

SECTION - 9
PRICE SCHEDULES
Part A – Bill of Quantities

Section 9 - Part A**BILL OF QUANTITIES (BOQ)**

“Design, Supply, Erection, Testing & Commissioning for the Shifting/modification of 8 Nos of Switching Stations along with SCADA (comprising of 6 Nos. of Sub Sectioning & Paralleling Posts and 2 Nos. of Sectioning & Paralleling Posts) which are infringing the alignment of Corridor-1 & Corridor-4 of BSRP with necessary modification in existing Over Head Equipment/PSI Arrangement if required”.

1. The Bill of quantities shall be read in conjunction with the Instructions to Tenderers, Conditions of Contract, Notice Inviting Tender, Technical Specifications, Tender Drawings, Pricing Schedule, Annexures and Addendums.
2. The Percentage/Amount are to be quoted in each section of the Bill of quantities (i.e. Schedule-A, B, C, D, E, F, G & H)
The Contractor should quote percentage for each schedule.
Schedule -A: Non-Ferrous Items
Schedule -B: Ferrous Items
Schedule -C: Concrete
Schedule -D: Other Items
Schedule -E: Supply of Contact Wire
Schedule -F: Supply of Catenary Wire
Schedule -G: Miscellaneous Items
Schedule -H: Construction of Switching Station Buildings and Associated Works
Schedule -I – Power Block Component
Schedule -J- Provisional Sums
3. The quoted Percentage/Amount are for completed and finished items of work and complete in all respects. Which shall be inclusive of constructional plant, tools, machinery, labour, supervision, materials, fuel, oil, consumables, electric power, water, transportation, all leads and lifts, dewatering, all temporary works and false works, construction of temporary stores and buildings, fencing, watering, lighting, erection maintenance, night working, inspection facilities, safety measures at work sites/casting yard for workmen and road users, preparation of design and drawings etc. establishment and overhead charges, labour camps, insurance costs for labour and works, contractor's profit, all taxes, royalties, duties, cess, octroi, GST and other levies and other charges together with all general risks, liabilities and obligations set out or implied in the contract and including remedy of any defects during the Defect Liability Period, unless otherwise provided in Bill of quantities.
4. Providing concrete for all works deemed to be inclusive of the cost towards production of concrete by batching plant, transit mixer, transportation of concrete with all leads and lifts, form work, shuttering including staging as required, pouring of concrete by pump/tower crane to all heights /depths, compaction by vibrators, curing by approved means such as water, steam or curing compound and all labour, tools, plants, machinery required for execution of work complete in all respects including de shuttering after completion of work.
5. The whole cost of complying with the provisions of the Contract shall be deemed to have been included in the quoted Amount/Percentage.
6. General directions and description of works and materials are not necessarily repeated or summarized in the Bill of quantities.
7. The method of measurement of completed work for payment shall be in accordance with the requirements as stated in the individual sections of the Technical Specifications and Conditions of Contract.
8. Shuttering required for concrete work shall be of steel except wherever there are site constraints as decided by Engineer.

9. In the defined grade of concrete mix, the first figure defines the strength of concrete and second figure defines the maximum size of coarse aggregates to be used for production of particular concrete mix, E.g. M 15/20 means “M-15” is the grade of concrete and “20” is the maximum size of coarse aggregate in mm to be used.
10. Tenderer may please note that to perform this contract, nothing extra shall be payable on account of field constraints, availability of front, preparation of detailed scheme for taking necessary clearance and approval from the concerned authority and other local bodies etc.
11. Contract prices shall be inclusive of all taxes and duties payable by them excluding GST. Income tax and any other statutory taxes to be deducted at source, if any, will be deducted by the Employer in accordance with Income Tax Act and any other acts in force in accordance with instructions issued by authorities on this behalf, from time to time.
12. If work is stopped due to non-shifting of utilities, no claim shall be entertained on this account.
13. The Tenderer is required to furnish the PAN for all members of Group.
14. Replace CA audit with Statutory Auditor wherever applicable, except in qualification of experts.

Note: -

1. The above quoted Percentage / cost covers all items of the work as detailed in the “Employer’s Requirement” contained in Section 7A as well as conforming to all Technical Specifications in Section 7B and stipulations laid down in the Bid Document including all addenda/corrigenda thereof till the date of submission of Bids.
2. It is inclusive of all costs on Design, Drawings, Reports, Survey, Site Facilities, Construction, Equipment, Plants, Instruments, Labour, Supervision, Materials, Supply, Erection, Testing, Commissioning, Modification, Maintenance, Temporary Works, Site Access, Safety, Security, Defect Rectification, Insurance, Profit duties, Taxes, Levies, Royalties as per applicable law together with all general risks, liabilities and obligations set out or implied in the contract.
3. Schedule for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of quantities (refer: ITT Clause 11.2 and CC Clause 37.2)
4. Unit rate/Percentage shall be quoted by the Tenderer in Indian Rupees.
5. Where there is a discrepancy between the rate in figures and words, the lower of the two will govern. [ITT Clause 24.1]
6. **No Tower Car, BRN Wagon, Crane etc, shall be provided for Mast Erection, Wiring & Adjustment of OHE. Tower Car shall provide for only joint checking with Railway Officials.**
7. For all foundation works in OHE/Feeder/PSI works – M-15 concrete shall be used and for core – M – 20 concrete shall be used with 20mm ballast for both the concrete.
8. For every 50 m3 of concrete casted, three samples of test cubes of size 15x15x15 cm shall be made and tested for crushing strength after 28 days at any government approved agency/colleges. If any sample test cube fails, the performance of the foundations will be observed for a period of one year from the date of casting for any crack or disintegration; if found satisfactory, payment for that batch will be made after the observation period.
9. Muffing of OHE mast/structures should be done along with grouting in order to ensure homogeneous bonding between Muffing and grouting concretes.
10. All bolts and nuts below 14 mm dia on current carrying parts of OHE shall be stainless steel.
11. All type of insulators shall be tested at site for Mechanical Proven test in the presence of TRD Staff before execution of work.
12. Proper soldering should be required both sides of the jumper ends (H, G, C, F, Anti-theft jumpers) etc.
13. Contractor should be provide PACKING SADDLE each and every Cantilever.
14. The contractor shall provide composite insulator in the vandal prone area/polluted areas instead of porcelain insulator as directed by engineer in-charge.
15. While doing power block works proper bonding is required for OHE structure.
16. The Contractor should provide heat shrinkable PVC sleeve of minimum length of 40cm for structure bond under track circuited rail.

17. The OHE traction bonds should be fixed to the rail and connected in such a way that they do not interfere with tamping machine during tamping.
18. Drilling of holes in the rails shall be done only with prior approval of authorized Railway official and drilling should be done in the presence of nominated Railway official.
19. All the released equipment, fittings, SPS Steel works shall be returned to the OHE Depot.
20. While releasing OHE Structures (Masts, Boom, Up-Rights, TTU's, Gantry mast etc.) proper care shall be taken.
21. The contractor shall provide only copper wires for anti creep, feeder wire, large span wires and jumpers.

Bi-RIDE

SUMMARY SHEET OF PRICE SCHEDULE

Sl. No.	Particulars	Approx. Contract Value in INR (Excluding GST)
1	Schedule – A – Non-Ferrous Items	1,38,14,470.03
2	Schedule – B – Ferrous Items	1,58,57,656.17
3	Schedule – C – Concrete	99,78,603.07
4	Schedule – D – Other Items	2,58,57,677.80
5	Schedule – E – Supply of Contact Wire	27,79,794.92
6	Schedule – F – Supply of Catenary Wire	20,66,187.78
7	Schedule – G – Miscellaneous Items	44,61,292.49
8	Schedule –H – Construction of Switching Station Building and Associated Works	56,99,133.61
9	Schedule –I – Power Block Component (Fixed Amount)	16,94,915.25
10	Schedule –J- Provisional Sums (Fixed Amount)	16,94,915.25
Grand Total (Schedule A to Schedule J) – Excluding GST		8,39,04,646.37

Important Notes to Bidders:

1. In the financial bid section, the bidders should enter in the template provided for abstract of amount of all schedules (Summary sheet) by filling in the last column of quoted INR against each of the schedules which shall be inclusive of all the taxes, duties, levies, cess, etc. excluding GST.
2. For comparison of the quoted bid price by the bidders, the grand total of the quoted amount from schedule (“A” to “J”) shall be taken into consideration.
- 3. The Bidder to quote same amount for Schedule- I & J.**
4. The Schedule-I is Power Block Component. The cost under this Schedule stands fixed and this amount is provided as fixed amount in the summary of Financial Bid / Price Schedule. Bidder to refer clause no.5 of Section-9, Part – C: Payment Procedure for operation of power block component & payment terms.
5. The Schedule “J” is provisional sums for incidental and unforeseen items likely to occur during the execution of work and paid under latest SOR of SWR-USSOR / BESCOM / KPTCL as per sequence of priority as per the clause no.13.3 of Section-7 (PCC) with the approval of Engineer / Employer. The cost under this Schedule stands fixed and this amount is provided as fixed amount in the summary of Financial Bid / Price Schedule.
- 6. The Highest average annual turnover in last 5 years shall be considered for deciding Lowest bidder if two or more bidders quoted the same percentage.**

Schedule-A					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	A1-1	Supply (excluding supply of copper contact wire and catenary wire) of overhead equipment.	KM	3	67,531.02
2	A1-2	Erection (excluding supply of copper contact wire and catenary wire) of overhead equipment.	KM	3	52,968.05
3	A3-1	Supply of 25 kV Feeder wire (Including 150 sq.mm Copper wire).	KM	8	16,47,954.53
4	A3-2	Erection of 25 kV Feeder wire (Including 150 sq.mm Copper wire).	KM	8	28,354.45
5	A4-1	Supply (excluding supply of copper conductor) of anti-creep with cadmium Copper Catenary Wire	EACH	3	11,425.42
6	A4-2	Erection (excluding supply of copper conductor) of anti-creep with cadmium Copper Catenary Wire	EACH	3	2,741.57

Schedule-B					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	B1-1	Supply of fabricated mast K, B, S, series etc.	MT	70	1,17,505.96
2	B1-2	Erection of fabricated mast K, B, S, series etc.	MT	70	8,898.79
3	B2-1	Supply of 8"x8", 8"x6", 6"x6" mast and S1 to S8	MT	30	1,17,505.96
4	B2-2	Erection of 8"x8", 8"x6", 6"x6" mast and S1 to S8	MT	30	8,898.79
5	B3-1	Supply of fabricated steel work other than masts by manual/crane	MT	10	1,22,389.99
6	B3-2	Erection of fabricated steel work other than masts by manual/crane	MT	10	8,628.77
7	B4-1	Supply of fabricated & galvanized small part steel work (SPS).	MT	15	1,19,947.97
8	B4-2	Erection of fabricated & galvanized small part steel work (SPS).	MT	15	7,184.96

Schedule-C					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	C1	For Foundation and Plinth - Concrete in hard soil - Supply and Erection	CUM	200	6,449.20
2	C2	Concrete in rocky soil – Supply and Erection	CUM	100	13,590.15
3	C3	Concrete in other than hard soil and rock – Supply and Erection	CUM	500	12,454.66
4	C4	Reinforced concrete- Supply and Erection	CUM	50	22,048.34

Sr. No	Item Code	Description	UOM	Quantity	INR
1	D1-2	Preparation of designs and drawings for overhead equipment complete. - Erection only	KM	3	13,967.67
2	D2-2	Preparation of designs and drawings for Switching station - Erection only	Each	8	23,143.60
3	D3-2	Supply of Preparation of station working rule diagram and working instruction	Each	8	9,829.07
4	D4-1	Supply of a Guy rod assembly	Each	50	12,885.64
5	D4-2	Erection of a Guy rod assembly	Each	50	736.78
6	D5-1	Supply of a single bracket assembly including stay and bracket insulator	Each	70	26,484.92
7	D5-2	Erection of a single bracket assembly including stay and bracket insulator	Each	70	1,368.56
8	D6-1	Extra on D5 for supply of additional fittings on a single bracket assembly for supporting two OHES	Each	20	3,913.47
9	D6-2	Extra on D5 for Erection of additional fittings on a single bracket assembly for supporting two OHES	Each	20	2,52.71
10	D8-1	Supply of a pull off arrangement for one OHE	Each	1	15,435.89
11	D8-2	Erection of a pull off arrangement for one OHE	Each	1	912.08
12	D9-1	Extra for Each additional equipment pulled - Supply only	Each	1	4,918.98
13	D9-2	Extra for Each additional equipment pulled - Erection only	Each	1	550.81
14	D16-1	Supply of regulating equipment (3 pulley type) with counter-weight assembly for conventional OHE	Each	16	1,02,705.13
15	D16-2	Erection of regulating equipment (3 pulley type) with counter-weight assembly for conventional OHE	Each	16	3,757.75
16	D19-1	Supply of materials for termination of Double conductor	Each	28	15,402.08
17	D19-2	Erection of materials for termination of Double conductor	Each	28	965.47
18	D23-1	Supply of materials/termination of 25 kV terminating wire (150 sq mm) copper cross track / along track feeder	Each	70	9,160.81
19	D23-2	Erection of materials/termination of 25 kV terminating wire (150 sq mm) copper cross track / along track feeder	Each	70	1,351.65
20	D26-1	Supply of Porcelain cut-in-insulator	Each	70	6,868.60
21	D26-2	Erection of Porcelain cut-in-insulator	Each	70	731.44
22	D27-1	Supply of a Porcelain suspension insulator	Each	150	6,702.20
23	D27-2	Erection of a Porcelain suspension insulator	Each	150	676.27
24	D28-1	Supply of 25kV Post insulator	Each	50	7,995.13
25	D28-2	Erection of 25kV Post insulator	Each	50	634.45
26	D31-2	Erection of PTFE Type short neutral section assembly	Each	4	4,477.63
27	D32-1	Supply of 25 kV single pole Isolator	Each	5	47,437.75
28	D32-2	Supply of 25 kV single pole Isolator	Each	5	5,159.24
29	D33-1	Supply of 25 kV double pole Isolator	Each	21	85,776.99
30	D33-2	Erection of 25 kV double pole Isolator	Each	21	7,840.30

Sr. No	Item Code	Description	UOM	Quantity	INR
31	D34-1	Provision of interlocking device on 25kV Single/Double Pole isolator with or without earth contact assembly - Supply only	Each	21	3,362.67
32	D34-2	Provision of interlocking device on 25kV Single/Double Pole isolator with or without earth contact assembly - Erection only	Each	21	5,14.32
33	D35-1	Supply of a copper jumper	Each	60	4,008.69
34	D35-2	Erection of a copper jumper	Each	60	247.37
35	D37-1	Supply of a structure bond / Interlock bond	Each	120	685.17
36	D37-2	Erection of a structure bond / Interlock bond	Each	120	272.29
37	D39-1	Supply of transverse and special bond	Each	50	626.44
38	D39-2	Erection of transverse and special bond	Each	50	439.58
39	D40-1	Supply of a single earth electrode	Each	100	2,947.12
40	D40-2	Erection of a single earth electrode	Each	100	1,032.20
41	D41-1	Supply of earth bus	Mtr	1000	154.83
42	D41-2	Erection of earth bus	Mtr	1000	72.08
43	D42-1	Supply of copper strips for equipment earthing	Mtr	60	497.42
44	D42-2	Erection of copper strips for equipment earthing	Mtr	60	113.90
45	D43-1	Supply of 8 SWG GI wire for earthing	Mtr	50	33.81
46	D43-2	Erection of 8 SWG GI wire for earthing	Mtr	50	22.25
47	D44-1	Supply of Vacuum type 25KV Interrupter	Each	07	3,92,635.04
48	D44-2	Erection of Vacuum type 25KV Interrupter	Each	30	6,313.35
49	D45-1	Supply of 25 kV potential transformer	Each	8	1,17,005.59
50	D45-2	Erection of 25 kV potential transformer	Each	14	1,688.01
51	D46-1	Supply of 42 kV lightning arrestor	Each	10	51,968.77
52	D46-2	Erection of 42 kV lightning arrestor	Each	30	1,195.93
53	D50-1	Supply & Installation of cables control and Indication - Supply only	Mtr	500	294.53
54	D50-2	Supply & Installation of cables control and Indication - Erection only	Mtr	500	16.91
55	D51-1	Supply & Installation of cables Heater supply- Supply only	Mtr	500	89.87
56	D51-2	Supply & Installation of cables Heater supply- Erection only	Mtr	500	16.91
57	D52-1	Supply & Installation of cables Catenary Indication- Supply only	Mtr	500	114.79
58	D52-2	Supply & Installation of cables Catenary indication- Erection only	Mtr	500	16.91
59	D54-1	Supply & Installation of cables 110 V.D.C supply - Supply only	Mtr	200	114.79
60	D54-2	Supply & Installation of cables 110 V.D.C supply - Erection only	Mtr	200	22.25
61	D55-1	Supply of cable for LT Transformer to ACDB: 2 Core, 70 sq mm XLPE insulated PVC sheathed Aluminium cable (1100V grade, Heavy Duty)	Mtr	1000	337.25
62	D55-2	Laying of Cable for LT Transformer to ACDB:	Mtr	1000	278.52

