either side on structures, ending clamps and fittings excluding 9 ton insulator assembly (Cost of insulator will be paid in Schedule-1, Section-5) and small parts steel work, if any. Cost of SPS will be paid under Item 3(c) of Schedule-1, Section-3. The price shall cover erection of all materials including 9 ton insulator assembly and small parts steel work, if any.

Rly. Ident No.	Description Of Components	Qty. Per Unit
-	Galvanised steel wire (19/2.50 mm)	As required
6020	9 ton insulator assembly.	As required
1360	Steel wire ending clamp	2 off
5020-1/5020-2	9 ton adjuster (Forged)	2 off
5030	Anchor double strap assembly	As required
3010/5040	Clevis assembly	2 off
3231	Mast anchor fitting with bolts, nuts etc.	2 sets.
1170	Double suspension clamp	1 off
Less 1160	Suspension clamp	(-1 off
5183	Double eye distance rod	As required.

Item No. 9(b) : Supply without insulator and erection of anti-creep with galvanized Steel wire suitable for tramway type overhead equipment (Regulated)

The price shall cover supply and erection of all materials (Cost of insulator will be paid in Schedule-1, Section-5) for anti-creep for the tramway type equipment (Regulated) similar to the fittings catered for an Item 9(a).

Item No. 9(c) : -DELETED-

NOTE for 9(a) & 9(b) :

1. The price shall include the cost of any additional cut-in or suspension insulator which will be paid for under Item 11(a) (i) or 11(a) (ii) as applicable.

2. In case the anti-creep extends beyond one span on either side of anti creep center, payment for the supply and erection of extra length shall be paid additionally at the rate of 20% of the rate for 9(a) for each extra span.

Item No. 9(d) : - DELETED -

Item No. 9(dz) : Supply without Insulator and erection of anti-creep with cadmium copper catenary wire in polluted area.

The price shall cover the supply of all materials for anti-creep including adjusters, mast anchor fittings at its terminations on either side, structure ending clamps, fittings etc but excluding cadmium copper catenary wire, 9-ton insulator assembly and small parts steel work, if any. The price shall cover erection of all materials including cadmium copper catenary wire, 9- ton insulator assembly and small parts steel work, if any. Catenary wire required for the work shall be supplied by the purchaser. The price of 9 -Tonne insulator and small parts steel work shall be paid in Schedule-1 section-5 and section- 3 respectively.

RLY. Ident No.	Description of components	Qty. per unit
-	Cadmium copper catenary wire (65 sq.mm)	As required
6020-1	9 ton insulator assembly	As required
1120 (1121, 1092 & 1094)	Catenary ending clamp (65)	2 off
5020-1/5020-2	9 ton adjusters (Forged)	2 off
5030	Anchor double strap assembly	As required
3010/5040	Clevis assembly	2 off
3231	Mast anchor fitting with bolts, nuts etc.	2 sets
1170	Double suspension clamp	1 off
Less 1160	Suspension clamp	(-) 1 off
5183	Double eye distance rod.	As required

Item No. 9(e) : - DELETED -

Item No. 9(ez) : Supply without Insulator AND Erection of anti-creep with cadmium copper catenary wire suitable for tramway type OHE (Regulated) in polluted area.

Same as Item 9(d) (Cost of insulator will be paid in Schedule-1, Section-5) with the following changes:

Id No. 2140, large catenary contact clamp to be used in place of Id. No. 1170.

NOTE :- Note for 9(a) & 9(b) under Item 9(a) and 9(b) shall also be applicable for Item 9(dz) & 9(ez).

Item No.9(ax) : Supply of 9-T Insulators for Items 9(a), 9(b), 9(c), 9(dz) and 9(ez)

The price shall cover only supply of any of the following 9 tonne insulator assembly to be supplied at site for execution of work under Items 9(a), 9(b), 9(c), 9(d) and 9(e). Erection costs of insulators are inclusive in Items 9(a), 9(b), 9(c), 9(dz) and 9(ez) respectively.

Item No.	Insulator
9(ax)(i)	Porcelain 9 Tonne (CD-1050 mm)
9(ax)(ii)	Composite 9 Tonne (CD-1050 mm)
9(ax) (iii)	Composite 9 Tonne (CD-1600 mm)

Item No. 10 (a), (b) & (c) : –DELETED -

Item No. 10 (az), (bz) & (cz) : Extra on Item 6(az), 6(bz) & 6(cz).

For supply and erection of additional fittings required at a turnout, diamond crossing or over-lap.

The price shall cover on flat rate basis supply of additional components and fittings required at turnouts, crossings or over-laps (insulated or un-insulated) including overlaps, knuckle or crossing equipment at a turnout, or a diamond crossing and parallel clamps/bimetallic parallel clamp for jumper connections between two sets of overhead equipment conductor at a turnout, diamond crossings, overlaps or neutral section. The price shall cover supply of required jumper wires (excluding Contact and Catenary wires) and erection of all materials including jumper wire, Contact and Catenary wires and all adjustments required at turnouts, crossings, overlaps and neutral sections. The price shall also cover erection of potential equaliser jumpers at insulated overlaps and neutral sections. The price shall not include extra bracket assemblies, overhead equipments, termination of overhead equipment and cut-in-insulators in the case of insulated overlaps and neutral section which will be paid for under Items 4, 6, 8, and 11 respectively. Required quantity of Contact wire and Catenary wire for the work shall be supplied by the purchaser.

NOTE : A cross-over shall be paid for as 2 off of Item 10, special configuration of OHE commonly known as half overlap shall be paid for as 1 off under this Item. This shall apply in case of half overlap used in changing over from regulated to unregulated equipment or unregulated to regulated equipment.

Item No. 11(a)(i) : Supply without insulator and Erection of a cut-in (9 Tonne) insulator

The price is applicable to the provision of the an additional 9 Tonne cut-in-insulator on a flat rate basis such as in a head-span, cross span or in span wire or an overhead equipment conductor at an insulated overlap, anti-creep not provided for in other Items.

The price shall cover supply of all components required for the cut-in-insulators assembly, including appropriate terminal fittings for the conductor but excluding the cost of 9 ton insulator assembly. This price shall cover erection of all components, including the 9 ton insulator. This price shall also be applicable as an adjustment price for non-provision of insulators under Items 8(b)(i) to 8(b)(viii).

Item No. 11(a)(ii): Supply without insulator and Erection of a suspension 9 Ton insulator.

The price is applicable to the provision of 9 ton suspension insulator assembly for suspension of an All Aluminium 25 kV feeder (single or double SPIDER), 130 sq.mm or 65 sq.mm overhead equipment conductor or any other similar type of suspension.

The price shall cover supply of all components, required for the suspension assembly including the appropriate suspension clamp but excluding 9 ton insulator assembly and small parts steel work with bolts nuts etc., if any. The price shall cover erection of all components, including the 9 ton insulator assembly but excluding small parts steel work, with bolts and nuts etc. if any.

