

1116	<p>Fixing of fence around the ring earth area/location boxes and other miscellaneous works to be executed. This job includes cutting and welding of MS Grill, drilling, cement concreting. This work to be executed in one ring earth area as per the instruction of railway site engineer(s). All the materials (i.e. sand, cement, stone chip etc.) & manpower to be supplied & provided by the contractor except MS Grill fence. As per 'Typical fencing for earthing S&T installation' Annexure-III (c) of document No. RDSOSig0SPD(PROJ)/1/2020 Ver.0.0 Dtd.01/01/25.</p> <p>Note: Per foundation of the fence would be of 250 mm. X 250 mm. with 300 mm. minimum depth.</p>	Mtr.	472.00
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CHAPTER - 12 :**Cable laying material, Cable protection, Cable execution, Jointing Kits items etc.**

SN	Description	Unit	Rate
1201	Supply of Light class GI pipes 100 mm. dia. (thickness 3.6 mm.) as per IS 1239 (Part-1):2004 or Latest with socket & coupling. INSPECTION: RITES/Consignee.	Mtr.	1,326.00
1202	Supply of Light class GI pipes 50 mm. dia. (thickness 2.9 mm) as per IS 1239 (Part1):2004 or Latest with socket & coupling. INSPECTION: RITES/Consignee.	Mtr.	638.00
1203	Laying & Fixing of GI pipes 50 mm./100 mm. as per IS 1239 (Part1):2004 with socket & coupling on culverts and bridges. It includes installation of all material required for fixing arrangement. The contractor will install a flexible/corrugated HDPE pipe at the end of the GI pipe along with any masonry work (if required) to protect the cables from sharp edges and sudden bends.	Mtr.	360.00
1204	Supply of 40 mm. dia. permanently lubricated HDPE telecom: ducts (with chord) as per RDSO Spec. No. RDSO/SPN/TC/45/2013 Rev.2.0 with latest amendments or Latest in length of 1000 mtrs./roll For each km. of HDPE duct following items are to be supplied (a) end plugs-2 nos. (b) cable sealing plugs - 2 nos. (c) plastic couplers slip fit/push fit type-2 nos. (d) end plugs to be provided along with drum 2 nos. Color to be specified by Railways. INSPECTION: RITES/Consignee.	Km.	79,596.00
1205	Laying of HDPE/DWC/GI Pipes.	Km.	7590.00
1206	Blowing of armoured optic fiber cable (OFC Cable supplied by Railways) into the HDPE duct by using a blowing machine and associated works. 10% of OFC length to be blown extra on both ends of Duct i.e. total 20% of Duct length. Before blowing the duct integrity shall be tested. The payment shall be made after ensuring duct integrity and corrective action wherever required at his own cost. Payment will be made as per the length of Duct from which OFC is Blown.	Km.	13,950.00

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1207	Supply of Double Walled Corrugated (DWC) HDPE duct of outer Diameter 63 mm. and inner Diameter 50 mm. length of 6m as per Specification RDSO/SPN/204/2011 Ver.1.1 Amd.1 or latest. The duct shall be supplied along with push-fit type 0-ring coupler or end cap. INSPECTION: RITES/Consignee.	No.	867.00
1208	Supply of Double Walled Corrugated (DWC) HDPE duct of outer Diameter 180 mm. and inner Diameter 153 mm. length of 6m. as per Specification RDSO/SPN/204/2011 Ver.1.1 Amd.1 or latest. The duct shall be supplied along with push-fit type 0-ring coupler or end cap. INSPECTION: RITES/Consignee.	No.	3,791.00
1209	Supply of Double Walled Corrugated (DWC) HDPE duct of outer Diameter 250 mm. and inner Diameter 217 mm. length of 6m. as per Specification RDSO/SPN/204/2011 Ver.1.1 Amd.1 or latest. The duct shall be supplied along with push-fit type 0-ring coupler or end cap. INSPECTION: RITES/Consignee.	No.	6,499.00
1210	Supply of Double Walled Corrugated (DWC) HDPE duct of outer Diameter 315 mm. and inner Diameter 271 mm. length of 6m. as per Specification RDSO/SPN/204/2011 Ver.1.1 Amd.1 or latest. The duct shall be supplied along with push-fit type 0-ring coupler or end cap. INSPECTION: RITES/Consignee..	No.	8,233.00
1211	Supply of Bend to suit DWC HDPE duct of 120mm outer diameter, 103 mm. inner dia. INSPECTION: RITES/Consignee.	No.	1,070.00
1212	Supply and laying of split DWC pipe of 250/217 mm. diameter in already dug cable trenches as per Drawing No.SK.9/11. The unit of RMT means two split pipes of 1 Mtr. each. INSPECTION: RITES/Consignee.	Rmt.	754.00
1213	Supply and laying of split DWC pipe of 120/103 mm. diameter in already dug cable trenches as per Drawing No.SK.9/11. The unit of RMT means two split pipes of 1 Mtr. each. INSPECTION: RITES/Consignee.	Rmt.	230.00

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1214	Supply of Thermo shrink Universal Jointing kit for Quad Cable (for straight joints) as per RDSO spec IRS/TC-77/2012 Revision.3 With latest Amdt. Inspection: RDSO.	No.	2,754.00
1215	Jointing of 4 / 6 quad Signaling cable with Heat Shrinkable straight through Jointing Kit. All the materials required for the work are to be arranged by the contractor himself at his own cost except Thermo shrinkable Joint Kit/Rapid Joint kit. After joining the cable through test such as insulation test, continuity cable losses etc. to be carried out jointly with the Railway Engineer. If any defect or any damage is observed during jointing, the contractor has to redo the joint free of cost.	No.	1,205.00
1216	Arranging of HDD machine with accessories including handling/laying of Pipes and preparation of site and boring (boring size upto 175 mm. at track crossing/ pucca road crossing, boring trench shall be minimum 01(one) meter below the track/road/pucca road crossing area. Required pipes shall be supplied by Railways. Payment shall be made after laying of required cables & sealing/plugging of vacant pipes. Note: This shall be used only for track crossing/pucca road crossing.	Mtr.	1,946.00
1217	Arranging of HDD machine with accessories including handling/laying of Pipes and preparation of site and boring (boring size 150mm at track crossing/pucca road crossing, boring trench shall be minimum 01(one) meter below the track/road/pucca road crossing area. Required pipes shall be supplied by Railways. Payment shall be made after laying of required cables & sealing/plugging of vacant pipes. Note: This shall be used only for track crossing/pucca road crossing.	Mtr.	1,182.00
1218	Arranging of HDD machine with accessories including handling/laying of Pipes and preparation of site and boring (boring size upto 110 mm. at track crossing/ pucca road crossing, boring trench shall be minimum 01(one) meter below the track/road/pucca road crossing area. Required pipes shall be supplied by Railways. Payment shall be made after laying of required cables & sealing/plugging of vacant pipes. Note: This shall be used only for track crossing/pucca road crossing.	Mtr.	641.00

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1219	Manual Track crossing/ Road Crossing by Horizontal Boring method at culverts/track/pucca road. This also includes insertion of HDPE pipe of 110 mm./G.I. Pipe of 100 mm. in the bore drilled (HDPE pipe/GI pipe is to be supplied by Railway).	Mtr.	1,634.00
1220	Breaking of metal/tar road and refilling after laying the cables. Repair of pucca roads to original state in level crossing area after cable laying.	Mtr.	295.00
1221	Supply, transportation at site and Installation of RCC cable route marker engraved and painted on both side along the route at every 50 meter and at route diversion. The cable marker is to be fabricated as ER TECHNICAL POLICY CIRCULAR NO.108 . Fixing work is to be done as per extant practice of E.Rly. and as per Railway site supervisor. 50% payment will be done after supply of material. Material to be supplied at Site. INSPECTION: Consignee.	No.	882.00
1222	Removal of Rail (13 mtrs.) in the way of cable route. In case of panel (39 Mtrs. Each) will be considered as three rails for payment purposes.	No.	117.00
1223	Removal of PSC Sleeper in the way of cable route.	No.	117.00
1124	Earthwork in filling in embankment, guide bunds , around buried type abutments, bridge gaps, trolley refuges, rain bunds if provided, platforms etc. with earth excavated from outside railway boundary entirely arranged by the contractor at his own cost as per RDSO's latest guidelines and specifications and special condition of contract including all leads, royalty, lifts, ascents, descents, crossing of nallahs or any other obstructions. The rates shall include all dressing of bank to final profile, demarcation and setting out of profile, site clearance, removal of shrubs, roots of vegetation growth, heavy grass, benching of existing slope of old bank, all handling/re-handling. Taxes, Octroi and royalty etc. as a complete job. Cut trees shall be property of railways and to be deposited in the railway godown unless specified otherwise in the Special conditions of contract.	Cu.M tr.	162.00

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1225	Extra for mechanical compaction of earth/blanketing material filled in embankment with contractor's rollers of suitable capacity, type and size to achieve specified density as per specification, testing as per IS codes incl. cost of water, T&P consumable material and all labour as a complete job. The work is to be executed as per Latest edition of "Guidelines for Earthwork in Railway Projects" issued by RDSO, Lucknow.	Cu.M tr.	19.00
1226	Removal of excavated/slip earth/debris/malba from the site of works to any other place outside Railway land/premises, including all excavations, handling, re-handling, loading, unloading and leading, etc. all labour and material as a complete job. Removal of Earth (all kinds of soils)/ROCKS, BOULDERS including mud/slush, slipped earth in catch water drains, side drains, over berms in cutting, water way of bridges, over coping of toe/breast/retaining walls etc. including crossing of nallah, railway tracks, making/repairing approach roads if required, all lead, lift, ascent, descents, or any other obstruction. Earth spoils to be dumped outside the cutting or railway embankments as per direction of Engineer in charge.	Cu.M tr.	162.00
1227	Excavation of trench at a of Depth of 1200 mm. and width of 300 mm., including marking of cable alignment, clearing of jungle, roots of trees, bushes, refilling with excavated soil, ramming and consolidation after laying of cables complete to the finished item of work in all type of Soil. NOTE: In case 1.2 m. depth of the trench is not achievable due to site conditions approval of officer in charge is to be obtained and payment shall be made on a prorated basis.	Km.	97,822.00
1228	Trenching under Rails for crossing the track (Track Crossing) and refilling of trenches. The track crossing shall be done at right angles. The depth of the cable trench shall be 1.2 meter below the rail flange. The ballast shall be stacked separately while making the trench and the earth soil shall be stacked separately. While re-filling the trench, the earth soil has to be filled first to the ground level and the ballast has to be properly put in the track. This work has to be done under supervision of the supervisor of S&T.	Mtr.	1,128.00

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1229	Cutting of platform surface (tile/slab/concrete) for a depth of 20 cm. & width of 10 cm. & refilling /reconditioning/ repairing the platform after laying pipe & cable. Cutting should be done with marble cutting machine in proper manner & restore the same as before in such a manner that the aesthetic of PF is not disturbed.	Mtr.	437.00
1230	Laying of S&T Cables of various cores/pairs/quads in trenches/GI pipes/RCC pipes/DWC pipes/Trunking.	Mtr.	7.00
1231	Testing of insulation/Meggering of cable laid, before and after laying (before closing of trench)	Per Cable	316.00
1232	Testing of insulation/Meggering of cable after termination.	Per Cable	84.00
1233	Cement concrete work for miscellaneous items in the ratio 1:3:6. Items include ramming, curing and plastering with cement & sand mixture (aggregate not exceeding 3.8 cm.) (Aggregate cement & sand to be supplied by the contractor).	Per Cu. Mtr.	4,533.00
1234	Providing brick masonry in ratio 1:6 cement and mortar including plastering with 1:4 cement and sand mixture both sides, 20 mm. thick each with contractor's owned class II bricks, including curing, grouting, bolting etc. wherever required. Bricks, sand and cement to be supplied by the contractor.	Per Cu. Mtr.	2,341.00
1235	Supply and Filling sand in trench/under floors/OFC chambers, complete as per instruction of engineer in charge.	Cum.	1,547.00
1236	Breaking of Hard rock by Hydraulic excavator/manual means over areas (exceeding 30 cm. in depth, 1.5 m. in width as well as 10 Sq.m. on plan) including getting out and disposal of excavated earth lead up to 50 m. and lift up to 1.5 m., as directed by Engineer-in charge	Cum.	805.00
1237	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm .measured at a height of 1 m above ground level and removal of cleared jungle to a distance of 50 m. outside the periphery of the area cleared (Measurement is to be done as per area cleaned).	Sq.m.	10.00
1238	Videography of work spots such as Signal/LB foundation, cable trench with depth indicators at every 10 mtrs. with reference to landmark such as RE mast or hectometer post in MPEG or any other format specified by the engineer in charge. The video recording shall be supplied in CDs/Pen drive.	Km.	456.00

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1239	Location survey for cable route and preparation of tentative cable route plan as per the instructions of Engineer in charge.	Km.	1,458.00
1240	Supply of RCC cable duct TYPE-I 700 X 425 X 500 mm. Drg. No. SI/TYP/0099 (Sheet.1). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	2,362.00
1241	Supply of RCC cable duct TYPE-II 700 X 425 X 350 mm. Drg. No. SI/TYP/0099 (Sheet.2). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	1,300.00
1242	Supply of RCC cable duct TYPE-III 700 X 425 X 500 mm. Drg. No. SI/TYP/0099 (Sheet.3). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	1,536.00
1243	Supply of RCC cable duct TYPE-IV 700 X 425 X 350 mm. Drg. No. SI/TYP/0099 (Sheet.4). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	1,300.00
1244	Supply of RCC cable duct TYPE-V 700 X 250 X 300 mm. Drg. No. SI/TYP/0099 (Sheet.5). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	946.00
1245	Supply of RCC cable duct TYPE-VI 700 X 525 X 500 mm. Drg. No. SI/TYP/0099 (Sheet.6). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	2,362.00
1246	Supply of RCC cable duct TYPE-VII 700 X 700 X 500 mm. Drg. No. SI/TYP/0099 (Sheet.7). Material is to be supplied at site. INSPECTION: RITES/Consignee.	No.	2,716.00
1247	Loading, unloading, handling, transport & placement of RCC duct from site to exact trenching place for laying purpose, coupling of RCC cable duct. Material is to be supplied at site.	No.	395.00

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1248	Supply of HDPE pipe of various diameter with material grade PE 100 as per specification IS:4984:1995 up to latest amendment. INSPECTION: RITES/Consignee.		
	a) HDPE pipe of 110 mm. Dia.	Mtr.	355.00
	b) HDPE pipe of 125mm Dia.	Mtr.	483.00
	c) HDPE pipe of 140mm Dia.	Mtr.	609.00
	d) HDPE pipe of 160mm Dia.	Mtr.	792.00
	e) HDPE pipe of 180mm Dia.	Mtr.	1,000.00
1249	Hiring of JCB machine (in good condition) for levelling and dressing ground/dismantling structures including disposal of debris through dumpers etc., with contractors labour, JCB machine, machine operator, fuel etc. The contractor shall arrange road permit for vehicle for all the states of operation, as per instructions of the engineer in charge.	Per Hour.	1,081.00