		2 Core, 70 sq mm XLPE insulated PVC sheathed Aluminium cable (1100V grade, Heavy Duty)			
63	D56-2	Cable trench cutting -Erection only	Mtr	1000	345.25
64	D57-1	Supply of Aluminium bus bar 50mm/39mm	Mtr	500	565.04
65	D57-2	Erection of Aluminium bus bar 50mm/39mm	Mtr	500	61.40
66	D58-1	Supply of Solid copper bus bar 18 mm	Mtr	20	1,421.06
67	D58-2	Erection of Solid copper bus bar 18 mm	Mtr	20	94.32
68	D59-1	Supply of Aluminium bus terminal	Each	50	1,466.44
69	D59-2	Erection of Aluminium bus terminal	Each	50	420.00
70	D60-1	Supply of Aluminium bus splice	Each	30	1,724.49
71	D60-2	Erection of Aluminium bus splice	Each	30	420.00
72	D61-1	Supply of Aluminium bus tee connector	Each	50	1,767.20
73	D61-2	Erection of Aluminium bus tee connector	Each	50	420.00
74	D62-1	Supply of Aluminium tap connector	Each	50	3,163.25
75	D62-2	Erection of Aluminium tap connector	Each	50	36.48
76	D63-1	Supply of Aluminium terminal connector bolted type	Each	30	1,491.36
77	D63-2	Erection of Aluminium terminal connector bolted type	Each	30	475.17
78	D64-1	Supply of solid copper bus bar connectors-Bus terminal (6310)	Each	2	2,148.94
79	D64-2	Erection of solid copper bus bar connectors-Bus terminal (6310)	Each	2	420.00
80	D65-1	Supply of solid copper bus bar connectors-Bus splice (6320)	Each	2	2,210.34
81	D65-2	Erection of solid copper bus bar connectors-Bus splice (6320)	Each	2	617.54
82	D66-1	Supply of solid copper bus bar connectors-Bus tee joint	Each	2	2,087.54
83	D66-2	Erection of solid copper bus bar connectors-Bus tee joint	Each	2	420.00
84	D67-1	Supply of solid copper bus bar connectors-Bus terminating tee	Each	2	5,143.22
85	D67-1	Erection of solid copper bus bar connectors-Bus terminating tee	Each	2	36.48
86	D68-1	Supply, Erection, oil filtration, testing and commissioning of 10 kVA capacity LT supply transformers - Supply only	Each	2	1,09,741.91
87	D68-2	Supply, Erection, oil filtration, testing and commissioning of 10 kVA capacity LT supply transformers - Erection only	Each	9	8,580.64
88	D69-1	LT control board for AT location as per RDSO spec. no. TI/SPC/PSI/CLS/0020 with A & C slip No.4. (7/2010) or latest - Supply only	Each	1	8,1608.14
89	D69-2	LT control board for AT location as per RDSO spec. no. TI/SPC/PSI/CLS/0020 with A & C slip No.4. (7/2010) or latest - Erection only	Each	1	2,503.09
90	D70-1	Supply of 25 kV drop out fuse switch	Each	8	20,644.07
91	D70-2	Erection of 25 kV drop out fuse switch	Each	8	2,021.69
92	D71-1	Supply of Protective Screen for FOB/ROB	Each	10	26,119.19
93	D71-2	Erection of Protective Screen for FOB/ROB	Each	10	2,024.36

94	D72-1	Supply of anti-climbing device, etc. LT. Supply transformer stations	Each	9	1,685.34
95	D72-2	Erection of anti-climbing device, etc. LT. Supply transformer stations	Each	9	311.44
96	D73-1	Supply of Fixing of caution boards and warning boards	LS	7	39,327.84
97	D73-2	Erection of Fixing of caution boards and warning boards	LS	7	2,908.86
98	D74-2	Modification to erected equipment Transfer of equipment from one mast or support to another-Erection only	Each	60	2,428.35
99	D75-2	Provision of an additional bracket assembly / assemblies on a mast or support - Erection only	Each	20	2,152.50
100	D76-2	Dismantling of overhead equipment - Erection only	KMS	0.25	49,885.68
101	D77-2	Dismantling of feeder / return conductor. - Erection only	KMS	2	16,668.331
102	D78-1	Splicing and extension of an anchored overhead equipment - Supply only	Each	10	1,946.95
103	D78-2	Splicing and extension of an anchored overhead equipment - Erection only	Each	10	8,371.53
104	D79-1	Dismantling of a section insulator - Supply only	Each	1	3,899.24
105	D79-2	Dismantling of a section insulator - Erection only	Each	1	5,740.30
106	D80-2	Slewing of equipment - Erection only	span	5	1,935.38
107	D81-2	Dismantling of an isolator. - Erection only	Each	31	1,287.58
108	D82-2	Dismantling of pin/pedestal insulators - Erection only	Each	2	422.67
109	D83-2	Dismantlement of OHE mast / structure by cutting - Erection only	Each	10	4,859.36
110	D84-2	Dismantlement of OHE mast structure of breaking the foundation -Erection only	Each	5	6,930.89
111	D85-2	Dismantling of guy rod - Erection only	Each	10	3,137.54
112	D88-1	Splicing and extension of RC wire/feeder wire- Supply only	Each	5	2,643.69
113	D88-2	Splicing and extension of RC wire/feeder wire-Erection only	Each	5	7,061.69
114	D89-2	Releasing of plinth/ pole mounted AT along with drop out fuse, fencing panels and Las etc.- Erection only	Each	7	7,498.60
115	D91-1	Spreading of 20 mm Ballast in the SSP/SP Switch Yard. - Supply only	Cum	100	1,041.99
116	D91-2	Spreading of 20 mm Ballast in the SSP/SP Switch Yard. - Erection only	Cum	100	80.08
117	D101-2	Dismantling of copper jumper	EACH	25	95.43
118	D102-2	Dismantling of fabricated steel & SPS	MT	50	462.93
119	D103-2	Dismantlement of 25 KV Interrupters/CBs (oil/ vac/sf6)	Each	30	1,609.48
120	D104-2	Dismantling of 25 kV Potential Transformer (Type I, II)	Each	15	367.47

121	D105-2	Dismantling of 42 KV LA	Each	30	239.29
122	D106-2	Dismantling of fencing panel with Retrieval of fencing upright	Each	100	320.47
123	D107-1	Supply of lead acid batteries 110 V 40 AH as per RDSO specification	EACH	7	87,449.53
124	D107-1	Erection of lead acid batteries 110 V 40 AH as per RDSO specification	EACH	7	5,262.86
125	D108-1	Supply of Battery chargers	EACH	7	41,554.57
126	D108-2	Erection of Battery chargers	EACH	7	723.55
127	D109-1	Supply of fencing panels at switching stations	MTR	500	2,521.04
128	D109-2	Erection of fencing panels at switching stations	MTR	500	68.37
129	D110-1	Supply of fencing uprights	MT	3	76,931.72
130	D110-2	Erection of fencing uprights	MT	3	3,226.08
131	D111-1	Supply of anti-climbing device at switching stations	MTR	500	284.86
132	D111-2	Erection of anti-climbing device at switching stations	MTR	500	7.12
133	D112-1	Supply of Cable trench cover	Sqm	150	1,755.58
134	D112-2	Erection of Cable trench cover	Sqm	150	417.25
135	D113-1	Supply of Terminal boards in control room/cubical	EACH	14	14,350.01
136	D113-2	Erection of Terminal boards in control room/cubical	EACH	14	348.96
137	D-114	Supply and Erection of materials for internal and external lighting of Switching Station Building (SP/SSP).	EACH	7	33,335.79
138	D115-2	Erection, Testing & Commissioning of released Remote Station Equipment's at remote station including software & hardware modification/alteration	each	7	56,614.92
139	D116-2	Dismantling of Remote Station Equipment's at remote station including software & hardware modification/alteration	each	7	50,953.43
140	D117-1	Supply of safety equipment at switching station	EACH	7	77,022.01
141	D117-2	Erection of safety equipment at switching station	EACH	7	5,031.20
142	D118-1	Supply of 25KV Single Pole Vacuum Circuit Breaker, Spring-Spring Operating mechanism, Spec: TI/SPC/PSI/LVCBIN/0120 (Dec 2013) Rev.0 with A & C slip no. 1, STR : TI/STR/015 (Rev.1) or latest	No's	2	4,49,437.50
143	D119-2	Erection of 25 KV Circuit Breaker SF-6/Vacuum type	Each	2	5,319.83
144	D120-1	Supply of 25 KV current transformer of 200-100/5 A	Each	2	67,722.89
145	D120-2	Erection of 25 KV current transformer of 200-100/5 A	Each	2	3,670.60
146	D121-1	Supply of 25KV Potential Transformer, Type-II of ratio 27500/110V as per RDSO specification Number I/SPC/PSI/PT/0210/(06/2021) or latest	No's	2	42,489.38
147	D121-2	Erection, Testing & Commissioning of 25KV Potential Transformer, Type-II of ratio 27500/110V as per RDSO specification Number I/SPC/PSI/PT/0210/(06/2021) or latest	No's	2	804.98

Schedule-E					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	E1-1	Supply of Jointless Hard Drawn Grooved Copper Contact Wire, 107 sqmm made out of continuous cast copper wire rod as per RDSO 2019 specification No. ETI/OHE/76(6/97) with A&C slips no 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10	KM	3	9,26,598.31

Schedule-F					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	F1-1	Cadmium Copper Catenary Wire, 19/2.10 mm 65 sq mm for overhead Railway Traction as per RDSO 2019 specification No. ETI/OHE/50(6/97) with A&C slip Nos. 1, 2, 3, 4 and 5	KM	3.5	5,90,339.36

Schedule-G					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	G1-2	Transporting of OHE Materials	MT / KM	2000	73.86
2	G2-1	Supply of Schematic diagram and shock treatment board	SET	8	848.01
3	G2-2	Erection of Schematic diagram and shock treatment board	SET	8	53.39
4	G3-2	Manning Arrangements	Day	700	1,005.51
5	G5-1	Supply of PTFE Type short neutral section assembly	EACH	3	10,28,002.50
6	G7-1	Supply of Disconnector Assembly suitable for 42 KV Surge Arrestor as per RDSO specification for Lightning Arrestor Assembly No TI/SPC/PSI/MOGTLA/0101(02/2015) with complete set and suitable hardware's for fixing.	EACH	30	4,465.17
7	G9	Supply & Erection of MS flat 75x8mm to a depth of 500mm below existing ground level duly bolted with buried rail on either side and connecting to nearest traction rail with tin plated copper bush and M12 bolts (Stainless steel) as per RDSO drawing.	MTR	150	1,502.03
8	G10-2	Erection of 13 mtr long buried rail including transportation of rail and excavation of buried rail pit of 0.75 mtr wide and 1mtr depth.	No	7	22,749.41

Schedule-H					
Sr. No	Item Code	Description	UOM	Quantity	INR
1	H1	<p>Earth work excavation by manual means for drains, canals, waste weir, draft, approach channels, key trenches, foundation of Buildings & bridges and such simillar works in all kinds of soils, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter, excavated surface leveled and sides neatly dressed disposing off the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools & other appurtenances required to complete the work.</p> <p>In all kinds of soils depth upto 1.5 m Note : Cost of De-watering upto 5 % may be added, where required assessment for dewatering shall be made as per site condition</p>	Cum	146.29	242.00
2	H2	<p>Earth work excavation by manual means for drains, canals, waste weir draft, approach channels, key trench, foundation of Bridges and such similar works, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, excavated surface leveled and sides neatly dressed disposing off or leveling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage & other appurtenances required to complete the work.</p> <p>In ordinary/soft rock without blasting upto 1.5 m depth Note : Cost of De-watering upto 5 % may be added , where required assessment for dewatering shall be made as per site condition</p>	Cum	62.56	299.00
3	H3	<p>Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work</p> <p>In all kinds of soils depth upto 3 m Note : Cost of De-watering upto 5 % of (A+B) may be added, where required as sessment for dewatering shall be made as per site condition</p>	Cum	146.29	102.00
4	H4	Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing	Cum	62.56	363.00

		and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work In ordinary/soft rock without blasting upto 1.5 m depth Note : Cost of De-watering upto 5 % of (A+B) may be added, where required assessment for dewatering shall be made as per site condition.			
5	H5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations and other similar works etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m. Note: 1) Add 5% per m3 for every additional 1.50m depth or part thereof beyond 4.50 m depth is provided 2) Add 3% per m3 for every additional 1.50m depth or part thereof beyond initial 1.50 m depth if shoring and strutting is provided	Cum	193.54	266.00
6	H6	Providing and Filling in foundation with granite / trap broken metal 100mm. and down size & with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift complete as per specifications.	Cum	23.04	2,682.00
7	H7	Providing and laying in position Cement Concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications. Mix 1:4:8 Using 40 mm nominal size graded crushed coarse aggregates	Cum	34.72	5,664.00
8	H8	Providing and laying in position Cement Concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications Mix 1:2:4 Using 20 mm nominal size graded crushed coarse aggregates	Cum	13.30	6,243.00
9	H9	Providing and laying in Cement Concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/basalt crushed graded coarse aggregates	Cum	57.27	6,480.00

		and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M25 Design Mix Using 20 mm nominal size graded crushed coarse aggregates			
10	H10	Providing and laying in Cement Concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates	Cum	14.00	6,605.00
11	H11	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine	Cum	48.82	6,336.00
		mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M25 Design Mix Using 20 mm nominal size graded crushed coarse aggregates			
12	H12	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates	Cum	14.00	6,742.00

13	H13	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancillary operations complete as per drawing and technical specification: Buildings	Tonne	11.00	89,457.00
14	H14	Providing Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	92.04	5,611.00
15	H15	Providing and laying autoclaved aerated cement blocks masonry with 150mm/230mm/300 mm thick AAC blocks as per IS 2185 (Part III) in super structure above plinth level up to floor I level with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.	Cum	89.43	7,978.00
16	H16	Providing and fixing in position 12mm thick plaster of paris (Gypsum anhydrous) for ceiling reinforced with hessian cloth flat surface with ceiling tiles up to a height of 5 m above floor level over aluminium strips 25mm x 6mm and rendered smooth with plaster of paris including cost of materials, labour, curing complete as per specifications.	sq.m	851.86	1,171.00
17	H17	Providing 12 mm cement plaster with cement mortar 1:6 (1 cement: 6 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.	sq.m	655.52	241.00
18	H18	Providing 15 mm cement plaster on the rough side of single or half brick wall of mix :1:6 (1 cement: 6 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.	sq.m	468.93	279.00
19	H19	Providing 6 mm cement plaster with cement mortar 1:3 (1 cement : 3 fine sand) on concrete surface / ceilings including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.	sq.m	196.33	211.00
20	H20	Providing and fixing 10 mm thick acid and/or alkali resistant tiles of approved make and colour using acid and/or alkali resisting mortar bedding for Bathrooms: Toilet: Chemically exposed areas and joints filled with acid and/or alkali resisting cement as per IS : 4457, complete as per the direction of Engineer-in- Charge :	sq.m	59.32	1,246.00

		In flooring on a bed of 10 mm thick mortar 1:4 (1 acid proof cement : 4 coarse sand) with Acid and alkali resistant tile			
21	H21	Providing and fixing 10 mm thick acid and/or alkali resistant tiles of approved make and colour using acid and/or alkali resisting mortar bedding for Bathrooms: Toilet: Chemically exposed areas and joints filled with acid and/or alkali resisting cement as per IS : 4457, complete as per the direction of Engineer-in- Charge : In dado/skirting on 12 mm thick mortar 1:4 (1 acid proof cement : 4 coarse sand) with Acid and alkali resistant tile	sq.m	59.32	1,260.00
22	H22	Distempering with 1st quality acrylic distemper (ready mixed) having VOC content less than 50 g/l, of approved manufacturer, of required shade and colour Complete, as per manufacturer's specification. Two coats on new work to give an even shade after thoroughly brooming the surface to remove all dirt, dust, mortar drops and foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications and as per directions of Engineer-in-charge.	sqm	851.86	80.00
23	H23	Finishing walls with water proofing cement paint of required shade: New work (Two coats applied @ 4.84 kg/10 m ²) to give an even shade after thoroughly brooming the surface to remove all dirt, dust, mortar drops and foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications and as per directions of Engineer-in-charge.	sq.m	468.93	89.00
24	H24	Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications: Two coats applied on walls @ 1.25 L/10 m ² over and including one coat of Special primer applied @ 0.75 L/10 m ² with paint of approved quality to give an even shade, after thoroughly brooming the surface to remove all dirt, dust, mortar drops and foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications and as per directions of Engineer-in-charge. (The gloss should be 50% @ 60 degree angle with 10 years life)	sq.m	1,323.00	158.00
25	H25	Providing and fixing Structural Steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete including cost of materials, labour, usage charges of machinery complete as per specifications and as per directions of the Engineer-in Charge.	Kg	70.00	113.00
26	H26	Providing and fixing 1mm thick M.S. Sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer. Using M.S. angels 40x40x6 mm for diagonal braces including cost of materials, labour, usage charges of machinery	Sqm	28.00	4,478.00

		complete as per specifications and as per directions of the Engineer-in Charge.			
27	H27	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes 100 mm diameter	m	28.00	291.00
28	H28	Providing and laying water proofing treatment to the Roof with PU based single component elastomeric pure polyurethane based coating on New terrace/Chajjas/ Sunken portion of WC:Bathroom, cold applied PU waterproofing membrane that is highly elastic with elongation greater than 400% and tensile strength greater than 2MPa as per ASTM D412. The waterproofing membrane to be applied in 2coats @ 1.6 kg/m ² to achieve final DFT (Dry Film Thickness) of 1mm including prime coat of epoxy primer @150 g/m ² and protection with 120gsm Geo-textile over the waterproofing membrane. The finished cost to include surface preparation, making coving at Junction, Bore Packing, treatment of construction joints completely as per specification.	sqm	196.33	817.00
29	H29	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material to the appropriate disposal area as per direction of Engineer-in-charge.	m ³	10	2,426.00
30	H30	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material to the appropriate disposal area as per direction of Engineer-in-charge. In cement mortar	m ³	10	1,029.00
31	H31	Taking out doors, windows and clerestory window shutters (steel or wood) including stacking to the appropriate disposal area as per direction of Engineer-in-charge. of area 3 m ² and below	m ²	10	94.00
32	H32	Dismantling tile work in floors and roofs laid in cement mortar including stacking material to the appropriate disposal area as per direction of Engineer-in-charge. For thickness of tiles 10 mm to 25 mm	m ²	10	48.00

SECTION - 9
PRICE SCHEDULE
Part B – Explanatory Notes

Section-9: Part B – Explanatory Notes

Explanatory notes for various items of work in Schedule are given below:

The basic quantities of components and materials required to make up a unit of work for selected items, are indicated for guidance only. There may be minor variations to suit erection but no adjustment in prices of Schedule shall be made on that account. In estimating the prices for various items of work, provision for loss and wastage in transit and erection should be provided for over and above the basic quantities of components and materials required to make up a unit of work, indicated herein, except where otherwise specified for materials supplied by the Purchaser.