The price shall include the cost of provision of a flat armour tape only to be used in connection with suspension of 'SPIDER' conductor.

Item No. 11(ax) : Supply of 9-Tonne Insulators for Item 11(a)(i) & 11(a)(ii)

The price shall cover only supply of any of the following 9 tonne insulator assembly to be supplied at site for execution of work under Items 11(a)(i) & 11(a)(ii) respectively. Erection cost of insulators are inclusive in Items 11(a)(i) & 11(a)(ii) respectively.

Item No.	Insulator
11(ax)(i)	Porcelain 9 Tonne (CD-1050 mm)
11(ax)(ii)	Composite 9 Tonne (CD-1050 mm)
11(ax) (iii)	Composite 9 Tonne (CD-1600 mm)

Item No. 11(b): Supply without Insulator and Erection of a 25 kV Post Insulator.

The price is applicable to the provision of a 25 kV Post Insulator to support copper or aluminium jumper/busbars. The price shall cover supply of all components and fittings/angle iron (outrigger) to support the jumpers but excluding post insulator and small parts steel works with bolts and nuts etc., if any. The price shall cover erection of all components required for the assembly, including post insulator, but excluding small parts steel work with bolts and nuts etc. if any.

Item No. 11(bx): Supply of a 25 kV Post Insulator for Item 11(b)

The price shall cover only supply of 25 kV Post insulator to be supplied at site for execution of work under Items 11(b). Erection cost of insulators is inclusive in Items 11(b).

Item No. 11(c): Supply without insulator and Erection of a 3 kV Disc Insulator.

The price is applicable to the provision of a 3 kV Disc Insulator for suspension of an All Aluminium return conductor or any other similar type of suspension. The price is also applicable to a 3 kV cut-in-insulator for earthwire.

The price shall cover supply and erection of all components required for the assembly, including appropriate suspension clamp, ending clamp for cut-in-insulator on earth wire, but excluding 3 kv Disc Insulator and small parts steel work, with bolts and nuts etc., if any. The price shall include the cost of provision of a flat armour tape to be used in connection with the suspension of SPIDER/RACCOON conductor.

Item No. 11(cx) : Supply of 3 kV Disc Insulator for Item 11(c).

The price shall cover only supply of 3 kV Disc Insulator to be supplied at site for execution of work under Items 11(c). Erection costs of insulators are inclusive in Items 11(c).

Item No. 11(d) : Supply without insulator and Erection of a 11 kV Post Insulator.

The price shall cover, on a flat rate basis for supply of all necessary fittings for erection of 11 kV post insulator to support return conductor, Aluminium or copper busbars or return conductor jumper connections but excluding 11 kV post insulator and small parts steel work with bolts and nuts etc. if any. The price includes the erection of all the fittings including 11 kV Post Insulator.

Item No. 11(dx) : Supply of 11 kV Post Insulator for Item 11(d).

The price shall cover only supply of 11 kV Post Insulator to be supplied at site for execution of work under Items 11(d). Erection cost of insulator is inclusive in Item 11(d).

Item No. 12(a) : - DELETED -

Item No. 12(az) : Supply without Insulator and erection of a Section Insulator Assembly.

The price shall cover supply of all components required for a standard section insulator assembly (serving both the overhead equipment conductors) including supply of dropper wires for special droppers for supporting the equipment and all terminal fittings for conductors and the section insulator assembly including 9 ton Insulator (RI No.6020) (Cost of insulator will be paid in Schedule-1, Section-5) on the catenary and Sectioning insulator (RI No.6110). The price shall be exclusive of Contact and Catenary wires, required if any. The price shall cover erection and adjustment of all components including section insulator assembly, 9 ton insulator on the catenary, Sectioning Insulator, Contact wire and droppers. Required quantity of Contact wire for the work shall be supplied by the purchaser.

Rly. Ident. No.	Description of components	Qty. per Unit
1120/or SK/ or 1122 & 1123	Catenary ending clamp	2 off
1192/ETI/OHE/SK/33 3.	Catenary dropper clip assembly.	As required
6170	Parallel clamp for double contact wire	12 off
6180	Section insulator dropper assembly.	3 sets
6100	Section insulator assembly	To be supplied by the Contractor.
6020	9 ton insulator assembly	To be supplied by the Contractor.

Item No.12(ax) : Supply of 9 Tonne and Sectioning Insulators for Item 12(a) & 12(az)

The price shall cover only supply of Sectioning Insulator with any of the following 9 Tonne Insulator for execution of work under Item 12(a). Erection cost of insulators is inclusive in Items 12(a).

Item No.	Insulator
12(ax)(i)	Porcelain 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(ax)(ii)	Composite 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(ax)(iii)	Composite 9 Tonne (CD-1600 mm) & Sectioning Insulator

Item No. 12(b) : Supply without Insulator and erection of a double wire section insulator assembly.

The price shall cover supply of all components required for a double wire section insulator assembly (to serve both wires of two overhead equipments and special droppers, including supply of dropper wires, for supporting this equipment) at any location, including terminal fittings for the conductors and the double wire section insulator assembly including 9 ton insulator (Cost of insulator will be paid in Schedule-1, Section-5). The price shall include erection and adjustment of the entire assembly including double wire section insulator assembly, droppers and the 9 ton insulators.

Item No.12(bx) : Supply of 9 Tonne and Sectioning Insulators for Item 12(b)

The price shall cover supply of 2 Nos Sectioning Insulators and any of the following 9Tonne Insulator only for execution of work under Item 12(b). Erection cost of insulators is inclusive in Items 12(b).

Item No.	Insulator
12(bx) (i)	Porcelain 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(bx)(ii)	Composite 9 Tonne (CD-1050 mm) & Sectioning Insulator
12(bx)(iii)	Composite 9 Tonne (CD-1600 mm) & Sectioning Insulator

Item No. 12(c) : - DELETED -**Item No. 12(cz) :Supply without Insulator and erection of a Section Insulator Assembly suitable for tramway type OHE (Regulated)**

The price shall cover supply of all components required for a standard Section Insulator Assembly including special arrangements for supporting the equipment and terminal fittings for conductors and the section insulators assembly as required with Sectioning Insulator (RI No.6110). The price shall cover the supply of all required components including sectioning insulator assembly and erection, adjustment of all components including sectioning insulator. The price of required Contact/Catenary wire shall be supplied by the purchaser and price of Sectioning insulator shall be paid in Schedule-1, Section-5.

NOTE : (1) The same price will apply if the section insulator is provided in the tramway type equipment (contact wire only).

(2) The supply and erection of a bracket assembly shall be paid under Item 4(a)(iii).

No adjustment of price due to non-provision of steady arm, in this case, shall be made.

Item No.12(cx):Supply of Sectioning Insulators for Item 12 (cz)

The price shall cover only supply of Sectioning insulator for execution of work covered under Item 12(cz). Erection cost of insulators are inclusive in Item 12(cz).

Item No. 12(d): Supply and erection of Ceramic/ beaded Glass fibre type (PTFE) short neutral section assembly.