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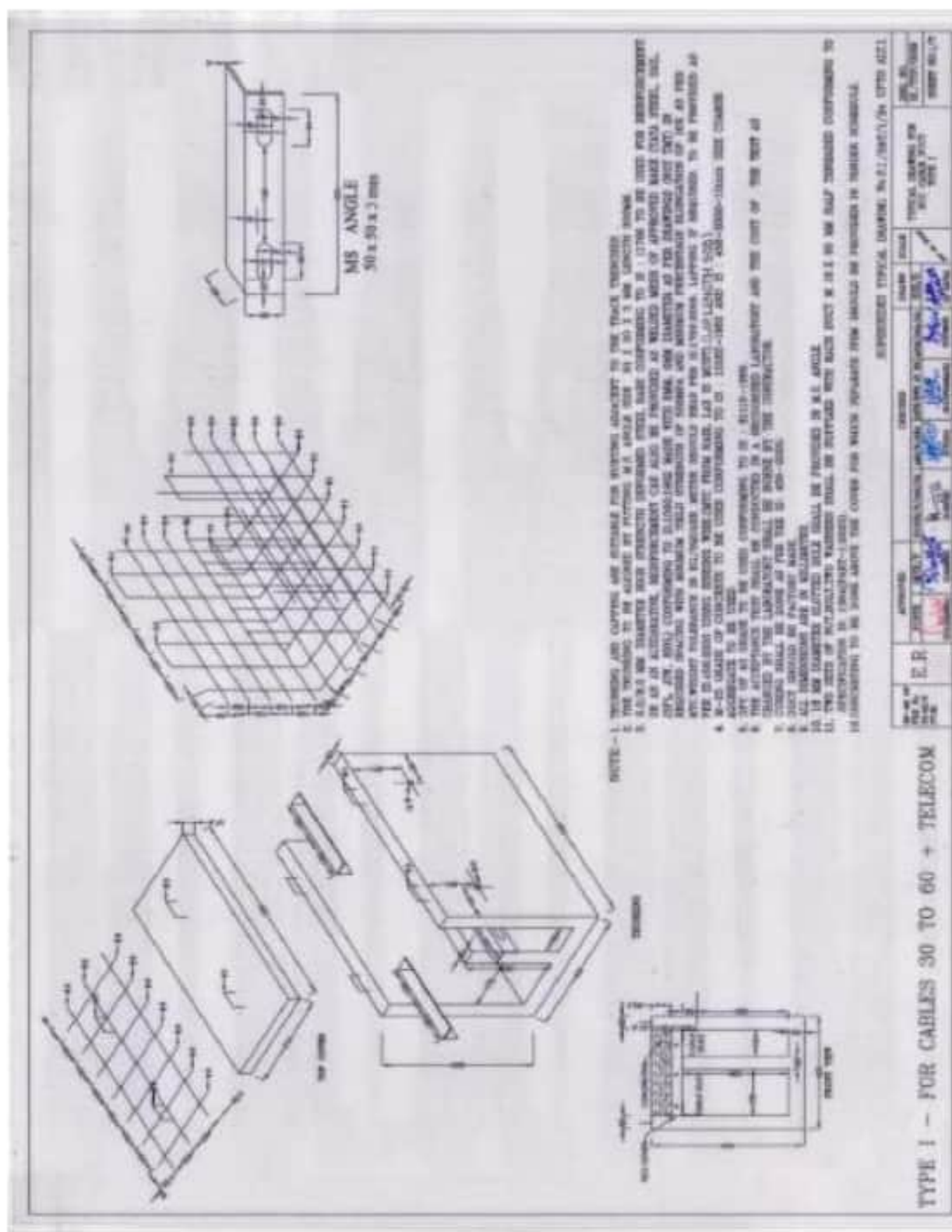
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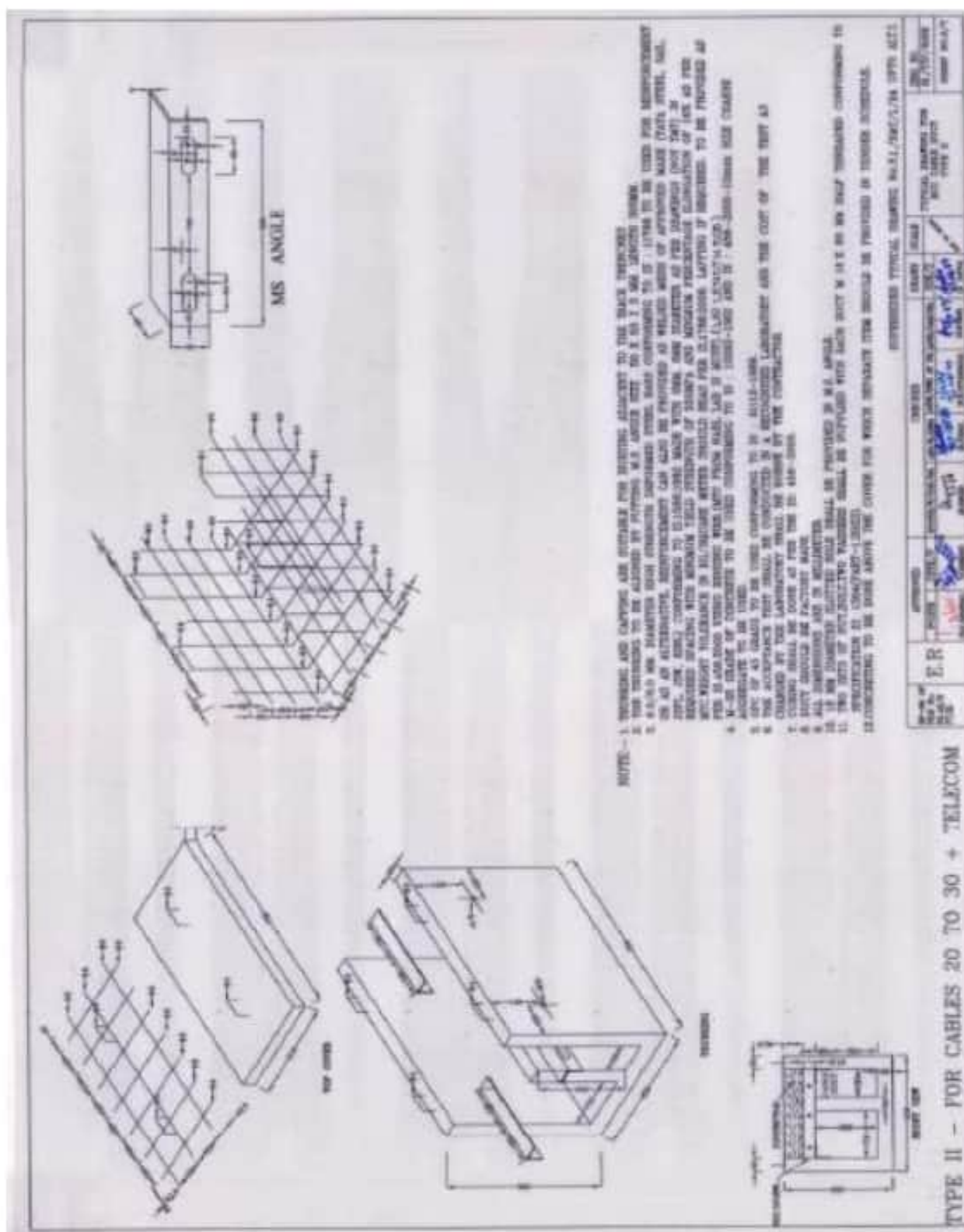
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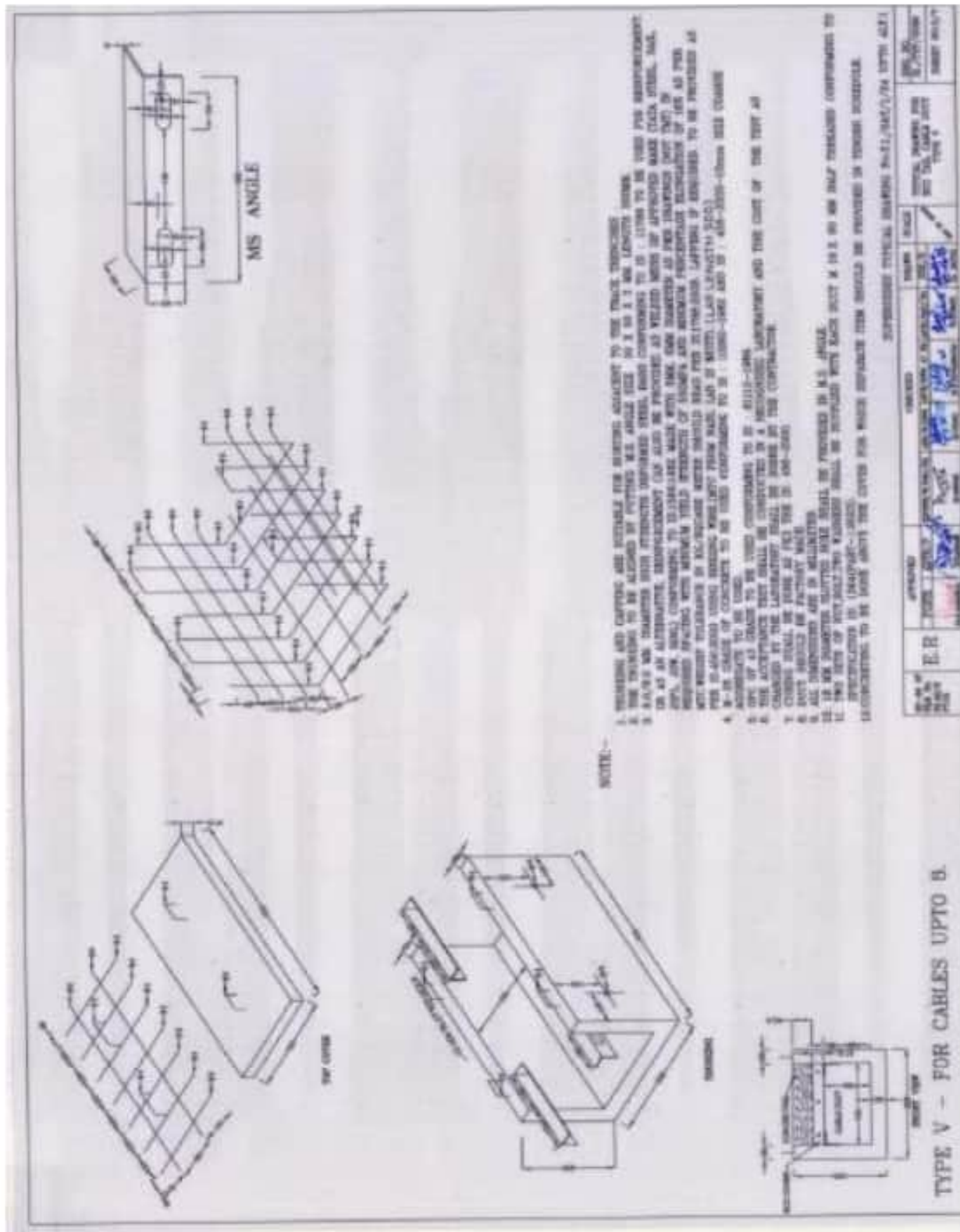
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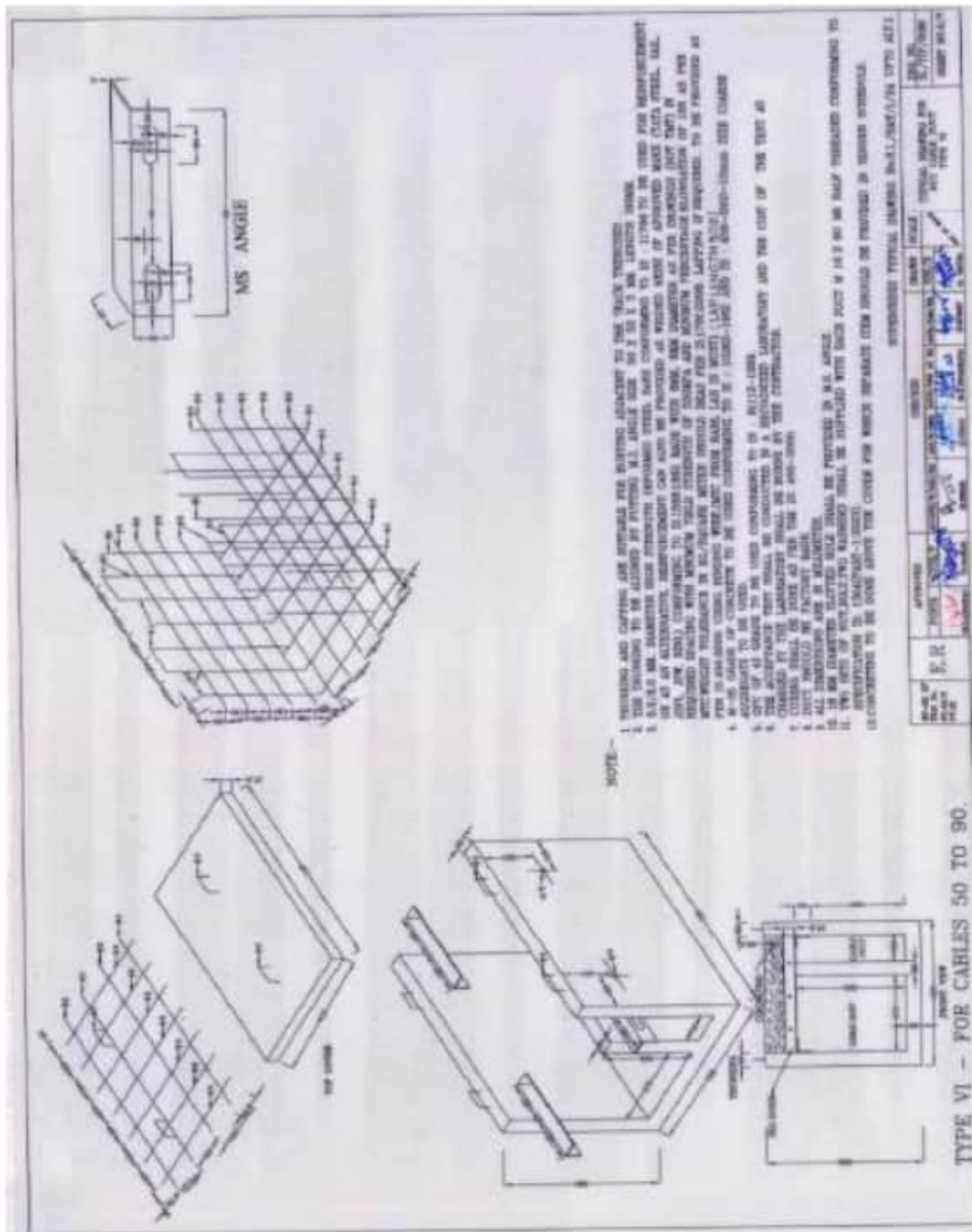
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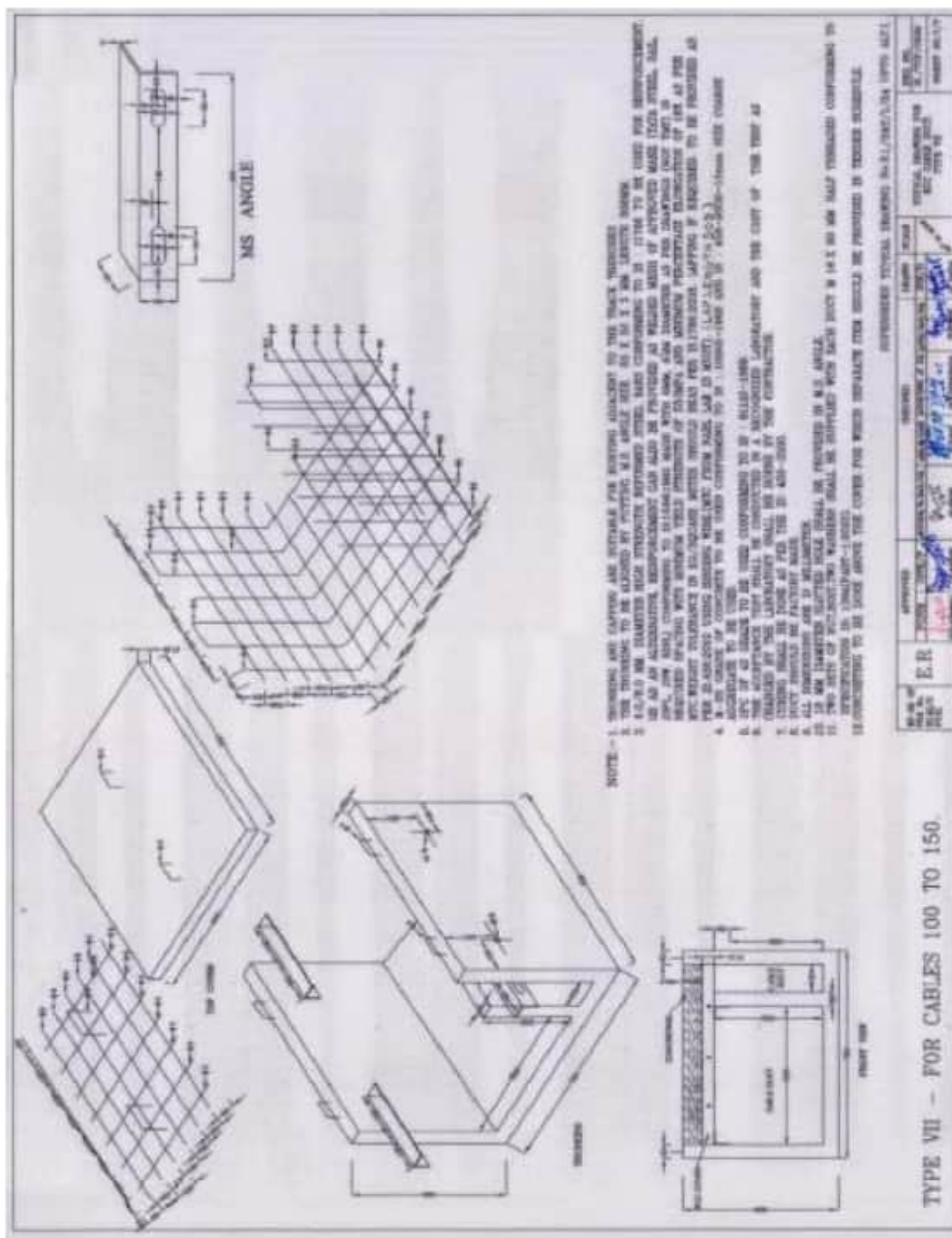
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CHAPTER - 13 :
ELD, Earthing and Bonding.

SN	Description	Unit	Rate
1301	Supply of 12 channel Earth Leakage Detector (ELD) with configuration specified by Engineer In charge and as per specification RDSO/SPN/256/2002 or latest with insulated tester, test probes, Mounting stand and Fuse board to isolate from distribution board as per requirement of channels. INSPECTION: RDSO.	No.	1,51,661.00
1302	Supply of 8 channel Earth Leakage Detector (ELD) with configuration specified by Engineer In charge and as per specification RDSO/SPN/256/2002 or latest with insulated tester, test probes, Mounting stand and Fuse board to isolate from distribution board as per requirement of channels. INSPECTION: RDSO.	No.	87,173.00
1303	Installation, Calibration and commissioning of Earth Leakage detector 8 to 12 channels as per instructions of engineer in charge.	No.	11,589.00
1304	Supply of Tinned Copper LUGs for fitting in Cable Size: 2.5 Sq.mm. , Barrel Inner Dia: 2.4 mm., Barrel Outer Dia: 3.90 mm., Barrel Length : 8 mm., Stud Hole Center Dia: 5.2 mm., Palm Width: 9 mm., Thickness: 1.3-1.5 mm., Lug Length: 17-19 mm., Thimble Type: Ring. Inspection: Consignee.	No.	3.00
1305	Supply of Tinned Copper LUGs for fitting in Cable Size : 6 Sq.mm , Barrel Inner Dia: 4.0 mm., Barrel Outer Dia : 5.5 mm., Barrel Length: 10mm., Stud Hole Center Dia : 8.2 mm., Palm Width: 10.0 mm., Thickness: 1.3-1.5 mm., Lug Length: 24 mm., Thimble Type: Ring. Inspection: Consignee.	No.	6.00
1306	Supply of Tinned Copper LUGs for fitting Cable Size: 10 Sq.mm. , Barrel Inner Dia: 4.7 mm., Barrel Outer Dia: 7.10 mm., Barrel Length: 10mm., Stud Hole Center Dia: 9.9 mm., Palm Width: 12.6 mm., Thickness: 1.8 mm., Lug Length: 27 mm., Thimble Type : Ring. Inspection: Consignee.	No.	12.00

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1307	Supply of Tinned Copper LUGs for fitting in Cable Size : 16 Sq.mm. , Barrel Inner Dia: 6.4 mm., Barrel Outer Dia 8.0 mm., Barrel Length: 12.2 mm., Stud Hole Center Dia: 10 mm., Palm Width: 12.6 mm., Thickness: 1.8 mm., Lug Length: 28-30 mm., Thimble Type: Ring. Inspection: Consignee.	No.	16.00
1308	Supply of Tinned Copper LUGs for fitting in Cable Size : 35 sq. mm. , Barrel Inner Dia :13 mm., Barrel Outer Dia: 17 mm., Barrel Length: 12.2 mm., Stud Hole Center Dia: 10 mm., Palm Width: 12.6 mm., Thickness: 1.8 mm., Lug Length: 28-30 mm., Thimble Type: Ring. Inspection: Consignee.	No.	35.00
1309	Supply of Copper bonded steel electrode of 3.0 m. long, 17.2 mm. dia. with copper bonding thickness of minimum macrons and UL listed as per RDSO Spec. No RDSO/SPN/197 Ver.1.0 or latest and conforming to RDSO Drg. No. SDO/RDSO/E&B/001 or Latest. Necessary testing certificate of UL, IEC to be produced. Inspection: RDSO/Consignee.	No.	4,858.00
1310	Supply of Copper Strip 25 X 6 mm. Inspection: RDSO/Consignee.	Mtr.	873.00
1311	Supply of Copper tape for BRC(25 X 2) mm. Inspection: RDSO/Consignee.	Mtr.	317.00
1312	Supply of Earth Enhancement material for treatment of earth pits as per Specification No. RDSO/SPN/197/2016 Ver.1.0 or latest. Inspection: RDSO/Consignee.	Kg.	147.00
1313	Installation of Unit Maintenance Free Earth. It includes (i) Digging the earth in normal soil to the required depth. (ii) Insertion of electrode. (iii) Filling of earth enhancing compounds (Approx.30 Kg.) (iv) This also includes supply of CC cover 1.5 ft. x 1.5 ft. 1 ft. wall thickness 2 inch with cover 3 inch thickness.	Set.	3,761.00
1314	Supply of 50 mm. x 6 mm. GI tape for interconnecting earth electrodes. Inspection: Consignee. Inspection: RDSO/Consignee.	Mtr.	541.00

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1315	Installation of GI Tape (50 X 6 mm.) for connecting Main earth pit to other earth pit in case of loop earth. Note: 'No' in the unit column indicates 'per pair of earth pit'.	No.	100.00
1316	Supply and Execution of Exothermic Welds for more than 16 sq. mm. wire. This includes a Welding Kit, Welding Powder, Mould and other necessary materials. Note - No. in unit column indicates per welding. Inspection: RDSO/Consignee.	No.	498.00
1317	Supply and Execution of Exothermic Welds for upto 16 sq.mm. wire. This includes a Welding Kit, Welding Powder, Mould and other necessary materials. Note- No. in the unit column indicates per welding. Inspection: RDSO/Consignee.	No.	382.00
1318	Installation of MEEB/SEEB/BRC with the insulators (As per the instruction of Site Engineer). Fitting materials & Insulator (Dough Moulding Compound Conical type of different Size) as per the site requirement to be supplied by the contractor. Note: 'No' in the unit column indicates 'per insulator'.	No.	32.00
1319	Supply of Nut Bolts, Washer (Stainless Steel) as per the site requirement (One set consists of 1 Nut, 1Bolt, 2 washer & 2 spring washer) Note: Hex Nuts, bolts and washers of size 5/16". Inspection: Consignee.	Set.	27.00
1320	Supply of earth electrode (GI PIPE) as per CSTE/ER's (Drg. No. SI/TYP/0097 dated 25.03.25). Inspection: By RITES [for value of material above Rs.5.0 lakhs]. Inspection: RITES/Consignee.	No.	1,886.00
1321	Supply of MS FLAT (Spec. No.226 STD or latest) of size 35 mm. x 6 mm. as per CSTE/ER'S DRG. NO. S&T-1/2007 (or latest). (STANDARD MINIMUM LENGTH OF 5M OR MULTIPLE OF 5M) Inspection: Consignee.	Mtr.	230.00
1322	Fixing of earth electrode including laying and installation of MS flat of size 35 mm. x 6 mm. with length 5 mtr. or as per extant practice of Eastern Railway. As per PCSTE/ER's Drg. No. SI/TYP/0097 dated 25.03.2025 or latest. For apparatus cases, signal post & other equipment as per instruction of site engineer. Provision for fixing MS flat at apparatus cases/ signal post/other equipment should	No.	1,464.00

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	be made by the firm at site. Where required necessary holes to be drilled on the MS Flat. Full threaded bolts of 10 mm. dia. and length 40 mm should be welded in the apparatus cases in such a way that the MS flat at the apparatus case end can be fixed from outside or from inside (bolts of 10 mm. dia. and length 40 mm. should be supplied by the contractor). Welding arrangement with accessories and welding materials should be arranged by the contractor for fixing of bolts at equipment end where required as per instruction of site engineer. All hardware and other miscellaneous materials required for installation to be supplied by the contractor except earth electrodes and MS flat. Sig. Cable as provided by Railway is also to be laid and terminated on Earth Electrode and to GI Wire/GI Flat in Location Box.		
1323	Provision of cement concrete enclosure for earth electrodes as per CSTE/ER's (Drg. No. SI/TYP/0097 dated 25.03.25). Inspection: Consignee.	No.	720.00
1324	Welding for jointing MS flat width of different lengths strips connecting from Earth to location boxes/Signal post/Signal Unit for better continuity. Prior approval of welding material to be taken from the Engineer In charge. Note: ' No. ' in Unit Column indicates ' Each Weld '.	Each Weld.	346.00
1325	Carrying out wiring of potential free contact of SPD with Datalogger via Tag Block and validation in Datalogger. These work includes the releasing of existing unused wires and wiring the relays using 16/0.2 mm. copper wire as per RDSO Spec. Wire to be procured from RDSO's approved source Inspection: Consignee. Note: (i) wire to be procured from RDSO's approved source only. All required material like wire, soldering material, paint etc. to be supplied by the contractor for execution of the work. (ii) ' No ' in the unit column indicates ' Per SPD '.	Per Relay	270.00
1326	Installation of GI Wire in location Box and soldering / Tinkering of cable armour. This includes Releasing of existing armour connection from existing GI wire and replacement with new GI wire and resoldering of armour with New GI wire. Note: 6 SWG (4mm dia.) GI wire and soldering material to be supplied by the contractor.	No.	304.00

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A Class Lightning Arrester			
1327	Supply and installation of "FRANKLIN ROD" as per NFPA-780 Standards as per ER Drawing No.-SI/TYP/103 . Installation to be done as per IEC standard. It also includes connection of down conductor with Franklin Rod and running of down conductor through PVC pipes and connecting the same to nearby earth electrode. All material required for installation to be supplied by the contractor. Inspection: RITES/Consignee.	No.	66,093.00
1328	Supply and erection of a mast/high mast lightning protection installation, mechanically robust good corrosion and fire resistance, 5 mtr. (including 2 mtr. FRP) long GI/MS painted along with guying kit foundation and other accessories required for installation of mast. Supply material inspection by consignee.	Per Job.	9,038.00
1329	Supply of copper bonded steel conductor of size 50 Sq.mm. as per IEC/EN 62561-2 (VDE 0185-561-2) for connecting A-class LA to earth. Inspection: RITES/Consignee.	Mtr.	320.00
1330	Supply of Lightning Strike recorder LSC 6 digits shall be weather proof type. It should have a 6-digit event count & the capacity to count the smallest strike of intensity 3 KA. It should be a voltage sensing type counter so that it will register nearby strikes & static discharge due to induction effect as per IS 2309:1989 or latest. Make-Bakiral or better. Inspection: RITES/Consignee.	No.	12,334.00
1331	Fixing of Down Conductor through HDPE Pipe for A'-Class Surge Arrestor. HDPE pipe will be supplied by Rly. Note: No. in Unit column indicates per Arrestor.	No.	623.00
1332	Increasing the height of 'A' Class Surge Arrestor (3 Mtrs. above of VHF Antenna). Dismantling of existing 'A' Class Surge Arrestor & refixing as per the instruction of Rly. site engineer. All the items required for cement concreting & refixing will be supplied by the contractor.	No.	2,546.00

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1333	Supply of lightning and surge arrestors of Class B & C suitable for single phase supply in TT network as per specification RDSO/SPN/165/2023 Ver.4.0 Amd-1 or latest and as Both B & C to be from the same OEM recommended by RDSO letter No. STS/E/IPS/GENL dated 27/01/2006 (Amendment.5). Inspection: RDSO/Consignee.	Set.	14,858.00
1334	Supply of Class C , Type 2 Protection for 60-100V AC/DC/24-60V . Supply as per Clause No.3.11.2 of Specification No. RDSO/SPN/165/2023 Ver.4.0 or latest. The Class C shall be with pluggable type, with indication and potential free contact. The supplier should submit an OEM certificate, KEMA, UL Certificate with the material, for connection between L1-L2, L1-E & L2-E. Inspection: RDSO/Consignee.	No.	885.00
1335	Supply and Erection of RCC precast slabs with hook to cover Earth pits of dimensions as shown in IRSEM Drg. No.19-D6. All the required materials for this work i.e. stones, cement, iron and sand etc. are to be supplied by contractor.	No.	155.00
1336	Earthing and soldering of cable armour.	Per Cable	31.00

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CHAPTER - 14 :
Telecommunication

SUPPLY OF OPTICAL FIBER AND RELATED ITEMS			
SN	Description	Unit	Rate
1401	Supply of OFC single mode 6 fiber unarmoured cable, conforming to TEC Spec. No. GR/OFC-14/01.AUG.2005 or Latest. Make Molex/AMP/Finolex or similar. Inspection: RITES/Consignee.	Mtr.	28.00
1402	Supply of OFC single mode 6 fiber armoured cable, conforming to TEC Spec. No. GR/OFC-02/03.SEP.2003 or Latest. Inspection: RITES/Consignee.	Mtr.	32.00
1403	Supply of 12 core Unarmoured Mono mode OFC cable as per latest TEC Specification or latest. Inspection: RITES/Consignee.	Km.	18,746.00
1404	Supply of 12 core Armoured Mono mode OFC cable as per latest TEC Specification or latest. Inspection: RITES/Consignee.	Km.	33,018.00
1405	Supply of 24 Fiber Armoured Optical Fiber Cable as per Specification No. SPN/TC/110/2020 Rev.0 or latest. Inspection: RDSO/Consignee.	Km.	86,066.00
1406	Supply of OFC SC/SC Patch Cord 5 m Length. Inspection: Consignee.	No.	203.00
1407	Supply of SC-LC patch cord 5 m. Inspection: Consignee.	No.	205.00
1408	Supply of SC-FC patch cord 5 m. Inspection: Consignee.	No.	164.00
1409	Supply of LC-LC patch cord 5 m. Inspection: Consignee.	No.	204.00
1410	Supply of RJ-45 Connector for CAT-6 cable. Inspection: Consignee.	No.	8.00
1411	Supply of 10 Meters LC to LC Outdoor Armored Fiber Patch Cable, Single Mode Fiber Optic Cable Jumper Optical Patch Cord, Simplex, 9/125um, (OS1/OS2 Compatible), Low Friction LSZH Black. Inspection: Consignee.	No.	3,884.00