In the explanatory notes given in this Chapter, the term 'Small parts steel work' is meant to cover fabricated steel work made from rolled steel sections, complete with bolts and nuts and washers where required for fastening the small parts steel work to any structural member. The term "attachment" wherever used is intended to cover castings, forgings, machined or welded components or fittings, which are attached directly to a structural member, or mounted on small parts steel work and shall include bolts and nuts for fastening the attachment to the structural member or small parts steel work.

In the explanatory notes given in this chapter, the term "bimetallic connection" is meant to cover any connection between a copper conductor and an aluminium conductor. The clamps used for such connections shall be made of a suitable aluminium alloy or copper alloy and the copper/aluminium conductor shall be wrapped with a bimetallic (aluminium copper) strip to prevent direct contact between aluminium and copper.

Special notes for measurements are included in this chapter under various items, where necessary.

Note: It is to note that the OHE structure of 25 kV feeding system is to be adopted as far as possible as per RDSO instruction No. TI/IN/0042.

Reconciliation of materials supplied by the Purchaser:

The following procedure shall be adopted for the final reconciliation of the various equipment's, materials, fittings and conductors supplied by the Purchaser in terms of para for OHE. All the materials supplied by the Purchaser shall be correctly accounted for and quantities reconciled on completion of the work by the Contractor. On completion of work, all surplus materials supplied by the Purchaser together with the ones found defective or that have become defective or broken on account of defective materials and/or workmanship shall be returned to him by the Contractor.

1. ITEM NO. A1 SUPPLY (EXCLUDING SUPPLY OF COPPER CONTACT WIRE AND CATENARY WIRE) AND ERECTION OF OVERHEAD EQUIPMENT ONLY BY MANUAL.

The price for above shall cover erection of (19/2.5 sq.mm) 95 sq. mm pure copper/65 sq. mm cadmium copper Catenary , Hard drawn 107 sq. mm copper contact wire and 130 sq.mm feeder tail wire if any and supply and erection of 5 mm dropper wire, and components including dropper clips, parallel clamps for PH/F/H/C jumpers and splices (where their use is approved) dropper wire, PH/F/H/C jumper wire and terminating wire/s and including small parts steel works complete with bolts and nuts etc. for attachment of number plates to mast/ structure. The price shall cover erection of all components and wires and conductors including contact wire, catenary, droppers, PH/F/H/C jumpers and terminating wires including small parts steel work, if any.

The price shall cover adjustment of OHE height and stagger at the specified rail level and any further adjustment of OHE height and stagger along with track packing/ permanent way works as and when required till the final track position by Engineering branch and will be paid under item No. D74.

Tower Car will be provided by the employer only for final OHE checking along with TRD officials before commissioning of the section.

Rly Id No.	Description of components	Qty per Unit
1040-2	Contact wire parallel clamp small	As required
1180	Contact wire dropper clip (107)	- do -
1192	Catenary dropper clip complete with bolts, nuts etc.	- do -

7501	Retro reflective Structure no. plates complete with 2 S.S. bolts dia 10 x 35/30 nuts and rubber Washer for dia 10 bolts	-do-
1110-2	Contact wire (107 Sq. mm) Contact wire ending clamp	-do-
1120	Catenary ending clamp	-do-
1140	Large span wire clamp (130)	-do-
5020-1/5020-2	Adjuster	-do-
5030	Anchor Double Strap Assembly	-do-
5191/5192	Compensating Plate/Equalizing Plate	-do-
ETI/OHE /3 (2/94)	Annealed stranded Copper jumper wire for PH/F/H/C jumpers with PG clamps	-do-
ETI/OHE/50	Cadmium copper Catenary 95 sq. mm	-do-

NOTES FOR MEASUREMENT

The unit of measurement for the payment purpose shall be in TKM. No additional payment shall be made on account of overlap etc.

2. ITEM NO. A2 SUPPLY (excluding supply of copper contact wire) AND ERECTION OF TRAMWAY OHE WITH CONTACT WIRE ONLY (REGULATED WITH CATENARY WIRE BY MANUAL MEANS).

DELETED

3. ITEM NO. A3 SUPPLY AND ERECTION OF 25 KV FEEDER (INCLUDING 150 SQ. MM WIRE)

The price shall cover supply and erection of a 25 kV feeder along or across track made of a 150 sq. mm copper wire (37/2.5 mm) Drop jumpers/Jumpers from this wire shall be of 160 sq.mm wire with 1050-3 PG clamps which will be paid under D35.

NOTES FOR MEASUREMENTS

- i) THE PRICE UNDER ITEMS A3 SHALL NOT INCLUDE Termination which will be paid for under item D18 The connection (a) between feeders, or return conductors and (b) of feeders or return conductors to a bus bar, overhead equipment or which will be paid for under item D35 and Cut-in-insulators and suspension insulators which shall be paid for under item D26.
- ii) For the purpose of payment against Item A3 the length of feeders shall be measured from the center lines of the mast/ structure at which the two ends of each length of feeder or conductor run are anchored by adding actual spans. In case of feeder return conductors crossing a track, the length shall be measured between the faces of traction masts/ structures at which the two ends of the cross feeder or return conductors are anchored as indicated in the as erected structure erection drawings for traction masts/ structures. For purposes of progress payment reference to "as approved drawings" shall be made.

4. ITEM NO. A4 SUPPLY (EXCLUDING SUPPLY OF COPPER CONDUCTOR) AND ERECTION OF ANTICREEP WITH PURE/CADMIUM COPPER CATENARY WIRE

The price shall cover the supply of all materials for anticreep including adjusters, mast anchor fittings at its terminations on either side of structure, ending clamps including 9 tonne porcelain insulator, mast anchor fitting and backing angle as required. The price shall cover erection of all materials including pure/cadmium copper catenary wire, 9 tonne porcelain insulators assembly and small parts, steel work if any.

Rly Id No.	Description of Components	Qty per Unit
6020-1	Pure/Cadmium copper catenary wire (65 sq. mm)	As Required
6020-2	9 tonne insulator assembly	2 Nos.
6020-31120	Polluted zone type for Polluted area Catenary ending clamp (65)/1360	As Required

5020	9 tonne adjusters	As required
5030	Anchor double strap assembly	As required
5040	Clevis assembly	2 Off
3231	Mast anchor fitting including suitable attachment for mast /structure with bolts nuts and backing angle	2 Sets
1170	Double suspension clamp	1 Off
5183	Double eye distance rod	As Required

Notes for Item No. A4:

- i) No extra rate is admissible for double eye distance rod provided if any. As per site requirement if the termination insulator is to be shifted in the same wire to any other place, no extra rate is admissible.
- ii) Wherever Portal structures are provided, the anti-creep wire shall be terminated on uprights crossing number of tracks as required.
- iii) In case the anti-creep extends beyond one span on either side of anti-creep center, payment for the extra spans shall be made on pro-rata basis.
- iv) Wherever anti-creep wire passes through underneath the over-line structures as desired by the purchaser, contact wire shall be provided in lieu of anti-creep wire for suitable length.
- v) Anti-creep termination insulators shall be of normal porcelain type 9 – tonne insulators for normal zone and polluted 9 – tonne insulator for polluted and red zone areas.
- vi) Where 65 sq.mm cadmium copper catenary wire is used for conventional /tramway OHE, the anti-creep wire shall also be of 65 sq.mm cadmium copper catenary wire. In case 95 sq.mm pure copper catenary wire is used for conventional /tramway OHE, the anti-creep wire shall be of 95 sq.mm pure copper catenary wire.

ITEM NO. B ERECTION OF TRACTION MASTS AND MAIN MASTS OF SWITCHING STATIONS AND LT SUPPLY TRANSFORMER STATIONS BY MANUAL/CRANE

The price shall cover cost for manual/crane erection, alignment and setting before grouting of individual traction mast and main mast of switching post and booster transformer stations, including dwarf mast and mast for L.T. supply transformer stations whether rolled or fabricated including those for head span. Erection of traction mast also includes painting with cold galvanizing paint in rusted area and also removal of the bends if any in the mast supplied by contractor. The masts released under item no (D84) may also have to be reused.

5. ITEM NO B1 SUPPLY AND ERECTION OF FABRICATED MAST K, B, T & S SERIES ETC EXCLUDING S1 TO S8 MASTS AND**ITEM NO B2 SUPPLY AND ERECTION OF BFB MAST 8"X8", 6"X6" AND RSJ 8"X6" & S1 TO S8 MASTS**

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 shown below for standard types. For special type mast the payable weight per meter length will be indicated by the purchaser at the time of approval of designs.

PAYABLE UNIT WEIGHTS FOR STANDARD MASTS

Sl. No.	Types of Masts Galvanization	Weight in Kg per meter including
1	6" x 6" x 25.15 BFB	38.03
2	162 X 154 X 27.1 KG BFB	38.00
3.	200 X 200 X 49.9 BFB	51.20
4.	8" X 6" X 35 CBS RSJ	53.39
5.	S 1	53.39
6.	S 3	76.40

Sl. No.	Types of Masts Galvanization	Weight in Kg per meter including
7.	S 4	53.39
8.	S 5	111.53
9.	S 6	53.39
10.	S 7	76.40
11.	S 8	111.53
12.	K 100	23.70
13.	K 125	30.30
14.	K 150	38.18
15.	K 175	43.72
16.	K 200	49.87
17.	K 225	57.50
18.	K 250	66.72
19.	B 100	27.71
20.	B 125	32.47
21.	B 150	38.92
22.	B 175	44.61
23.	B 200	49.92
24.	B 225	61.50
25.	B 250	70.72
26.	S 100	23.72
27.	S 101	19.98

Note for item B1 & B2 The purchaser reserve the rights to change the quantities among the item No. B1 & B2 as the rate are equal.

6. ITEM NO. B3 SUPPLY AND ERECTION OF FABRICATED STEEL WORK OTHER THAN MAST BY MANUAL/CRANE.

The price shall cover cost of supply and erection, alignment and setting before grouting, wherever required, the portals, gantries, 2/3 tracks cantilever structures, booms. The price shall also include supply and erection of galvanized bolts, nuts washers etc. Wherever required as per approved designs and drawings. Drop arms will be paid under item No. B4.

NOTE FOR ITEM B (B1, B2, B3 & B4)

The price for the item B1, B2 & B3 shall also include cost of stenciling of location number, contact wire height, stagger, implantation and Rail level including emergency telephone indication. On Mast/ Portal uprights in the manner as directed by the purchaser. The price shall also include the straightening of masts/ portal upright bent during transit and cutting of mast/ portals to suit the site conditions. The mast/structures cut to suit site condition, proportionate weight will only be paid under item B1, B2 & B3.

- i) For erection under items B1, B2, B3 & B4 the contractor can use his own road crane duly transporting the structures to site.
- ii) The mast/ portals supplied under item 3 shall conforms to the following:
 - (a) Quality of steel – ST 42-S of IS 226, IS – 2062

- (b) Fabricated etc. – IS – 800
- (c) Electric arc welding – IS – 816.
- iii) For galvanization of the mast, zinc conforming to grade ZN 99.99 and as per IS – 209 and 1966 shall be used. The Mast/ Portals shall be Galvanized as per IS 2629 of 1968 and the masts of Zinc coating shall not be less than 610 gms/ sq.m generally and in the case of polluted area, the steel galvanization shall be 1000 gms/sq.m for all galvanized materials under this contract.
- iv) The mast/ portals which are not conforming to the standard mentioned above will be rejected.
- v) Temporary bonding of structure by means of 2 nos. of 8 SWG wire shall be done before boom erection, where proper bonding arrangement is not available.
- vi) In case mast erected due to any modifications/alterations and where OHE wiring is not done mast number plate and stenciling of number and other parameters as per RDSO directives have to be provided by the contractor. The cost of such number plates is included in the supply and erection schedules of item No. B.
- vii) The quantity schedule for item no B1, B2 & B3 are prepared based on certain drawings given during preparation of schedule. The purchaser reserves the right to change quantities among item no B1, B2 & B3 during execution of works as per site requirements.
- viii) If the purchase Engineer desires for the mast/ structure erected in between two main lines/yard lines to coat with different color bands for easy identification of elementary section, the contractor shall do so at no extra cost.

7. ITEM NO. B4 SUPPLY AND ERECTION OF FABRICATED AND GALVANIZED SMALL PARTS STEEL WORK

The price shall cover the cost of supply and erection of the above steel works including fasteners which are to be supplied by the contractor as per the approved designs and drawings.

For standard fabricated steel work for which RDSO's approved drawings are available, the weight of steel work as specified in RDSO's drawing shall be considered for payment. However, in case the unit sectional weight of any member indicated in RDSO's drawing is not in conformity with the unit sectional weight as per the latest IS specification the weight of the fabricated steel work, shall be calculated on the basis of latest IS specification and the same will be considered for payment.

For the nonstandard fabricated steel work, the calculated weight to be considered for payment under this item shall be included in the relevant drawing based on latest IS sectional weight at the time of submitting the designs for approval of the purchaser. All type of Drop arm with accessories, Pedestal Insulator outrigger (with mast/structure) and feeder super (individual or on portal) mast, 3121/3122 will only be paid under this schedule.

NOTE FOR ITEMS B1, B2, B3 & B4

- i) For the purpose of payment against items B1, B2, B3 & B4 weight for structures or fabricated steel work will be calculated according to the weight of black steel given in section books for the lengths of various members shown in the approved drawings. There will be no addition for increased weight due to galvanizing or painting or weld material or reduction for holes or skew cuts. If the weight of structure received by the contractor is less than the weights specified for the standard mast, payment shall be made for less weight only.
- ii) If purchaser desires to provide for bridge mast, 32mm dia galvanized hard steel bolts or as required – 4 Nos. with necessary washer, nut and check nut, the bolt shall be 32□ x 1110/300 mm or as required by the purchaser. The weight of the same may be got approved by the purchaser. The cost of the bolt, washer, nut and check nut will be paid as per the weight approved by the purchaser under item B4. For bridge mast if any angle/channel arrangement is required to be provided as per purchase engineers directive. The same also will be paid under item B4.
- iii) If purchaser desires to use stainless steel bolt & nuts for bridge mast, the cost of SS bolt & nut will be paid on mutually agreed rates.

8. ITEM NO. C1 CONCRETE FOR FOUNDATION AND PLINTH IN HARD SOIL & ITEM NO. C2 CONCRETE FOR FOUNDATION AND PLINTH IN ROCKY SOIL

The price shall cover excavation, supply and handling of all materials, and accessories, temporary arrangements for excavation in hard soil and concrete/ masonry drains/ walls requiring use of chisel and hammer or requiring breaking by tractor/JCB breaker (in schedules C1 & C2) shoring where necessary, casting concrete including form work where necessary, casting concrete grouting of masts and finishing the top of concrete foundation or anchor blocks wherever underground cable or pipes are met with the contractor should arrange to excavate with due care so as not to damage the U.G. cables/ Pipes and arrange for slight deviation of the U.G. cable to the extent necessary to cast foundation and protect the cables using DWC pipes of

adequate thickness and length as approved by the Purchaser's Engineer at site. The price also includes dismantling of all connected temporary arrangements back filling with earth and compacting the same to the required height and width as per drawing to ensure safety of foundation confining the exposed height of foundation block to within 10 cm and removal of spoil. The contractor shall arrange for filling up of earth around foundation where the embankment is low and enough shoulder width is not available as directed by Purchaser's Engineers. The price shall also include diverting the tracks side drains if any on account of OHE mast foundation works. The purchaser engineer shall certify where use of chisel and hammer or breaking has been necessary. The contractor shall arrange for supply of all tools and plants for breaking operations by tractor or/and JCB breaker at his own cost. If half or more of the depth or width of excavation is in hard soil/ concrete/ masonry drains/ walls or in rock, the entire foundations shall be paid for under item C1 or C2 as the case may be. If half of the depth or width of the excavations is in hard soil/ concrete/ masonry/ drains/ walls and the other half is in rock the entire foundation shall be paid under item C2. The price shall also include the cost of cement. The cement to be used for construction of PCC/RCC should be of ISI branded ordinary Portland cement to IS269 or latest version.