The price shall cover Supply of Ceramic/Glass fibre or PTFE type short neutral section assembly and erection and adjustment of Glass Fibre or PTFE type short neutral sections, which will be supplied by the Contractor. The price would cover fittings for contact and catenary wire as necessary including supply of required dropper wire.

Item No. 13(a) & (b) : Supply without Insulator and erection of 25 kV SP Isolators without earth contact assembly.

The prices under sub-Items (a) and (b) shall cover supply and erection of Isolator switches of approved make, complete with arcing horns, operating rods, operating rod guides, mounting base including cost of 25 kV solid core Post and Operating rod insulators (Cost of insulator will be paid in Schedule-1, Section-5). The price shall also cover supply and erection of a number plate of approved design and a padlock for each isolator. The price shall not include supply and erection of small parts steel work complete with bolts and nuts etc. for support of isolators and for support of operating rods on gantries/masts, and insulator to support jumper and jumper connectors.

Item No. 13(c): Supply without Insulator and erection of 25 kV Double Pole Isolator.

The price shall cover supply and erection of a Double Pole Isolator complete with mounting base, operating rod and operating rod guides excluding the cost of Operating Rod Insulator and 25kV solid core Post Insulator required for the operation of the isolator (Cost of insulator will be paid in Schedule-1, Section-5). The price shall also cover supply and erection of Al-Cu strips, a padlock and a number plate of approved design for each isolator. The price shall not include supply and erection of small parts steel work for support of isolators and for support of operating rods on gantries masts.

Item No. 13(d) : Extra for supply and erection 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. 13(e): Extra on Item 13(a), (b) or (c) for an interlocking device.

The price shall cover supply and erection of an inter locking mechanism on an isolator to permit working of two or more isolators or an isolator and an interrupter in a desired sequence. This Item shall be applicable individually for each isolator or interrupter.

NOTE: Prices under Item 13 do not include the cost of supply and erection of (i) any post insulator to support jumpers/busbars which shall be paid for under Item 11(b), (ii) flexible jumper connection which will be paid for under Item 15 and (iii) busbar/bus-rod terminals which will be paid for under Item 26(b) or (c). The price does not include also the cost of supply and erection of an aluminium/copper busbar or a copper bus rod the cost of which will be paid for under Item 26(a)(i) or 26(a)(ii), as applicable.

Item No.: 13(ax), 13(bx) and 13(cx): Supply of Post and Operating Rod Insulators for Single and Double Pole Isolator for Item 13(a), 13(b) & 13(c)

The price shall cover only supply of 25 kV Solid Core Post and Operating Rod Insulators for execution of work covered under Item 13(a), 13(b) & 13(c) respectively. Erection cost of insulators are inclusive in Items 13(a), 13(b) & 13(c) respectively.

Item No. 14: Supply and erection of connection between return conductor and the rail.

The price shall cover fabrication and erection of connections between all aluminium return conductor to cross rail/impedance bond (both of which as required will be supplied by the Purchaser free of cost at the Contractor's Depot) excluding the aluminium jumper connections from the return conductor to the steel flat which will be paid for under Item 15(b) and any 11 kV post insulator for supporting the jumper which will be paid under Item 11(d). The price shall include the cost of necessary supports on the traction structure, terminal connections and covering the mild steel flats with two coats of red oxide zinc chromate primer to IS:2074, CNSL based and finished with 2 coats of Bitumen 85/25 blown grade.

Item No. 15(a)(i): Supply and erection of 105 sq.mm (19/7/1.02 mm) large copper jumpers.

The price shall cover the supply of large jumper wire size 105 sq.mm(19/7/1.02mm) made of annealed stranded 100% pure copper conductor as per RDSO's specification No. TI/SPC/OHE/JMP/0941 or latest and on a flat rate basis, the supply of all components and fittings required for providing a flexible copper large jumper connection, including supply of parallel clamps, bi-metallic and Aluminium Copper Al-Cu strips, wherever required, and bolted type terminal connectors where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall not, however, be applicable for jumper connections already including under Item 6(a) and 10, but shall be applicable for any jumper of 105 sq.mm (19/7/1.02mm) connections in any combination between feeders, lightening arrestors, isolators and boosters stations. Continuity jumper at Boom anchor anti-creep will be payable under this Item.

Item No. 15(a)(ii): Supply and erection of 50 sq.mm(19/1.8 mm) small copper jumpers.

The price shall cover supply of Small jumper wire size 50 Sq.mm(19/1.80 mm) made of annealed stranded 100% pure copper conductor, and on a flat rate basis, the supply of all components and fittings required for providing a flexible small copper jumper connection, including supply of parallel clamps, Aluminium Copper (Al-Cu) bi-metallic strips, wherever required, and bolted type terminal connector where ever required. The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall not, however, be applicable for jumper connections already including under Item 6(a) and 10, but shall be applicable for any small jumper connection in any combination required for lightening arresters and isolators etc. Anti-theft jumper as per drawing No. ETI/OHE/G/05107, with latest mod. for connecting out-of-run OHE with the in running OHE at insulated/un-insulated over-lap locations and also anticreep locations at polluted zone wherever considered necessary will be payable under this Item.

Item No. 15(a)(iii): -DELETED -

Item No. 15(az)(iii): Supply and erection of a copper jumpers (65 Sq mm catenary)

The price shall cover the supply of 50 sq.mm Small Jumper and on a flat rate basis, the supply of all components and fittings excluding 65 sq.mm catenary wire (to be supplied by the purchaser) required for providing a flexible copper jumper connection, including supply of parallel clamps, Aluminium Copper (Al-Cu) bi-metallic strips, wherever required and bolted type terminal connector where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire. The price shall be applicable for jumper connections using 65 sq.mm catenary wire in any combination required for lightening arresters and isolators etc., not included under Item 6(a), 10, 15(a)(i), and 15(a)(ii). The supply of all components and fittings including catenary wire and the erection of all the components and fittings including the catenary wire for providing double catenary contact wire in place of catenary under overline structures as per DRG. No. ETI/OHE/SK/446 and ETI/OHE/SK-529, with latest mod. respectively will also be payable under this Item, treating the double catenary as one jumper irrespective of its length including the catenary/contact wire ending clamp.

Item No. 15(a)(iv) : Supply and erection of copper jumpers (5 mm dia dropper wire).

The price shall cover supply of conductors/jumper wires, and on a flat rate basis, the supply of all components and fittings required for providing a single strand/flexible copper jumper connections not included under Items 6(a), 10, 15(a)(i), 15(a)(ii) & 15(a)(iii), including supply of parallel clamps, Aluminium Copper (Al-Cu) bi-metallic strips, wherever required, including supply of bolted type terminal connector where ever required.

The price shall also cover the erection of the complete jumper assembly including jumper wire, to be provided between the Over head equipment and L.T. Transformers, drop out switch.