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1412	Supply of Fiber Distribution Management System (FDMS-6F) 06 port , Single Mode, Simplex Fiber Optic Patch Panels, 19 inch 1 U Rack Mountable with SC connector with all accessories, Make: Syrotech/Drone Edge/Digisol or similar. Model: SY-LIU-6-XXX/similar. Inspection: RITES/Consignee.	No.	8,765.00
1413	Supply of Fiber Distribution Management system (FDMS)/LIU for 12 Fiber complete with all accessories such as patch cord & pigtail as per TEC Spec. GR/FDM/01/02 April '2007 or latest. This includes supply of installation accessories as per technical specification. Inspection: RITES/Consignee.	No.	2,598.00
1414	Supply of Fiber Distribution Management system (FDMS)/LIU for 24 Fiber complete with all accessories such as patch cord & pigtail etc. as per TEC Spec. GR/FDM/01/02 April '2007 or latest. This includes supply of installation accessories as per technical specification. Inspection: RITES/Consignee.	No.	3,636.00
1415	Supply of Fiber Distribution Management system FDMS/LIU for 48 Fiber as per drawing No. RDSO/TCDO-170(a) or latest complete with all accessories such as patch cord & pigtail etc. as per TEC Spec. GR/FDM/01/02 April '2007 or latest. This includes supply of installation accessories as per technical specification. Inspection: RITES/Consignee.	No.	10,198.00
1416	Installation, splicing and commissioning of Fiber Distribution Management system (FDMS) for 12 Fiber complete with all accessories with patch cord & pigtail as per TEC Spec. with the latest amendment. The sundry material if required any to be supplied by the contractor.	No.	2,086.00
1417	Installation, splicing and commissioning of Fiber Distribution Management system (FDMS) for 24 Fiber complete with all accessories such as patch cord & pigtail etc. as per TEC Spec. with the latest amendment. The sundry material if required any to be supplied by the contractor.	No.	13,142.00
1418	Installation, splicing and commissioning of Fiber Distribution Management system (FDMS) for 48 Fiber complete with all accessories such as patch cord & pigtail as per TEC Spec. with the latest amendment. The sundry material if required any to be supplied by the contractor.	No.	8,234.00

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1419	Jointing, terminating and Splicing of 6 Fiber Optical Fiber Cable and fixing of termination box/FDF/placing of joint closures in pit required at various location including transportation of all the jointing & amp; terminating materials from railway store to the works site and returning left over materials to the railway store. The rate should include all jointing materials.	No.	2,333.00
1420	Supply of 24 fiber optical fiber cable straight joint enclosure (SJC) complete with all accessories along with enclosures with heat shrinkable splice protection sleeve as per RDSO Spec. RDSO/SPN/TC68/2014 Revision 1.0, Amdt.1.0 or latest. Splice losses in no case should be more than 0.1 dB. Inspection: RITES/Consignee.	No.	5,505.45
1421	Jointing, terminating & splicing of 24 fiber optic fiber cable and fixing of termination box/FDF/placing of joint closures in the pit required at various locations including transportation of all the jointing & terminating materials from railway store to the work site and returning leftover materials to the railway store.	No.	10,727.00
1422	Supply of optic fiber splice closure (48 fiber) as per technical Specification No. G/OJC-02/01, March'99 with latest amendment or latest including all miscellaneous items and consumables for fiber splicing. Inspection: RITES/Consignee.	No.	4,522.00
1423	Jointing, terminating & splicing of 24/48 optical fiber cable and fixing of termination box/FDF/placing of joint closures in the pit required at various locations including transportation of all the jointing & terminating materials from railway store to the work site and returning leftover materials to the railway store.	No.	13,505.00
1424	Excavation of the jointing pit and provision of RCC/FRP joint /Loop chambers of 90 cms. Inner dia. 60 cms. depth and 3mm thickness with two pieces of top cover with hooks each and bottom cover with hole for drainage and cable entry as per Drg. No. RAILTEL/SR/OFC/ 2009/12 and as directed by Engineer to be provided at every joint location and at every Kilometer loop etc., The chamber shall be filled with sand mixed with ariti-stermic power, back filling and ramming of trench after HDPE duct laying, splicing and commissioning.	No.	25480.00

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1425	Supply of FSK to Optical Fiber Converter (OFC). (01 Set consisting of 02 Nos. FSK to OFC module). Note: This unit to be used for SSDAC/HASSDAC. Module to be powered by 24V DC. It has minimum 2 input port and minimum 2 output port at each unit of the set and has auto change over facility. This item to be housed inside the Location box and housing arrangement to be supplied by the contractor. The unit should have an LED indication panel to show health of the unit, status of media and potential free contact for monitoring through datalogger. This unit has a power off failsafe mechanism. Make -CEL/CYGNUS/TEAM ENGG or similar. Warranty will be minimum one year from date of commissioning. Inspection: RITES/Consignee.	No.	64,141.00
1426	Testing of fiber between short haul station in both directions after splicing the required fibers.	LS.	7,855.00
1427	Testing of fiber between Long haul station in both directions after splicing the required fibers.	LS.	16,367.00
1428	Supply of patch cord cable (10 meter long) with FC/PC connectors compatible with SDH equipment as per TEC Spec. No. GR/OFJ-02/01 May 2004 with latest Amendment. Inspection: Consignee.	No.	927.00
NETWORK ITEMS			
1429	Supply & installation of Firewall with bundled provision of threat subscription for min. 5000+ subscribers with storage : Integrated min. 240 GB SATA-III SSD along with necessary services on application, Ethernet interfaces: 8 x GE copper, 2 x SFP fiber, 2 x SFP+ 10 GE fiber, Management ports: 1 x RJ45 MGMT, 1 x COM RJ45, 1 x Micro-USB (cable incl.), Other I/O ports: 2 x USB 3.0 (front), 1 x USB 2.0 (rear), 1U rack mount, Firewall throughput : 47000 Mbps, Firewall IMIX: 23500 Mbps, Firewall latency : 4 microsecond, IPS throughput : 10500 mbps, Threat protection throughput : 7400 Mbps, NGFW : 9000 Mbps, concurrent connection: 12260000, new connection : s/sec : 186500, IP sec VPN throughput : 25000 Mbps, IP sec VPN concurrent tunnels : 6500, SSL VPN concurrent tunnels : 5000, Xstream SSL/TLS concurrent connection: 55296, Power supply : Internal auto-ranging AC-DC100-240VAC, 3-6A@50-60 Hz External Redundant PSU Option, (Bidder should Submit OEM authorization MAF). Make: Cisco/Fortinet/Sophos/similar, Model: Sophos XGS 3100/better. Inspection: RITES.	No.	6,25,161.00

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1430	Supply & installation of JT 1:8 Fiber Optical Splitter 1310nm PLC Type SC Input SC Output G652D Fiber Box Type, Integrated with splice cassette and cable management rods., with all accessories, make: Syrotech/JT optics/similar, Inspection: RITES/Consignee.	No.	2,913.00
1431	Supply & installation of centralize GPON 4 Port OLT system with 02 loaded module, 1U height 19 inch rack mountable, with 4 PON ports, 2 SFP/SFP+ slots, and 2 GE RJ45 ports, 128 ONU connections per PON port under the 1:128 split ratio, with features like STP/RSTP, IGMP Snooping, VLAN Translation/Q-in-Q, Port Aggregation, Dynamic Bandwidth Allocation, DHCP Snooping ACL, Port Mirroring etc., power supply : 220-240V/AC with a frequency of 50 Hz, Make: Digisol/Zyxel/similar. Inspection: RITES/Consignee.	No.	1,00,000.00
1432	8 port L2 switch Supply and installation of Layer 2 Switch as per RDSO/SPN/TC/83/2020, Rev.2.0 or latest. Minimum 8+2 Port Manageable with 8 Nos. 10/100/1000 Mbps Ethernet port, POE+ & Single Fiber 2 Nos. 1G SFP Port with SM SFP Optical Modules loaded with all accessories etc. as per RDSO/SPN/TC/83/2020, Rev.2.0 or latest. Inspection: RDSO/Consignee.	No.	54,640.00
1433	Supply Installation & Commissioning of Layer 2 Manageable, 24 Port POE, 24 GE10/100/1000 Base X Ethernet port with POE+ support and 4x1GE SFP Port for uplink with 4 no of 1GE SFP modules loaded, with all accessories as per RDSO/SPN/TC/83/2020, Rev.2.0 or latest. Inspection: RDSO/Consignee.	No.	28,766.00
1434	Supply and Installation of Standard 19 inch Rack Mountable Layer 3, 24 Port Managed Switch with 24 Nos. of 10/100/1000 Ethernet Ports with POE + Support and Redundant AC Power Supply, Dedicated Stacking Module 4 x 10 GE SFP+ Ports for uplink including 4 Nos. of 10 GE BX SM SFP+ Modules, as per para number 4.0 of RDSO Specification No. RDSO/SPN/TC/83/2020 Rev 2 or latest Rev. Mounting Kit with all necessary accessories to be supplied. Inspection: RDSO/Consignee.	No.	2,71,795.00
1435	Supply of SFP Cu 1G 10/100/1000 Base T Copper Ethernet Transceiver SFP Module with all accessories. Inspection: RDSO/Consignee.	No.	7,598.00

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1436	Supply of SFP optical 10G-40 Km (10G SFP+ Module with 40 Km range for IPMPLS Routers as per RDSO Document No. STT/TAN/IP-MPLS/2020 Version.2.0 or latest. Inspection: RDSO/Consignee.	No.	1,58,575.00
1437	Supply, installation and complete indoor wiring of 19 inch (42U) covered Rack of size 2035 mm. x 600 mm. x 600 mm. (Approx.). The rack shall be complete with all fittings for housing SDH equipments, Primary MUXES, DDF, MDF using crone modules and other equipments like runway ladders etc. completely wired and equipped with integrated protection modules for all channels as per technical specifications and other stipulations of tender document. It should be possible to lock all the equipments with only order wire telephone remaining outside the rack. Inspection: Consignee.	No.	39,792.00
1438	Supply & installation of Rack 19" wall mount 17U with front glass door and lock and key including the following: 1. 1 U Cable manager - 1 No. 2. 1 U Cantilever tray - 1 No. 3. AC distribution box 5X5 amps - 1 No. 4. Front panel H/W PKT of 10 Sets - 1 No. 5. Cooling fan of 230V AC operated. Inspection: Consignee.	No.	31902.00
1439	Supply and Installation of 19" 9U Rack Wall/ Pole Mount , with all accessories Like Electrical fittings, Fan Tray, Patch Panel, Cable Manager, PDU. Inspection: Consignee.	No.	9,623.00
1440	Supply & installation of Rack 19" wall mount 6U/500MM D with front glass door and lock and key including the following: 1. 1 U Cable manager - 1 No. 2. 1 U Cantilever tray - 1 No. 3. AC distribution box 5X5 amps - 1 No. 4. Front panel H/W PKT of 10 Sets - 1 No. 5. Cooling fan of 230V AC operated. Inspection: Consignee.	No.	6,839.00
1441	Supply and installation of Router for UTN at Tier 2/3/4 or below locations as per spec. Inspection: RITES/Consignee.	No.	1,65,453.00

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1442	Supply of FR CAT-6 UTP Cable suitable for 10BASE-T/100BASE-TX/and 1000BASE-T(Gigabit Ethernet). Make: DLINK/AMP/Avaya/Krone/Bestnet/Aambernet. Inspection: RITES/Consignee.	Mtr.	25.00
1443	Supply and installation of Input/Output Box for termination of CAT-6 Cable. Inspection: RITES/Consignee.	No.	297.00
1444	Supply and installation of Gigabit Media converter . Inspection: RITES/Consignee.	No.	12,474.00
1445	Supply of RJ-45 CAT-6 Patch cord 2M length . Inspection: RITES/Consignee.	No.	241.00
1446	Laying of STP/UTP CAT-6/Power Cable/LS cable through flexible PVC Conduit Pipe/GI Pipe/HDPE Pipe (where necessary) as per direction of the Rly. Representative, including any fixing of cables/PVC pipe/PVC Casing on wall/shed with suitable clamps (the clamps and screws should be made of Stainless steel). All the fixing materials including Collar, bend, junction etc. shall be supplied by the contractor. This also includes transportation of cable, PVC Pipe, GI Pipe, HDPE Pipe etc. to the site.	Mtr.	19.00
1447	Supply, Installation, Testing & Commissioning of Executive open standard SIP phone . Specification: As per 1) ED/Tele/RB's letter No. 2022/Tele/9(3)/4 dated 22.09.2022 2) Telecom Circular No. 04/2022 issued vide letter No. 2017/Tele/11(2)/1 dated 24.06.2022. Inspection: RITES/Consignee.	No.	13,314.00
1448	Supply, Installation, Testing & Commissioning of SIP Based Video Phones . Specification : As per 1) ED/Tele/RB's letter No. 2022/Tele/9(3)/4 dated 22.09.2022. 2) Telecom Circular No. 04/2022 issued vide letter No. 2017/Tele/11(2)/1 dated 24.06.2022. Inspection: RITES/Consignee.	No.	54,460.00
1449	Supply, installation, testing and commissioning of non-Executive open standard SIP phone . For details, refer to the Tender Document. Inspection: RITES/Consignee.	No.	5,500.00

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1450	Supply of 96(48x2) Port Rack Mountable FXS Gateway SITC of 48 port FXS Gateway. Inspection: RITES/Consignee.	No.	2,21,993.00
1451	Supply of 48/24 Port FXS Gateway 19" Rack Mountable along with Patch Panel/krone module for termination (DC or AC based as per site requirement) and Dual input ports (Fiber/Ethernet) including mounting kit and all the accessories. Inspection: RITES/Consignee.	No.	65,112.00
1452	Supply of 16/8 Port FXS Gateway (DC or AC based) including mounting kit and all the accessories. Inspection: RITES/Consignee.	No.	20,347.00
1453	Supply of STP (Shielded Twisted Pair) CAT-6 Cable compliant with TIA/EIA-568-B2-1 or latest. Inspection: RITES/Consignee.	Mtr.	37.00
1454	Supply & Installation of Wi-Fi Access Point with controller. Specification: as per RCIL's documents as referred to by RB's letter No. 2018/Transcell/Health/HMIS dated 26.10.2020. Inspection: RITES/Consignee.	No.	38,024.00
1455	(a) Supply of IP based day and night high resolution camera spec with IP 66 rated water proof, dust proof for outside application with RDSO Spec. RDSO/SPN/TC/65/2013 ver.6 or latest. Inspection: RDSO/Consignee.	No.	27,805.00
1456	(b) Supply of 32 Channel NVR as per RDSO SPN/TC/65/2013 Ver.6 or latest. Inspection: RDSO/Consignee.	No.	28,816.00
1457	(c) Supply of network 8 port switch with Ethernet and SFP port RJ-45 10 m. network interface, product, delink model or similar, dgs-1008d. Inspection: RDSO/Consignee.	No.	2,326.00
1458	(d) Supply of 2TB internal hard disc with power and SATA data cables suitable for 16 channel super NVR. Inspection: RDSO/Consignee.	No.	6,774.00

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1459	(e)Supply of 6TB internal hard disc with power and SATA data cables suitable for 16 channel super NVR. Inspection: RDSO/Consignee.	No.	15,902.00
1460	(f) Supply of 10TB internal hard disc with power and SATA data cables suitable for 16 channel super NVR. Inspection: RDSO/Consignee.	No.	29,675.00
1461	(g)Supply of 2 TB external hard disc of Seagate/WD or similar make. Inspection: RDSO/Consignee.	No.	8,504.00
1462	Supply of single line RJ-11 Rosette box . Inspection: Consignee.	No.	32.00
1463	Supply of Ethernet to EI Converter (Ethernet port to G.703) with four Ethernet ports to one EI. The converter shall have the provision of dual AC I DC power supply. Inspection: RITES/Consignee.	No.	47,597.00
1464	Supply and installation of ONVIF 4MP IR bullet camera with Veri focal Lenses similar to Model No. DH-IPCHFW2231 RP-ZS-1RE6 and compatible to work with Dahua/Hiki vision/CP Plus/ Honeywell make NVR with required licensed video management software. Inspection: RDSO/Consignee.	No.	19,517.00
1465	Supply and installation of ONVIF 16 Channel NVR similar to Model No. 4416-4K82 series along with required licensed video management software compatible to work with Dahua/Hiki vision/CP Plus/ Honeywell make 4 MP Bullet cameras. Inspection: RDSO/Consignee.	No.	31,230.00
1466	Installation and commissioning charges (installation and configuration for video IP camera.	No.	3,033.00

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BATTERIES/CHARGER/UPS/STABILIZERS etc.			
1467	Supply and installation of 1KVA/168 VAH on line UPS (Single Phase) with 1 or 2 Hour Backup and all the accessories required for installation. Inspection: Consignee.	No.	41,322.00
1468	Supply of 1KVA Online UPS with min. 30 minute back up along with 03Nos. 12V/26Ah external battery (battery make : Exide/Quanta/similar) with terminal & all accessories set. Model: Liebert GXT MT+ CX/similar, Make: Vertive/APC/Numeric/Similar. Inspection: Consignee.	No.	26,222.00
1469	Supply and Installation of 2 KVA online UPS (Single Phase) 19-inch Rack Mountable Type with 1Hour Backup along with suitable AH capacity battery and all the accessories required for installation. Inspection: Consignee.	No.	1,43,805.00
1470	6 KVA UPS (Supply, Installation, Testing and Commissioning of on line 6 KVA UPS). Inspection: Consignee.	No.	1,52,030.00
1471	Supply of SMPS based Battery Chargers as per RDSO Spec for Telecom use 48 volts, 25 Amps in 2+1 configuration modules of 25 Amps with ultimate expandable capacity 50 Amps, automatic switching between the modules as per RDSO Spec No. RDSO/SPN/TC/23/1999 version 4 or latest along with two potential free contacts. Inspection: RDSO/Consignee.	No.	96,174.00
	Supply of Maintenance Free Batteries of following capacity of AMARAJA/EXIDE/Panasonic or equivalent brand.		
1472	(a) 12/65AH.	No.	7,759.00
1473	(b) 12V/75AH.	No.	9,381.00
1474	(c) 12V/100AH.	No.	11,291.00
1475	Supply of 48 Volt/200 AH maintenance free VRLA Batteries duly charged as per IRS Spec. No. S-93/96(A) with Amendment-1 or latest. Inspection: RDSO/Consignee.	No.	1,20,997.00

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1476	Installation, wiring, testing & commissioning of 48 Volt/200 AH or 48 V/300 AH maintenance free VRLA Batteries duly charged as per IRS Spec. No. S-93/96(A) with Amendment-1 or latest.	No.	19,702.00
1477	Installation of Battery chargers, Power distribution Board along with MCBs of suitable ratings and wiring and commissioning of External alarm contacts through EMS. The work includes supply of battery rack, MCBs, battery cable and battery lugs and other accessories required for installation of power plant. Inspection: Consignee.	No.	4,984.00
1478	Supply and installation and commissioning of voltage stabilizer 5 KVA, single phase, servo controlled, wide range voltage stabilizer as per specification, input voltage range from 135 Volts AC - 300 Volts AC with changeover / by pass switch. Inspection: RITES/Consignee.	No.	16,810.00
1479	Supply of 16 A DP C MCB, Type: Double Pole, Rated Short Circuit Breaking Capacity: 6 kA, Rated Impulse Voltage: 4 kV, Rated Insulation Voltage: 690 V, Rated Voltage: 240 V AC / 415 V AC, IP20, Specification: IS/IEC 60898-1 & IEC 60898-1. Make: Havells or better. Model: DHMXCDPZ016 or better. Inspection: Consignee.	No.	441.00
1480	Supply of 6 A DP C MCB, Havells DHMGBSPF006 PVC Plastic 6A MCB SP B Curve, Specification: IS/IEC 60898-1 & IEC 60898-1. Make: Havells or better. Model: DHMYCDPM006 or better. Inspection: Consignee.	No.	464.00
1481	Supply of 32A DP C MCB, Specification: IS/IEC 60898- & IEC 60898-1. Make: Havells or similar. Model: DHMYCDPM032/better, Inspection: Consignee.	No.	611.00
<u>CONTROL COMM. EQPT etc.</u>			
1482	Supply of 4 Wire DTMF Head quarter control room equipment with all accessories as per Specification No. IRS: TC-60/2007 Amd.1 or latest. Inspection: RDSO/Consignee.	No.	12,249.00

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1483	Supply of 4 wire DTMF Way station equipment as per Specification No. IRS: TC-60/2007 Amd.1 or latest with 4 wire Control telephone as per Specification No. IRS-TC-38/97 Amd.2 or latest. Inspection: RDSO/Consignee.	No.	4,401.00
1484	Supply of Power Supply Unit for Way Station DTMF Telecom installations as per the RDSO Specification. IRS/TC/72/97 or latest with 12V/7AH. Make: Indisco/Epsilon/Bentron or better. Inspection: RDSO/Consignee.	No.	5,149.00
1485	Supply of Desk type 2 wire, 12 way DTMF selective calling group telephone (Selective Calling/Group Telephone) complete as per specification IRS : TO 80-2000 Amd.1 or latest with suitable power supply unit. Inspection: RDSO/Consignee.	No.	6,352.00
1486	Installation, wiring, testing & commissioning of 2 wire DTMF Selective Calling Telephone with power supply.	No.	932.00
1487	Transportation, installation, testing & commissioning of 4W Way-station equipment DTMF type and Way-station 4W control telephone including termination of the electric wires, battery wires, switch board cable on the equipment. The termination shall be done using eyelets of required size. The way station equipment shall be fixed over the wall on board of approved design. Board and all the materials required for fixing and termination to be supplied by the contractor.	No.	1,060.00
1488	Supply of 4/2 wire combined Portable Light Weight Emergency control telephones of metal body with 6-pin plug as per IRS-TC-75/99 (Amdt.4) or latest. Inspection: RDSO/Consignee.	No.	941.00
1489	Supply of Universal 2/4 wire way side DTMF control telephone as per RDSO Spec. No. IRS:TC:82:2005 (with Amdt.3) or latest. Inspection: Consignee. Inspection: RDSO/Consignee.	No.	5,253.00
1490	Supply of power supply unit for telecom installation at way side station suitable to operate max 6 equipments of DTMF type (12V/7AH) battery with suitable battery charger) as per RDSO spec. No. IRS: TC-72-97 or latest. Inspection: RDSO/Consignee.	No.	3,883.00

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1491	Installation of power supply unit (230V AC input, 12V DC output and 7AH battery) at ASM office.	No.	431.00
1492	Push button corded auto telephone with Caller ID facility of Beutel, Panasonic or Binatone make. Inspection: Consignee.	No.	2,642.00
<u>PASSENGER AMMENITIES etc.</u>			
1493	Supply, installation, testing and commissioning of Remote Monitoring System (RMS) Server as per RDSO Specification No. RDSO/SPN/TC/108 /2019, Ver.1.0 or latest as per instruction of site in charge with all required accessories and fixing arrangements to commissioning the item. Inspection: RDSO/Consignee.	No.	1,70,877.00
1494	Supply of Platform Data Controller (PDC) conforming to System requirement of RDSO Specification No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	40,272.00
1495	Installation, testing and commissioning of Platform data controller (PDC) as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest as per instruction of site in charge with all required accessories and fixing arrangements to commissioning the item.	No.	3,099.00
1496	Supply of Central Data Controller Unit (CDC) including CDS along with required software and all accessories as per RDSO Spec. No: RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	2,78,614.00
1497	Installation, testing and commissioning of Central Data Controller Unit (CDC) along with CDS and all accessories as per RDSO Spec. No: RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	15,321.00
1498	Supply, installation, testing and Commissioning of Train information at a Glance display board multiline single side with all accessories as per RDSO Specification No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This includes supply of all other materials required for installation such as clamp, hanger, angles etc. Inspection: RDSO/Consignee.	No.	1,87,573.00