NOTES FOR MEASUREMENT FOR ITEMS C1 AND C2

- i) The payable volume of the foundations under item C1 and C2 shall be the designed one as shown in the drawings for which the whole has been blasted/chiselled irrespective of the actual configuration assumed by the later due to the following.
- ii) The depth of the excavation shall be measured from the formation level to the maximum excavated point.

9. ITEM NO. C3 CONCRETE FOR FOUNDATION AND PLINTH IN OTHER THAN HARD SOIL AND ROCKY SOIL.

The price shall include all works mentioned in item C1 and C2 in all classes of soil except hard soil concrete or masonry drains and walls and rock.

10. ITEM NO. C4 REINFORCED CONCRETE FOR FOUNDATION AND PLINTH

The price shall cover excavation for reinforced concrete work for foundations, supply of steel for reinforcement and other materials including bending, binding, laying of the reinforcement, shoring where necessary casting concrete including form work where necessary, grouting and finishing the tops of foundation blocks. The price shall also include dismantling of all connected temporary arrangements back filling as required and removal of spoil. The price shall also cover all concrete work for foundation or anchor blocks on bridge piers, irrespective of whether they are actually reinforced or not, and those for cast-in-situ piles foundations and counter weight foundations. The volume of cast-in-situ piles shall be added to the volume of foundation block for the purpose of payment. Dowel bars as may be required for bond with bridge structures shall be supplied and erected free of cost by the purchaser. Dowel bars will not be considered as reinforcement for the purpose of this item.

For cable trench work in FP/SSP/SP, the angel of suitable size shall be placed for proper resting of cable trench cover. No extra payment is admissible for the above steel work. The price shall also cover cable supports trays which is provided on cable trench.

Note: Nominal reinforcement will be necessary in black cotton soil foundations. Such nominally reinforced foundation in black cotton soil will be payable under item C-3 and not under item C-4.

The steel for nominal reinforcement will be arranged by the contractor after taking the approval from BI-RIDE and the concrete mixture, in such a case shall be as for normal of foundations 1:2:4.

NOTES FOR ITEMS C (C1, C2, C3 & C4)

- i) The price under item C (C1, C2, C3 & C4) shall be same for any shape of size on concrete blocks, cable trench or brick wall in calculating the individual volume of concrete and brick work, or a cubic meter beyond the third decimal shall be rounded off to the nearest third decimal.
- ii) The price under item C1, C2, C3 & C4 shall apply for concreting of all pedestals, plinths and foundations for gantries/ portals and supporting steel work and cable trenches and for other civil engineering work wherever required.
- iii) For purpose of computation of volume of concrete and brick work under item 2 the volume of steel work embedded in the foundation block of muff shall be ignored.
- iv) The volume of each muff will be included in the volume of concrete for the respective foundation for purposes of computation of volume of concrete.
- v) The prices shall include cost of embedment of drain pipes, conduits for cables or earthing flats where necessary. Dowel bars in special foundations and nominal reinforcement in black cotton soil foundations will be necessary. Such nominal reinforced foundation in black cotton soil will be payable under item C3 and not under item C4. The steel for

nominal reinforcement and dowel bars will be supplied by the contractor and the concrete mixture, in such a case shall be as for normal foundation 1: 2: 4.

- vi) In case, the anchor foundation cast becomes redundant due to reasons beyond the control of BI-RIDE, no extra rates are admissible for the Anchor loops embedded in the anchor foundation.
- vii) Muffing of OHE mast/structures should be done along with grouting in order to ensure homogeneous bonding between Muffing and grouting concretes.
- viii) For all foundation works in OHE/Feeder/PSI works – M-15 concrete shall be used and for core – M – 20 concretes shall be used with 20mm ballast for both the concrete.
- ix) The price shall include cost of testing of three sample test cubes of size 15x15x15 cm for every 50m³ of concrete casted for crushing strength after 7 days and 28 days at any government approved agency/colleges as per the latest IS Codes. If any sample test cube fails, the performance of the foundations will be observed for a period of one year from the date of casting for any crack or disintegration; if found satisfactory, payment for that batch will be made after the observation period.
- x) If any foundation becomes obsolete due to change in track alignment etc. during the execution of the work, the contractor may be asked to recast new foundation in lieu of the old. In such cases, the contractor is eligible to get payment for each such location under item C1, C2, C3 & C4 as may be applicable.

11. ITEM NO. D1 PREPARATION OF DESIGNS AND DRAWINGS FOR OVERHEAD EQUIPMENT AND VERIFICATION OF PURCHASERS ENGINEERING PLANS.

The price shall cover verification of purchasers engineering track plans indicating the layout of new lines with respect to the existing lines, which will be issued by the purchaser in stages. The preparation of lay out plans and other design are to be finalized by the contractor in consultation and in close coordination with purchaser. The contractor may be asked to prepare the layout plans based on the site details if the purchaser is not able to supply the Engineering track plan. The rate shall be per TKM. The price shall include the following.

- (i) Preparation of sectioning diagram & wiring diagram for the whole section and the part of the section.
- (ii) Preparing a detailed Electrification layout plan indicating the existing track and OHE arrangements with the proposed track and OHE arrangements based on the details given in the existing OHE layout / proposed alignment track plan/ Site details taken from the site. (If existing yard is a major yard and proposed modification is very small then for preparing the existing yard OHE lay out plan if not provided by purchaser, half the rate will be given and for new proposal full rate is eligible).
- (iii) Preparation of cross section drawings and structure erection drawings for each structure locations for the new locations and modified structure/ mast.
- (iv) Choice of type and size of foundations to suit soil and loading conditions, except for the ones which are considered as 'Works under other Agencies'.
- (v) Preparation of long section drawings of overhead equipment where such drawings are required including detailed study of overline structures such as foot over bridges, road over bridges etc. for maintaining this specified height of contact wire and requisite clearances.
- (vi) Preparation of other designs and drawings including drawings of small parts steel work (other than those for which RDSO standard drawings are available) and detailed designs for booster transformer stations and Aux. transformer station.
- (vii) Supply of requisite specified number of copies of all drawings including completion drawings specified.

(viii) Bonding Layout Plan: -

- (a) Preparation of Bonding layout plan based on signalling plan and as desired by the Purchaser Engineer as per site condition.
- (b) Any change in Bonding arrangements in existing line consequent to the OHE modifications done, shall also to be prepared for the entire kilometre length.
- (c) Preparation of wire run diagram duly incorporating existing tension lengths if any in the same Km of work.

Note: 1) This price shall also cover soil investigation of testing in an approved manner.

2) All the designs & drawings shall preferably be done in CAD or on any other higher software.

NOTE FOR MEASUREMENTS: For the purpose of payment against this item the length of track shall be measured as under:

- (i) **GENERAL:** By the difference in the chainages of the length under consideration as incorporated in the layout plans.
- (ii) **TURNOUTS:** The track taking off shall be deemed as starting from the SRJ of the switch of the Turnout.
- (iii) **CROSS OVERS:** The length of track shall be taken as the difference in the chainages of the toes of switches of the two turnouts constituting the crossover.
- (iv) **DIAMOND CROSSING WITH OR WITHOUT SLIPS:** The two tracks crossing each other shall be measured independently as per note 1 above as though there were no crossing. No extra shall be provided for slip points.
- (v) **DEAD ENDS AND TOPS OF LOOPS:** The lengths for payment under this item shall be up to chainage of anchor mast of the terminating OHE.

(vi) FEEDER AND RETURN FEEDERS FROM GRID SUB STATION TO FEEDING STATION:

This item will be also applicable independently in case of feeders/ return feeders/ conductors from grid substation to overhead equipment feeding stations or in a case of feeders/ conductors running on independent structures (not supporting OHE) along or across tracks.

NOTES FOR MEASUREMENTS:

The length of line to be considered for purpose of item 6 shall be measured by the distance between the center of gantries of the grid substation and feeding stations, in case of feeder/ return feeders/ conductors' line from grid sub-station OR

by the distance between the center line of the two structures to which the feeders/ return feeders/ conductors are anchored in case of feeders running along the track if such feeder/ return feeder/ conductors are running completely on independent structures OR

by the distance between the centre of the structures supporting the OHE on either side of the first and last independent structure in case of feeders/ return feeder/ conductors running along-with the track support OHE.

12. ITEM NO. D2 PREPARATION OF DESIGN AND DRAWINGS FOR SWITCHING STATION.

The price shall cover on a flat rate basis per Switching Station, Survey, Investigation of Soil bearing pressure preparation of cross section drawings, preparation of General arrangement drawings, detailed Layout of equipment, busbar connections cable run layout, detailed designs and drawings for steel work and structural support, suitable concrete plinths, for equipment and drawings for equipment's, components, fittings and materials supplied by the contractor. The price shall include supply of requisite number of copies of all drawings, including completion drawings as number of copies of all drawings, including completion drawings as specified.

13. ITEM NO. D3 PREPARATION OF STATION WORKING RULE DIAGRAM AND WORKING INSTRUCTION PERTAINING TO 25 KV AC TRACTION.

This includes preparing of revised station working instructions and drawings based on the revised OHE and signaling plans. This will include preparing / Altering of station working rule diagrams and instructions, pertaining to 25 KV AC Electric Traction. The Drawing size depends on the No. of Loop Lines/ Road in the stations. A minimum of 15 copies of stations rules diagram (Colour CAD print) and 15 copies of station working instructions are to be prepared as directed by the purchaser's Design Engineer. The rate includes supply, painting and Erection of station working rule diagram on a Milky White Decolam Sheet 4 mm thick and Aluminum Framed Board in a neat manner. Generally, one Board per station is to be provided. The Board should be a minimum of 1800 mm x 1200 mm size and if the number of Loops/ Roads are more than size of the Board shall be increased as directed by the Purchaser Engineer. The rate shall also include correction to the existing Sectioning Diagrams available in Sr. SE/ SE/ CTPC/ AEE/ TRD/ SR. DEE/ TRD and at section control rooms. For sections newly electrified, new boards have to be kept in the places mentioned supra at no extra cost. If the works proposed in a contract is done in a phased manner, the contractor is eligible to get payment for each phase at the same rate paid under item D3. The new board will be supplied only one time. The rate also includes corrections to be incorporated on either side stations consequent to the changes made in a station.

If the purchaser so desire that if any station have major yard having RRI cabin, Station Manager Room, station master room separately, any other cabins are to be provided with separate station working rule diagram boards, the contractor is eligible to get payment for each board as half the rate paid under item D3 extra.

All the painting works on the White Decolam Sheets should be done with colour Fluorescent Paints as Directed by the Purchaser Engineer. If the purchaser so desires instead of painting in the white Decolam board, the station working diagram shall be taken on flex sheet by the contractor and fixed on the white Decolam Board. For major stations having RRI cabins

and SMR rooms/PF SM rooms separately, the number of such boards as required will be decided by the purchaser's Engineer at site.

14. ITEM NO. D4 SUPPLY AND ERECTION OF GUY ROD ASSEMBLY

The price shall cover supply and erection of guy rod assembly of various lengths for traction masts, feeder line towers or supports complete with mast /structure guy rod anchor fittings, guy rod with anchor attachment if any, with mast and part/s be grouted in the anchor block. The price shall not include the cost of supply and erection of a dwarf or stub mast with anchor plates drilled and welded in position. Such location for anchorage, small parts steel work, complete with bolts and nuts etc. If any, for attach in the mast, guy rod fittings to the mast/ structure which is also included in this schedule of work. No extra rates are payable for the small parts steel items used if any.

COMPONENTS REQUIREMENT:

Rly. Id No.	Description of components	Qty. for unit
3232	Mast guy rod fitting (welded) complete with 4 short bolts, nuts, lock nuts and washers for attachment to mast/SPS including appropriate fittings	1 off
5001/5001-1 or 5001-3	Anchor bolts (complete with nuts, lock nuts and split pins)	1 Set
5002	Guy rod stirrup	1 off
5004 or 5005 or 5006-1 or 5070 or 5071	Guy rod with nut, washer and split pin	1 off
5007-1	Anchor 'v' bolt	1 off
5008	Anchor loop	1 off
5220	Guy rod double strap assembly	1 off or 2 off (as required)

Note:

1. In case the contractor desires to adopt a different design for guy rod assembly, the same shall be indicated by him in the Tender and the components required should be clearly listed under this item as deviation.
2. Supply and erection of guy rod assembly at anticreep, portals will also be paid for under this item.

15. ITEM NO. D5 SUPPLY AND ERECTION OF A SINGLE BRACKET ASSEMBLY (INCLUDING STAY AND BRACKET INSULATORS)

The price shall cover on a flat rate basis any bracket assembly on a traction mast or support or drop arm, and shall include those of high/ low level platform, in the vicinity of turnouts, over bridges or overlaps and at locations with reduced encumbrance or terminating wires. The price shall include cost of supply of all components galvanized steel tubes, 5 mm dropper wires including adopter small parts steel work complete with bolts and nuts etc. if any. The price shall cover erection of all components including solid core insulators, dropper wires and small parts steel work excluding MCC i.e., 3121/3122 in the case of multiple cantilever locations. This include the anticreep centre arrangement at masts/ structures. The price shall include:

Rly Id No.	Description of Components	Qty per Unit
3020	Mast fitting for hook insulator with 2 of bolts, nuts, locknuts washers of 16 mm	1 set or as required.
2400	Tubular stay arm assembly (including description of components galvanized steel tube)	1 set or as required
2110/2130	Catenary suspension bracket assembly or hook bracket	1 Off 2380
1160/	Suspension clamp	1 Off (as required)

2120/2140/ 2040/2080	Bracket tube assembly complete with tube cap and sleeve where required (including galvanized steel tube).	1 set 2080
3070-1/2	Mast Bracket fitting assembly including 2 off bolts, nuts locknuts and washers of 16 for attachment to structure or to small part steel work	1 set
2150-1/2160-1	Register arm hook assembly complete with bolts, nuts and locknuts.	1 Off
6000-1	Stay arm insulators –	1 Each or as required
6030-1	Bracket insulators -	1 Each or as required
2270-4 or 5 2460 style 02 or 2470 style – 02	Register arm dropper assembly including 5 mm dropper wire, complete bolts, nuts etc.	1 Set
2540 or 2520	Bent steady arm	1 Each
2360/2490-2	25 mm steady arm drop bracket/ clamp	do
3131 & 3076	Adaptors & Backing angle	do
1220	Contact wire swivel clip or raised register arm clamp	1 off 1370/-1 (Mod- F)
2550-1/2	Antiwind clamp	as required
1174	Packing Saddle	1 Each

Note: - Bent steady arm need to be provided in each bracket instead of normal steady arm.

16. ITEM NO. D6 (II) EXTRA ON D5 FOR SUPPLY AND ERECTION OF ADDITIONAL FITTINGS ON A SINGLE BRACKET ASSEMBLY FOR SUPPORTING TWO OHE's

The price is applicable as an extra to item D5 for the provision of additional fittings required to support an additional OHE on a single bracket assembly payable under item D5. The price shall include supply of all extra fittings including the double contact wire swivel clip, if any.

17. ITEM NO. D7 SUPPLY & ERECTION OF A SINGLE BRACKET ASSEMBLY SUITABLE TRAMWAY TYPE OVERHEAD EQUIPMENT (REGULATED) INCLUDING STAY AND BKT INSULATORS.

DELETED

18. ITEM NO. D8 SUPPLY AND ERECTION OF PULL OFF ARRANGEMENT FOR ONE OHE

The price shall cover supply for all components required for a pull off arrangement to pull one equipment only including head span mast fittings, complete with M.S. angle equalizing plate assembly steady arm catenary, dropper clip, contact wire swivel clip and fittings, conductors, small jumper (50) wire. The price shall cover supply and erection of all components including solid core insulators small jumper wire and conductors as required.

19. ITEM NO. D9 EXTRA FOR EACH ADDITIONAL EQUIPMENT PULLED

The price shall cover as an extra to item D8 supply and erection of additional fittings required in case of the pull off to pull more than one equipment. The price is applicable for each extra equipment pulled.

20. ITEM NO. D10 SUPPLY AND ERECTION OF A PULL-OFF ARRANGEMENT FOR REGULATED TRAMWAY TYPE OHE.

DELETED

21. ITEM NO. D11 SUPPLY AND ERECTION OF MOUNTING ARRANGMENT OF SPAN WIRE.

DELETED

22. ITEM NO. D12 SUPPLY AND ERECTION OF A SPAN WIRE.

DELETED**23. ITEM NO. D14 SUSPENSION/REGISTRATION FOR CONTACT WIRE ONLY****DELETED****24. ITEM NO. D16 SUPPLY AND ERECTION OF REGULATING EQUIPMENT (3 PULLEY TYPE) MODIFIED WITH COUNTER WEIGHT ASSEMBLY FOR CONVENTIONAL/ COMPOSITE OHE.**

The price shall cover supply of regulating equipment, SS wire rope, anti-falling rod of suitable length, counter weight and small part steel required for fixing with mast/structure for regulating equipment and anti-falling rods. Suitable forged clevis as approved by RDSO for fixing with mast/structures to be used. In case of old type of regulating equipment, the same is to be replaced by new type of regulating equipment consequent to any modifications/request by the purchaser. The rate includes above also. The price shall cover supply and erection of all items given above including counter weight (suitable for 1.2 T OHE Load). The price shall also cover adjustment of the entire regulating equipment. The price shall not include supply and erection of termination which will be paid for under item no. D18 & D19. The price shall also include for marking 150, 350 and 450 deg temperature marking on the BWA mast and color band including the half tension lengths as required by the purchaser for items under D16 & D17.