Note: In case the required length of jumper wires vary from the lengths given in column - (4) of Annexure-6, the payment/deduction towards the extra/short length of jumper wires supplied under Items 15(a)(i), 15(a)(ii), 15(a)(iii), 15(a)(iv), 15(d) & 15(e) will be made at the rates given in Schedule-3

Item No.15 (b) : Supply and erection of an aluminium jumper.

The price shall cover on a flat rate basis the supply and erection of an aluminium jumper complete with all components and fittings required for providing jumper connection, including parallel clamps, bimetallic Al-Cu strips wherever required, and terminal or tee clamps at either end. The price shall be applicable for any aluminium jumper/connections in any combination between feeders, return conductors, overhead equipment, isolators and out going busbars or switching stations and booster stations. Jumper connections for 25 kV feeders at angle tower traction sub-station or at feeding stations will also be paid under this Item.

Item No.15 (c):Supply and Erection of Insulated Catenary cable in the span under Over-Line Structure.

The price shall cover supply of insulated catenary wire, catenary splice (1090) for each location and required dropper clip and erection of the same for each location. The prices shall also cover erection and adjustment of special droppers wherever required. The insulated catenary wire to be supplied shall be as per RDSO's specification No.ETI/OHE/75(04/95) with A&C slip Nos.1&2 (with latest spec.). The work shall be executed in accordance with drawing No.ETI/OHE/SK/570, with latest mod. The price shall also cover the cutting of existing Catenary wire, supply and erection of all materials and components including adjustment of dropper wires.

Item : 15 (d) : Supply of materials and erection of a large copper jumper 160 Sq. mm between Aluminium bus and cross feeder.

This jumper shall be provided between 36 mm Aluminium bus and the copper cross feeder at SP/SSP/FP/BT locations. The price shall cover the supply of 160sq.mm flexible copper jumper wire, made of annealed stranded 100% pure copper conductor as per RDSO's specification TI/SPC/OHE/JMP/0941 (or latest spec.), all components and fittings required for providing a flexible copper jumper (160 Sq. mm) and connection between 36 mm Aluminium bus and cross feeder including Terminal connector 19mm multiple hole bolted type (1009), parallel clamps (1050-3), Al-Cu bimetallic strips, fasteners. The price shall also cover the erection of the complete jumper assembly including jumper wire.

Item : 15 (e) : Supply of materials and erection of a large copper jumper 160 Sq. mm between cross feeder and OHE.

This jumper shall be provided between copper cross feeders and OHE. The price shall cover supply of 160 sq.mm flexible copper jumper wire, made of annealed standard 100% pure copper conductor as per RDSO's specification TI/SPC/OHE/JMP/0941 (or latest spec.), and all components and fittings required for providing a flexible copper jumper (160 Sq. mm) between copper cross feeder and existing OHE, including Parallel clamps (1030-3 & 1050-3) complete with fasteners etc as required. The price shall also cover the erection of the complete jumper assembly including jumper wire.

Item No.16 (a)(i) : 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 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.

Item No.16 (a)(ii) : Supply and erection of a Galvanised steel stranded Wire structure bond

The price shall cover supply of all materials including **Galvanised steel stranded wire** required to provide a structure bond connecting a traction mast or structures to the nearest non-track circuited rail including all fasteners at both ends as per RDSO's drawing No. TI/DRG/OHE/GTBLUG/ RDSO/0001/04/0 with latest mod. The price shall include fixing of lugs and drilling of the rails and erection of all materials including the bond.

The price shall also include provision of heat shrinkable PVC tape for structure bond under track circuited rail. This would also cover connection or earthing terminals of equipment like LT supply Transformers with structure and then to rails as per relevant drawings.

Item No. 16(b): Supply and erection of longitudinal bond

The price shall cover the supply of all materials including mild steel flats, fasteners etc. required to provide longitudinal bond connecting two rails at the rail joint at the locations to be specified by the Purchaser. The price shall include shaping and drilling of the bond and erection of all materials including the bonds.

Item No.16(c) : 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.

Item No. 17(a) : 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. 17(b) : Extra for special embodiment of earth electrode.

The price shall be payable as extra on Item 17 (a) where an earth electrode is embedded by driving or otherwise in an earth pit filled with charcoal and salt. The price shall cover supply and erection of all additional materials required for embedding the earth pipe.

Item No. 17(c) : Supply and erection of earth bus.

The price shall cover the supply of all materials including 50 mm x 6 mm mild steel flats for providing earth bus. The price shall also cover erection of earth bus either buried at a depth of 300 mm below ground level painted with 2 coats of red oxide zinc chromate primer and 2 finishing coats of bitumen as per the particulars specified in para 2.1.49 or fixed on wooden gutties on walls. It shall include connecting the earth bus to earth electrodes and to various floor-or-wall-mounted equipments or structures to be earthed and also connections to non-track-circuited rails, wherever required it shall also cover the cost of making recesses in concrete foundation blocks or floor or cubicles and covering them up. The connection of earth strips to each other shall be made either by riveting or by welding. The connection of earth strips to various equipment, structures or fencing post shall be made with G.I. bolts and nuts and spring washer/ lock-nuts.

Item No. 17(d) : Supply and erection of copper strips for equipment earthing.

The price shall cover supply and erection of 25mmx3mm copper strips to connect the earth terminals of equipments like potential transformers, lightening arrestors, L.T. supply transformers and booster transformer to the main masts of the gantries on which they are mounted. The price shall cover all fastenings required for fixing the copper strips along any structure member of the gantry.

Item No. 17(e) : Supply and erection of 8 SWG G.I WIRE for earthing.

The price shall cover supply and erection of 8 SWG GI wire per meter, used for earthing at remote control cubicles and fencing panels.

Item No. 17(h) Supply and Erection of Earthing station at Switching Posts (SSP & SP) with Conventional earthing system.

The rate covers cost of supply & erection of one set of earthing stations for single line / single track .The earthing station using 13 meter long Buried Rail, shall be as per RDSO SMI No. TI/SMI/0032 with the latest amendments thereof.

The released Rail shall be made available by the purchaser to the contractor at any location on "as is where is" basis. The contractor shall transport the rail upto site of installation. The price covers transportation of rail, excavation of trench 0.6X15mX1m from the ground level, lowering of Rail duly prepared into the trench and refilling the soil including compaction and making the surface good after connection to earth electrodes and Running Rails.

The price shall cover the cost of supply of 75X8 mm Galvanized flats for connection between Buried Rail and Earth electrode /Running Rail and erection of 75X8 mm Galvanized flats for connection between Buried Rail and Running Rail. Price shall also cover the cost of required Nut Bolts, Copper rivets, Plain/Spring Washers etc. including shaping and drilling of 75X8 mm galvanized flats.

Price does not cover:-

- (i) Cost of supply and erection of 2 nos earth electrodes which is payable under Item 17(a) in schedule-1 section 3.
- (ii) Connection between Buried Rail and these earth electrodes, which is **payable under Erection portion** of Item 16(a)(i) in schedule-1 section 3.

Item No. 18(a) : – DELETED -

Item No. 18(b) : Supply and Erection of 25 kV, vacuum type Interrupters.