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1499	Installation, testing and Commissioning of Train information at a Glance display board multiline single side as per RDSO Specification No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	13,852.00
14100	Supply of double-faced Coach Guidance Display Board (CGDB) along with junction box and other accessories and as per RDSO Spec. No: RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	31,183.00
14101	Installation, testing and commissioning of double-faced Coach Guidance Display Board (CGDB) in covered area with electrical switch & board etc. as per the instructions of site supervisor conforming to RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	3,027.00
14102	Installation, testing and commissioning of double-faced Coach Guidance Display Board (CGDB) in open area along with pole arm junction box , electrical switch, board, rain hood etc. and all accessories as per the instructions of site supervisor conforming to RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	6,606.00
14103	Supply of single line double faced Platform Display boards for displaying information of single train & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	190480.00
14104	Installation, testing and commissioning of single line double faced Platform Display boards for displaying information of single train as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	12,588.00
14105	Supply of LED based Single faced Monocolor (MLDB) Two Line Train Arrival/Departure display board & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	15,368.00

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14106	Installation, testing and commissioning of LED based Single faced Monocolor (MLDB) Two Line Train Arrival/Departure display board as per RDSO Spec No: RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	12,509.00
14107	Supply of LED based Single faced Monocolor (MLDB) Three Line Train Arrival/Departure display board & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	2,97,826.00
14108	Installation, testing and commissioning of LED based Single faced Monocolor (MLDB) Three Line Train Arrival/Departure display board as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	13,586.00
14109	Supply of LED based Single faced Monocolor (MLDB) Four Line Train Arrival/Departure display board & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	13,586.00
14110	Installation, testing and commissioning of LED based Single faced Monocolor (MLDB) Four Line Train Arrival/Departure display board as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	19,627.00
14111	Supply of LED based Single faced Monocolor (MLDB) Five Line Train Arrival/Departure display board & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	4,59,675.00
14112	Installation, testing and commissioning of LED based Single faced Monocolor (MLDB) Five Line Train Arrival/Departure display board as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	24,415.00

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14113	Supply of LED based Single faced Monocolor (MLDB) above 5 lines Train Arrival/Departure display board & all accessories as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. The payment shall be done sum of fixed cost of 5 lines single faced monocolor & No. of required additional line multiplied with per line cost. Inspection: RDSO/Consignee.	Per Line.	78,337.00
14114	Installation, testing and commissioning of LED based Single faced Monocolor (MLDB) above 5 Line Train Arrival/Departure display board as per RDSO Spec. No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc. The payment shall be done sum of fixed cost of 5 line single faced monocolor & No. of required additional line multiplied with per line.	Per Line.	3,571.00
14115	Supply of 6-line single face True color Indoor Video Display (IVD) of Pixel Resolution (WxH) 432 x 128 with all necessary accessories conforming to system requirements as per RDSO Specification No. RDSO/SPN/TC/108/2019, Ver.0 or latest. Inspection: RDSO/Consignee.	No.	16,26,674.00
14116	Installation, Testing and Commissioning of 6-line single face True color Indoor Video Display (IVD) of size Pixel Resolution (WxH) 432 x 128 as per RDSO Specification No. RDSO/SPN/TC/108/2019 Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	91,648.00
14117	Supply of 6-line single face True color Outdoor Video Display (OVD) of Pixel Resolution (WxH) 432 x 128 with all necessary accessories conforming to system requirements as per RDSO Specification No. RDSO/SPN/TC/108/2019, Ver.1.0 or latest. Inspection: RDSO/Consignee.	No.	24,46,254.00
14118	Installation, Testing and Commissioning of 6-line single face True color Outdoor Video Display (OVD) of size Pixel Resolution (WxH) 432 x 128 as per RDSO Specification No. RDSO/SPN/TC/108/2019 Ver.1.0 or latest. This also includes supply of all other materials required for installation such as clamp, hanger, angles etc.	No.	1,70,888.00

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14119	Supply, Installation, testing and Commissioning of Platform dual face, 4 digit, GPS synchronised digital clock as per RDSO Spec. No. RDSO/SPN/TC/62/2008 Rev. 3, Amdt.1 and Amdt.2 or latest, with LED of Blue/Red/White color and size approximately 762 x 381 x 228 mm. It also includes all fitting arrangements. (Color to be decided by Railways). Inspection: RDSO/Consignee.	No.	47,020.00
14120	Supply of Digital Clock suitable for Office Complex with GPS Synchronization in standalone mode as per Clause 6 of RDSO SPN TC 62/2008, (Rev.3.0) Amdt.2 or latest. Inspection: RDSO/Consignee.	No.	13,342.00
14121	Supply of 15 watt Horn speaker with 10 watt tapping, matching transformer and driver unit, made reputed as UHC-15XT of Ahuja make or similar. Inspection: Consignee.	No.	19,19.00
14122	Supply and installation of column speaker 15W with LMT all metal weather resistant, including fixtures and other material required. Inspection: Consignee.	No.	1,558.00
14123	Supply, installation commissioning of 250 Watt Amplifier Make Ahuja model SSA 250M or Similar. Inspection: Consignee.	No.	11,309.00
14124	Supply, installation commissioning of 500 watt Amplifier Make Ahuja model SSA 5000EM.or Similar. Inspection: Consignee.	No.	29,075.00
14125	Supply, installation commissioning of 700 watt Amplifier Make Ahuja model SSA 7000 or Similar. Inspection: Consignee.	No.	30,189.00
14126	Supply, Installation & commissioning of Dual channel 1800 W, Class-H power amplifier, for array speakers & subwoofer. Model - Electro-Voice Q1212 230 V or superior with required all complete accessories for installation. Inspection: Consignee.	No.	83,760.00
14127	Supply of high fidelity PA horn speaker IP-65 rated model AMH-402T, make Ahuja or similar. Inspection: Consignee.	No.	6,698.00

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14128	Supply of Ahuja SCM-30 20W/16Ohm PA Column Speaker, Input Power: 20W RMS, 30W Max., Power Taps: 20W, 20/15/10W, Impedance/Voltage: 16Ω, 100V, Speakers: 4 × 152.4 mm.(6") × 101.6 mm.(4"), Make : Ahuja/similar, Model : SCM-30 or similar. Inspection: Consignee.	No.	2,890.00
14129	Ahuja SSA 250M Amplifier or Similar (250 Watt). Inspection: Consignee.	No.	17805.00
14130	Ahuja SSA 5000EM Amplifier or Similar (500 Watt). Inspection: Consignee.	No.	32,096.00
14131	Supply of 20W loudhailer, Power Output: 16W Rated/20W Max., Voice Range Approx. 400m. (Siren 500m.), Power Source: 12V DC, 10 × AA Pencil Cells / Car Battery, Microphone: unidirectional, 600 ohms, Inputs Dedicated Microphone, Make: Ahuja or better, Model: AM-22HSD or better. Inspection: Consignee.	No.	4,117.00

TELECOM SW BOARD, PIJF CABLE, ASSOCIATE TERMINATION EQPT. POWER CABLE etc.

14132	Supply of power cable 3 core 2.5 Sq. mm. multi strand (36/0.3 mm. dia.) cable as per IS 694:1990 reaffirmed 1995 or latest suitable for railway electrification area shall be of reputed make like Delton, LAPP, Finolex, or Similar. Inspection: Consignee.	Mtr.	77.00
14133	Supply of V.F. transformer 1220:600/470/:1220 as per IRS:TC-22/76 or latest. Inspection: Consignee.	No.	830.00
14134	Switch board cable 5 Pair/0.6mm dia. as per TEC 68080:2002 or latest. Inspection: RDSO/ Consignee.	Km.	17,845.00
14135	Supply of 10 pair switchboard indoor copper cable 0.6 dia. as per specification IRS:TC:24:91 or TEC/GR/WIR-06/03. MAR 2002 with the latest amendment. Inspection: RDSO/Consignee.	Mtr.	45.00
14136	Switch board cable 20 Pair / 0.6mm dia. as per IEO 68080:2002 or latest GR WIR 0603 March 2002 or Latest. Inspection: RDSO/ Consignee.	Mtr.	89.00

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14137	50 Pair cable of 0.5mm dia. polythene insulated, polythene sheathed, jelly filled underground telephone cable with poly aluminium moisture barrier, annealed copper conductor, polythene jacketed double steel tape armoured as per specification IRS:TO 41/97 Amdt.3 or latest. Inspection: RDSO/Consignee.	Mtr.	307.00
14138	100 Pair cable 0.5mm dia. polythene insulated, polythene sheathed, jelly filled underground telephone cable with poly aluminium moisture barrier, annealed copper conductor, polythene jacketed double steel tape armoured as per specification IRS:IC 41/97 Amdt.3 or latest. Inspection: RDSO/Consignee.	Km.	4,18,183.00
14139	Supply, installation, testing and commissioning of 2 core screened/shielded multistrand PVC insulated wire (24/0.2 mm. dia.) for speaker load line. Inspection: Consignee.	Mtr.	36.00
14140	Supply of Thermo-shrink Jointing (TSF) Kits for PIJF Underground Telecom Cable of different pair sizes 5/10/20/50/100/200/400 Pairs with copper conductor's diameter 0.5mm./0.63mm./0.9mm. conforming to RDSO Draft Specification No. RDSO/SPN/TC/57/2015 Rev.1, Amdt.1.0 or latest. Inspection: RDSO/ Consignee.	No.	3,257.00
14141	Supply of Thermo-shrink jointing (TSF) kits for jointing underground Quad cable of size 0.9mm./1.4mm. diameter conductor for straight/condenser/Y-(Derivation)/Loading Coil/Transformer Joints as per Specification No. IRS-TC-77/2012 Rev.3 with Amd.3.0 or latest. Inspection: RDSO/ Consignee.	No.	3,576.00
14142	Execution of Straight joint on Quad cable/jelly filled Telecom cable using Thermo-shrink/Universal jointing kit (RTSF). This includes excavation of a cable joint pit of size 1.5 m. X 1.5 m. X 1.2 m. for jointing of cables, back filling and ramming after jointing. After joining, the cable through test such as insulation test, continuity test etc. to be carried	No.	1,434.00

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	out jointly with the Railway Engineer. If any defect or any damage is observed during jointing the contractor has to redo the joint free of cost. Note: In case jointing is required to be done in the Location boxes, then 80% payment will be released.		
14143	Execution of Derivation/Transformer joint on Quad cable/jelly filled Telecom cable using Thermo-shrink/Universal jointing kit (RTSF). This includes excavation of a cable joint pit of size min 1.5 m. X 1.5 m. X 1.2 m. for jointing of cables, back filling and ramming after jointing. After joining, the cable through test such as insulation test, continuity test etc. to be carried out jointly with the Railway Engineer. If any defect or any damage is observed during jointing the contractor has to redo the joint free of cost. Note: In case jointing is required to be done in the Location boxes, then 80% payment will be released.	No.	2,126.00
14144	Supply and jointing of 5T/TSF-3 Transformer Joint as per IRS:TC-77-2012 Rev.3 or Latest. All materials required to be supplied by the contractor except VF Transformers. Inspection:RDSO/ Consignee.	No.	9,664.00
14145	Fixing of 12/10 pair weather proof C.T. Box WAGO type and termination of 6 quad jelly filled cable on teak wood plank of size 375 mm. x 250 mm. x 20 mm. thickness.	No.	344.00
14146	Installation of 100/50/20 pair Krone terminal Box on teak wood plank of size 330 X 200 X 25 mm. plank and wiring. Teakwood plank and other materials like screws, bolts etc. to be arranged by the contractor.	No.	379.00
14147	Termination of telecom cable at cable hut and panel room, fixing of block filter units and cable termination boxes to the wall in panel room, wiring VF transformers, block filter units, block bell equipment including draw of cable through GI/PVC pipe, termination on to terminals and doing other works associated with commissioning of derivation of block working as per instructions of supervisor in charge of work. Note: Cables, CTB, Filter units, Block bell equipment, VF Transformers, GI Pipe, and Cement will be supplied by Railways. All other materials including Angles, PVC pipe etc. will be arranged by the Contractor.	LS.	2,700.00

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14148	Testing and commissioning of the system: This work involves the Testing of Underground six quad cables in each repeater section after laying and jointing. These readings to be recorded and supplied to the Railway Engineer. This involves all the tests to be carried out such as measurement of loop resistance, insulation test, frequency attenuation, cross talk and noise level etc.	No.	3,329.00
MISC. ITEMS			
14149	Supply PVC conduit pipe of 50 mm. dia. Inspection: consignee.	Mtr.	79.00
14150	Execution/fixing of PVC conduit pipe of 50 mm. dia. on wall/Shed including supply of all fixing materials & accessories by contractor. Returning the left over material to the railway store.	Mtr.	20.00
14151	Fixing of frame, surface box and white cover plates for Two modules. This also includes fixing of RJ-11 Telephone sockets with level holder Jack type, RJ-45 LAN sockets Jack Type (Tool less) and blanking plates for one modules. Make: Legrand or Similar. Inspection: Consignee.	No.	144.00
14152	Shifting and installation of control and other telecom equipments like control phone, magneto phone, auto phone, VHF sets, VF Repeaters etc. from old station building to new station building as per instructions of site engineer. All the material required for fixing and installation will be supplied by the contractor. Inspection: Consignee.	Station.	9196.00
14153	Supply and installation of 45 mm. x 45 mm. PVC channels for drawing switchboard cables at OFC cable huts and at stations as indicated by the Railway Engineer at site. Inspection: Consignee.	Mtr.	103.00
14154	Supply and fixing of different sizes of PVC casing /Pipes as required by Railway at site by fixing/clamping to the wall for indoor wiring purposes. All the material required for fixing PVC casing/Pipes are to be supplied by the contractor. Inspection: Consignee.	RMT.	49.00
14155	Location survey for cable route and preparation of tentative cable route plan as per the instructions of Engineer-in-Charge.	RKM.	1,393.00

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14156	Supply of Buffer amp for emergency communication through V.H.F. communication Inspection: Consignee.	No.	13,837.00
14157	Supply of DC-DC converter. for emergency communication through V.H.F. as per specification – the DC DC converter shall be independent for each VHF base equipment (voice equipment) and shall allow to work from -48V nominal input (-48V to -60V variation) & output 12V DC. The power capacity to deliver 10A current with output short circuit protection & ripple voltage less than 5mv for telecom circuit. Short circuit current not more than 2 mA, input-output insulation by 2.5 KV, load & output regulation +/-1% with ERTL certification. Make: DACS, Pune or Webfil Kolkata or Machronics, Kolkata or similar. Inspection: consignee.	No.	20,742.00
14158	Supply of Tributary interface card of Webfil make PD Mux (flexi Mux) as per Specification No. IRS:TC/68/12 Rev.0 with amendment no.1 or latest. Inspection: RDSO/ Consignee.	No.	48,050.00
14159	Supply of 2W/4W Subscriber Interface Card 4 channels as per card compatible with PD Mux Webfil Mux as per RDSO Specification No. IRS:TC/68/12 with amendment. Inspection: RDSO/ Consignee.	No.	12,252.00
14160	Supply of Network interface module (NIM) interface card compatible with existing PD Mux (flexi Mux) as per Specification No. IRS:TC/68/12 Rev.0 with amendment no 1 or latest. Inspection: RDSO/ Consignee.	No.	33,984.00
14161	Supply of HDMI Cable 15 meter, HDMI cable transferring both high definition audio and video over a single cable, Resolution support: 4K. Inspection: Consignee.	No.	2,404.00
14162	Supply of HDMI Cable 10 meter, HDMI cable transferring both high definition audio and video over a single cable, Resolution support: 4K Inspection: Consignee.	No.	1,480.00
14163	Supply of HDMI Cable 1.5 meter, HDMI cable transferring both high definition audio and video over a single cable, Resolution support: 4K Inspection: Consignee.	No	849.00

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14164	Supply of Microphone with all accessories, with a sturdy, aluminium die-cast top and special high reliability switches with integrated LED indicators, Fitted with a flexible 300mm (12") gooseneck and a high quality unidirectional dynamic cartridge. Make: Ahuja/Bosch/Studio Master. Model: ACM96 or similar. Inspection: Consignee.	No.	3,599.00
14165	Supply of Battery charger 12V/10A for VHF Set as per IRS:S-86/2000 amdt.4 or latest, Make: Ultra or similar. Inspection: RDSO/Consignee.	No.	29,540.00
14166	Supply of VHF Microphone. Inspection: Consignee.	No.	1,218.00
14167	Supply of Multi Unit fast Charger Desktop IMPRES2 or similar, charge six batteries separately or along with Radio for model XiR P6600i. Inspection: Consignee.	No.	76,464.00
14168	Supply of Standing wave power meter for measurement of RF power and SWR in 5 watt and 25 watt VHF set frequency range 1.8 to 200 MHz with UHF female connector with connecting cable for measurement of power and Dummy load. Make: Nissei/Diamond or better. Inspection: Consignee.	No.	18433.00
14169	Supply of 25 Watt VHF trans receiver Sets in frequency band 136 MHz to 174 MHz (Full band) with DTMF Microphone Cord with GP Antenna, 30 Mtrs. feeder cable and suitable BNC connector with 3 Mtrs. of power cord and 12V/13.5V, 10 Amp power supply suitable for 25 watt VHF as per RDSO Specification No. RDSO/SPN/TC/107/2018 Rev.2.0. Amendment.1 or latest. Make: HYT, KENWOOD, Sanchar, Motorola or better. Inspection: RDSO	No.	25,783.00
14170	Supply of VHF ANTENNA for Transreceiver/Repeater - Mobile/Static/Handheld "0 dB" Omni directional Antenna / GP Antenna 136-174 with Double Clamp with Nut and Bolt of good quality (corrosion free), Suitable RF cable (min length of 30 mtr.) with both end Connectors. Inspection: Consignee.	No.	8,142.00

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14171	Supply of RG-213 RF Communications Coaxial Cable for Indoor/Outdoor Usage (30 Mtr. RF co-axial cable with BNC adaptor connected at both ends). Make : Sanchar communication or similar. Inspection: Consignee.	No.	5,326.00
14172	Supply of 5 watt. VHF Digital Walkie Talkie Set without Keypad and without Display to Spec. No. RDSO/SPN/TC/107/2018 Ver.2.0 or latest, SL. No. 2.3(b). Each set will consist of: (1) One [1] no. VHF Set with Compatible Battery + Battery Charger + Antenna + suitable Belt Clip in complete Box packing. (2) One [1] No. spare Battery compatible with the VHF Set as per Spec. No. RDSO/SPN/TC/107/2018. Ver.(2.0) or latest. Inspection: RDSO	No.	25,724.00
14173	Supply of Floor mounting surge suppressor (4 Nos. of 16A Socket in each strip), Make: Rockware or similar. Inspection: Consignee. Inspection: Consignee.	No.	7,581.00
14174	Supply & installation of speaker cable 2 core, Size: 1.5 Sq. mm. (16AWG), Thickness of Insulation: 0.7 mm., shielded, complaint to IS-694:2010, Conductor Material: Copper, Make: Finolex or similar. Inspection: Consignee.	Mtr.	47.00
14175	Supply of 4 port router as per RDSO Specification : RDSO/SPN/TC/84/2008, Rev.0 With accessories as : 2 on board GE, 4 port serial WAN interface card, 2E HWIC slots, 1 ISM slot, 256 Mb CF default, 512 Mb RAM, IP base, 2 Nos. V35 cable, DTE make to smart serial 10 feet length with required cable & connection. Make: CISCO or similar. Model: C8200L-1N-4T or similar. Inspection: RDSO/Consignee.	No.	1,12,454.00
14176	Supply of 2 Mbps modem having (V.35 + G.703) interface operating with AC & -48DC, as per Specification No. RDSO/SPN/TC/80/2020 Rev.2.0 or latest. Make: Nomus/MROTEK or similar. Model: Nomus Gateway e/2M/2W/G.703/V.35 or similar. Inspection: RDSO/Consignee.	Pair	16,461.00

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CHAPTER - 15 :**Digital Axle Counters and Block Instruments, Multiplexers, MSDAC, HASSDAC, SSDAC, UFSBI, SSBPAC(D), DLBI/TLBI.**

<u>MSDAC</u>			
SN.	Description	Unit	Rate
1501	<p>Supply, Installation, wiring, testing and commissioning of Multi Section Digital Axle Counter (Detection points and Evaluators as per the Scheme) along with Toolkit, as per RDSO Specification No. RDSO/SPN/176/2013, Ver.3 or latest and as per Annexure-A. The warranty of the equipment shall be 2 YEARS from the date of commissioning.</p> <p>Inspection: RDSO.</p> <p>Note:-</p> <p>1) Scheme of Main/Redundant (dual) Evaluators with approximate number of DPs connected shall be enclosed for each location of Evaluators.</p> <p>2) Installation, wiring, testing and commissioning of MSDAC as per RDSO TAN/Guidelines and Annexure-B.</p>	Per DP	3,29,883.00
<u>SSDAC</u>			
1502	<p>Supply of Single Section Digital Axle Counter (SSDAC) as Set per specification No. RDSO/SPN/177/2012 Ver.3.0 or latest.</p> <p>Inspection- RDSO</p> <p>Note - (i) The length of Tx & Rx cable shall be of 5/10/15 m to meet the site requirements. Before supply of Tx-Rx cable, approval from concerned authority to be taken.</p> <p>(ii) Warranty of the equipment shall be 2 YEARS from the date of commissioning.</p> <p>(iii) Payment terms - 75% after supply 15% after installation, wiring & Testing, 10% after commissioning.</p>	Set	6,67,988.00
1503	<p>Installation, Testing & Commissioning of SSDAC as per latest RDSO TAN/Guidelines.</p> <p>Note - It includes fixing of device, relays, wiring, lacing /dressing, cable termination with lug eyelet, drilling holes in rails, Installation of track devices and making it functional along with existing UFSBI/block instrument. Material required other than supply item of SSDAC/HASSDAC shall be arranged by contractor to make it functional.</p>	Set	36,802.00

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UFSBI/SSBPAC-D/MUX			
1504	<p>Supply of Universal FailSafe Block Interface (UFSBI) as per Specification No. IRS:S-105/2012 (Ver.0) or latest OR Solid-State Block Proving Axle Counter (Digital) (SSBPAC-D) as per specification No. RDSO/SPN/175/2005 Ver. 1 or latest. Complete with all accessories for Single Line or Double Line. Inspection: RDSO.</p> <p>Warranty of the equipment shall be 2 YEARS from the date of commissioning.</p> <p>Note - Payment terms - 75% after supply. 15% after installation, wiring & Testing, 10% after commissioning.</p>	Pair	8,19,630.00
1505	<p>Supply of MODEM compatible with existing UFSBI system to work on backup media (either VF-channel on OFC P/Mux or 2 Mbps EI channel from STM or direct dark single mode 1 Core, optic fiber cable up to 30 Km. distance). The required type must be mentioned while ordering.</p> <p>Note: Warranty of the equipment shall be 2 YEARS from the date of Supply.</p>	Pair	78,227.00
1506	<p>Supply of Industrial grade EI Modem (with 1+1 hot standby EI uplink) for UFSBI with 6 no. of RS232 & 8 nos. E&M VF channel (individually configurable to 2/4 wire by simple hardware switch) suitable for connecting UFSBI Block along with UP & DN Line HASSDAC and 100% spare channels. Working on dual DC 24/48 Volts supply in hot-standby mode.</p> <p>Note: Warranty of the equipment shall be 2 YEARS from the date of Supply.</p>	No.	2,02,209.00
1507	Installation, Testing and Commissioning of item 150006 as per RDSO TAN/ Guidelines.	Set	70,688.00
1508	<p>Supply of Dual Redundant Mux for IBS/ABS application: Supply of Universal FailSafe Block interface (UFSBI) equipment as per Specification No. IRS:S-104/2012 Ver.0.0 or latest. Systems shall be capable of working on Dark fiber, E1 and Quad cable with auto changeover facility. Required modems shall be supplied along with spares as per list attached at Annexure-C. The System shall be equipped for 16 I/P & 16 O/P for UFSBI for exchange of vital Relay exchange for IB/ABS application. Inspection: RDSO.</p> <p>Note - (i) Warranty of the equipment shall be 2 YEARS from the date of commissioning.</p> <p>(ii) Payment terms - 75% after supply, 15% after installation, wiring & Testing, 10% after commissioning.</p>	Pair	11,06,400.00