Note: - For item No. D16 the weight of counter weight should be kept so that tension in catenary wire and contact wire should be maintained 1.2T.

25. ITEM NO. D17 SUPPLY AND ERECTION OF REGULATING EQUIPMENT (3 PULLEY TYPE) MODIFIED WITH COUNTER WEIGHT ASSEMBLY FOR TRAMWAY TYPE OHE (REGULATED)**DELETED****26. ITEM NO. D18 (i) SUPPLY AND ERECTION OF MATERIALS FOR TERMINATION OF SINGLE CONDUCTOR OF OVERHEAD EQUIPMENT****DELETED****27. ITEM NO. D19 SUPPLY AND ERECTION OF MATERIALS FOR TERMINATION OF DOUBLE CONDUCTOR (CONVENTIONAL/COMPOSITE OHE)**

The price shall cover supply of all materials necessary for the yoked termination of two overhead equipment conductors on a traction mast or structure including appropriate mast anchor fitting including attachment with mast/structure, backing angle, cleaves – assembly three adjusters, ending clamps for catenary and contact wire anchor double strap assembly, equalizing/ compensating plate and fittings including 9-tonne conventional porcelain insulator assembly in a FTA/RE location but excluding the termination wire if any. The price shall cover erection of all materials including the 9-tonne conventional porcelain insulator assembly. When anchoring of a OHE (Both catenary and contact wire) through large span wire (130 sq. mm) is done, supply and erection rate for termination will be paid under this schedule of work.

28. ITEM NO. D22 (VI) SUPPLY AND ERECTION OF MATERIALS FOR TERMINATION OF TRAMWAY TYPE OHE (REGULATED)**DELETED****29. ITEM NO. D23 SUPPLY AND ERECTION OF MATERIALS FOR TERMINATION OF 25 KV TERMINATING WIRE (150 SQ.MM) COPPER CROSS TRACK/ ALONG TRACK FEEDER.**

The price shall cover supply of all materials necessary for termination of terminating wire 150 sq. mm Copper on a structure for cross track or along track including appropriate anchor fittings, backing angle, cleaves assembly, adjuster anchor double straps, ending clamp for 150 sq. mm Copper wire and fitting including 9 tons conventional porcelain insulator assembly and but excluding terminating wire (150 sq. mm Copper) if any. The price shall also cover erection of all materials including 9 tonne conventional insulator assembly and excepting terminating wire if any.

NOTES TO ITEM D16, D17, D18, D19, D22 & D23:

- (i) Anchor fittings including suitable attachment for mast/structure and backing angle complete with bolts and nuts wherever required is included in this item.
- (ii) **Deleted.**
- (iii) The price under items D18, D19 & D22 shall also include the cost of double eye distance rod (Id. No. 5183) if proved for any type of terminations.
- (iv) Supply and erection of materials for terminations of catenary wire on either side of the portal at anticreep locations or at bridge face will also be paid for under this item.

- (v) As per site requirement if the termination 9 tonne insulator is to be shifted to mid span of Anchor span no extra rate for shifting at the time of erection is admissible.
- (vi) The price including provision of spacer pipes to be provided in anti-falling device as per tension length and marking of 150 C, 350C and 450C marks on the mast/structures as per standard width and colour code in vogue.
- (vii) Due to some reason or other OHE and guy rods are provided with two separate anchor fittings, no extra rates are admissible for any of the materials provided extra.
- (viii) In regulating equipment, SS wire rope the manufacturers identification mark ferrules should be kept on cast iron weight side.
- (ix) Erection rates under item No. D16, D17, D18, D19, D22 & D23 also includes the temporary termination of OHE/Feeder/RC wires on structures/mast during modification also during the wiring works, where temporary termination is done. – For such terminations supply rates are not admissible.
- (x) The insulator provided for terminations in normal zone and for polluted and red zone, shall be 9 tonne porcelain insulator (1050 mm creepage).
- (xi) Anti-falling device rod shall be fixed on mast/structure as per RDSO drawing No. TI/DRG/OHE/ATD/RDSO/00009/06/0 and no extra payment is admissible for the above arrangement.

30. ITEM NO. D24 EXTRA ON ITEM A1 FOR SUPPLY AND ERECTION OF ADDITIONAL FITTINGS REQUIRED AT A TURNOUT, DIAMOND CROSSING OR OVERLAP.

DELETED

31. ITEM NO. D25 EXTRA ON ITEM A2 FOR SUPPLY AND ERECTION OF ADDITIONAL FITTINGS REQUIRED AT A TURNOUT, DIAMOND CROSSING OR OVERLAP.
DELETED

32. ITEM NO. D26 SUPPLY AND ERECTION OF PORCELAIN CUT-IN-INSULATOR.

The price is applicable to the provision of an additional 9 tonne porcelain 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, in anti-creep any additional insulators provided. The price shall cover supply of all components required for the cut-in- insulators assembly, including appropriate terminal end fittings for the conductor and the 9-tonne porcelain insulator. The price shall cover erection of all components, including the 9-tonne porcelain insulator. This price shall also be applicable as an adjustment price for non-provision of insulators under items D18, D19, D22 & D23.

33. ITEM NO. D27 SUPPLY AND ERECTION OF A PORCELAIN SUSPENSION INSULATOR.

The price is applicable to the provision of a 9-tonne porcelain suspension insulator (Polluted zone type for polluted area) assembly for suspension of a Copper 25 KV feeder 150 sq. mm or 65 sq. mm overhead equipment conductor or 19/2.79 mm all aluminum catenary 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 and the 9-tonne porcelain insulator assembly but excluding small parts steel work with bolts and nuts etc. if any. The price shall cover erection of all components including the 9-tonne porcelain insulator assembly but excluding small parts steel work, with bolts and nuts etc. for fixing if any. The price shall include the cost of provision of a flat armour tape to be used in connection with suspension of SPIDER conductor.

34. ITEM NO. D28 SUPPLY 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 aluminum jumper/ busbars. The price shall cover supply of all components and fittings/ angle iron (outrigger) to support the jumpers including supply of Post insulator but excluding supply of small parts steel works with bolts and nuts etc. for fixing with mast/structure 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. for fixing with mast/structure if any.

35. ITEM NO. D29 SUPPLY AND ERECTION OF A SECTION INSULATOR ASSEMBLY

DELETED

36. ITEM NO. D30 SUPPLY AND ERECTION OF A SECTION INSULATOR ASSEMBLY SUITABLE FOR TRAMWAY TYPE OHE (REGULATED)

DELETED

37. ITEM NO. D31 ERECTION OF A CERAMIC BEADED GLASS FIBRE TYPE SHORT NEUTRAL SECTION ASSEMBLY (PTFE Type):

The rate includes erection of Ceramic beaded glass fiber type short neutral section of Imported make as per RDSO spec. No. TI/SPC/OHE/SNS/0000. The contractor shall procure and shall make his own arrangements for transporting the same to the site. For erection of Neutral section, any droppers are to be modified, no extra payment are admissible.

38. ITEM NO. D32 SUPPLY AND ERECTION OF 25 KV, 1250A, S.P. ISOLATORS WITHOUT EARTH CONTACT ASSEMBLY

The prices under this item shall cover supply and erection of isolator switches of approved make

complete with arcing horns, operating rods, operating rod guides operating rod insulator, Pedestal Insulators, mounting base and 6 lever navtal lock. The provision of 160 sq mm jumper wires of required length to be paid under item D35, with 2 no's of terminal connectors. (RI – 1009) bolted type to be paid under item No. D59 is not included in the scope. The price shall also include flexible copper earth connection between isolator handle and mast/structure.

The price shall also cover supply and erection of all small parts steel with bolts and nuts required for erection of Isolator on the mast/ structure supporting pedestal insulators, supporting operating Rods, Handle, Jumpers, number plate of approved design etc. Any other pedestal insulator fixed for Jumper with/ without rigger shall be paid under item D28 and B4 respectively.

39. ITEM NO. D33 SUPPLY AND ERECTION OF 25 KV DOUBLE POLE ISOLATOR 1600 AMP

The price shall cover supply and erection of a double pole isolator of approved make complete with mounting base operating rod and operating rod guides operating rod insulator pedestal insulator, 6 lever navtal lock.

The price shall also include 3 /4 numbers of terminal connectors to be provided on isolators for OHE/SSP as the case may be and flexible copper earth connection between isolator handle and mast/structure.

The price shall also cover supply and erection of Al-Cu Strip, number plate of approved design, small parts steel structure, supporting operating Rods, Handle, Jumpers etc. If any other items supplied and erected like outrigger, pedestal insulator which will be paid under item D28 and B4.

40. ITEM NO. D34 EXTRA ON ITEM NO. D32 and D33 FOR PROVISION OF INTERLOCKING DEVICE ON 25KV SINGLE/DOUBLE POLE ISOLATOR WITH OR WITHOUT EARTH CONTACT ASSEMBLY.

The price shall cover supply and erection of an inter locking mechanism on an isolator along with small parts steel if any, to permit working of two or more isolators.

Note for item D32 and D33: All Isolators are to be supplied with Insulators and with complete accessories and small parts steel. Isolator key box of appropriate size shall be provided for at each station on the section, one number of such isolator box shall be provided at the nearby OHE depot in charge of the section and one number at SSP/SP, as desired by the purchaser engineer at site.

41. ITEM NO. D 35 SUPPLY AND ERECTION OF A COPPER JUMPER

The price shall cover on a flat rate basis the supply of all components and fittings required for providing a flexible copper jumper connection, including parallel grooved clamps, bimetallic and aluminum copper AL-CU strips, wherever required and terminal or tee clamps at either end including jumper wire of appropriate length.

The price shall also cover the erection of the complete jumper assembly including jumper wire of appropriate length, The price shall not however be applicable for jumper connections already included under items A1, A2, D24 and D25 but shall be applicable for any jumper connections in any combination between feeders, Isolators, L. T. Transformer's dropout switches, Lightning arrestors for overhead equipment's and outgoing busbars for switching stations booster stations. Continuity jumper as Boom anchor anticrime will be payable under this item. For continuity jumper across the ending clamps under OLS, the supply of all components and fittings including catenary wire for erection under the over line structure as per Drg. No. ETI/OHE/SK-529 or latest will also be payable under this item. The jumper wire shall be of RDSO's approved supply. (Including aluminum jumper wire of appropriate length). If the purchaser desires to go in for fit & forget type PG clamps, it will be informed to the contractor at the time of execution. The jumpers provided for continuity of supply at Feeding Post/SSP/SP and along track feeder continuity shall be of 160 sq.mm jumper of suitable length as required at site.

42. ITEM NO. D 37 SUPPLY AND ERECTION OF A STRUCTURE BOND / INTERLOCK BOND

The price shall cover supply of all materials including mild steel flat required to be provided in a structure bond connecting a traction mast or structures to the nearest non- track circuited rail, or (locations other than earth wire) earth electrode, including all fasteners at both ends, bonding should have suitable insulation sleeve in an approved manner. The price shall include shaping and drilling and paint of all materials including the bond. The price shall also include provision of heat shrinkable PVC sleeve of minimum length of 40cm for structure bond under track circuited rail. This would also cover

connections or earthing terminals of equipment's like L.T. transformers with structures and then to Rails as per relevant drawing. The rate will be per bond.

43. ITEM NO. D 38 SUPPLY AND ERECTION OF LONGITUDINAL BOND / INRUN BOND

DELETED

44. ITEM NO. D 39 SUPPLY AND ERECTION OF TRANSVERSE AND SPECIAL BOND

The price shall cover supply of all materials including mild steel flats, fasteners insulation sleeve etc. required to provide Impedance bonds / Transverse Impedance bond connecting rails of the same/adjacent tracks at the locations and 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, painting and erection of all materials including the bond. This will be paid per bond. The price shall also include provision of heat shrinkable PVC sleeve of minimum length of 40 cm. Whenever it is required.

NOTE for ITEM No. D37, D 38 and D 39

1. The OHE traction bonds should be fixed to the rail and connected in such a way that they do not interfere with tamping tools during tamping as shown in drawing No. CE/570.
2. The traction bonds shall be connected to the rail at a distance of not more than 80 mm from the adjoining sleepers.
3. Drilling of holes in the rails shall be done only with prior approval of authorized K- RIDE official and drilling should be done in the presence of nominated Bi-RIDE official. All holes drilled to the rail shall be chamfered soon after drilling.
4. Drawing No. CE/570 showing the fixing arrangement of traction bonds to be followed strictly.
5. If any bonds provided and got damaged by the packing machine during track alignment work or by any other means etc., the same shall be replaced for which payment shall be made at the rates given under item Nos. D37, D38, D39 as applicable and the contractor shall set right/replace the same before handing over the assets to maintenance.
6. In case of yard remodelling & signalling work being done in stages during doubling, the bonding works of the concerned yard will have to be modified at each stage as per the requirement. At each stage the payment will be made at the rate specified for that particular item.
7. Jointing of flats by welding is only permitted except in platforms where it is inevitable.
8. On platforms bonds need to be secured with the use of double cleat.

45. ITEM NO. D 40 SUPPLY AND ERECTION OF SINGLE EARTH ELECTRODE

The price shall cover supply and erection of an earthing stations with a single pipe embedded into the ground complete with protective concrete box and lugs suitable for directly connecting two mild steel flats of minimum size 40 mm x 6 mm. The earth resistance shall be measured and stenciled in the concrete box. The concrete Box shall be, as per RDSO's Design and may not be possible to remove unless otherwise bond fasteners are removed. The rate includes provision of Charcoal and Salt to a minimum size of 0.3 x 0.3 x 2.0 mts. in alternative layers irrespective of Soil Condition at Site.

46. ITEM NO. D 41 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 gutters on wall. It shall include connecting the earth bus to earth electrodes and to various floor-or- wall mounted equipment's 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. Welding shall make the connection of earth strips to each other. The connections of earth strips to various equipment's structures of fencing post shall be made with G.I. bolts and nuts and spring washers/locknuts. This will be paid per meter length.

The Price shall also cover provision of separate earthing of communication cable shield at controlled stations:

47. ITEM NO. D 42 SUPPLY AND ERECTION OF COPPER STRIPS FOR EQUIPMENT EARTHING

The price shall cover supply and erection of 25 mm x 3 mm copper strips to connect the earth terminals of equipment's like potential transformers, lightning, arrestors, L. T. supply transformers and booster transformers to the main masts of the gantries on which they are mounted. The price shall cover all fastenings required for fixing the copper strip along any structure member of the gantry. The flat shall be painted with suitable paint to avoid theft.

48. ITEM NO. D 43 SUPPLY AND ERECTION OF 8 SWG G.I. WIRE FOR EARTHING

The price shall cover supply and erection of 8 SWG G.I. Wire per meter, used for earthing at remote control cubicles and LT panels.

49. ITEM NO. D 44 -1 & 2 SUPPLY AND ERECTION OF VACUUM TYPE 25 KV INTERRUPTERS

The price shall cover supply, erection, testing and Commissioning of vacuum type interrupter of indigenous, RDSO's approved make complete with supporting framework and terminal connectors. The price for erection shall include alignment and grouting of the interrupters 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, equipment, instruments including power supply required for carrying out necessary checks, tests and commissioning shall be arranged by the contractor. The rate includes supply and erection of interlock to be provided between Isolator and interrupter and one number pad lock of 6 lever Naval for each Interrupter.

The price for item D 44 is inclusive of 2 distinct flexible solid copper earths to be provided between Mechanism Box and the frame/ earth if any. The rate also includes supplying of 1 No. each of closing coil, Tripping coil, drum contact (auxiliary contact) for each interrupter etc. and 6 copies of operating manual and wiring diagram.

In case BI-RIDE supply interrupter/circuit breaker, the same has to be erected by the contractor for which erection rate only will be paid.

SPECIAL INSTRUCTION FOR THE INTERRUPTER IF INSTALLED AT TSS.

In addition to the condition mentioned above, the rate also includes providing a T-N-C switch of English Electric (or) Recon or Siemens make an indication lamp holder with lamp mounted on a separate sheet metal box duly painted with enamel paint on a separate sheet metal box duly painted with enamel paint of appropriate colour (as existing) in TSS.

50. ITEM NO. D45 1&2 SUPPLY AND ERECTION OF 25 KV POTENTIAL TRANSFORMER

The price shall cover supply, erection, testing and commissioning of a 25 KV potential transformer type-I complete with all fittings and accessories as per relevant specifications, including terminal connector and fixing bolts at the PT terminals. 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 also include the cost of any small parts steel work.