The price shall cover supply of 25 kV, AC, 50 Hz, Single Pole, outdoor type, vacuum Interrupters complete with all accessories and components as per RDSO's specification No. TI/SPC/PSI/LVCBIN/0121 with A&C slip No. 1 (or latest) at site and erection of the same complete with supporting frame work and terminal connectors. The price for erection shall include alignment and grouting of the Interrupter on its foundation block and mounting of accessories, if any, in their respective positions. The price shall also cover supply and erection of enameled number plates. All necessary tools, equipments, instruments including power supply required for carrying out necessary checks, tests and commissioning shall be arranged by the contractor.

Item No. 19 : Supply and erection of 25 KV Potential Transformers (Type-I).

The price shall cover supply and erection of a 25 kV potential transformer type-I complete with all fittings and accessories as per relevant specifications, including terminal connectors and fixing bolts. The price for supply and erection shall include proper alignment of the transformer in position. The price shall also cover the supply and erection of an enameled number plate and fixing bolts. The price shall not include the cost of any small parts steel work.

Item No. 20(a) : Supply and erection of 42 kV lightning arrestors.

The price shall cover supply and erection of 42 kV lightning arrestors complete with all fittings and accessories as per relevant specifications including terminal connectors. The cost of supply and erection shall include proper alignment of the lightning arrestor in position. The price shall not cover supply and erection of cadmium copper jumper (65) which will be paid under Item No. 15. The price shall not include the cost of any small parts steel work.

Item No. 20(b) : Supply and erection of lightning arrestors 7.5 kV.

The price shall cover supply and erection of 7.5 kV lightning arrestor complete with all fittings and accessories. The cost of supply and erection shall include proper alignment of the lightning arrestor in position. The price shall not include the cost of any small parts steel work.

Item No. 21 : Supply and erection of terminal boards in control cubicles.

The price shall cover supply and erection of a wall mounted terminal board with six numbers of two-way terminal blocks for connecting the cables from the outdoor equipment of a switching station as per Railway Drawing given in Annexure-1(Part-IV).

Item No. 22(a) : Supply and erection of an iron clad 110 V D.C. fuse box.

The price shall cover supply and erection of a 15A, 110V iron clad two way fuse box on the wall inside the remote control cubicles. The fuse box shall be complete with two fuse carriers and bases.

Item No. 22(b) : Supply and erection of iron clad 230 V A.C. fuse box.

The price shall cover supply and erection of a 15A, 230V,A.C. iron clad 4-way fuse box on the wall inside the remote control cubicle, for heater supply of interrupters. The fuse box shall contain four fuse carriers and bases.

Item No. 23 : Supply and erection of lead acid batteries.

The price shall cover supply and erection of 110V, 40Ah low maintenance lead acid battery complete with stand, accessories and a tool board. The price for erection shall include installation and connecting, up charging and commissioning of the battery, but exclude the cost of connecting cables, erection of which will be paid for under Item 25. Price shall include supply of 110V, 40Ah lead acid battery complete with accessories and connectors as per relevant RDSO's specification given in Annexure-1. Price shall also cover supply of Mild Steel stand, electrolyte and Tool Board with thermometer, hydrometer & wrench.

Item No. 24 : Supply and erection of battery chargers.

The price shall cover supply and erection of battery charger for a 110 V, 40 Ah lead acid battery complete with connecting lead and plug for connection to 230 V A.C. supply. The price for erection shall include mounting of the charger in position and connecting it up to the 230 V A.C. distribution boards, which will be provided by the Purchaser in the control cubicles. The price shall not include supply and erection of any cable for connecting the charger to the 110 V battery which shall be paid for under Item 25.

Item No. 25: Supply and Installation of Cables for:-

Item No. 25(a): Control and Indication.

The price shall cover supply, installation and connecting up of cables for control and indication from the interrupter to the terminal board. The price shall include supply and erection of terminal connectors at both ends, if required the conduits may be provided where it is necessary.

Item No.25 (b): Heater Supply.

The price shall cover supply, installation and connecting up of heater supply cable from interrupter to interrupter or from the interrupter to the 230V A.C. fuse box mounted on wall inside the control cubicle and from this fuse box to L.T. distribution board inside the control cubicle. The price shall include cost of supply and erection of terminal connectors at each end, if any required, and conduit, if any at the interrupter end.

Item No.25 (c): Catenary Indication

The price shall include supply, installation and connecting up of cable for catenary indication, between potential transformer Type-I and the terminal board inside the control cubicle. The price shall include supply and erection of terminal connectors at both the ends if required and conduit to be embedded between the steel work based and the cable trench and shall include all fastenings on masts and structural members to support them.

Item No. 25 (d): L. T. Power Supply

The price shall cover supply, installation in trenches and connecting up of L.T. Power supply cable between the L.T. supply transformer at switching station and L.T. distribution board, inside the control cubicle. The price shall cover supply and erection of suitable cable boxes, if required, and connectors at both ends.

Item No. 25 (e): 110 V D. C. Supply

The price shall cover supply, installation and connection up of cable between 110V battery charger and battery, between battery and the D.C. fuse box and between the D.C. fuse box and terminal board. The price shall include terminal connectors, wherever required.

NOTE : 1.The length of cables shall be the actual distance measured along the lengths of the cable between the starting and terminating points of each cables.

2. for purposes of payment fraction of a metre in the total length of cable of each type used at a switching station shall be rounded off to the next higher metre.
3. Price under Item 25 do not include cost of concrete cable trenches which will be paid for under Item 2(c).

Item No. 26(a) : Supply and erection of bus bars

(i) Aluminum bus bar 36 mm x 28 mm

The price shall cover supply and erection of aluminium bus bars 36mm x 28mm including bending, shaping and clamping on to insulators, connectors or equipment terminals.

(ii) Solid copper bus bar 18 mm

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

NOTE:- The price under Item 26(a)(i), (a)(ii) does not cover the cost of terminal connectors which will be paid for under Items 26(b) or (c) as applicable.

Item No. 26(b) (i) to (vii) : Supply and erection of aluminium bus-bar connectors

The price shall cover supply and erection of bus-bar junctions and connectors of various types specified, including bolts, nuts etc, required at junctions or terminations of bus-bars.

Item No. 26(c) (i) to (iv) : Supply and erection of solid copper bus-bar connectors

The price shall cover supply and erection of solid copper bus-bar junctions and connectors of various types specified, including bolts, nuts, etc, required at junctions or terminations of solid copper bus-bars.

Item No. 27(a) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V 10 kVA L.T. supply transformers.

The price shall cover Supply of 25 kV/240V 10 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.

Item No. 27(b) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 5 kVA L.T. supply transformers.

The price shall cover supply of 25 kV/240 V, 5 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/ checks/tests and commissioning shall be arranged by the contractor.

Item No. 27(c) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 25 kVA L.T. supply transformers.

The price shall cover Supply of 25kV/240V 25 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/checks/tests and commissioning shall be arranged by the contractor.