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1509	Installation, Testing and Commissioning of Dual Redundant Mux complete with all accessories as per Specification No. IRS:S-104/2012 (Ver.0) or latest.	Pair	1,07,442.00
TLBI/DLBI			
1510	Installation, interconnection and commissioning of single/ double line/Tokenless block instrument in the station. All materials (except block instrument) to be supplied along with wooden stand for keeping the instrument, filter unit & block bell. Warranty of the equipment shall be 2 YEARS from the date of Supply.	No.	8,340.00
1511	Supply of block bell equipment as per spec. No. IRS-TC-44/88 (LATEST). Material to be procured from an RDSO approved firm. Inspection - RDSO.	No.	3,943.00
1512	Supply of block bell as per Spec. No. IRS-TC-44/88 (LATEST). Material to be procured from an RDSO approved firm. Inspection: RDSO. Note- Warranty of the equipment shall be 2 YEARS from the date of Supply.	No.	9,103.00
1513	Supply of block Telephone as per Spec. No. IRS-TC-44/88 (LATEST). Material to be procured from an RDSO approved firm. Inspection: RDSO. Note- Warranty of the equipment shall be 2 YEARS from the date of Supply.	No.	4,201.00
1514	Supply of spare cards of CEL Make for Single Section Digital Axle Counter or High Availability Single Section Digital Axle Counter as per Specification No. RDSO/5PN/177/2005 Ver.2.0 or RDSO/SPN/177/2012 Ver.3.0 or latest. The spare cards shall be supplied as per the make of SSDAC and to the version as specified by the engineer in-charge. Inspection: RDSO		
a)	Micro controller logic card (CPU Card).	No.	51,070.00
b)	Modem card (Communication Card).	No.	34,047.00
c)	DC-DC converter card (Power Supply Module).	No.	17,023.00
d)	Signal conditioner card (Phase Detector Card).	No.	33,908.00
e)	Relay driver card.	Set.	30,643.00
f)	Axle detectors (each set consists of 2 numbers Tx and 2 numbers of Rx coils).	Set.	43,258.00
g)	Reset box.	No.	47,426.00

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h)	Event logger card.	No.	35,538.00
i)	Reset card for reset box.	No.	16,260.00
1515	Supply of Spare Cards for CEL Make High Availability Single Section Digital Axle Counter (HASSDAC) as per Specification No. RDSO/SPN/177/2012 Ver. 3.0 or latest. The spare cards shall be supplied as per the make of SSDAC and to the version as specified by the engineer in-charge. Inspection:RDSO		
a)	Signal Conditioner Card or Phase Detection Card for HASSDAC.	No.	40,832.00
b)	Signal Conditioner Card or Phase Detection Card for HASSDAC.	No.	40,754.00
c)	Modem Card or Communication Card for HASSDAC.	No.	40,754.00
d)	Dual micro controller logic card or CPU Card for HASSDAC.	No.	1,09,218.00
e)	Relay Driver card for HASSDAC.	No.	40,754.00
f)	DC-DC converter card for HASSDAC.	No.	24,452.00
g)	Axle detectors (each set consists of 2 numbers Tx and 2 numbers Rx coils).	No.	55,424.00
h)	Reset box for HASSDAC.	No.	58,685.00
1516	Spare cards for G.G.Trronics SSDAC/HASSDAC - Inspection:RDSO		
a)	Supply of Communication Card COM-1 compatible with SSDAC or BPAC Part No. H001M04R1, Make G.G.Trronics or similar. RDSO Spec. No. RDSO/SPN/177/2012 Ver.3 or latest. Accepted Make/Brand: G.G.Trronics.	No.	28,848.00
b)	Supply of Communication Card COM-2 compatible with SSDAC or BPAC Part No. H001M04R1, Make G.G.Trronics or similar. RDSO Spec. No. RDSO/SPN/177/2012 Ver.3 or latest. Accepted Make/Brand: G.G.Trronics.	No.	28,848.00
c)	Supply of Relay Drive Card RD-1 compatible with SSDAC or BPAC Part No. H001M04R1, Make G.G.Trronics or similar. RDSO Spec. No. RDSO/SPN/177/2012 Ver.3 or latest. Accepted Make/Brand G.G.Trronics.	No.	25,008.00
d)	Supply of Relay Drive Card RD-2 compatible with SSDAC or BPAC Part No. H001M04R1, Make G.G.Trronics or similar. RDSO Spec. No. RDSO/SPN/177/2012 Ver.3 or latest. Accepted Make/Brand: G.G.Trronics.	No.	25,008.00
e)	Supply of Tx Transmitter coil assembly 21 KHZ/25 KHZ as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3) or latest. Offered & Accepted make: G.G.Trronics.	No.	44,502.00

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f)	Supply of Rx Receiver coil assembly 21KHZ/25KHZ as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3) or latest. Offered & Accepted make: G.G.Trionics.	No.	44,502.00
g)	Supply of Phase Detector Card PD-2 21KHZ/25KHZ card as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3) or latest. Offered & Accepted make: G.G.Trionics.	No.	42,303.00
h)	Supply of Phase Detector Card PD-1 21KHZ/25KHZ card as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3) or latest. Offered & Accepted make: G.G.Trionics.	No.	42,303.00
i)	CPU-1 card as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3.0) or latest. Offered & Accepted make: G.G.Trionics.	No.	65,871.00
j)	CPU-2 card as per RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3.0) or latest. Offered & Accepted make: G.G.Trionics.	No.	65,871.00
k)	Supply of DC-DC Converter Card for HASSDAC. RDSO Spec. No. RDSO/SPN/177/2012 (Ver.3). Offered and Accepted Make/Brand: G.G.Trionics.	No.	31,941.00
l)	Reset Box for single section digital type axel counter as per RDSO Specification - RDSO/SPN/177/2012 (Ver.3) or latest version & amendment upto date if any, (Suitable for G.G.Trionics) Make: G.G.Trionics.	No.	34,500.00
1517	Supply of Spares and accessories for UFSBI. Inspection:RDSO		
a)	Input card compatible with existing UFSBI system.	No.	13,298.00
b)	Output card compatible with existing UFSBI system.	No.	33,876.00
c)	CPU card compatible with existing UFSBI system.	No.	29,162.00
d)	Control & Communication card compatible with existing UFSBI system.	No.	24,996.00
e)	MODEM compatible with existing UFSBI system.	No.	28,606.00
f)	DC-DC Converter (Hot standby Type).	No.	47,548.00
g)	SAM unit.	No.	6,374.00
h)	Mother board compatible with existing UFSBI system fitted in 6-U Rack.	No.	54,120.00
i)	Reset box.	No.	15,779.00
j)	Flat cable set.	No.	2,572.00

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k)	UFSBI Block Telephone (Complete with PTT Handset).	No.	6,249.00
l)	Automatic media changeover of Modems working on redundant channels for data transmission on OFC/Quad compatible with existing UFSBI.	No.	34,994.00
m)	Supply of Key switch with 1 NO + 1 NC or 2 NO config. of ESBEE make, suitable to work with Block Panel of Deltron or similar make as per RDSO Spec No. IRS-S-105/2012 Ver.0 or Latest.	No.	1,221.00

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Annexure-A for MSDAC (Item no-1501)

1. Multi Section Digital Axle Counter (MSDAC) system shall comprise of Axle detectors, DAC field unit, Central evaluator, Reset unit, Soft Reset, relay unit, event logger, diagnostic terminal and line verification box confirming to RDSO specification no. RDSO/SPN/176/2013, Ver.3 or latest (Inspection by RDSO).
2. OEM supplied/certified Pre-Fabricated Rack with power supply arrangement for Evaluator (Inspection by RDSO) which is to be supplied along with system (Para 5.5.1) of RDSO specification no. RDSO/SPN/ 176/2013, Ver.3 or latest.
3. OEM supplied/certified Reset Box as per drawing no RSDO/S/20001 (Inspection by RDSO), as required.
4. OEM supplied / certified Tool Kit with marking Zig (One set for every 20 DP or part thereof) consisting of all tools and measuring instruments required for installation, testing, failure attention and all types of maintenance of MSDAC; to be supplied with consignee inspection along with main equipment confirming to item no. 20 of RDSO specification no. RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time.
5. OEM supplied Line Verification Boxes as per drawing no. RDSO/S/20002, as required. (Inspection by RDSO).
6. OEM supplied / certified Mushroom cover/ Half apparatus case(s) (If required for installation) for track-side equipments / each detection point housing (Inspection by RDSO for OEM supplied/certified Mushroom cover; Consignee/RITES for half apparatus case as per latest Railway Board guideline on Inspection of Material). Quantity of Mushroom Cover/Half apparatus case shall be the same as that of detection point. Half Apparatus Case to be supplied as per drawing GKP TYPE DRAWING NO.SE/FE/2004/21.
7. OEM recommended lightning and surge protection devices for all sub-systems as per RDSO specification no. RDSO/SPN/144/2006. (Inspection by RDSO) as per Para 5.0.24 of RDSO/SPN/176).
8. Instruction manuals, installation manual & maintenance manuals including DO's Don'ts, mechanical drawing for each subsystem, schematic block diagram showing mounting arrangement of various component &, details of each type of assembled PCB, troubleshooting manual, pre-commissioning check list and other technical information regarding MSDAC supplied (As per item no. 18 of RDSO specification no. RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time).
9. Supply of Event logger (In-Built) & diagnostic terminal with monitoring software (one set). A) Event logger Diagnostic software (Inspection by RDSO). (One Set per evaluator Rack in separate Pen drive as per Para 5.9.1 of RDSO/ SPN/176). b) Event logger Diagnostic PC (Inspection by consignee) — One system per location as per the scheme as per following specification: i. CPU: Intel i7 or latest ii. Processor Family: 12th Generation or higher m. Cache: 8 MB or higher iv. RAM: Minimum 8 GB, DDR-4 or better v. Hard Disc Drive — Min 1 TB SSD vi. Parts — 2 serials, 2 USB-2, 2 USB-3, 2 PCI slot vii. Monitor 22 inch LED flat panel, resolution 1920x1080 at 60 Hz or better vm. Network Interface: Integrated 10/100/1000 GbE LAN ix. Wireless: 802.11a/b/g/n Wi-Fi and Bluetooth x. Keyboard: QWERTY xi. Optical scroll mouse xii. Optical Drive: DVD xm. Audio: 2.1 speaker; xiv. Antivirus single license for 3 years for single user; xv. Operating System-Windows 10 or latest pre-loaded with license and MS office 2018 or higher with license and media. xvi. Connecting cord between Evaluator and PC; xvii. Suggested make Compaq, I-IP, Lenovo, Dell, Acer or Wipro 27" Display.

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10. LaserJet printer (size A4, minimum 20 copies per minute, black and white] suggested brand- DP/DELL/CANON (Inspection by consignee)- Along with each Diagnostic PC.
11. Table: Godrej make interio Companion C3 Engineered Wood computer desk or similar (Inspected by consignee). (1 No per Location)
12. Chair: Godrej make PCH-7003 premium Executive chair or Similar (Inspected by consignee). (1 No per location)
13. All empty slots in the card-file shall have dummy cards fitted to prevent entry of lizards etc.
14. Railway will provide 24V DC from IPS in N+1 configuration for Main and Dual (Redundant) evaluator, reset box and DP. Additional power supply modules (from RDSO approved source), if required, shall be arranged by the OEM.
15. The warranty of the equipment shall be 2 YEARS from the date of commissioning.
- a) During the period of warranty, the supplier shall remain responsible to arrange for replacement and for getting right at his own cost of any equipment supplied by him which is defective during manufacturing or defective in design or due to defective material component or due to any cause whatsoever.
- b) All replacement and repair that the Railway shall call upon the supplier to perform under this warranty period within one month.
16. The supplier will submit the following documents along with the supply. Breakup of number of each cards /modules & other accessories for each location as per Table given below-
SN Description of Card / Sub-assembly/items Part No Unit Quantity in No. In the break up, module wise rates, inspection authority and quantity should be given in a separate sheet.
17. Cable length of track device (5, 10, 15 meters) shall be indicated by the purchaser in the inspection call letter.
18. Materials, which are not in the list of RDSO, shall be inspected by the Consignee.
19. Payment Terms- 60% on the supply of material, 30% on installation, wiring and testing of evaluators and DPs, and balance 10% on commissioning of MSDAC.
20. As per RDSO Spec. cl. 5.4.2. VDU/Rest box can be used for resetting. At stations having more than 10 Track sections, the Railway proposes to use a separate VDU- based resetting system. Such a VDU- based system if using a PC, it must be industrial grade. However, if such a system is not developed by some OEMs, use of reset boxes can be permitted subject to conditions that all reset boxes shall be provided in 19" standard 42U or suitable size rack of Rittal or similar make. Size of reset boxes can be modified to suit local requirements of availability of space in existing rooms. Permission to use reset boxes for complete yard will be available only for one year of issue of this policy as some OEMs are still developing VDU based resetting. For VDU based resetting, separate scheme/typical issued by HQ shall be followed.

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Installation, wiring, testing and commissioning of MSDAC**Annexure-B**

1. This includes installation, wiring, testing and commissioning of complete MSDAC system which includes track circuit electronics and its all accessories (track electronics unit, central evaluator and its accessories/interface device, if any. All the tools and plants for installation has to be arranged by the contractor. Wiring from cable termination rack to the central evaluator, installation and wiring the reset.
2. All execution/installation materials as required to be supplied by the contractor.
3. Installation, testing and commissioning of MSDAC to be done by OEM'S certified engineer.
4. Precommissioning checklist issued by RDSO for MSDAC will be prepared by OEM's engineer and to be signed jointly with Rly engineer incharge.
5. OEM'S engineer will also impart training to Rly. staff at site for proper functioning /working and applications of MSDAC.
6. Training on installations, maintenance & trouble shooting shall be imparted to Railway Personnel at site or at OEM's premises (20 man-days per station).
 - a) Training shall be organized for OL and Project/Construction staff & officers through the OEM before commissioning of work and proper record shall be maintained.
 - b) During the training each of the attendee shall be given a copy of the training manual and copies of the approved document without any exception.
7. Foundation, erection and earthing of Track side Equipment i.e. Mushroom/ Location Box (if required), **In case the track side equipment is fixed in the location box.**
8. Individual Earthing of all detection Points shall be provided by the tenderer if required by the OEM. The earth value shall be within the limits recommended by the OEM & those shall be certified by OEM site engineer. If required, multiple earth-pits to be installed to bring earth value within limit, in each location. This includes supply & installation of maintenance free earth materials and exothermic bonding and other connecting cable etc. as per Railway practice (As per RDSO guidelines/TAN).
9. Installation of Event logger & diagnostic terminal with monitoring software at Maintainers room and connectivity from evaluator to Diagnostic terminal.
10. Submission and approval of documents.
 - a) The following documents, in addition to the documents specified in item no. 18 of RDSO specification no. RDSO/SPN/ 176/ 2013, Ver.3 as updated by RDSO from time to time, shall be submitted by the agency to the field unit for approval before commencement of actual work.
 - i) Evaluator summary, DP summary and evaluator communication summary.
 - ii) MSDAC DP plan.
 - iii) Rack-wise evaluator allotment plan.
 - iv) Wiring Diagram.
 - v) MSDAC DP connection between 2 CTRs.
 - vi) Reset box disposition & resetting arrangement.
 - vii) Pre-commissioning check list regarding MSDAC supplied.
 - viii) Power supply diagram for evaluators and DPs.
 - b) Hard copy and soft copy in PDF and autocad format shall be submitted.
11. Materials, which are not in the list of RDSO shall be inspected by the Consignee.
12. Interface wiring with datalogger shall be done.
13. All materials, wires required for installation of Reset box like cabinet etc.

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14. Wiring of final relay to CTR to be done.
15. Power wiring from power distribution panel/IPS to be done.
16. Retroreflective tape on deflector to be provided.
17. Payment terms- 80% on installation, wiring, testing of evaluators and DPS, balance 20% on commissioning.

Annexure-C

Spare cards for item no- 1508 for Dual Redundant Mux

Following Spares to be provided-

- (i) Input Card DES/UFSBI/INPUT.
- (ii) CPU Card.
- (iii) Output Card/DES/UFSBI/CPU
- (iv) COMM Card
- (v) DC-DC Converter
- (vi) Reset Box
- (vii) Modem
- (viii) Mother Board
- (ix) Auto Changeover Modem

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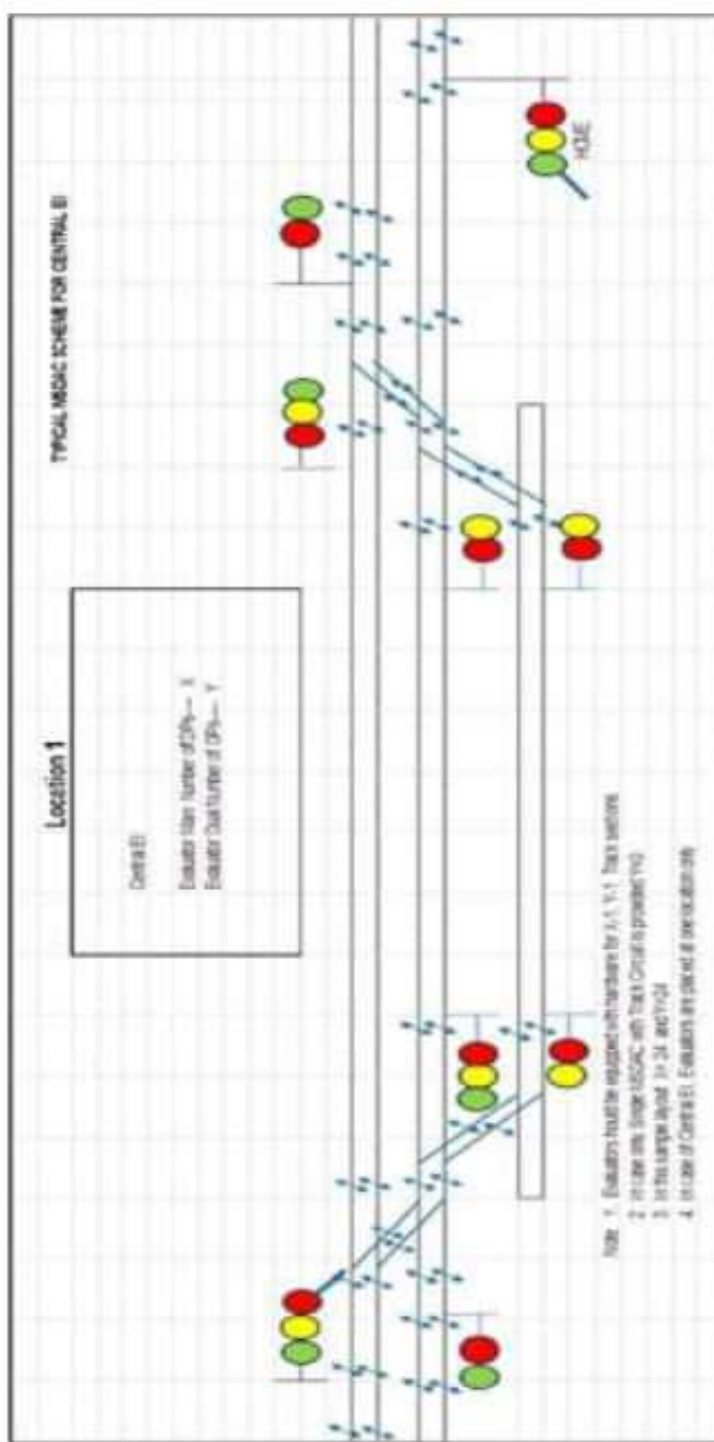
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Typical MSDAC Scheme for Central EI



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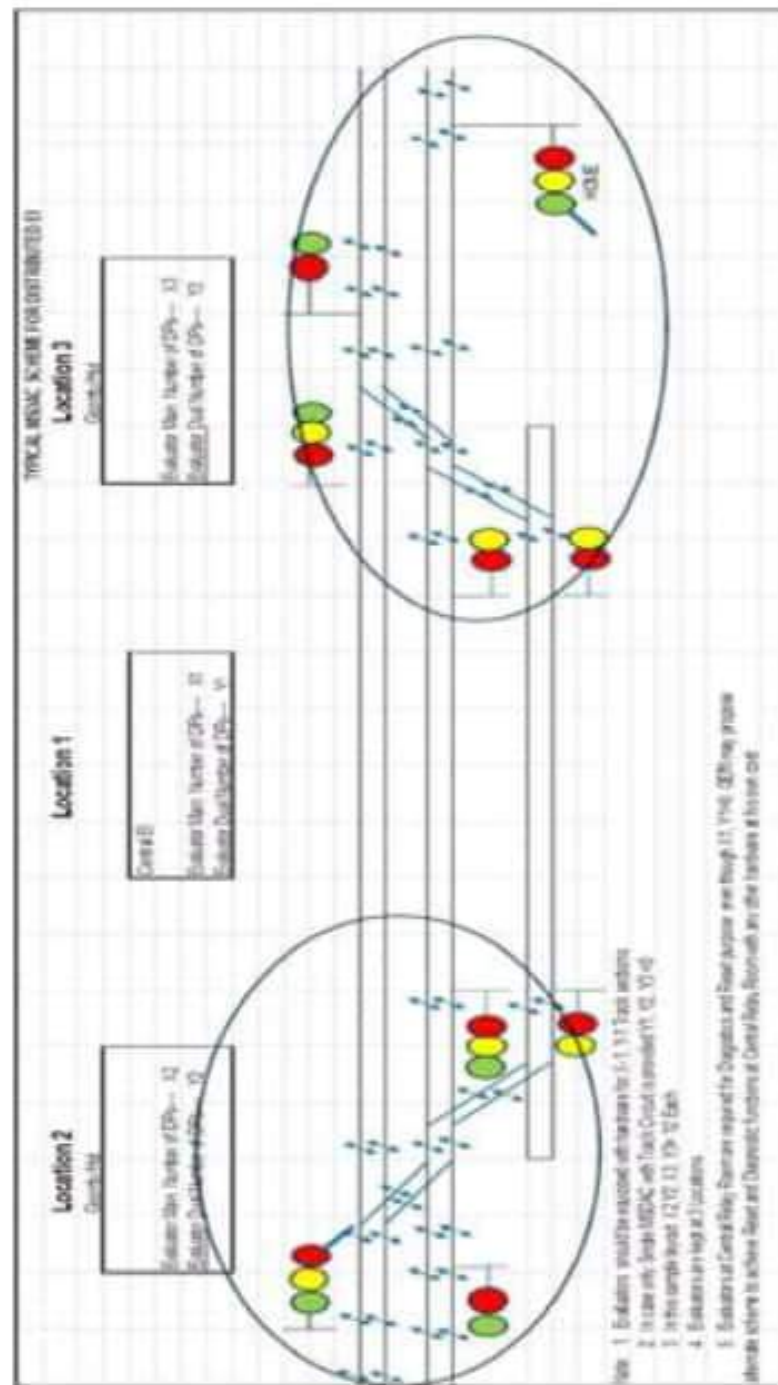
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Typical MSDAC scheme for Distributed EI



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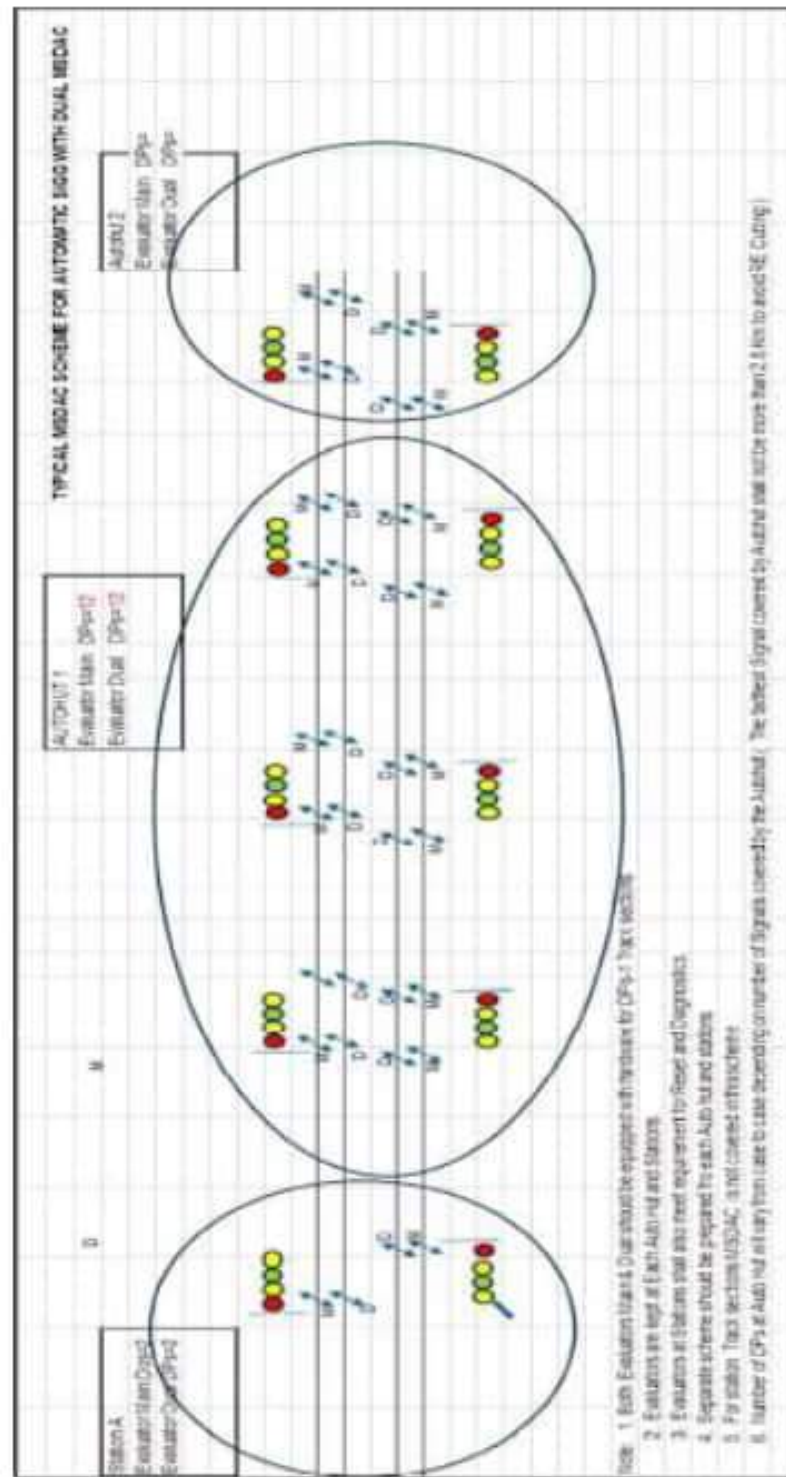
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Typical MSDAC scheme for Automatic SIGG with Dual MSDAC



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CHAPTER - 16 :
TOOLS AND PLANTS.