51. ITEM NO. D46 1&2 SUPPLY AND ERECTION OF 42 kV LIGHTNING ARRESTOR (STATION CLASS)

The price shall cover supply, erection, testing and commissioning of 42 kV lightning arrestors complete with all fittings and accessories as per relevant specifications including terminal connectors if any in LA top. The cost of erection shall include proper alignment of the lightning arrestor in position. The price shall not cover supply and erection of copper jumper (65/160) which will be paid under Item D 35. The price shall include the cost of the small parts steel work.

52. ITEM NO. D 50 SUPPLY AND INSTALLATION OF CABLES FOR CONTROL AND INDICATION CIRCUITS

The price shall cover supply, installation and connecting up of cables 7 Core, 2.5 sq.mm Unarmoured cable with copper conductors PVC insulated and sheathed (1100V grade) for control and indication from the interrupters to the terminal board. The price shall include supply and erection of terminal connectors at both ends, if required and conduits where necessary.

53. ITEM NO. D 51 SUPPLY & INSTALLATION OF CABLES FOR HEATER SUPPLY

The price shall cover supply installation and connecting up of heater supply cable (2 Core, 4 sq.mm Unarmoured cable with aluminium conductors, PVC insulated and sheathed (1100V grade) from interrupter to interrupter or from interrupter to the 230 VAC fuse box mounted on wall inside the control cubicle and from this fuse box to L.T. distribution board provided by the Purchaser inside the control cubicle. The price shall include cost of supply and erection of terminal connectors and each end if required and conduit if any at the interrupter end.

54. ITEM NO. D 52 SUPPLY & INSTALLATION OF CABLES FOR CATENARY INDICATION

The price shall include supply, installation and connecting up of cable (2 Core, 2.5 sq.mm Unarmoured cable with copper conductors, PVC insulated and sheathed (1100V grade)) 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 end if required and conduit to be embedded between the steel work base and the cable trench and shall include all fastenings on masts and structural members to support them.

55. ITEM NO. D 54 SUPPLY & INSTALLATION OF CABLES FOR 110 V.D.C SUPPLY

The price shall cover supply installation and connecting up of cable (2 Core, 2.5 sq.mm Unarmoured cable with copper conductors, PVC insulated and sheathed (1100V grade)) between 110 V 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 cable.
2. For purposes of payment fraction of a meter in the total length of cable of each type used at a switching station shall be rounded off to the next higher meter when it is 0.5 and above only.
3. Prices under items D50, D51, D52, D53, D54, D55 and D56 do not include cost of concrete cable trenches which will be paid for under item C4.

56. ITEM NO. D55 SUPPLY & LAYING OF 2 CORE, 70 SQ MM XLPE INSULATED PVC SHEATHED ALUMINIUM CABLE (1100V GRADE, HEAVY DUTY)

The price shall cover supply and laying of XLPE insulated PVC sheathed aluminium conductor armoured power cable of aluminum cable of size 2 core x 70 sq.mm as per ISS: 7098 heavy duty, 1100 V with IS markings for signal purpose as per latest RDSO directives. The cable shall be laid from L. T. signalling AT to the station building AT control panel or part thereof. The cable should be of RDSO approved make. The cable should be properly clamped on walls and GI pipe of required size and length is to be provided where ever cable is taken out from the earth to surface level. The price shall include testing, connecting/jointing and commissioning of cable and it will be paid/meter length. Suitable cable indicators are to be supplied and placed at 50 meters interval in an approved manner. No intermediate joint is permitted, whatever be the length of cable used. If lower [5 kVA] capacity L. T auxiliary transformers, are to be erected, then the payment is made for the supply and laying of XLPE insulated PVC sheathed aluminium conductor armoured power cable of aluminum cable of size 2 core x 25 sq. mm as per ISS: 7098 heavy duty, 1100 V with IS markings will be paid at half the rate per meter under this item. The price shall also cover supply and erection of suitable cable glands and connectors at both ends.

57. ITEM NO. D 56 CABLE TRENCH CUTTING

For laying the 2-core x 70 sq.mm XLPE cable trench to be excavated to a depth of 3 feet and suitable width. After laying the cable sand to be filled to a depth of 20 cm and Bricks to be placed crosswise throughout the length the trench to be covered with excavated mud. The mud should be kept with a heap for future settlement. The price shall inclusive of concreting of platform area to its original shape. The rate will be paid per meter length. The same rate is applicable for 2 x 25 sq. mm XLPE cable also.

58. ITEM NO. D 57 SUPPLY AND ERECTION OF ALUMINUM BUS BARS 50/39 MM

The price shall cover supply and erection of aluminum busbars 50/39 mm (OD/ID) including cutting, bending, shaping and clamping on to insulators, connectors or equipment terminals.

59. ITEM NO. D 58 SUPPLY AND ERECTION OF SOLID COPPER BUSBAR 18 MM

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

NOTE FOR ITEM NO. D 57 & D 58:

The price under item D 57 & D 58 does not cover the cost of terminal connectors on the jumper and which will be paid for under item ITEM NO. D59 & D60 as applicable. The cost of terminal connector provided on Isolator end is included in the Isolator.

60. ITEM NO. D 59 SUPPLY AND ERECTION OF ALUMINUM BUSBAR CONNECTORS / TERMINAL

The price shall cover supply and erection of busbar junctions and connectors of various types specified, including bolts, nuts etc., required at junctions or terminations of busbars.

61. ITEM NO. D 60 SUPPLY AND ERECTION OF ALUMINIUM BUS SPLICE

The price shall cover supply and erection of aluminum busbar bus splice including bolts, nuts etc.

62. ITEM NO. D 61 SUPPLY AND ERECTION OF ALUMINIUM BUS TEE CONNECTORS:

The price shall cover supply and erection of Aluminum bus tee connectors including bolts, nuts etc.

63. ITEM NO. D 62 SUPPLY AND ERECTION OF ALUMINIUM TAP CONNECTORS:

The price shall cover supply and erection of Aluminum tap connector including bolts, nuts etc.

64. ITEM NO. D 63 SUPPLY AND ERECTION OF ALUMINIUM TERMINAL CONNECTOR BOLTED TYPE:

The price shall cover supply and erection of Aluminum terminal Connector bolted type including bolts, nuts etc.

65. ITEM NO. D 64 SUPPLY AND ERECTION OF SOLID COPPER BUSBAR CONNECTOR BUS TERMINAL (6310):

The price shall cover supply and erection of copper busbar connector bus terminal (6310) including bolts, nuts etc.

66. ITEM NO. D 65 SUPPLY AND ERECTION OF SOLID COPPER BUSBAR CONNECTOR BUS SPLICE (6320):

The price shall cover supply and erection of Solid Copper busbar connector bus splice (6320) including bolts, nuts etc.

67. ITEM NO. D 66 SUPPLY AND ERECTION OF SOLID COPPER BUSBAR CONNECTOR BUS TEE JOINT

The price shall cover supply and erection of Solid Copper busbar connector bus tee joint including bolts, nuts etc.

68. ITEM NO. D67 SUPPLY AND ERECTION OF SOLID COPPER BUSBAR CONNECTOR BUS TERMINATING TEE

The price shall cover supply and erection of Solid Copper busbar connector bus terminating tee including bolts, nuts etc.

69. ITEM NO. D68 1&2 SUPPLY AND ERECTION OIL FILTRATION, TESTING AND COMMISSIONING OF 10 KVA L.T. SUPPLY TRANSFORMER (OIL TYPE)

The price shall cover supply and erection of 10 KVA L.T. supply transformer 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 Indian Railways. The Contractor shall make his own arrangement for oil filtration equipment's as well as power supply required for the same. All necessary tools equipment's instruments required for carrying out oil filtration/checks/tests for commissioning shall be arranged by the contractor. The price also includes the cost of L.T. fuse box with 63 Amps to be mounted on the Aux. Tr. Mast.

70. ITEM NO. D 69 SUPPLY AND ERECTION OF LT CONTROL BOARD FOR AT LOCATION AS PER RDSO SPEC. NO. TI/SPC/PSI/ CLS/0020 WITH A&C SLIP NO. 4 (7/2010) or latest

The price shall cover supply, erection, testing and commissioning of LT control and distribution panel for colour light Signaling suitable for 10 kVA with automatic changeover supply facility as per RDSO specification No. TI/SPC/PSI/CLS/0020 with A & C Slip No. 4 (7/2010) or latest.

The price also shall include provision of suitable cable termination box 63 Amps for terminating the LT cable of AT & local EB supply and outgoing cable to signal equipment at Cabin/Station building. The price shall also cover provision of 16 sq. mm copper leads for connecting terminal board to the LT control and distribution panel.

The price shall also include supply of necessary cable glands, fasteners, grouting bolts and clamps required for fixing/grouting of panel board.

71. ITEM NO. D 70 - SUPPLY AND ERECTION OF 25 kV DROP OUT FUSE SWITCH

The price shall cover supply and erection 25 kV Drop out fuse (5 amps/1 amp) switch complete with all mounting accessories and terminal connectors as required including the supply of 25 kV solid core insulator. The price shall include supply and erection of small parts steel work, fuse element and mounting base channel. The D.O fuse switch of 5 amps shall be provided for 100 kVA/50 kVA auxiliary transformers and 1 amp for 10 kVA auxiliary transformers. No extra rate is admissible for the fuse element whether 5 Amps or 1 Amps fuse element is provided.

72. ITEM NO. D71 SUPPLY AND ERECTION OF PROTECTIVE SCREEN FOR FOB/ROB.

The price shall cover supply and erection of protective screen for one line on either side of the FOB / ROB in an approved manner as per RDSO drawing No. ETI/C/0068. The protective screen shall be painted with two coats of red oxide zinc chromate primer confirming to ISI and finished with two coats of aluminum paint. The price is inclusive of any arrangement required for erection of protective screen.

73. ITEM NO. D72 SUPPLY AND ERECTION OF ANTI-CLIMBING DEVICES FOR L.T. SUPPLY TRANSFORMER STATIONS

The price shall cover the supply and erection of anticlimbing device consisting of galvanized steel fixtures mounted on each mast below the transformer. The price shall be for each mast provided with the Anti-climbing device.

74. ITEM NO. D73 SUPPLY AND ERECTION OF CAUTION BOARDS AND WARNING BOARDS ALONG WITH SUITABLE FIXING CLAMPS FOR EACH SWITCHING STATION.

The price includes the supply and erection of Enamel caution board with suitable clamps for fixing in the Mast/ structure/wall including suitable bolt and nuts as per RDSO specification.

Sr. No	Item Description	Qty
01	Public Caution Board (Regional Language/Hindi/English)	04 Nos
02	Staff Caution Board (Regional Language/Hindi/English)	01 Nos
03	Caution 25 kV (Retro Reflective Type) (Regional Language/Hindi/English)	02 Nos
04	Danger 25 kV (Retro Reflective Type) (Regional Language/Hindi/English)	02 Nos
05	Retro reflective signal board at warning neutral section 250m as per latest RDSO specification	04 Nos
06	Retro reflective signal board at warning neutral section 500m as per latest RDSO specification	04 Nos
07	Retro reflective signal board at warning neutral section 'DJ ON' as per latest RDSO specification	04 Nos
08	Retro reflective signal board at warning neutral section 'DJ OFF' as per latest RDSO specification	04 Nos
09	Neutral Section warning Board – Retro-reflective type DJ close board – EMU as per RDSO	04 Nos
10	Name Plate [Enamel Board] for switching stations.	02 Nos
11	Protected Area Board	02 Nos

75. ITEM NO. D74 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 or support and releasing of SPS DA etc. The dismantled equipment shall be returned to the purchaser along with steel works like MCC DA and consequent adjustment to overhead equipment required such as changing the droppers leveling etc. No extra rates are payable for providing new dropper wires, catenary / contract wire clips if any. The foundations and steel work and bracket assembly for the new mast or structure will be paid for under relevant Items under schedule B, C and D respectively. Where ever changing of winch type regulating equipment by modified 3 pulley type regulating equipment is carried out, in addition to supply and erection of 3 pulley type RE, transfer of OHE shall be paid for transferring OHE from old RE to new RE.

76. ITEM NO. D75 PROVISION OF AN ADDITIONAL BRACKET ASSEMBLY/ ASSEMBLIES ON A MAST OR SUPPORT

The price shall cover dismantling of an existing bracket assembly/assemblies/ along with the steel works like MCC DA and provision of a multiple cantilever cross arm SPS wherever required and erection of bracket assemblies on the multiple cantilever cross arm/SPS. The price shall include any consequential adjustments to traction overhead equipment such as re-spacing of droppers, leveling etc. This price shall not include the price for supply and erection of any additional bracket assembling which will be paid for under relevant Item under Schedule D.

77. ITEM NO. D76 DISMANTLING OF OVERHEAD EQUIPMENT

The price shall cover cost of dismantling of OHE equipment including terminations, tensioning devices, section insulators guy rod assemblies at the termination and Anti creep, bracket, assemblies and associated small part steel work (excluding components embedded in concrete) the dismantled equipment's shall be returned to the purchaser. This item includes releasing of Earth Wire and its termination, cut in insulator, Anti creep wire also if any. The released catenary wire to be coiled in drums or cut into pieces for handing over as desired by the purchaser. If anti-creep wire alone is released at any location, half the length of Anti creep wire will be paid under this item. The rate is inclusive of Guy Rods. Terminations and SPS to be released from either end of Anti creep anchor and OHE.

The rate is also inclusive of pedestal Insulators to be released from OHEs/ Anchor Locations/ Return conductors as the case may be. The rate includes for releasing of Isolators and section insulator assembly released along with OHE if any.

78. ITEM NO. D77 DISMANTLING OF FEEDER/RETURN CONDUCTOR

The price shall cover dismantling of feeder, return feeder or return conductor including guy rods, terminations, suspension assemblies, insulators super masts and associated small part steel work. Whenever feeder wire is released and transferred to new location, dismantling and erection shall be paid. The length of the feeder wire so released/erected is reckoned duly calculating half the length of the span on either side of the location.

79. ITEM NO. D78 SPLICING AND EXTENSION OF ANCHORED OVERHEAD EQUIPMENT – SUPPLY ONLY

The price shall cover splicing of terminated overhead equipment for extension and consequent adjustment of the affected equipment. The dismantled equipment shall be returned to the Purchaser's Engineer. The cost of dismantling of overhead equipment would be paid for under Item D76. The extended overhead equipment shall be deemed as starting from the center line of the splice to the extended overhead equipment and shall be paid for under Item A1 or A2 or A3 as applicable. Half the rate shall only be paid if and only catenary or contact wire alone is spliced and extended. In case of splicing and extension of AC wire, half the rate shall be paid. The length of the AC wire spliced will be paid based on Schedule – G rates applicable to the tender. The splicing of catenary wire with contact /insulated catenary wire using ending clamp/splice under the ROB will be paid under this item and half the rate shall be paid for each such splicing.

80. ITEM NO. D79 DISMANTLING OF A SECTION INSULATOR

The price shall cover cost of dismantling of a section insulator assembly and also if required splicing of catenary and contact wires and the necessary adjustments to droppers. The dismantled equipment shall be handed over to the Purchaser's Engineer at the spot of dismantling or at the Contractor's / Purchaser's depots, as required by Purchasers Engineer.

81. ITEM NO. D80 SLEWING OF EQUIPMENT

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 readjustment of the equipment after completion of special work. Slewing of OHE shall be paid for the OHE slewed near to the new OHE to be spliced during modification work. The price shall be per location/span or part thereof including anchoring spans. This is inclusive of RC wire and earth wire if any.

Additional components or materials used during such restoration of re-adjustment shall be paid provided such use has, in the opinion of the Purchaser, become necessary due to reasons beyond the control of the contractor.

82. ITEM NO. D81 DISMANTLING OF AN ISOLATOR

The price shall cover cost of dismantling of an isolator including dismantling of isolator single pole or double pole or gang operated including dismantling of pedestal insulators, operating rod insulator, operating rod and connection to the overhead equipment and associated small parts steel work in isolated cases.

83. ITEM NO. D82 DISMANTLING OF A PIN/PEDESTAL INSULATOR

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

84. ITEM NO. D83 DISMANTLEMENT OF OHE MAST/STRUCTURE BY CUTTING

The price shall also cover the cutting and retrieving of the old steel structure as directed by the purchaser. The price shall cover the cutting and retrieving of old mast of any type including TTU's as directed by the purchasers Engineers at site. While releasing such TTU's proper care shall be taken in such a way that no damage occurred to the Booms. However, the dismantling of the TT boom will be paid under item D87. The OHE foundation must be chipped or broken to a depth of 670mm from the tip of the foundation. All the retrieved mast shall be stacked at the places to the nearest OHE maintenance depot as decided by the purchaser in the section. On completion of cutting site clearance shall be done duly back filling if there any need be. Any small part steels available in the mast/structure shall release safely and handed over to the purchaser. No extra rate is admissible for the same.

85. ITEM NO. D84 DISMANTLEMENT OF OHE MAST/STRUCTURE BY BREAKING THE FOUNDATION – ERECTION ONLY

The price shall cover retrieving of steel mast/structure from the foundation after retrieving the OHE mast the mast hole may be filled with enough soil and as directed by purchaser's engineer. During the time of dismantling operation any deformation occurred it should be set right. The rate shall also applicable for retrieval of TTUs. All the retrieved mast shall be stacked at the place/ depot decided by the purchaser in the section. All the retrieved mast shall be stacked at the place to the nearest OHE maintenance depot as decided by the purchaser in the section. The deformation of mast, occurred either during the retrieval or during transport shall be removed by the contractor. If it is not removed or the mast was cut and removed by the contractor due to other reasons, then the payment will be made only under item No. D83

Note: All the dismantlement equipment, fittings, masts, SPS steel work shall be returned to the purchaser.