Item No. 27(d) : Supply, Erection, oil filtration, testing and commissioning of 25 kV/240 V, 50 kVA L.T. supply transformers.

The price shall cover supply of 25kV/240V, 50 kVA LT supply transformers, at site, as per the RDSO's specification indicated in Annexure-1 of Part-IV of this tender paper, and erection of the same complete with terminal connectors on a mast or gantry. The price shall be applicable for transformers mounted on steel pedestals at switching stations also. The price shall also cover supply and erection of an enameled number plate of approved design. The price shall also cover oil filtration and pre- commissioning tests as approved by the railways. The contractor shall make

his own arrangement for oil filtration equipments, as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration/checks/tests and commissioning shall be arranged by the contractor.

NOTE for Item 27(a), 27(b), 27(c) & 27(d): The replenishment of the transformer oil on account of testing and leakages during the warranty period shall be done by the Contractor at his own cost.

Item No. 28 : Supply without Insulator and Erection of 25 kV D.O. Fuse Switch

The price shall cover supply and erection of 25 kV drop out fuse switch complete with all mounting accessories and terminal connectors as required but without the cost of the supply of 25 kV solid core insulator. The price shall not include erection of small parts steel work.

Item No.28(x) : Supply of Post Insulators for Item 28

The price shall cover only supply of 25 kV Solid Core Insulators (Post Insulators) for execution of work covered under Item 28. Erection cost of insulators are inclusive in Item 28.

Item No. 29(a) : Erection, oil filtration, testing and commissioning of Booster Transformers

The price shall cover erection of a 150 or 100 KVA booster transformer supplied by the purchaser complete with terminal connectors on a gantry. The price shall include proper alignment of the transformer on the gantry, but shall exclude any steel work required for mounting the transformer. The price shall also cover supply and erection of an enameled number plate. The price shall also cover oil filtration and pre-commissioning tests as approved by the Railways. The contractor shall make his own arrangement for oil filtration equipments as well as power supply required for the same. All necessary tools, equipments, instruments required for carrying out oil filtration /checks/tests and commissioning shall be arranged by the contractor.

Item No. 29(b) : -DELETED-

Item No. 30(a)(i): Supply and erection of fencing panels at Switching Stations

The price shall include supply and erection of fencing panels painted with two coats of red oxide zinc chromate primer to IS:2074:1979 and finished with two coats of aluminium paint. The prices shall not include supply and erection of fencing up-rights, anti-climbing devices but shall include the cost of fasteners and the price shall be for a metre length of the panels, 2.4 meter height measured in the plan view of the appropriate approved drawings.

Item No. 30(a)(ii): Supply and erection of fencing uprights

The price shall cover supply and erection of fencing uprights painted with two coats of red oxide zinc chromate primer to IS:2074:1992 and finished with two coats of aluminium paint. The price shall be on the basis of black weight of the steel with no deduction for holes or skew cut or no increase for weld materials. The cost of foundation of uprights will be paid under Item-2.

Item No. 30(b)(i): Supply and erection of anti-climbing device at Switching Stations

The price shall cover supply and erection of an anti-climbing device consisting of galvanised steel fixtures mounted on the fencing panels as per approved design. The price shall be per metre length of the panel.

Item No. 30(b)(ii): Supply and erection of anti-climbing device for B.T. Stations

The price shall cover on a lump sum basis the supply and erection of anti-climbing device consisting of galvanised steel fixtures mounted on the masts, of the gantry below the transformer. The price shall be for each B.T. Station provided with the device.

Item No.30(b)(iii): Supply and erection of anti-climbing devices for L.T. Supply Transformer Stations.

The price shall cover on a lump sum basis the supply and erection of anti-climbing device consisting of galvanised steel fixtures mounted on the masts below the transformer. The price shall be for each mast provided with the devices.

Item No.30(b)(iii)(iv): Supply and erection of Anti Monkey Menace.

The price shall cover supply and erection of anti monkey menace consisting of Hot dip galvanized fixtures (MS angle 60mm x 60mm x 8mm) including all bolts, nuts, MS Flat and barbed wire as per requirement, mounted on masts as RDSO's drawing Nos. TI/SK/OHE/ANTIMON/RDSO/00001/08/0 & TI/SK/OHE/ANTIMON/RDSO/00001/09/0 (or latest). The location for provision of "Anti Monkey Menace" if any shall be advised by the concerned project after award of the contract. All components shall be hot dip galvanized after fabrication and take approval from the project with the type of mast also.

Item No.31: Modifications to erected equipment

The price under this Item shall cover various modifications required to be carried out, in a section of completely erected overhead equipment energised or fit to be energised, certified as such by the Purchaser's Engineer provided such modifications are not on account of non-compliance of specifications, approved drawings and instructions given by the Purchaser for the execution of the work from time to time, during the progress of the work. All the prices are on a flat basis and cover only the important and most frequent type of modifications required to compensate the contractor for additional work involved. No payments shall be admissible for other minor modifications which may be necessary in the course of work. All work originally done shall be paid for at normal rates for Items 1 to 30 of schedule 1 as applicable. Dismantling of foundations and masts/structures shall be done by the Purchaser at his own cost.

In all the following cases, the dismantled equipment shall be handed over by the contractor to the Purchaser's Engineer at the spot of dismantlement or at the contractor's Depot, as required by Purchaser's Engineer. Where prices under this Item are applicable, the Contractor shall finalise the quantities of work jointly with the Purchaser's Engineer before taking the work in hand.

Item No. 31(a): Transfer of equipment from one mast or support to another

The price shall cover transfer of overhead equipment to a bracket assembly on a new mast or support and dismantling of the erected bracket assembly from the old mast of support and consequent adjustment to overhead equipment required such as re-spacing of droppers (including cost of dropper wire), leveling etc. the foundation and steel work and bracket assembly for the new mast or structure will be paid for under appropriate Items 2,3 and 4 respectively.

Item No. 31(b): Provision of an additional bracket assembly/assemblies on mast or support

The price shall cover dismantling of an existing bracket assembly/assemblies and provision of a multiple cantilever cross arm wherever required, supplied free of cost by the Purchaser and

erection of bracket assemblies on the multiple cantilever cross arm. The price shall include any consequential adjustment to traction overhead equipment such as re-spacing of droppers, leveling, etc. This prices shall not include the price for supply and erection of any additional bracket assemblies, which will be paid for under Item 4.

Item No. 31(c): Re-adjustment of a head-span

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 Item 5 as extra to Item 31(c).

Item No. 31(d): Dismantling of overhead equipment

The price shall cover cost of dismantling of equipment including Terminations, tensioning devices, guy rod assemblies, bracket assemblies and associated small parts steel work(excluding components embedded in concrete).

Item No. 31(e): Dismantling of feeder/return conductor

The price shall cover dismantling of feeder, or return conductor including guy rods, terminations, suspension assemblies, super masts and associated small parts steel work.