SN	Description	Unit	Rate
1601	Supply of Digital Multimeter as per specification to make - Fluke 87V or better. Inspection: RITES/Consignee.	No.	42,562.00
1602	Supply of true RMS 5 digit 60000 counts Digital Multi Meter with the following specification. 1. Frequency range - 6Hz to 1MHz mV AC. 2. Bandwidth - 10kHz. 3. AC voltage range - 1 mV - 1000V, $\pm 0.5\%$. 4. DC voltage range - 1 micro V - 1000V, $\pm 0.05\%$. 5. AC current range - 1 micro A - 10A, $\pm 0.5\%$. 6. DC current range - 1 nA - 10A, $\pm 0.2\%$. 7. Capacitance range - 1pF - 10000pF. 8. Data logging - 32000 Readings. 9. Dual display - Available. 10. Other features - Shall have temperature measurement, diode, continuity, duty cycle measurement, self battery voltage measurement, low pass filter, Mm, Max and average value recording, back light, bar graph, protective rubber holster. Inspection: RITES/Consignee.	No.	15,014.00
1603	Supply of Current Clamp Meter of Model Fluke 317 or similar with the following specification. 1. True RMS responding. 2. Voltage - DC 600V, AC 600V, DC accuracy - $\pm 1\%$ + 4 digit. 3. AC accuracy - $\pm 1.5\%$ + 5 digit. 4. Current - DC 600A, AC 600A, AC accuracy: - $\pm 1.5\%$ + 5 counts, AC / DC current measurement. 5. Unique 40A low frequency measurements capability with 0.01A resolution. 6. Special filter circuit to enable accurate measurement of PWM output. 7. Additional measurement of resistance. 8. Continuity check feature. 9. Data hold features with large, easy to read backlight display. 10. Calibration certificate. 11. 1 year warranty. Inspection: RITES/Consignee.	No.	19,897.00

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1604	Supply of AC/DC TRMS Hand clamp meter 3-4/5digit 5000 count back light with analog bar graphs. Measure 1mA up to 80A AC TRMS/DC. Ac measuring bandwidth 60 Hz. Make: Metravi Model 4672 or similar. Inspection: RITES/Consignee.	No.	6,534.00
1605	Supply of Digital Cable Insulation Tester for measurement of cable insulation resistance with auto range 0-500 V DC. Motwani or from any reputed make. Item to be supplied after successful demonstration and Approval of Railway. Inspection: Consignee. Inspection: RITES/Consignee.	No.	10,958.00
1606	Supply of Handheld Digital Earth Clamp Tester for clamp on earth/ground resistance measurement up to 1000 ohms. Accuracy 0.1 - 0.99 Ω : 1%, 1 - 49 Ω : 1.5%. Also measure current leakage up to 20A. No spines required for measurement Model - DECT-2 or equivalent / higher version. Make: Motwani/Stanlay/Fluke/Megger. Item to be supplied after successful demonstration and Approval of Railway. Inspection: RITES/Consignee.	No.	1,18,172.00
1607	Supply of Digital Earth Resistance Tester for measurement of earth resistance with 3.5 digital LCD, 12.5 mm screen segment and Range - 0.5 Ohms to 500 Ohms. WACO or Similar make. Item to be supplied after successful demonstration and Approval of Railway. Inspection: RITES/Consignee.	No.	11,045.00
1608	Supply of electronic Cable route tracer/locator (with minimum 10W transmitter) with underground cable and pipe locating receiver and cable avoidance tool that provide location of armoured OFC, signalling and telecom, power cable etc. Make: Stanlay STLOC10 GPS Pathfinder/2273M-iD (12W)/RD 2273M-iD/3M 2573 or similar/superior. Item to be supplied after successful demonstration and Approval of Railway. Inspection: RITES.	No.	5,21,636.00
1609	Supply of cable fault locator complete with all necessary accessories including rechargeable battery pack and charger Liquid Crystal Display (LCD) with back light. Low Insulation Faults Mode Max. Range: 20 Km. etc. Make: Radio detection /Stanlay TDR ST90/APLAB 3039/ANDIG 5559 or better. Inspection: RITES/Consignee.	No.	1,58,187.00

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1610	Supply of Road Measuring Cycle , made of Aluminum with 05 digit counter, foldable with bag. Item to be supplied after successful demonstration and Approval of Railway. Inspection: RITES/Consignee.	No.	5,421.00
1611	Supply of hand operated track drilling machine for bonding holes. Inspection : RITES/Consignee.	No.	6,855.00
1612	Supply of titanium coated 7.2 mm. drill bits of Bosch/Addision make. Inspection: RITES/Consignee.	No.	145.00
1613	Supply of Various Tools for S&T installation Supply of Tool Kit as under – 1. Standard Tool Bag (CANAVAS) - 1 No. 2. Soldering Iron (Make - Solderm/Philips) - 60W / 230V - 1 No. 3. Digital Multimeter - True RMS Meter (Philips / Fluke / Rishabh Rish 18S) Upto 20 Megaohm, 10A, 5kHz, 2mV to 750V AC, 200V DC - 1 No. 4. Screw Driver set of 6 pieces (Taparia Make) - 1 No. 5. Cutting plier 6" (Taparia Make) - 1 No. 6. Side Cutter (Wire cutter) 6" (Taparia Make) - 1 No. 7. Nose plier 6" (Taparia Make) - 1 No. 8. 8. Wire stripper (Taparia Make) - 1 No. 9. 9. Fiber tape 3 m. length - 1 No. 10. Scale 6" (for measuring tongue rail opening) - 1 No. (Transparent Plastic Material) 11. Pop spanner wrench 6 mm. to 22 mm. (Auto adjustable spanner) of Taparia make - 1 No. 12. Pop spanner wrench 10 mm. to 30 mm. (Auto adjustable spanner) of Taparia make - 1 No. 13. Pop spanner wrench 15 mm. to 41 mm. (Auto adjustable spanner) of Taparia make - 1 No. 14. Hacksaw frame with blade 6", 4" width (for cuffing cable) - 1 No. 15. Hammer 3.0 lb - 1 No. 16. Chisel 6" (for cutting bond wire) - 1 No.	Set.	42,562.00

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	17. Poker 8" (for removing bond wire, bond pin) - 1 No. 18. Heavy duty Screw Driver 12" with plastic handle (Taparia Make) - 1 No. 19. Test piece (Point wedge piece) - 1 No. 20. Multi-color rechargeable LED torch light - 1 No. 21. Universal key - 1 No. 22. Box spanner for 6 way terminals (13 mm.) - 1 No. 23. Nylon brush (for cleaning purpose) - 1 No. 24. Sealing plier - 1 No. 25. Crimping Tool (1.5 to 16 Sq.mm.)- 1 No. 26. Feeler gauge - 1 Set. 27. TSR Meter (for testing condition of track circuit) - 1 No. 28. Wooden Block (60 mm. x 60 mm.) - 1 No. 29. Track shorting clips - 1 No. 30. Tester - 1 No. 31. Flat file 12" length x 1" width - 1 No. 32. Clip on meter - 1 No. 33. Digital Earth meter - 1 No. 34. Meggar - 1 No. Inspection: RITES/Consignee.		
1614	Supply of Distilled water plant/Demineralised plant of 10 Liter/Hr., Make: Laptech/shivam or similar. Inspection: RITES/Consignee.	No.	27,209.00
1615	Supply of Tool kit for HASSDAC/SSDAC consisting of the following. a) Digital multi meter - Model 187 of Fluke make or Model Rish 18S of Rishabh Make or similar suitable for Digital Axle Counter. b) Train simulator. c) Extender card. d) Dummy Wheel. e) Square Drive T Handle - Model 1733 of Taparia Make. f) 19mm, 3/8 inch square drive socket made of Chrome Vanadium steel - Model 19H of Taparia make or similar. g) Ring Spanner (Flat) of size 17 x 19 mm. - Jhalani Make or equivalent. h) Double ended open jaw spanner no. 895 (Deflector plates). i) Spanner of size 17 x 19 mm. - Jhalani or Everest or	Set.	1,31,943.00

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	<p>Taparia Make.</p> <p>j) Spanner of size 19 x 24 mm. - Jhalani or Everest or Taparia Make.</p> <p>k) Ring Spanner of size 24 x 26 mm. - Jhalani or Everest or Taparia Make.</p> <p>l) Screw Driver No. 902 - Taparia Make or equivalent.</p> <p>m) Screw Driver No. 935 - Taparia Make or equivalent.</p> <p>n) Carrying bag for tools.</p> <p>Inspection: RITES/Consignee.</p>		
1616	<p>Supply of Optical Time Domain Reflectometer (OTDR) as per TEC Spec No. TEC/GR/TX/OTD001/05/SEP-19 or latest. Make: Yokogawa/Fuzikura/Sumimoto or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	2,81,867.00
1617	<p>Supply of Standing wave power meter for measurement of RF power and SWR in 5 watt and 25 watt VHF set frequency range 1.8 to 200 MHz with UHF female connector with connecting cable for measurement of power and Dummy load. Make: Nissei/Diamond or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	18,259.00
1618	<p>Supply of Automatic Fusion Splicer for single mode Optical fiber cable, along with accessories as per TEC spec. TEC/GR/TX/OSM - 001/04/SEP-12 or latest of make Superior/Fujikura or similar. Consignee shall approve the supply only after successful demonstration at site.</p> <p>Inspection: RITES/Consignee.</p>	No.	4,29,545.00
1619	<p>Supply of Ferrule/Tube Printer & label printer along with 5 nos. of Tap cartridge as per specification as under, Compatible Tube Diameter 2.5-6.5 mm., supported tube type - PVC, max. print height for tube - 6mm., tube print speed – 40 mm./Sec, multi-line printing, Maximum Tape Width Up to 36 mm., Label Print Resolution-360dpi, Label Print Speed 60 mm./sec Cutter Auto and half cutter, Interface- USB/Keyboard/Wi-Fi Make: Brother (Model No. PT-E850TKW) or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	56,980.00

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1620	<p>Supply of Barcode/Thermal Printer; Direct Thermal/Thermal Transfer or both, Resolution: 203 (dpi) or higher, print speed: 125 mm./sec or higher, RAM: 128 MB or more, Media form: Roll. It contains 02 nos. synthetic metallic roll along with each printer. Make: TVS/TSC/LENOVO or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	16,377.00
1621	<p>Supply of LaserJet Mono Printer for A4 Paper Size as per following specifications. Connectivity USB & Wi-Fi, monochrome, Mobile Printing Capability through smart app, Print Speed Black - Up to 21 ppm., Duty Cycle monthly - Up to 10,000 pages, function type - print only. Make: HP/Canon/Epson or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	13,889.00
1622	<p>Supply of desktop/All in one PC as per following specifications. Intel i3, 12th generation or better, RAM - 8 GB, SSD – minimum 256 GB, display - 21.5 inch, Window-10 or higher, graphics Type - integrated, Keyboard & mouse - wireless. Make: HP/Lenovo/Dell or better. Inspection: Consignee.</p> <p>Inspection: RITES/Consignee.</p>	No.	50,793.00
1623	<p>Supply of desktop/All in one PC as per following specifications. Intel i7, 10th generation or better, RAM - 16 GB, SSD – minimum 256 GB, HDD - 500 GB, display - 27 inch, Window-10 or higher, graphics Type - integrated, Keyboard & mouse-wireless. Inspection: RITES/Consignee. Make: HP/Lenovo/Dell or better.</p>	No.	96,538.00
1624	<p>Supply of Industrial vacuum cleaner wet & dry duty with 220 millibar vacuum pressure, air flow rate 54 Liters/sec, suction hose length 3.5-meter, floor nozzle size -350 mm, power cord length - 10 meter with 01 no motor of 1350 watt capacity with container capacity 35 Liter with filter dust class - G2 & filter area - 1 sq. meter with stainless steel body & container and operated voltage - 230 V AC. Make: Eureka Forbes/Panasonic/Deerma/Dyson/Inalsa or better.</p> <p>Inspection: RITES/Consignee.</p>	No.	17,282.00

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1625	Supply of heavy duty Corded electric hand operated drill machine , power rating: minimum 500 watt, max speed: 3000 RPM, 1.5/13 mm. Chuck capacity, Forward/Reverse Rotation. Make: Bosch GBM 13RE or better. Inspection: RITES/Consignee.	No.	3,972.00
1626	Supply of Chargeable Battery operated portable Cordless drill machine operated with minimum 18V, power rating : minimum 500 Watt, max speed : 1900 RPM, 1.5/13 mm. Chuck capacity, 21/54/- Nm, Forward/Reverse Rotation, LED Light, 2 Gear + 2 x battery GBA 18V, minimum 1.5 AH & Charger GAL12-40. Inspection: RITES/Consignee.	No.	9,345.00
1627	Supply & installation of Single User ELD (Electronic License Delivery) with 3 years Subscription AutoCad LT 2024 commercial or latest. Note: In case of compatibility issue of the AutoCad with desktop/Laptop system, the older version can also be accepted. Inspection: RITES/Consignee.	No.	69,332.00
1628	Supply & installation of Single User ELD (Electronic License Delivery) with 3 years Subscription AutoCad 2024 commercial or latest. The software includes Architecture, Mechanical, Electrical, Map 3D, MEP (Mechanical, Electrical & plumbing), Plant 3D, Raster design, Integrated work flow etc. The tool set also includes any specific requirement as per requirement of user. Note: In case of compatibility issue of the AutoCad with desktop/Laptop system, the older version can also be accepted. Inspection: RITES/Consignee.	No.	2,11,954.00
1629	Supply of Aluminium double Sided A shape Platform step ladder as per the following specifications as under, Capacity minimum 150 kg, Step Width minimum 2.5 Inch, Normal Size (height without elongation) - minimum 8 foot, Number of steps minimum 6 nos., ladder Width minimum 17.5 Inch, Reach height minimum 12 foot. Inspection: RITES/Consignee.	No.	7,751.00
1630	Safety Tool Kit Bag with LOGO S & T Dept., Eastern Railway. Make : Stanley Specifications : Dimension -45 x 30 x 45 cm., Load capacity – 15 kg., Material -Nylon, Weight – 1200 gm. Inspection: RITES/Consignee.	No.	4,305.00

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1631	Supply of Battery Backup Head Light Rechargeable Head Focus 500 mtr. Range 8 Hours Battery Backup Head Light. Make: Ascentech or Similar. Inspection: RITES/Consignee.	No.	1,872.00
1632	Supply of Color LCD Thermal imager. Make - TESTO, FLUKE. Inspection: RITES/Consignee.	No.	80,821.00
1633	Supply of Steel stool , 1 ft. by 1 ft. size, 1.5 ft. height, laminated top. Inspection: Consignee.	No.	1,262.00
1634	Supply of rechargeable solar 100 Watt LED Flood light for outdoor use .Specification: LED light, Lithium ion battery, capacity 13000-16000 mAH, Lighting color - cool white, Lumens - 9000 min., Light beam angle – 120 degree, dual mode battery charging - 230v ac & solar power, minimum IP65. Inspection: RITES/Consignee.	No.	15,028.00
1635	Supply of magnifying glass 10 X 80 mm. Inspection: Consignee.	No.	359.00
1636	Supply of Surveyor's Wheel (rodometer). Inspection: RITES/Consignee.	No.	4,205.00
1637	Supply of pH / TDS meter of reputed make like Wasser Professional or similar. TDS meter shall have professional grade titanium electrode with auto temperature correction for higher accuracy. Inspection: Consignee.	No.	990.00
1638	Supply of Electric Track Drilling machine shall be suitable for operating on 110V, 50Hz AC / DC fully insulated and no load RPM shall be 1900 / 1000 and the power input is 550W/. Machine with suitable interchangeable track mounting stand and drilling to be designed with adjustable facility and along with a set of 20 no's of 7.2 mm. dia. Bosch MSS drill bit, Drill check dia. 13 mm and drilling dia. in steel 8 mm./13 mm. along with packing accessories. Inspection: RITES/Consignee.	No.	22,389.00
1639	Supply of Hydrometer as per IS: 3104 (Part II) -1982 or latest. Inspection: Consignee.	No.	274.00

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1640	Supply of Network Cable Tester Similar to Fluke Networks - MS2-100 - MICROSCANNER2 cable verifier [Detailed Specification in Technical Document]. Inspection: Consignee.	No.	34,467.00
1641	Tool Kit consisting of Optical power meter (Fibershot9990V), Multimeter (Fluke101), Ethernet Crimping Tool (Standard Make) Console cable (Cisco-RJ45-DB9), Wrist ripper (Standard Make), Universal Spanner Set (Taparia), Screw Driver Set (Taparia – 7 Pieces set), Cutting plier (Taparia), Wire Stripper, Industrial grade USB to Serial cable with all accessories or Similar. [Detailed Specification in Technical Document]. Inspection: RITES/Consignee.	No.	24,805.00
1642	Supply of Laser Source meter as per Specification No. TEC/GR/TX/OPM-001/04/NOV-13 of model Viavi OLS 35 or similar. Inspection: RITES/Consignee.	No.	87,947.00
1643	Supply of Power meter as per specification TEC/GR/TX/OPM-001/04/NOV-13 of model Viavi OLS 35 or Similar. Inspection: RITES/Consignee.	No.	32,338.00
1644	Supply of 3 in 1 modular crimping tool for RJ-45, RJ-11, CAT-5/CAT-6 Ethernet cable cutter crimping tool IMP made of Standard, 0-Link, i-Ball, Belkin, Tech NXT, Fluke or Terabyte make. Inspection: Consignee.	No.	569.00
1645	Supply of Digital Transmission Measuring Set as per Specification No. IRS:TC 43-87 APLAB or similar. Inspection: RITES/Consignee.	No.	27,591.00
1646	Supply of digital Psophometer as per specification are as under, Frequency Range - 15Hz to 6KHz (Weighted Mode) as specified by CCITT & 15 Hz to 10 KHz (Un weighted Mode); Measuring Range -90 dBm to 0 dBm & 30µV to 1V; Min. Measurable Value 10µV (-98 dBm); Calibration Accuracy at 800 Hz - 0 to -60 dBm : ±0.5 dB & -60 to -90 dBm : ±1.0 dB; 3½ Digit LCD type Display; Input Impedance - 600 ohms, 1120 ohms balanced, Recorder Facility; Power - 100µA at 0 dBm 1120 impedance, 230V AC ±10%, 47-53 Hz. Optional 115 V AC ±10%, 57-63 Hz. Internal rechargeable 6V battery. External battery operation. Make - Aplab 1072 or better. Inspection: RITES/Consignee.	No.	51,213.00

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1647	Supply of Krone tool for inserting wire into insulation-displacement connectors. Inspection: Consignee.	No.	404.00
1648	Supply of Telecom Optical Fiber Tool Kit comprising the minimum following equipment. i) Fiber Cleaver 18000 Cuts Type, ii) Tweezer, iii) Cable Sheath Jacket Stripper, iv) Buffer Tube/ Drop Cable Stripper, v) Utility Knife, vi) Screw Driver with Bits, vii) Alcohol dispenser, viii) Cleaning Wipes (Set of minimum 100 Nos.), ix) Visual Fault Locator 1 mW, x) Plier Needle Nose, xi) Long Nose Plier, xii) Allen Key Set 4 to 10 mm., xiii) Drop Cable Stripper, xiv) Cable Cutter upto 25 mm., xv) Fiber Protection sleeves, set of 100, xvi) Fiber Power meter with adopter, xvii) multi-purpose saw, xviii) Number sticker, xix) spanner set, xx) adjustable wrench, xxi) curved claw hammer, xxii) head light, xxiii) brush, xxiv) Polishing disk, xxv) 1 no. Carry Bag. Inspection: RITES/Consignee.	No.	25,316.00
1649	Supply of Blowers with dust extraction, Bosch Fiber Body Handheld Electric Blower, Warranty 6 months, make: Bosch or similar, Model: GBL 82-27 or similar. Inspection: Consignee.	No.	3,350.00
1650	Supply of BOSCH All-in-One Hand Tool Kit, 108 Pieces, Ratchet Screwdriver & Allen Key, Multiple Drill Bits, Additional Performance Tool, Blue, Hard Case. Inspection: Consignee.	No.	2,787.00
1651	Visual Fault Locator 30KM, VFL Fiber Optic Tester Kit Include Single Mode 9/125 um FC Male to LC Female Adapter, Fiber Light Pen for Fiber Network Cable Test. Inspection: Consignee.	No.	6,040.00
1652	Supply and Installation of HP/OEM approved document Scanner/Printer/Fax A3/Legal size Resolution in dpi 300, speed in PPM 20, ADF capacity 50, Flat Bed Size NA, Document size Legal or latest or similar. Inspection: RITES/Consignee.	No.	71,610.00

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CHAPTER - 17 :
DOCUMENTATION
Signaling Drawings SIP, RCC, SWR, SWRD etc.