86. ITEM NO. D85 DISMANTLEMENT OF GUY ROD ASSEMBLY

The price shall cover dismantlement of guy rod assembly including Guy Rod mast fitting with V - bolt/loop in an isolated cases where guy rod alone needs to be removed.

87. ITEM NO. D86 ERECTION OF TEMPORARY MAST INCLUDING CANTILEVER ASSEMBLY, TRANSFER OF OHE TO NEW MAST AND RELEASING THE TEMPORARY MAST UNDER POWER/NON-POWER BLOCK

DELETED

88. ITEM NO. D87 RELEASING OF PORTAL BOOMS

DELETED

89. ITEM NO. D88 SPLICING AND EXTENSION OF RC WIRE/ FEEDER WIRE

The price shall cover splicing of terminated RC wire/Feeder wire or cut and splicing through RC wire/Feeder wire with the new RC wire/feeder wire for the purpose of proposed alignment. For the Dismantled Portion of RC wire/feeder wire, will be paid under item D77. The price shall include releasing of termination if any.

90. ITEM NO. D89 RELEASING OF AUX. TRANSFORMER INCLUDING RELEASING OF DROP OUT FUSE AND LIGHTNING ARRESTOR FENCING PANELS, SPS IF ANY AND RELEASING OF JUMPERS FROM OHE

The price for releasing of plinth/pole mounted. Aux. Transformer from Location which includes releasing of Drop out fuse and Lightning Arrestor fencing panels, SPS if any and releasing of jumpers from OHE. The released materials are to be handed over safely to the purchaser's Engineer.

91. ITEM NO. D91 SPREADING OF 20 MM BALLAST IN THE SSP/ SP SWITCH YARD.

The price shall cover supply and spreading of uniformly graded 20/25 mm Ballast stone size in the SSP yard duly leveling the area as soon as cable trench, work, fencing work, Interrupter, Mast/ Gantry erection is over. The Ballast stone shall be of good quality and free from any dust/ dirt/ muck. Prior approval shall be obtained from the purchasers engineer for the ballast stone sample. The ballast stones shall be spread out uniformly to a depth of 20 cm as directed by purchaser's Engineer.

92. ITEM NO. D101-106 DISMANTLING OF COPPER JUMPERS, FABRICATED STEEL & SPS, 25KV INTERRUPTERS/ CB'S (OIL/VAC/SF₆), 25KV POTENTIAL TRANSFORMERS (TYPE I & II), 42KV LA, FENCING PANEL WITH RETRIEVAL OF FENCING UPRIGHT

The item prices include cost of labour for dismantling of copper jumpers, fabricated steel & SPS, 25kV interrupters/CB's (Oil / VAC/ SF₆), 25kV Potential Transformers (Type I & II), 42kV LA, fencing panel with retrieval of fencing upright as are at site including stocking, transporting and handing over released material to concerned official as instructed and if required making temporary arrangements as per instructions of the Engineer.

93. ITEM NO. D107 – SUPPLY & ERECTION OF LEAD ACID BATTERIES 110V 40AH AS PER RDSO SPECIFICATION.

The price shall cover Supply, Erection, Testing and Commissioning of 110V, 40AH, low maintenance lead acid batteries complete with stand of approved design, accessories, tool board, thermometer, hydro meter, voltage Tester as per RDSO specification no ETI/PSI/216/81) with A&C slip No.1 of 7/81 or latest. The price for erection shall include installation, connecting, filling up of electrolyte, initial/final charging, painting of stand with anticorrosive paint etc and commissioning of the battery set at site as per direction/approval of engineer. Details of battery like make, capacity, No of Cells and temperature Vs Specific Gravity to be specified/painted on the wall in the battery room is also included in the scope.

94. ITEM NO. D108 – SUPPLY & ERECTION OF BATTERY CHARGERS.

The price shall cover Supply, erection, testing and commissioning of battery charger suitable for 110 V, 40 AH battery set as per RDSO specification no ETI/PSI/1/(6/81) or latest. The price also includes grouting of the charger in position or mounting it on the wall and connecting it to 240V single phase AC distribution board, connecting cables, earthing of charger and other associated works etc for final commissioning.

95. ITEM NO. D109 TO D111 – SUPPLY & ERECTION OF FENCING PANELS, FENCING UPRIGHTS, ANTI-CLIMBING DEVICE 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 and finished with two coats of aluminium paint. The prices shall also include supply and erection of fencing upright, anti-climbing devices including the cost of fasteners and the price shall be for a meter length of the panels 2.4 m height measured in the plan view of the appropriate approved drawings. The prices shall be on the basis of black weight of the steel with no deduction for holes or skew cuts or no increase for weld materials. The price shall also cover supply and erection of an anti-climbing device consisting of galvanized steel fixtures mounted on the fencing panels as per approved design. The price shall be per meter length of the panel. Fencing panel shall be manufactured with 8 SWG GI wire as per CORE drawing no CORE/ALD/PSI/001 Mod 'B'.

96. ITEM NO. D112 – SUPPLY & ERECTION OF CABLE TRENCH COVER.

The price shall include trench covers at the switching stations/traction sub-stations as well as embodiment of drain pipe, wherever required as per standard drawings and measurements.

97. ITEM NO. D113 – SUPPLY & ERECTION OF TERMINAL BOARDS IN CONTROL ROOM / CUBICAL.

The price shall cover supply and erection of a wall mounted terminal boards with six numbers of two-way terminal blocks for connecting the cables from the outdoor equipment of a switching station as per RDSO Drawing.

98. ITEM NO. D114 – INTERNAL AND EXTERNAL LIGHTING OF SP/SSP BUILDING.

The price covers electrification of SP/SSP building as per latest SOR of Indian Railways (South Central Railways).

99. ITEM NO. D115 – ERECTION, TESTING & COMMISSIONING OF RELEASED REMOTE STATION EQUIPMENTS AT REMOTE STATION INCLUDING SOFTWARE & HARDWARE MODIFICATION / ALTERATION.

The price shall cover supply, installation, testing and commissioning of remote terminal unit compatible with existing SCADA system and the price covers installation, testing and commissioning of released remote terminal units.

100. ITEM NO. D116 – DISMANTLING OF REMOTE STATION EQUIPMENTS AT REMOTE STATION INCLUDING SOFTWARE & HARDWARE MODIFICATION / ALTERATION.

The price shall cover dismantling of remote terminal unit compatible with existing SCADA system.

101. ITEM NO. D117 – SUPPLY & ERECTION OF SAFETY EQUIPMENT AT SWITCHING STATION.

The item price shall cover cost of fire extinguishing equipment (ISI marked), Rubber mat (ISI marked), GI fire buckets filled with dry sand held on free standing steel stand, First aid box with medicines (ISI marked) and associated materials, Shock treatment chart suitably laminated on aluminium frame, schematic diagram of HT & LT installation & transformer data on white hylam sheet with aluminium frame & fixing/providing in the sub-station area as directed by Engineer-in charge of the work at site.

Stand for holding of fire buckets shall be free standing, manufactured with MS angle frame 50x50x6mm with base angle frame, shade and hanging arrangements for buckets as per approved drawing.

The price shall cover supply and erection of following items as a set:

(i) Fire extinguishers, 5 kg capacity of Dry chemical powder type (DCP), ISI marked and duly filled - 7 Nos.

The fire extinguishers supplied shall be of approved brand and as per relevant specification and manufacturing date shall be less than six months on the date of commissioning.

(ii) Standard first Aid box of made of GI Sheet with pad lock as approved by the Employer. The list of items/medicines to be supplied along with in the first aid box shall be obtained from Engineer as per concerned zonal Railway instructions.

(iii) Six number of fire buckets with stand of standard size, cover shed, and locking arrangement duly painted as per standard practice of concerned Railway and as approved by the Engineer.

- (iv) GI key box in SSP/SP with suitable key chains and locks as approved and directed by Engineer.
- (v) Registers of appropriate size in printed proforma (if required in newly electrified section and as per local Railway practice),
- (vi) Misc items for maintenance staff -1 no wooden stool of appropriate size, 1 no steel arm cushion chair, gum boots- 1 pair, rubber gloves-1 pair etc as approved and directed by Employer/Engineer.

102. ITEM NO. D118 – 119 SUPPLY AND ERECTION OF 25KV CIRCUIT BREAKER SF₆ / VACUUM TYPE

The price shall cover supply, erection, testing and commissioning of 25 KV Vacuum Circuit Breaker (1600 Amp Rating) complete with operating mechanism, all fittings, and accessories including terminal connectors. The price shall cover grouting the supporting frame and mechanism box on foundation block and mounting of other accessories in their respective places. It shall also cover, testing and commissioning of the circuit breaker. The price shall also cover the supply and erection of an enamelled number plate. The Contractor shall make his own arrangement for power supply required for testing purpose. The price shall also include supply of interlocks and shall be applicable individually for each, Circuit Breaker. The supply of vacuum circuit breaker shall be as per RDSO specification No. TI/SPC/PSI/LVCBIN/0120(Rev.0) Dec 2013 with A&C slip No. 1 (Oct 2016) or latest.

103. ITEM NO. D120 – SUPPLY & ERECTION OF 25kV CURRENT TRANSFORMERS OF 200-100/5A

The price shall cover supply, erection, testing and commissioning, connecting of a 25 KV Current Transformer (ratio 200-100/5A) complete with all fittings and accessories including terminal connectors. It shall include mounting of the transformer in position and supply and erection of an enamelled number plate. The price shall also include the cost of small parts steel work if any.

The supply of 25kV Current Transformers shall be as per RDSO's specification ETI/PSI/90(6/95) Rev. 4(Jan'03) or latest.

104. ITEM NO. D120 – SUPPLY, ERECTION, TESTING & COMMISSIONING OF 25KV POTENTIAL TRANSFORMER, TYPE-II OF RATIO 27500/110V AS PER RDSO SPECIFICATION NUMBER TI/SPC/PSI/PT/0210/(06/2021) OR LATEST.

The price shall cover supply, erection, testing and commissioning of a 25 KV Potential transformer Type-I or Type -II complete with all fittings and accessories as per relevant latest specification, 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 enamelled number plate and fixing bolts. The price shall not include the cost of any small parts steel work. The price also includes supply and erection of PT fuse modification work consisting of dropper wire, HDPE pipe, drop out fuse element etc as per the requirement of Zonal Railway and as directed by the Engineer.

105. ITEM NO. E1 SUPPLY OF 107 SQ. MM HARD DRAWN COPPER CONTACT WIRE.

The price shall cover the cost of supply of hard drawn grooved continuous cast copper contact wire 107 sq mm for overhead equipment. The rate is inclusive of transportation, proper storage and watch & ward of the conductors. The cost of erection of contact wire shall be payable under Item No. A1 & A2. Reconciliation of material should be done as per actual use taking into account anchor and overlap. The measurement will be from centerline of anchoring mast minus the length of large span wire if any used in the wiring shot. The unused cut pieces generated during erection shall not be measured. Unused cut pieces shall not be taken back by BI-RIDE.

106. ITEM NO. F1. SUPPLY OF 65 SQ. MM STRANDED CADMIUM COPPER CATENARY WIRE.

The price shall cover the cost of supply of stranded copper catenary wire for overhead equipment. The rate is inclusive of transportation, proper storage and watch & ward of the conductors. The cost of erection of catenary wire shall be payable under Item Nos. A1, A2, A4 & A5. Reconciliation of material should be done as per actual use taking into account anchor and overlap. The measurement will be from center line of anchoring mast minus the length of large span wire if any used in the wiring shot. The unused cut pieces generated during erection shall not be measured. Unused cut pieces shall not be taken back by BI-RIDE.

107. ITEM NO. G1. TRANSPORT OF OHE MATERIAL.

The tenderer shall quote the rate per MT-KM for transporting of OHE mast/structure/materials/Contact wires/Catenary and equipment's dismantled at site. The rate quoted will be applicable whether the materials transported are full load or part load of the vehicle. The distance in KM from the place where the transportation to be carried out to the place of un-loading will be based on actual Road route KM. For safe loading and un-loading of heavy and lengthy materials, contractor has to arrange cranes. The rate under this item is inclusive of loading/un-loading by manual or cranes.

108. ITEM NO. G2: SUPPLY AND ERECTION OF SCHEMATIC DIAGRAM AND SHOCK TREATMENT BOARD

The price shall cover supply and erection of schematic diagram of switching station of 3x2 feet in size on white decolam plywood of 8 mm thickness. Shock treatment chart should be printed in standard size and fixed in a glass frame. Price shall include fixing/mounting arrangements. Each set consists of one schematic diagram board and one shock treatment chart.

109. ITEM NO. G3: 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 equipment's 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 Traction Power Controller/representative of purchaser. The staff shall not leave the working place (Switching station and Traction Sub-station) in any case without prior permission of 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 in adjacent to TSS same will also be included for manning along with TSS.

110. ITEM NO. G4: SUPPLY, ERECTION, OIL FILTRATION, TESTING AND COMMISSIONING OF 25 KV/240 V, 5 KVA L.T. SUPPLY TRANSFORMERS.

DELETED

111. ITEM No. G5: SUPPLY OF PTFE TYPE 25 KV SHORT NEUTRAL SECTION ASSEMBLY.

The price shall Include supply of PTFE type 25 KV short neutral section assembly (Phase break) suitable for 107 Sqmm Contact wire and 65 Sqmm Catenary wire as per RDSO specification no TI/SPC/OHE/SNS/0000 Rev 1 with addendum and corrigendum slip no 1 or latest and make Arthur Flurry Part no. 685,000.00 1 Make / Brand Arthur Flurry. Import documents Firm supply import documents OEM certificate of guarantee and quality.

112. ITEM NO. G6: FABRICATION AND SUPPLY OF HEAVY-DUTY EMERGENCY OHE MAST MADE OF MS RAW MATERIALS AS PER SCR/SC SKETCH NO.TRD/SC/S014/289 (APPROX WEIGHT 650 KG).

DELETED

113. ITEM No. G7: SUPPLY OF DISCONNECTOR ASSEMBLY FOR 42 KV SURGE ARRESTOR.

The Price Shall Include supply of disconnector assembly for 42 KV surge arrestor as per RDSO specification for Lightning arrestor assembly no. TI/SPC/PSI/MOGLA/0101 (02/2015) or latest with complete set and suitable hardware for fixing.

114. ITEM NO. G8: SUPPLY AND ERECTION OF NEUTRAL SECTION WARNING BOARDS

DELETED

115. ITEM NO. G9 & G10: PROVISION OF BURIED RAIL ARRANGEMENT

The price includes Excavation of trench of size 0.75m with a depth of 1m from ground level along the track and erection of buried rail of 13m length (Rail will be supplied by Railways).

The price includes Supply and erection of GI flat 75x8 mm to a depth of 500 mm below existing ground level duly bolted with buried rail on either sides and connecting to nearest traction rail with tin plated copper bush and M12 bolts (SS) as per RDSO DRg. No. TI/DRG/PSI/E.stn/00001/14/0. Rev.1 or latest if any.

116. ITEM NO. G11: SUPPLY, ERECTION, TESTING & COMMISSIONING OF CONTROL AND DISTRIBUTION PANEL FOR COLOUR LIGHT SIGNALING SUPPLY IN 5 KVA AC TRACTION SYSTEM AS PER RDSO TECHNICAL SPECIFICATIONS NO. TI/SPC/PSI/CLS/0020 (7/10) WITH A&C SLIPS NO.1 TO 4 OR LATEST, CONNECTIONS AS REQUIRED.

DELETED

117. ITEM NO. G12: SUPPLY OF MOTOR BIKE 150 CC OR MORE AS PER RELEVANT SPECIAL CONDITIONS

DELETED

118. ITEM NO. G13: ERECTION, TESTING, COMMISSIONING OF 25 KV/240 V AUXILIARY SUPPLY TRANSFORMER (25 KVA CAPACITY) OIL TYPE.

DELETED

119. ITEM NO. G14: SUPPLY, ERECTION, TESTING & COMMISSIONING OF CONTROL AND DISTRIBUTION PANEL FOR COLOUR LIGHT SIGNALING SUPPLY IN 25 KVA AC TRACTION SYSTEM AS PER RDSO TECHNICAL SPECIFICATIONS NO. TI/SPC/PSI/CLS/0020 (7/10) WITH A&C SLIPS NO.1 TO 4 OR LATEST, CONNECTIONS AS REQUIRED.

DELETED

120. ITEM NO. G15: LAYING OF UG CABLES BY TRENCHLESS TECHNOLOGY BY ADOPTING HORIZONTAL BORING & DRAWING OF CABLE INCLUDING PREPARATION AT SITE IN NORMAL SOIL 5/6" BORE WITH SUPPLY AND ERECTION OF HDPE PIPE.

DELETED

121. ITEM NO. H1 TO H32: CONSTRUCTION OF SWITCHING STATION BUILDINGS AND DEMOLISHING OF EXISTING SWITCHING STATION BUILDING.

The Price shall cover the supply and erection of switching station building as per RDSO Drawing Number – ETI/C/0067(Mod- B) or latest and Technical specifications.