Item No. 31(f): Splicing and extension of anchored overhead equipment

The price shall cover splicing of terminated overhead equipment for extension and consequent adjustment of the affected equipment. The dismantled equipment (excluding portions embedded in concrete) shall be returned to the Purchaser's Engineer. The cost of dismantling of overhead equipment would be paid for under Item 31(d) for the whole length of the anchoring span irrespective of the physical position of the splices. The extended overhead equipment shall be deemed as starting from the center line of the structure preceding the old terminating structure and the extended overhead equipment shall be paid for under Item 6(a) or 6(b) or 6(c) as applicable.

Item No. 31(g): - DELETED -

Item No. 31(gz): Dismantling of a section insulator Assembly

The price shall cover cost of dismantling 107 sq mm contact wire, 65 sq mm catenary wire, dropper wire and a section insulator, splicing of catenary and contact wires and the necessary adjustments to droppers. The price shall exclude the supply of required copper conductors for the adjustment. The dismantled equipment shall be handed over to the Purchaser's Engineer at the spot of dismantling or at the contactor's Depot/s.

Item No. 31(h): Slewing and putting back of OHE in original shape

The price shall cover for temporary slewing or lowering of erected OHE adjusted and /or unadjusted to ground for special works, at the request of the Purchaser and restoration and re-adjustment of the equipment after completion of special works. The price shall be per span or part thereof, including anchoring spans.

Additional components or materials used during such restoration or re-adjustment will be paid for at rates included in schedule 3 plus handling charges of 10% provided such use has, in the opinion of the Purchaser, become necessary due to reasons beyond the control of the Contractor.

Item No. 31(i) Dismantling of an isolator

The price shall cover cost of dismantling of an isolator, single or gang-operated, including dismantling of connections to the overhead equipment and associated small parts steel work.

Item No. 31(j) Dismantling of a post/pin insulator

The price shall cover cost of dismantling of a pedestal pin insulator including dismantling of jumper connections, if any and associated small parts steel work.

NOTES for Item No. 31: All claims under this Item have to be supported by the following certificate to be furnished by the Contractor on the connected bill.

(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 finalised jointly with the Railway's Engineers before taking the work in hand.

(c) The dismantled material have been handed over to the Purchaser's representative.

Item No. 31 (m)(i) & 31(m)(ii): Manning of Switching Stations/Traction Sub-stations

The prices shall cover the payment/wages to the staff to be deployed at each switching station and traction sub-station as directed by purchaser's Engineer. Manning shall be done round the clock. The staff to be deployed must be skilled and fully conversant with operation of various equipments installed in switching station and traction sub-stations. The staff shall be deployed after test and trial by purchaser and on issue of competency certificate. The staff deployed shall act in accordance with instructions/ directions given by the Traction Power Controller/representative of the purchaser. The staff shall not leave the working place (Switching station and Traction Sub-station) in any case without prior permission of the purchaser's representative. The price shall cover conveyance charges to the staff for going and coming to the working place. The period of manning shall be decided by the purchaser during execution of contract and manning shall commence on receipt of intimation in writing from the purchaser one month in advance.

Note: In case Feeding Post is situated adjacent to TSS same will also be included for manning alongwith TSS.

Item No. 32: Extra on erection rate for work under a power block

The price under this Item cover extra charges over and above erection rates of Item 3 to 15 and 18 to 31 of Schedule 1, (Pt. I, Ch. IVA) for erection of equipment in the vicinity of energized overhead equipment and feeders or erection of equipment with joints equipment already energized or on 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 Item referred to above, 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 a 4 hour or more in a day. Where the prices under this Item are applicable, the Contractor shall finalise the quantities of various Items of work to be done under a power block, jointly with the Purchaser's Engineer prior to taking the work in hand.

Item No.33(a): Extra on erection rates for stringing work manually under Item No.6(a) to 7(c)

The price under this Item covers extra charges over and above the erection rates of Item 6(a) to 7(c) of Schedule-1(Pt. I, Ch. IVA) without use of Wiring Train/Tower Wagon. The price payable under this Item shall be 50% extra over the erection rates of the Items referred to above, 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.

Item No. 33(b) : Extra on erection rates for steel work manually under Item 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii) & 3(b)(iii)

The price under this Item covers extra charges over and above erection rates of Item No. 3 (a) (i), 3 (a)(ii), 3 (b)(i), 3 (b)(ii) & 3 (b)(iii) of Schedule-1(Pt. I, Ch. IVA) without use of rail crane. The price payable under this Item shall be 50% extra over the erection rates of Items referred to above, 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.

Note : Where the works under these Item 33(a) i.e "Manual Stringing" and 33(b) i.e "Manual Erection of Masts" are feasible, the Contractor shall finalise the quantities of various Items of work jointly with the purchaser's engineer prior to taking up the work in hand, subject to a maximum of two percent each for Item 6(a) to 7(c) and 3 (a) (i), 3 (a)(ii), 3 (b)(i), 3 (b)(ii) & 3 (b)(iii) of Schedule-1.

Item No.34(a): Supply of materials and construction of Super-structure of SP/SSP building (Control Cubicles)

The price shall cover the construction of Control room of SP/SSP building above plinth and will include labour and material cost for the following works:-

- i) RCC work in plinth, lintels, chajja, and roof slabs.
- ii) Pre-cast RCC slab, RCC jali.
- iii) Cement concrete in flooring and cable trench.
- iv) Brick masonry in walls.
- v) Plastering works.
- vi) Provision of Doors, windows grills, Rolling shutters, water pipe line ventilators and painting thereof.
- vii) White washing and colour washing.
- viii) Acid proof or painting of floor and wall in battery room.
- ix) Spreading of stone metal.
- x) Provision of RCC pipe etc.
- xi) Any other Item of work required to complete the work which has not been mentioned/included above shall also be done by the contractor and nothing extra shall be paid the same.

Construction of switching station shall be done strictly as per RDSO's drawing **No.ETI/C/0067** (Latest version as given in Annexure-1) and Technical specification included in Part-II Chapter-VIII of the Tender Papers.

The price shall cover the provision of all shuttering, frame works, arrangement of water, all tools and plants required for the work, consumable materials etc.

The materials used for the work such as brick, sand, stone aggregates, steel for door frame, grill/Rolling shutters, RCC pipe shall be of best quality in accordance with Railways specification.

The price shall also cover the provision of suitably sized opening on the wall, for installation of the exhaust fan in the battery room.

Item No.34 (b) : Cement concrete for foundation with stone ballast 40 mm nominal size rammed in layers not exceeding 15 cm thick in cement and sand, ratio 1:3:6 :

The price covers the supply of all necessary materials for casting cement concrete including cement, sand, ballast, arrangement of water and labour. The price shall cover the arrangement of all tools and plants such as mixer, vibrator (mechanical/electrical).

The price shall cover provision of shuttering and dismantling thereof. The price shall cover the cost of screening and washing of aggregate mixing as well as grinding of mortar, preparation, deposition and curing of concrete and rendering or finishing the exposed surface were required. The price shall cover the cost of transportation of all materials, tools and plants to the site or from the site.