SN.	Description	Unit	Rate
1701	<p>Preparation and Supply of new Signal Interlocking Plan (SIP) based on approved Engineering Scale Plan (ESP) for station, LC Gate, IBS & ABS.</p> <p>Note: The contractor shall supply tentative SIP 2 Copy for checking in paper print and after correction if any, submit (04 copies) for approval of Railway along with AutoCad file. After getting approval on tentative SIP, the final SIP shall be submitted in tracing paper (01 copy). 6 Copies in paper print/Ammonia print of Final Approved SIP to be Submitted to railways. Scanned copy of approved SIP and the AutoCAD file final version to be shared as soft copy with Railway in a suitable storage device. Inspection: Consignee.</p>		
	i) Station, LC Gate, IBS & ABS Upto 04 lines.	Per Strn.	28,262.00
	ii) Station, LC Gate, IBS & ABS Upto 05 to 08 lines.	Per Strn.	77,573.00
	iii) Station more than 8 lines.	Per Strn.	76,829.00
1702	<p>Preparation and Supply of Route Control Chart (RCC) upto 100 routes and other S&T drawings like point Control Chart, Crank handle Control Chart, LC gate Control Chart, Indirect Lock Table, based on approved SIP and Dispensations, etc. by AutoCad/Sig Date Operator. RCC UPTO 100 Routes shall be prepared through Sig DATE.</p> <p>Note: Contractor to supply paper print (02 copies) for approval of the Railway. If corrections are shown in RCC, fresh paper print (02 copies) shall be given by the contractor incorporating the changes made. The final RCC shall be submitted in tracing paper (01 copy) for approval as completion. 6 copies in paper print/Ammonia print of final approved RCC to be submitted to Railways. The contractor should convert the pdf file (Generated by Sig DATE) to the AutoCAD file version and share the soft copy of SIP in Sig DATE, RCC in pdf, RCC in Auto CAD to Railway. Inspection: Consignee.</p>	Per Route	891.00

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1703	<p>Preparation and Supply of Route Control Chart (RCC) other S&T drawings like point Control Chart, Crank handle Control Chart, LC gate Control Chart, Indirect Lock Table, Sub route Locking Table, Route section plan etc. based on approved SIP and Dispensations. RCC more than 100 routes.</p> <p>Note: Independent Checking & Verification of TOC/RCC by Design Engineer at 02 Levels, having IRSE /IRSTELO License holder. Contractor to supply paper print (02 copies) for approval of Railway. If corrections are shown in RCC, fresh paper print (2 copies) shall be given by the Contractor incorporating the changes made. The final RCC shall be submitted in tracing paper (01 copy) for approval as Completion. The final TOC/RCC shall also be independently Checked & Verified Design Engineer at 02 Levels, having IRSE /IRSTELO License holder. 6 copies in paper print/Ammonia print of final approved RCC to be submitted to Railways. Thereafter the scanned copy of approved RCC (in tracing) and the AutoCAD file version to be shared as soft copy with Railway. Inspection: Consignee.</p>	Per Route.	1,734.00
1704	<p>Alteration in RCC- The contractor shall supply the RCC paper print (02 copies) for approval of the Railway. If corrections are shown in RCC, fresh paper print (2 copies) shall be given by the Contractor incorporating the changes made. The final RCC shall be submitted in tracing paper (01 copy) for approval as Completion. 6 copies in paper print/Ammonia print of final approved RCC to be submitted to Railways. Thereafter the scanned copy of approved RCC (in tracing) and the AutoCAD file version to be shared as soft copy with Railway.</p>	Per Route.	800.00
1705	<p>Preparation and Supply of station working rule (SWR) in English based on approved ESP, SIP and provisions of GR/SR, IRSEM and other Railway policies issued from time to time.</p> <p>Note: The contractor shall supply station working rule paper (02 copies) and MS office word version to be shared as soft copy with Railway. SWR to be prepared by Ex. TI/Ex. SSE/JE(Sig)/Ex. SSE/JE (Drg). 6 copies in paper print/Ammonia print of final approved RCC to be submitted to Railways. Inspection: Consignee.</p>	Per Stn.	13,531.00

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1706	<p>Preparation and Supply of station working rule Diagram (SWRD)/Gate working Rule Diagram (GWRD) based on approved Signal Interlocking Plan (SIP) for station, LC Gate, IBS & ABS. Inspection: Consignee.</p> <p>Note: The contractor shall supply tentative SWRD/GWRD in paper print (04 copies) for approval of Railway along with AutoCad file. After getting approval on tentative SWRD, the final SWRD/GWRD shall be submitted in tracing paper (01 copy). After getting approval, 6 copies in paper print/Ammonia print and scanned copy of approved SWRD and the AutoCAD file final version to be shared as soft copy with Railway in a suitable storage device.</p>		
	i) Station, LC Gate, IBS & ABS Upto 04 lines.	Per Stn.	16,056.00
	ii) Station, LC Gate, IBS & ABS Upto 05 to 08 lines.	Per Stn.	34,815.00
	iii) Station more than 08 lines.	Per Stn.	36,846.00
1707	<p>Preparation and Supply of Miniature Signal Interlocking Plan (SIP)/schematic diagram based on approved Signalling Plan (SIP). Inspection: Consignee.</p> <p>Note: The contractor shall supply drawing in paper print (04 copies) and one copy tracing along with AutoCad file and pdf copy in suitable storage device</p>		
	i) Station Upto 04 lines.	Per Stn.	6,450.00
	ii) Station Upto 05 to 08 lines.	Per Stn.	9,300.00
	iii) Station more than 08 lines.	Per Stn.	12,800.00
1708	<p>Design in AUTOCAD and submission of two draft copies of Complete Outdoor Particular such as Cable Route Plan, Cable Corage Plan, Cable Termination Rack/Power Rack Particular, Track Bonding, and Location Box Particular along with NI wiring/NI Relay Disposition chart. One copy will be returned either duly approved or for resubmission for approval after incorporating the changes as required by Railways. After approval, one approved Tracing film copy & six copies (Ammonia Print or print as approved by Railway) of above drawings along with six copies of SIP and SWRD in Plastic Covers. All above drawing to be scanned including SIP & SWRD, bound in 6 different booklet with Rexin Cover (Each booklet shall have minimum 10 spare plastic transparent sheet) and a soft copy to be submitted in a Pen Drive for following categories of Stations:</p> <p>Inspection: Consignee.</p>		

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a)	Stations up to 4 lines.	Set.	69,922.00
b)	Stations having 5 to 8 lines.	Set.	1,36,267.00
c)	For a Mid-Section LC Gate.	Set.	41,075.00
d)	ABS Double line.	Per Block Section.	55,088.00
e)	ABS three Line with 3rd as reversible line or 4 Line section.	Per Block Section.	88,505.00
1709	Design of Cable Route Plan (Distant to Distant) including details of all track crossing/Horizontal boring/Cable Loop/Cable Joints etc. in AUTOCAD & submission of colored paper copies for approval. After approval, Auto Cad copies to be submitted in USB pen drive along with approved copy in Tracing film and six copies of final approved drawing in plastic cover (Ammonia Print or print as approved by Railway) in properly bound booklet along with its scanned copy. Inspection: Consignee.		
a)	Stations up to 4 lines.	Set.	6,594.00
b)	Stations having 5 to 8 lines.	Set.	23,610.00
c)	For a Mid-Section LC Gate.	Set.	2,557.00
d)	ABS Double line.	Per Block Section	4,556.00
e)	ABS three Line with 3rd as reversible line or 4 Line section.	Per Block Section	10,050.00
1710	Design of Cable Distribution Plan in AUTOCAD & submission of Three paper copies for approval as per the practice of SCR. After approval, AUTOCAD copies to be submitted in USB pen drive along with approved copy in Tracing film and six copies of final approved drawing in plastic cover (Ammonia Print or print as approved by Railway) in properly bound booklet along with its scanned copy. Inspection: Consignee.		
a)	Stations up to 4 lines.	Set.	6,194.00

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b)	Stations having 5 to 8 lines.	Set.	18,518.00
c)	For a Mid-Section LC Gate	Set.	2,557.00
d)	ABS Double line.	Per Block Section	4,520.00
e)	ABS three Line with 3rd as reversible line or 4 Line section.	Per Block Section	8,594.00
1711	Design of Track Bonding Plan in AUTOCAD & submission of Three paper copies for approval. After approval, AUTOCAD copies to be submitted in USB pen drive along with approved copy in Tracing film and six copies of final approved drawing in plastic cover (Ammonia Print or print as approved by Railway) in properly bound booklet along with its scanned copy. Inspection: Consignee.		
a)	Stations up to 4 lines.		5,745.00
b)	Stations having 5 to 8 lines.	Set.	13,342.00
1712	Design of Location Box Drawings in AUTOCAD (Including Contact Analysis, Fuse Particulars, cable particulars etc.) and submission of Three paper copies for approval in A4/A3 white papers. After approval, AUTOCAD copies to be submitted in USB pen drive along with approved copy in Tracing film and six copies in Ammonia print of final approved drawing in plastic cover in properly bound booklet along with its scanned copy. Inspection: Consignee.	Per Location Box	579.00
1713	Supply of Original Tracing of Location Box Drawings (Including Contact Analysis, Fuse Particulars etc.) along with softcopy in CD after incorporating all the corrections. Inspection: Consignee.		
a)	Stations up to 4 lines.	Per Station.	1,576.00
b)	Stations having 5 to 8 lines.	Per Station.	3,365.00
c)	For a Mid-Section LC Gate.	Per LC Gate.	655.00
d)	ABS Double line.	Per Block Section.	1,092.00

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e)	ABS three Line with 3rd as reversible line or 4 Line section.	Per Block Section.	2,182.00
1714	Scanning of Documents from the approved Tracing film		
a)	A3 Page.	Per Page.	8.00
b)	A2 Page.	Per Page.	35.00
1715	Fabrication and Supply of Different Boards. Inspection: Consignee.		
a)	Preparation of Station Working Order Diagram (SWOD) on non-transparent acrylic sheet of thickness 4mm with aluminium beading and hanging support with screen printing, lettering and yard diagram.	Per Yard/ Per Station	9,303.00
b)	Preparation of Track Bonding Diagram on non-transparent acrylic sheet of thickness 4mm with aluminium beading and hanging support with screen printing, lettering and bonding diagram.	Per Yard/ Per Station	9,204.00
c)	Fabrication, supply, and designing of board of size 36" x 24". (The details to be printed on board shall be collected from Engineer-In charge)	No.	4,717.00
d)	Manufacture and supply of laminated board of size 45 cm. x 60 cm. and 12 mm. thick with printed instructions as directed by engineer in-charge.	Per Board.	2,247.00
1716	Supply of thick Kodak photo paper with lamination and different lettering in languages and required size as per the instructions of site in-charge.	Sq.m.	5,626.00
1717	Making photocopies & binding of the SWR literature in English/Hindi/Diglot form as per Railway practice.	Each Booklet.	177.00

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CHAPTER - 18**Transportation**

SL.No.	Description	Unit	Rate
1801	Transportation of materials from any Stores to Site and vice-versa including loading and unloading.		
a)	Lead up to 50 Kms.	PTPK.	11.00
b)	Lead above 50 Kms.	PTPK.	7.00
1802	Arranging unskilled labour at S&T Stores for loading/unloading/stacking of departmental materials.	Man Day.	587.00
1803	Segregation, stacking, loading, unloading and transportation in a 6 MT capacity vehicle from Store to Scrap Depot or Store to Store within a city as per instruction of Engineer In charge.	Per Load.	10169.00

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CHAPTER - 19**Miscellaneous & NI related items**

SN.	Description	Unit	Rate
1901	Supply and fixing of Netlon wire mesh of all windows and ventilators as per instructions of Engineer-in-charge including labour charges. Providing and fixing fly proof galvanized M.S. wire gauge to windows and clerestory windows using wire gauge with average width of aperture 1.4 mm in both directions with wire of dia. 0.63 mm all complete. Inspection: Consignee.	Per Sq. Ft.	420.00
a)	With 2nd class teak wood beading 62 X 19 mm.	Sq.m.	898.00
b)	With 12 mm mild steel U beading	Sq.m.	619.00
1902	Providing the services of Computer oriented Technical manpower to carryout works like drawing, computation, write up etc., between 08:00 Hrs. to 20:00 Hrs. of the day with all expenses of transportation, accommodation, food, consumables etc., with all ascents, descents, taxes, octario, cess, fees, duties with contractors cost etc., as per special conditions/specifications/ regulations and as directed by engineer in charge.	Man Day.	777.00
1903	Provision of Lookout person round the clock in 12 Hours shift beat from Up Home Signal to Down Home signals to avoid theft of signaling assets.	Man Day.	634.00
1904	Arranging of skilled and unskilled workers with required tools during point blocks for removal of S&T assets to give way for track machines and re-fixing the removed assets after insertion/removal of point.	Per Job.	4,063.00
1905	Provision of one skilled and 2 unskilled staff round the clock to attend to teething trouble of the installation along with SI/CSI after the installation has been brought into commissioning. The work includes routine maintenance, failure restoration as per the direction of the SI/CSI.	Per month.	64,340.00

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Items related to Non Interlocking works			
1906	Provision of temporary signalling arrangement during Non-Interlocked working of Signals and Points, such as erection and wiring of temporary relay racks and wiring of relays, SM's slide instruments, wiring alterations in the cable termination rack, apparatus cases, signals, Control panel etc., as per the instructions of Railway representative at site. All other miscellaneous material shall be supplied e by contractor.	LS.	25,212.00
1907	Provision of PA system and telephone communication at stations/ tents as per the instructions of the Railway representative at site. Signalling cables available may be used for the communication. (Hiring of PA system equipments shall be done by the Contractor and telephone	Per Tent Per Day.	1,227.00
1908	Fabrication, supply and installation of NI panel of size 12" x 24" x 12" made in 18 gauge MS sheet.	No.	12,280.00
Arranging of sufficient staff by contractor and giving test to the railway in charge in the following stages as per instructions.			
1909	Making a simulation test board plywood 3 mm. approximately size 1.5 x 1 meter. Painted according to the yard layout fixing 1-way/2-way switches in its approximate position for track circuit, point setting lamp holders and lamps. Carrying out testing using simulation board after energizing of internal circuit.	Per Road.	3,859.00
1910	Testing to check integrity of gears (Field correspondence) i.e. One Signal Unit (with or without route)/Track Circuit/LC Gate/One Point machine/One Block Instrument/One Slot etc. This item will be applicable after one round of complete testing of gears by the contractor in presence of the Railway Supervisor.	Each.	102.00
1911	Testing and commissioning the entire signalling installations jointly with the Railway representative at site at the Stations/LC gates/IBS/Auto Signalling covered under various schedules of the Contract, and ensuring that all the signalling gears are installed and adjusted as per the existing rules.		
	a) Testing and commissioning of Stations. (up to 5 roads)	Per Station.	29,150.00

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	b) Testing and commissioning of Stations. (with more than 5 roads)	Per Station.	50,932.00
	c) Testing and commissioning of LC gates/IBS Hut/Auto Hut.	Per LC/Per Hut.	11,272.00
1912	Shifting of existing working functions like signals/Shunt/ Calling on/Points/Track circuits etc. from old cable to new laid cables carefully without affecting the traffic under disconnection/blocks, This work also includes releasing the existing tail cables from the relevant gears and re surfacing the earth excavated as instructed by Railway representative at site.	Per Cable.	2,103.00
1913	Miscellaneous arrangements for NI period per day comprising of a) Temporary goomty/Tent of dimension at least 12'x12' at both side of the station yard and at central panel building, furnished with one table, six chairs, emergency light and mosquito repellent. b) Sufficient temporary lighting arrangement throughout the yard from Sunset to sunrise one day prior, during and post NI work. This includes provision of minimum two DG set of minimum 7.5 KVA capacity and halogen/LED flood lights. The DG sets, consumables materials such as Diesel, Operator etc. has to be arranged by the contractor at his own cost. c) Provision of PA System at both the end of the yard, including at central location if required. d) Resting arrangement for at least 16 staff at night. e) Vehicle for transportation for to and fro movement of S&T staff during NI period. f) Manning of adjacent station to be done by contractor. g) Provision of printing/Xerox copies of drawings, wiring diagram, CTR/ Location box terminal chart, point wiring, MSDAC/track circuit wiring, NI program, Signal wiring, track bonding plan, etc. in a plastic folder. No. of copies depends upon the number of team formed for NI and as per instruction of officer in charge of NI. h) This also includes Free home & Free Starter wiring for NI as per the instruction of site engineer and any other works as assigned from time to time by Railway engineer.		
a)	Up to 200 routes.	Stn.	1,06,137.00
b)	More than 200 to 500 routes.	Stn.	1,41,516.00

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1914	Adjustment, testing and commissioning of complete Interlocking at proposed station as per approved circuit diagram with the satisfaction of Railway representative including all signal equipment erected in location, goomties, relay room and other related work not covered under schedule but required for the commissioning and post commissioning of works of stations. i) Filling the data in the maintenance register which contractor is to be supplied. ii) Shifting of TLBI/ DLBI /BPAC etc. instrument and fixing and wiring. iii) Painting & Lettering of leftover S&T gear and Lettering on Buildings as required for each station as per requirement. iv) Adjustment of Track circuit/Axle counter. v) Changing of signal number during NI. vii) Placement of cross mark on unused signals etc.		
a)	Up to 200 routes.	Stn.	55,543.00
b)	More than 200 routes.	Stn.	83,315.00

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CHAPTER - 20 :
RELEASING OF S&T GEARS

Releasing of the following equipments without causing damage, stacking neatly at a centralised place near the site of work as shown by the in charge, and handing over the same to the Stores depot as per the inventory made.

SN.	Description	Unit	Rate
2001	Releasing hand plunger lock single/double along with switch extension pieces, stretcher bars, point/ trap indicators and other fixtures carefully without damaging the materials, accounting and stacking them neatly at a place as instructed by Railway representative at site.	Set	1,791.00
2002	Releasing of all the S & T gadgets at LC gates like SM slide instruments, illuminated diagram board, block counter, termination box, telephones, emergency key box, LC gate barriers, cranks, wire rope etc. and concerned wiring, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing any holes on the walls/ floor are to be filled with cement mortar and plastered.	Set	7,164.00
2003	Releasing of existing apparatus cases (Full/ Half/ Quarter size) without damage after releasing the shelf planks, Terminal blocks, Fuse Blocks, Terminal Boards, Relays of all types EKTs, Secondary Cells, power equipments, 'E' type locks, etc., and breaking the concrete foundation. After releasing, the resultant pits are to be closed and consolidated by ramming and levelling. The released materials shall be accounted for and stacked at a place as instructed by the Railway representative at site.	No.	2,254.00
2004	Breaking of concrete and releasing of STOP board/Warning board/ LEGEND boards along with rails, accounting and stacking them neatly at a place as instructed by Railway representative at site. Also the resultant pits shall be re-surfaced and consolidated by ramming and levelling.	No.	1,185.00

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2005	Breaking of concrete and releasing the existing cable termination boxes, after releasing the base plank, Terminal blocks, Fuse Blocks, Terminal Boards, cut rails, pipes, etc., closing the resultant pits and consolidating it by ramming and levelling. The released materials shall be accounted and stacked neatly at a place as instructed by the Railway representative at site.	No.	1,504.00
2006	Releasing of existing Block Instruments (all types), Block counters, batteries, block filter, block bell equipment etc., carefully without any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site.	No.	1,329.00
2007	Releasing of existing relay racks/ cable termination racks along with all the terminals, fuse blocks, relays, with jacks, holding clips etc., 50 way boards, terminals, connecting wires, cables etc., carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing, the floor shall be levelled and cement plastered.	Per Rack.	1,483.00
2008	Releasing of existing SM's control panel including base plank, and other gadgets connected very carefully without causing any damage to the panel, accounting and stacking them neatly at a place as instructed by Railway representative at site. The resultant pit in the flooring shall be removed of all cable bits, levelled and cement plastered.	Set.	3,942.00
2009	Dismantling and releasing of ground lever frame along with all connected gadgets like lever locks, E type locks, HP locks, etc., accounting and stacking them neatly at a place as instructed by Railway representative at site. The work also involves breaking and removal of concrete foundation and the resultant pit shall be filled and consolidated by ramming and levelling.	No.	4,161.00
2010	Releasing of existing Axle Counter field equipment (transmitters & receiver coils) on the rails at the entry/exit track circuits without causing any damage. Excavating the under the track for removing track devices, connecting cables and duly covering the cable duct. Disconnecting and removing of Amplifier (electronic junction box and other associated equipment from the location box and transporting to a central location for account.	Set.	946.00

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2011	Dismantling and releasing of existing Color light Signals complete (up to 4 aspects) with or without Route Indicators, calling on signals, shunt signals etc., carefully without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work includes breaking the concrete foundation, closing the resultant pit and resurfacing it by ramming and levelling.	No.	2,311.00
2012	Releasing of existing Route Indicators of different types including tail cables, carefully without causing any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site.	No.	1,156.00
2013	Releasing of existing ground type shunt signals along with surface base, signal post etc. carefully without any damage, accounting and stacking them neatly at a place as instructed by Railway representative at site. The work also includes breaking and removal of concrete foundation and refilling of the resultant pit by ramming and levelling.	No.	1,646.00
2014	Dismantling and releasing of existing Point machines (all types) including ground connections and other accessories available complete without any damage to the gadgets, accounting and stacking them neatly at a place as instructed by Railway representative at site.	No.	2,023.00
2015	Releasing of existing TLD boxes with stumps terminals after releasing all the bond wires. The released materials shall be accounted and stacked neatly at a place as instructed by the Railway representative at site.	No.	120.00
2016	Releasing of lever frames up to 40 levers including lever illumination panel, cabin lever, indication board, lever lock circuit controllers, down rods, locking bay, complete with locking materials etc.	LS.	6,933.00
2017	Releasing Secondary cells and battery stands available in the battery room along with connecting strips, wires and terminal boxes carefully without causing any damage to the batteries, accounting and stacking them neatly at a place as instructed by Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Set.	4,045.00

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2018	Release of all Power equipments (IPS, charger etc.) including equipment stands, terminal boards, power panel etc., in the IPS room carefully without causing any damage to the equipments after disconnecting all the supply wires. The released equipments shall be accounted for and stacked at a place as instructed by the Railway representative at site. After releasing any holes in the walls/ flooring shall be filled with cement mortar and plastered.	Set.	9,475.00
2019	Releasing of existing control equipments - complete including way station equipments, telephones, power supply for way station equipment and telephones, along with all wiring, accounting and stacking them neatly at a place as instructed by Railway representative at site.	Set.	4,507.00
2020	Releasing of trestles 1/2 way.	No.	64.00
2021	Releasing of trestles 3/4 way.	No.	88.00
2022	Releasing of point rodding.	Per Rod/ Per meter.	11.00
2023	Releasing of 'A' type foundations.	No.	474.00