The price shall include the following:

1. RCC, PCC, masonry work, including earthwork, levelling, stone pitching, retaining wall in high embankment (if required) for switching post building.
2. RCC work in plinth, lintels, chhajja, Roof slab, steps at main entrance to SSP/SP and to control room.
3. Pre-cast RCC Slab, RCC jali.
4. Cement concrete in flooring and anti-skid verified floor tiles of approved design and cable trenches. It also includes provision of chequered plates above cable trench etc as per RDSO drawing as well as sealing of cable outlets and inlets through glands etc
5. Brick masonry in walls.
6. Plastering works
7. Provision of Doors, Windows, Grills, rolling shutters, Water pipe line, Ventilators and painting thereof.
8. Provision of 2 coats of acrylic (lappam) wall putty for inside walls, roof.
9. Acid proof tiles on the floor and up to min 1.5m height on the wall in battery room.
10. Provision of RCC pipe etc.
11. 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 for the same.
12. Demolishing of RCC work manually/by mechanically means including stacking of steel bars and disposal of unserviceable materials to appropriate disposal area as per direction of Engineer incharge.
13. Demolishing of brick work manually/by mechanically means including stacking of serviceable materials and disposal of unserviceable materials to appropriate disposal area as per direction of Engineer incharge (in cement mortar).
14. Taking out doors, windows and clerestory window shutters (steel or wood) including stacking to the appropriate disposal area as per direction of Engineer incharge. (of area 3 m² and below)
15. Dismantling tile work in floors and roofs laid in cement mortar including staking material to the appropriate disposal area as per direction of Engineer incharge (for thickness of tiles 10 mm to 25mm).

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 Railway's specifications and as approved by Engineer.

The price shall cover the cost of concreting required for foundation with 40 mm stone ballast rammed in layers of 15 mm thick in cement, aggregate and sand of ratio 1:4:8, RCC work for construction of column, brick work, retaining wall drainage etc. required for building.

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

The price shall also cover the cost of supply and erection of name board for switching station.

The payment shall be on uniform basis. The price shall also include supply of necessary clamps, nuts, and bolts etc., required for the erection of the boards. Name boards shall be made in bilingual or Hindi/English and vernacular language. The boards to be supplied shall be as per the standard size and standard specification of RDSO/Railways.

However, keeping in view local soil type and its bearing pressure, firm may adopt different design for foundation/plinth adhering to the min inside dimensions as per RDSO drawing and taking prior approval of the engineer. No extra payment is payable for such redesigned basic structure.

Note: Cost of retaining wall, plastering, earth filling etc of switching station building is included in the scope of this item.

Note:

The material shall be supplied as per the target sections mentioned in the milestones and as approved by BI-RIDE.

COMMON EXPLANATORY NOTE FOR EXTRA ERECTION RATE FOR EXECUTION OF WORK UNDER POWER BLOCK (FOR THE PERIOD LESS THAN 04 HRS):

In case the erection/dismantling of the portion of the work is carried out during power block (only for the power block of less than 04 Hrs in a day), the extra erection rate will be paid over and above the normal accepted erection of relevant item on certification by engineer. This shall be paid only for erection/dismantling 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 extra over the normal erection rates of the item referred against the item, provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the Employer 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 04 hour or more in a day. Where the prices under this item are applicable, the contractor shall finalize the quantities of various items of work to be done under a power block, jointly with the Employer's Engineer prior to taking the work in hand.

SECTION - 9
PRICE SCHEDULE
Part C – Payment Procedures

Payment Procedures

Scope:

This deals with prices to be paid for supply and/or erection of various items of work or for supplies and other amounts payable in accordance with accepted schedules of prices and rates and terms and conditions of payment mentioned herein. This is a works contract. The total prices for the completed items of work are the actual prices payable to the Contractor as per the terms and condition of the Contract.

SCHEDULE OF PRICES

a. Prices for items from Schedule A to H:

The rates given against various items of work in eight Schedules viz., Schedule -A to H of the tender. The tenderers are required to quote a single percentage below/at par/above each schedule separately. The actual payment to be made against any item of Schedule A to H, shall be derived after loading the prices of that schedule with the tenderer's quoted percentage for the same schedule. The prices so obtained shall be the unit prices for the various items of work given in Schedule A to H.

All Unit prices shall be FIRM irrespective of minor variations in basic quantities and use of alternative types of various components and fittings approved by the purchaser. Minor changes in basic designs shall not affect the unit prices, so long as such changes are mutually agreed to by the Purchaser and the Contractor. All Unit Prices shall be in Rupees. The prices shall be for materials and erection except for the materials supplied by the purchaser for which only erection charges will be payable, and for execution of work in accordance with specifications and approved drawings and designs.

b. Unit Prices for Materials

The prices indicated for Schedule A to H supply items are inclusive of the prices of materials including all incidental charges for transport, loading/ unloading and handling of materials, commission for arranging dispatch by rail or road from manufacturer's factory and completing all necessary formalities in this respect, such as submission of forwarding notes, collection of railway receipts, all insurance premia or any other charges, indemnity bond for the material supplied for which on- account payment exists etc. as also siding or shunting charges, if any, levied.

The prices shall include all taxes, duties and levies (including Octroi and excluding GSTetc.) applicable on this works contract. Therefore, Bidder should quote their prices taking into account the rate of taxes as leviable in the event of sale through works contract to the Central Government Organization in that state.

For Erection

The unit prices indicated for Schedule – A to H erection items are inclusive of cost of erection and testing to be done by the Contractor to the extent indicated in Section 7 and also cover all cost of administration of the contractor, insurance premium, banker's charges for guarantees, cost of stamps, cost of storage, loading and unloading and handling of materials and for any road transport which the contractor may use for carriage of materials between his depot and depot/s and site of work. The unit prices shall include cost of works and adjustments necessary to be done by the contractor during or after the tests carried out by the Purchaser as Section 9.

Other Payment Terms

No adjustment on account of variation in insurance and freight charges (road or rail) will be permitted.

Price variation on material: No adjustment of unit prices of fittings, materials, equipment's or components on account of prices, fluctuation on raw materials will be permitted. No adjustment on account of variation in insurance and freight charges (road or rail) will be permitted. However, reimbursement on account of prices fluctuation on Ferrous, Non-Ferrous, Steel, Zinc required for Structures and small parts Steel, Cement and Erection component will be allowed as per Section 5 of SCC.

A. Payment Procedure

1. ON ACCOUNT PAYMENT AGAINST SUPPLY OF MATERIAL

On Account Payment will be made as described below:

- (i) **“On Account Payment”** shall be made for the items specified in detailed terms of payment of each schedule under clause No. 4.0 as given below.
- (ii) **‘On Account Payment’** For Schedule A to H shall be made to the extent of 85% of the accepted supply rate, after receipt, acceptance, account, proper storage and protection against loss, damage or deterioration on the items mentioned in each schedule.
- (iii) **‘On Account Payment’** made to the contractor will subsequently be adjusted against progress payments and against payment due on provisional acceptance.
- (iv) All invoices shall be accompanied with the following, for the purpose of arranging **‘On Account Payment’** against the contract

NOTE: All the invoices should be accompanied by the following.

- a. E - way bill
- b. Supplier's challans.
- c. Transport challans
- d. Inspection Certificate granted by the Purchaser's representative/RITES.
- e. Certificate of receipt of materials at Contractor's Depot/s duly accepted by the Purchaser's Engineers.
- f. Quality assurance documents
- g. Invoice from approved vendor against our contract
- h. Certificate that contractor stores/depot has been insured. (Insurance copy to be submitted.)

2. Progress Payment Against Supply and Erection of Material.

On completion of each item of BOQ, the contractor shall receive payment to the extent of 95% of the supply and erection costs after making any recoveries and adjusting of On Account Payment, which may be due.

3. Balance 5% Payment

The balance 5% of each item of the BOQ shall be paid to the contractor after commissioning and after Completion of all the work in all the respects of the portion of the work or handing over of the installation/material to the employers / BI-RIDE representative along with the released material. This is applicable for all schedules.

4. Procedure of Schedule Wise Payments

4.1 Schedule A:

- i) **On Account Payment** will be made to the extent of 85% only for item Nos. A3 as per terms and conditions given in clause No. A (1) under “Payment Procedure”.
- ii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after final adjustment of OHE and SED checking and after adjustment of **“On Account payment”** & other recoveries, if any, wherever applicable.
- iii) The balance 5% of each item of the BOQ shall be paid to the contractor after commissioning.

4.2 Schedule B: Mast and Portal (Ferrous – Steel)

- i) **On Account Payment** shall be made only for item Nos. B1-B4 as per terms and conditions given in clause No. A (1) under **“Payment Procedure”**.

On account payment to the extent of 85% of the prices on supply of masts, portals and SPS as per terms and conditions given in clause No. A (1) under “Payment Procedure”.
- ii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after erection of masts, portals and SPS, after making any recoveries and adjusting of On Account Payment, which may be due. However, payment conditions can be relaxed by employer for Second Stage of Progress payment to the extent of 95% if the erection gets delayed by more than **TWO months** purely on Bi-RIDE's account. The decision taken in this respect by the Purchaser shall be final and suitable safeguard may be provided to protect Purchaser's interest.

- iii) The balance 5% of each item of the BOQ shall be paid to the contractor after commissioning.

4.3 **Schedule C: Concrete**

- i) Payment will be made on casting of foundation blocks, with or without Core holes, to the extent of 85% of the Prices of supply and erection for schedule-C and on the total volume of foundation blocks inclusive of muffs, as included in the approved cross-section drawings or as installed at site with permission of the Purchaser's representative.
- ii) On completion of grouting the progress payment to the extent of 95% of supply and erection shall be made.
- iii) Payment for balance 5% of prices of supply and erection shall be made after completion of muffing and commissioning of the agreed sub section.

4.4 **Schedule D: Other Items**

a. **Item No. D1, D2 & D3 (Design & Drawing)**

The payment shall be made as under:

- i) 50% of Scheduled rates shall be paid after "in principle approval of design/drawings by Bi-RIDE".
- ii) 40% of Scheduled rates shall be paid after the submission & acceptance of as erected/ completion drawings by BI-RIDE.
- iii) Payment of balance 10% of prices shall be made after submission of required number of copies of as erected drawing to the purchaser.

b. Other items except item No. D1, D2 & D3:

- i) **On Account Payment** will be made only for item Nos. D4, D16, D26, D27, D28, D32, D33, D44, D45, D46, D50, D51, D52, D54, D55, D68, D69, D70, D78, D118, D120 and D121 to the extent of 85% as per terms and conditions given in clause No. A (1) under "Payment Procedure".
- ii) On Account Payment for Item No. D5: The ONA Payments of Bracket Assembly to the extent of 85% is permitted only after receipt of the below mentioned parts of the Bracket Assembly:
 Stay arm Insulator (Porcelain/Composite) – 1 Off
 Bracket arm insulator (Porcelain/Composite) – 1 Off
 25 mm Stay/RT Tube – 6 mtr
 40 mm/49 mm Large Bracket tube – 3.50 mtr
 BFB Steady arm – 1 mtr
 Catenary suspension bracket assembly – 1 off
- iii) Progress Payment to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after final adjustment of OHE and SED checking and after adjustment of "On Account payment" & other recoveries, if any, wherever applicable.
- iv) Payment of balance 5% of prices shall be made after commissioning.

4.5 **Schedule E:**

- i) **On account payment** for schedule E shall be made to the extent of 85% of the accepted price on receipt of material as per terms and conditions given in clause No. A (1) under "Payment Procedure".
- ii) The progress payment to the extent of 95% of the accepted price of supply shall be made after completion of erection of material after adjustment of "On Account payment" & other recoveries, if any, wherever applicable.
- iii) Payment of balance 5% of prices shall be made after commissioning.

4.6 **Schedule F:**

- i) **On account payment** for schedule F shall be made to the extent of 85% of the accepted price on receipt of material as per terms and conditions given in clause No. A (1) under “Payment Procedure”.
- ii) The progress **payment** to the extent of 95% of the accepted price of supply shall be made after completion of erection of material after adjustment of **“On Account payment”** & other recoveries, if any, wherever applicable.
- iii) Payment of **balance** 5% of prices shall be made after commissioning.

4.7 Schedule G:

- i) The Payment against Schedule - G5 shall be made to the extent of 85% of the accepted price on receipt of material.
- ii) The Payment against Schedules - G1, G2, G3, G5, G7, G9, G10 shall be made to the extent of 95% of the accepted price on receipt and erection of material.
- iii) Payment of balance 5% of prices shall be made after commissioning.

4.8 Schedule H: Switching Station Building

- i) 50% of the Schedule rate shall be paid on Casting of the Roof of the Switching Station Building.
- ii) 45% of the Schedule rate shall be paid on completion of the building in all respects and certification by the Engineer.
- iii) Payment of balance 5% of prices shall be made after commissioning.

5. Work Under Power Block

In case a portion of the work is carried out during power block, 100% extra rates will be paid over and above the accepted erection rate (i.e. without adding extra for manual erection) of relevant item on certification by engineer. This shall be paid only 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 against each item provided such work is not called for on account of non-compliance with specifications, approved drawings and instructions given by the Employer 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 04 hour or more in a day. Where the prices under this item are applicable, the contractor shall finalize the quantities of various items of work to be done under a power block, jointly with the Employer’s Engineer prior to taking the work in hand.”

- 6. OHE material shall be inspected by M/s. RITES/ RDSO representative as per the extant directives from Railway/Bi-RIDE. The inspection charges of materials as required by RDSO/RITES shall be borne by contractor. If the inspection is carried out other than by RDSO/RITES, 1% of the cost of material will be deducted by Bi-RIDE as inspection charges.**

7. TERMS OF PAYMENT:

7.1 All bills shall be submitted by firm/contractor only (to whom contract has been awarded) to the authority mentioned in Preamble.

7.2 RECOVERIES FROM THE CONTRACTOR:

- a. All the recoveries for materials supplied and services rendered by the Purchaser to the Contractor and other refunds due from the Contractor shall, unless otherwise specified, ordinarily be made by deductions from payments due to the Contractor covering the value of supply and erection in the progress payment for erection and from payment on provisional Acceptance.
- b. The cost of shortage of materials in case of final reconciliation will be recovered in full by the Purchaser at relevant price in or book rate or last purchase rate whichever is higher, to the extent of requirement of such materials for each sub-section.

NOTE:

- i) If there are any shortages during final reconciliation, their cost will be recovered by the Purchaser from the Contractor at the book rate or the last purchase rate or the prevailing market rate, whichever is higher, plus 5% on account of initial freight, 2% on account of incidental charges together with supervision charges at 12.5% of the total cost inclusive of material freight and incidental charges. Freight between the Purchaser's source of supply and the Contractor's depot shall be to the Contractor's account.
- ii) The cost of materials if supplied under Section 9 (under other railway stores), will be recovered in the manner indicated in sub-para (a) above.
- iii) The materials supplied under Section 9 (under other railway stores) shall be covered by the suitable indemnity bond till the work is completed as certified by Engr. - in-charge.
- iv) The Performance security shall be as per Section 2 & Section 5.

8. PAYMENT FOR ADDITIONAL SUPPLIES:

The contractor shall receive payment for additional supplies ordered if any, in accordance with the prices included in Section 9 Schedule- A-H, on delivery of such supplies to the purchaser after due adjustment against 'On account' payment made only if purchaser accepts or ask contractor to supply the same.

9. FINAL PAYMENT:

On the basis of Work Completion certificate issued by the Engineer for all the works in all the sections covered in this contract, the final bill for the balance payment for each item/sub-item of work shall be submitted by the Contractor along with a clear "NO CLAIM CERTIFICATE". The provisional acceptance certificate shall be issued by the Engineer only when he has accepted the work wholly after conducting the acceptance tests on each item of work.

10. FINAL SETTLEMENT:

On expiry of the guarantee period and issue of the certificate of final acceptance of the entire installations, the security deposit will be refunded in accordance with PCC Clause 14.9 or Bank Guarantee released to the Contractor after adjustment of any dues payable by the Contractor.

11. MEASUREMENTS:

- i. Payments for field work shall be made in accordance with approved designs and drawings and measured in relevant units except where provided or otherwise. In case the dimensions of the work are more than those shown in approved designs and drawings, the Contractor will not be entitled to any extra payment unless dimensions were increased on account of physical impossibility of carrying out the work in accordance with approved drawings and designs. In case the dimensions of work are less than those shown in the approved designs and drawings and the work is accepted without being rejected, payment will be made as per work actually done.
- ii. The measurements will be made generally in accordance with standard engineering practice and in conformity with the explanatory notes for schedule - A to H (Section 9).
- iii. It shall be open to the Contractor and the Purchaser to take specific objection to any recorded measurement or classification on any ground within seven days of the date of such measurements. Any re-measurements taken by the Engineer or the Engineer's representative in the presence of the Contractor or in his absence after due notice has been given to him in consequence of objection made by the contractor shall be final and binding on the contractor and no claim whatsoever shall thereafter be entertained regarding the accuracy and classification of the measurements.
- iv. If an objection raised by the Contractor is found by the Engineer to be incorrect the Contractor shall be liable to pay the actual expenses incurred in measurements.

Note: The material shall be supplied as per the target sections mentioned in the milestones and as approved by BI-RIDE.