Item No. 34 (c) : RCC work of foundation in ratio 1:1.5:3

The price shall cover the price of reinforcement concrete work for construction of column including supply of cement, concrete, structuring arrangements and dismantling thereto but excluding cost of steel required for reinforcement which has been covered under Item 3(g). The concrete mixture shall also be before casting in accordance with IS:456/2000.

Item No. 34(d) : Brick work in foundation, plinth, Retaining walls and drainage

The price shall cover all labour and materials including cement and brick. The price covers supply, fixing, erecting, and removal of scaffolding, timber or steel frame work, shuttering, centering etc. The price covers arrangement of water at site, mixing of mortar, soaking bricks and all watering during the work and prescribed period of curing afterwards. The price shall cover the arrangement of all tools and plants required for work. The price shall cover all consumable materials e.g. fuel, oil, string, rope, wedges etc.

Item No. 34(e)(i):

Construction of retaining wall with Random rubble masonry in cement & sand 1:6

The price shall cover all labour and materials including cement. The price shall cover supplying, fixing, erecting, and removal of scaffolding, timber or steel frame work, Shuttering, centering etc. The price shall cover watering during the work. The price covers the arrangement of water at site.

NOTE:- In case the stone rubbles is not available near the work site then the Retaining wall shall be constructed by Brick Masonry work and the payment should be made to the contractor under Item 34 (d).

Item No. 34(e)(ii) : Construction of retaining/baffle wall with RCC M-20

The price covers the supply of all necessary materials for casting cement concrete (RCC) including cement, sand, ballast, arrangement of water and labour. The price shall cover the arrangement of all tools and plants such as mixer, vibrator (mechanical/electrical).

The price shall cover provision of shuttering and dismantling thereof. The price shall cover the cost of screening and washing of aggregate mixing as well as grinding of mortar,

preparation, deposition and curing of concrete and rendering or finishing the exposed surface where required. The price shall cover the cost of transportation of all materials, tools and plants to the site or from the site. The price shall be exclusive of the cost of Steel required for Reinforcement which shall be paid under Item 3(g). The price shall also include dismantling of all connected temporary arrangements, back filling as required and removal of spoil.

Note: Normally construction of retaining/Baffle wall requires digging for base preparation. Erection charges up to ground level will be paid as per erection rate of Item 2(b)/2(bz) for soil other than hard soil & rock. For hard soil & rock, erection rate for base preparation up to ground level shall be paid as per erection rate of Item 2(a)(i)/2(az)(i) & Item 2(a)(ii)/2(az)(ii) respectively.

Item No. 34(f) : Earth work in excavation and filling

The price shall cover the earth filling at the site of SP/SSP control room at specified area upto required level. The price covers all labour and materials required including arrangement of necessary tools and plants required for the work. This price also includes the transportation cost of earth, in case earth is not available for filling up the nearby area. The price covers the watering and ramming of levelled/ filled earth either manually or by mechanical means. The price shall cover the arrangement of necessary water required for the work.

Item No. 34(g) : Earth work in excavation for foundation

Same as for above, Item No.34(f) except that no watering and ramming of earth is required in this case, but includes the disposal of excavated earth /leveling etc. for foundations, drainage etc.

Item No. 34(h): Excavation of pile 100 to 200 mm dia with Single under ream up to 3.5 m deep

The price shall cover the cost of all labour tools and plants required at site during making of a 100 to 200 mm dia bare hold along-with single under ream upto a depth of 3.50 metre. The excavated earth from the bare hole shall be disposed off and leveled all around. The price shall also cover the cost of all consumable materials and water required at site during execution of work.

Item No. 34(i) : Plastering of Retaining wall

The price shall cover the supply of all materials and labour cost including cement for plastering of Retaining wall either constructed by Ruble masonry work or by Brick work. Plastering work shall be done by cement mortar in 1:4 (1cement and 4 sand). The price shall also cover the cost of arrangement of necessary water required for the work. The price shall cover the cost of necessary tools and plants required for the work and necessary consumable Items. Nothing extra shall be paid to the contractor for any rehandling of materials from the place of delivery to place of work. The price shall cover the cost of cleaning and wetting the surface of the work. The price shall also cover the cost of curing of the plastered surface as per extent practice.

Item No. 35 : Supply & Erection of materials for Internal and External Lighting of Switching Station Building (SP/SSP).

The price shall cover all cost of labour and materials required for the work. Wiring work shall be done in accordance with IE rules, IS-732 and specifications given in Part-II Chapter-VIII of the tender paper. The price shall also cover the cost of testing and commissioning of the installations. The various activities involved in the work are as follows:-

Fixing of MS conduits on wall and drawing of wires for circuit and point wiring.

Provision of C.I. Switch boxes of appropriate size concealed in wall at appropriate height with phenolic laminated (Hylum) sheet for fixing of switches, plugs etc. Provision of Main Board and Distribution Boards and connection thereof.

Provision of light fittings, Exhaust fan, Outdoor luminaries complete with tubes and bulbs.

Provision of Earthing station and connection between earthing station to Main Board with the help of 8 SWG GI wire. Earthing work shall be done in accordance with IS:3043/1987.

Materials such as light fittings, Exhaust fan, switches sockets, Ceiling Rose, Socket outlets all shall be with ISI mark and shall be one of the make mentioned in technical specification.

Provision of Switches, sockets outlets, Ceiling Roses on respective switch boards and points in appropriate numbers and connection thereof.

Provision of 150 Watt HPSV street light fitting complete in all respect including lamp on the wall of the building.

After completion of wiring work necessary testing of wiring and Earthing station shall be done and results submitted to the site-in-charge duly signed by representatives of both the contractor and purchaser.

Item 36 (a) : Unloading of all type of Steel Structures :

The price shall cover unloading charges for all type of steel structures (BFB/ RSJ, B-Series, Spl structures, N,O, R type structures etc) from BFR/ trailer/ truck over and above the requirement given by the contractor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 36(b): Loading of all type of Steel Structures:

The price shall cover loading charges for all type of steel structures (BFB/ RSJ, B-series, Spl structures, N,O & R type structures etc) into BFR/ trailer/ truck over and above the requirement given by the contractor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 37 (a) : Unloading of all type of Copper & Aluminium conductors :

The price shall cover unloading charges for all type of copper conductors (contact wire, catenary wire, Dropper, Bridle wire, Jumpers etc) and Aluminium conductors (spider conductor etc) from the BFR/ Tower wagon/ trailer/ truck over and above the requirement given by the contractor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.

Item 37 (b) : Loading of all type of Copper & Aluminium conductors :

The price shall cover loading charges for all type of copper conductors (contact wire, catenary wire, Dropper, Bridle wire, Jumpers etc) and Aluminium conductors (spider conductor etc) into BRF/ Tower wagon/ trailer/ truck over and above the requirement given by the contractor for the completion of the present work or actual qty utilised in the completion of work; whichever is higher.