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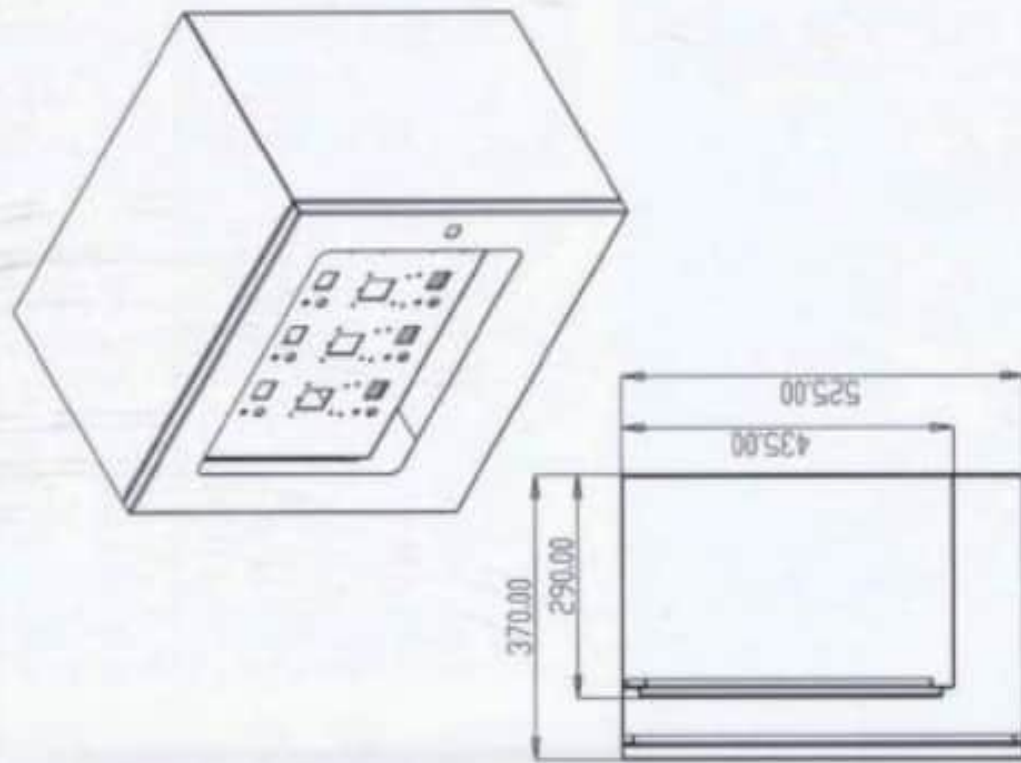
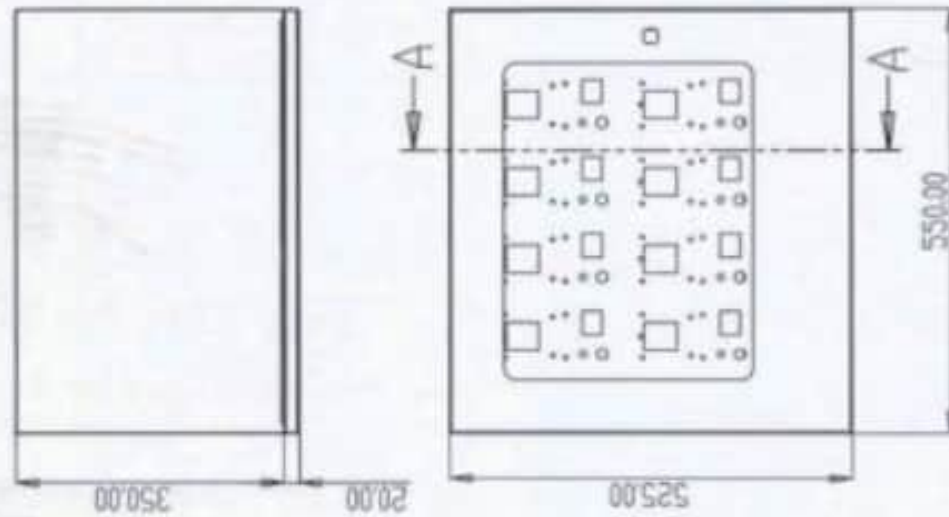
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S&T Drawing

Chapter - 3

**DATA Logger, RTU, FEP,
CMU and Networking
Accessories etc.**



SECTION A-A

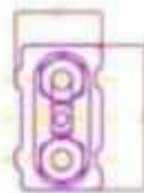
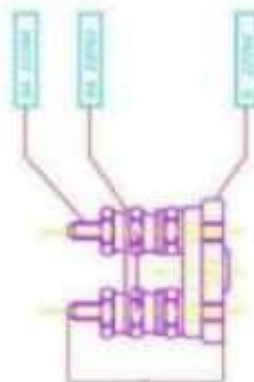
AS PER INSTRUCTION OF PCSTE/ OR NP-88 OF FILE No. HC 48/72/PT III	E.R	APPROVED OR R. ARUNAJ PCSTE	(B. ARUNAJ) DYCHING W/ 7/22/79	(P. K. ARUNAJ) ARTS/ 7/22/79	(S. K. ARUNAJ) ARTS/ 7/22/79	DRAWN SCALE (S. K. ARUNAJ) SSS/70	TYPICAL DRAWING FOR KEY LOCK CHECKING RELAY (8 WAY BOX)	DRG No. SI / TYP / 101 SHEET NO.1
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S&T Drawing

Chapter - 4

**Relay racks, CT racks, Tag
Blocks, Terminal, Fuses,
Indoor cables and
Jumper wires etc.**

TERMINAL BLOCK (SMALL) - 100%
PART IN POSITION (MOUNTING)
INSULATING BASE



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

R. D. S. O.

TERMINAL BLOCK (SMALL)
- INSULATING BASE

S 23742



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

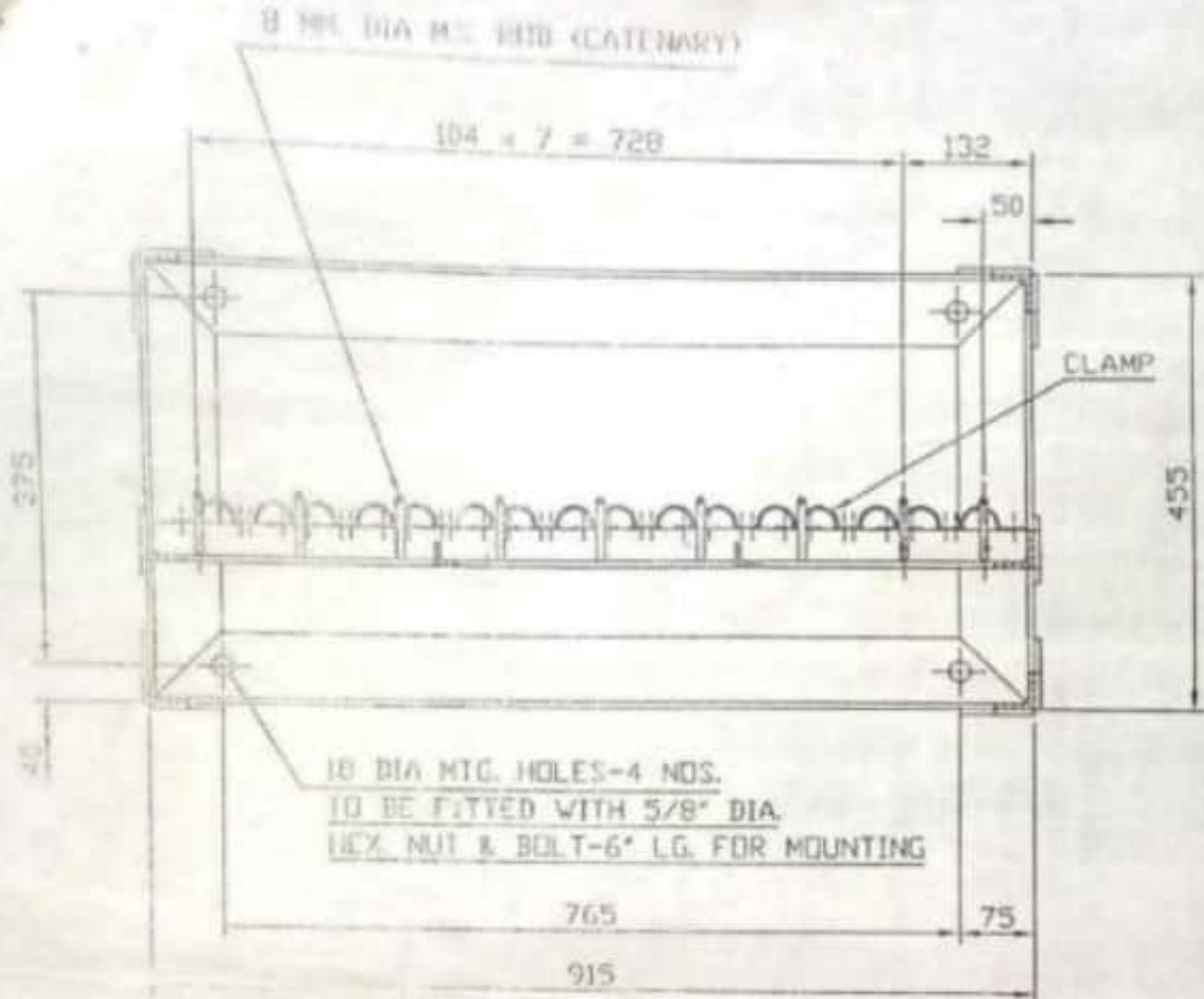
R. D. S. O.

TERMINAL BLOCK
(SMALL)

S 23741

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.



VIEW IN SECTION 'A-A'

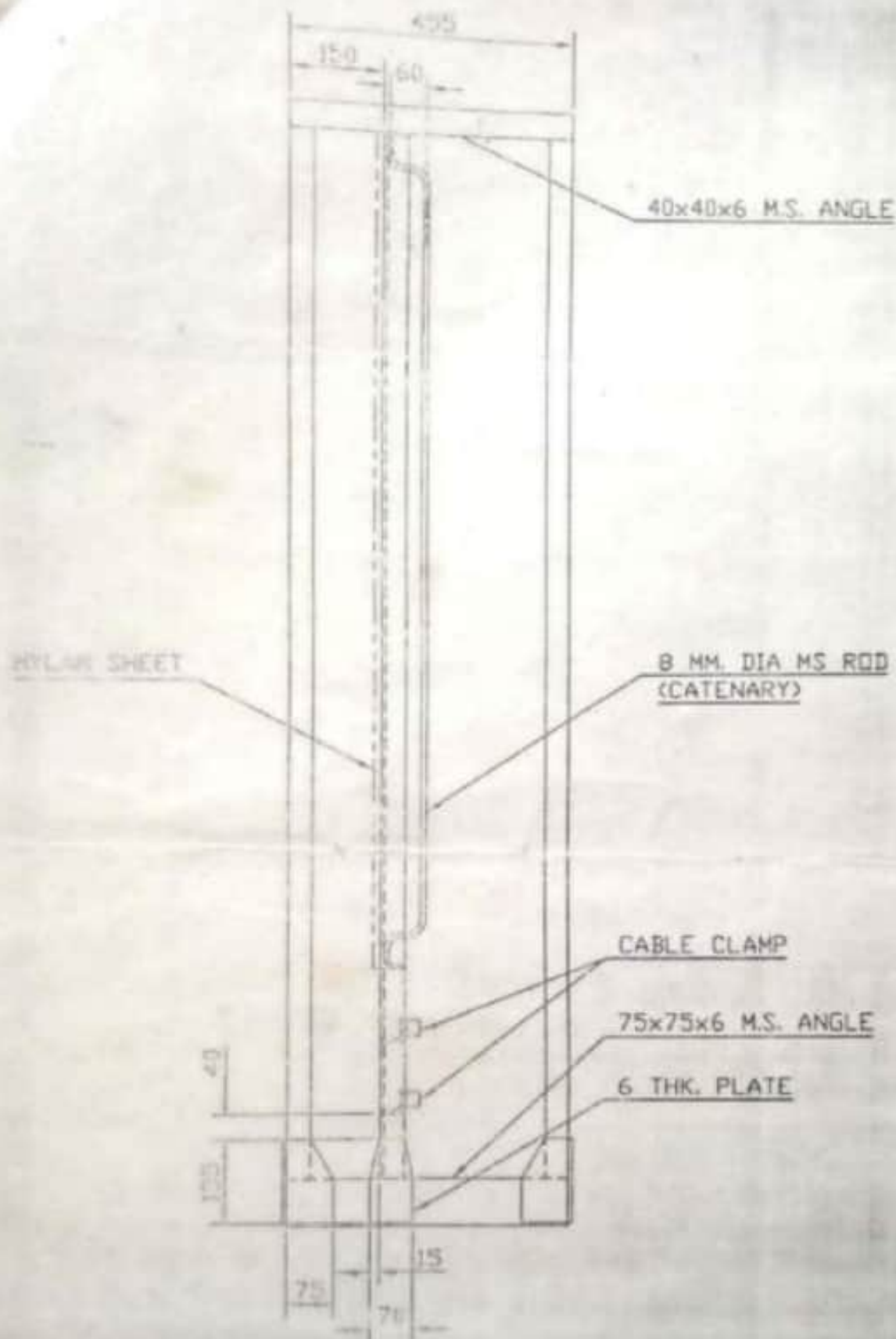
NOTE:-

- 1) Thickness of Sheet Metal is 12mm.
- 2) All angles, plates & rods will be fitted by all-round welding.
- 3) Specification of Single Way PBT Terminal is IRS-S-75/91 of Drg. No. SA-23741 (Alt-IV/Latest); Six Way PBT Terminal is IRS-S-75/91 of Drawing No. SA-23756 (Alt-III/Latest) & Eight Way PBT Terminal is IRS-S-75/92 of Drawing No. SA-24811 (Latest).
- 4) Left Hand Side is Cable side and Right Hand Side is Indoor Side.
- 5) No. of Terminals on each of Eight columns:-
i) for Single Way: 48, ii) for Six Way: 8x8=64, iii) for Eight Way: 11x8=88.
Total No. of Terminals can be accommodated:-
i) for Single Way: 384, ii) for Six Way: 512, iii) for Eight Way: 704.
- 6) Painting details:-
i) Primer painting to be made by 2 coat Red Oxide Paint (ICI mode).
ii) Finish painting to be made by 2 coat Epoxy Paint Metallic Grey cold treatment and Gloss-Baked finish.

SUPERSEDES DRG. NO. - S&T/C-17/2001 DATED 27.09.2001

SCALE - 1:7.5

| | | | |
|--|------|------------------------|---------------|
| By ESTE/C [Signature] | DRG. | CABLE TERMINATION RACK | DRG. NO. |
| ESTE/C [Signature] | DRG. | | S&T/C-19/2001 |
| APPROVED [Signature] | DRG. | ALL DIMENSIONS IN MM | SHEET NO. |
| EASTERN RAILWAY | | | 2/4 |
| APPROVED WITH NOTE (SEE) - 304 OF S&T/C-19/2001 DATED 10.01.2001 | | | DATE :- |



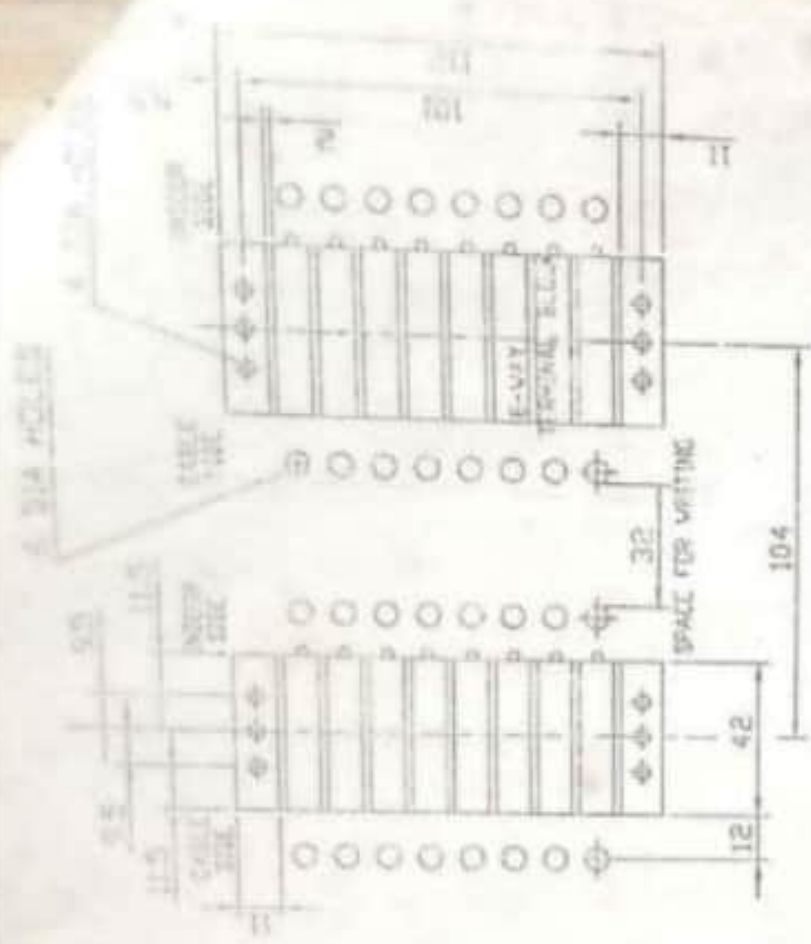
SIDE VIEW

SUPERSEDES DRG NO. S&T/C-17/2001 DATED 27/01/2001

SCALE- 1:10

| | | | |
|--|----------|--|---------------------------|
| DESIGNED BY: <i>[Signature]</i>
DATE: 1.9.01 | SON | CABLE TERMINATION RACK
ALL DIMENSIONS IN MM | DRG. NO.
S&T/C-19/2001 |
| CHECKED BY: <i>[Signature]</i>
DATE: 9.01 | DRN | | SHEET NO.
3/4 |
| APPROVED BY: <i>[Signature]</i>
DATE: 10.9.01 | DRG. NO. | EASTERN RAILWAY | DATE: -- |

APPROVED WITH NOTE SHEET- 2001 OF S&T/C-19/2001 DATED 10.9.01

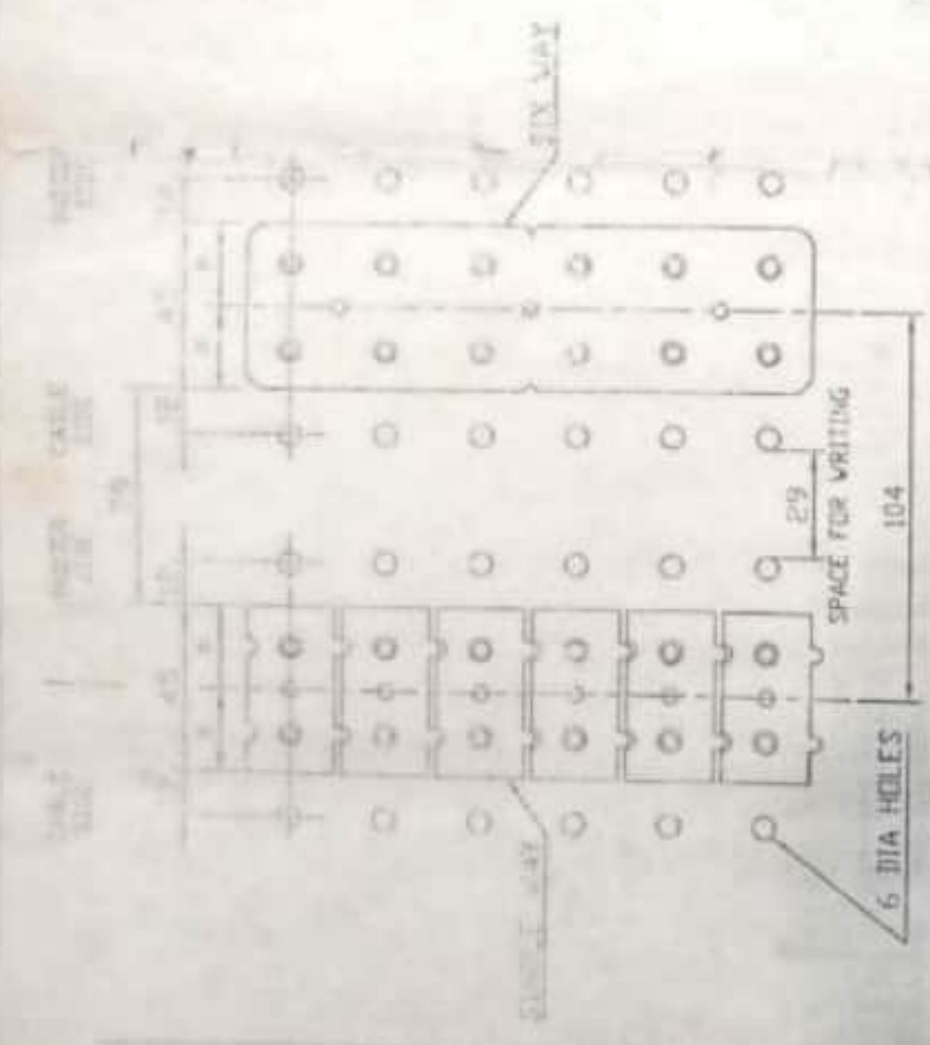


DETAILS OF TERMINAL FIXING
ON HYLAM SHEET
(FOR EIGHT WAYS)

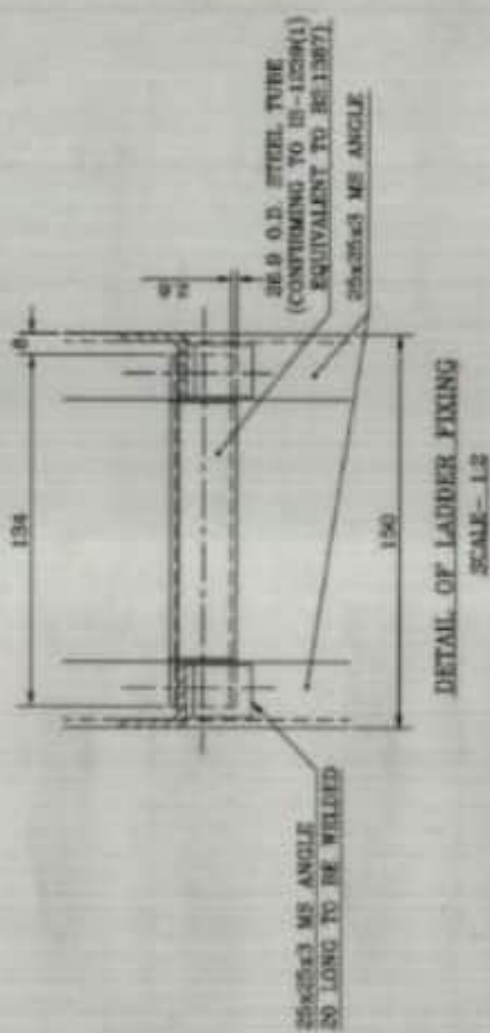
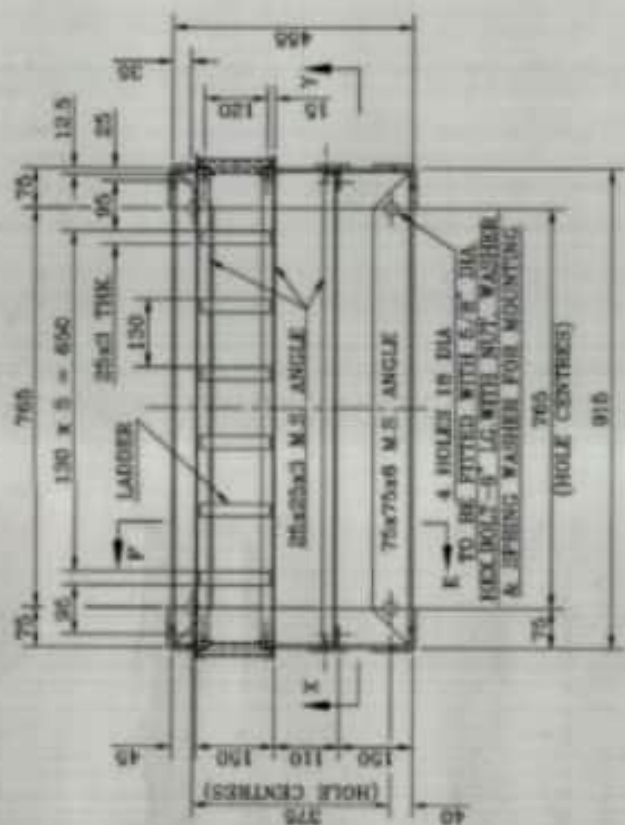
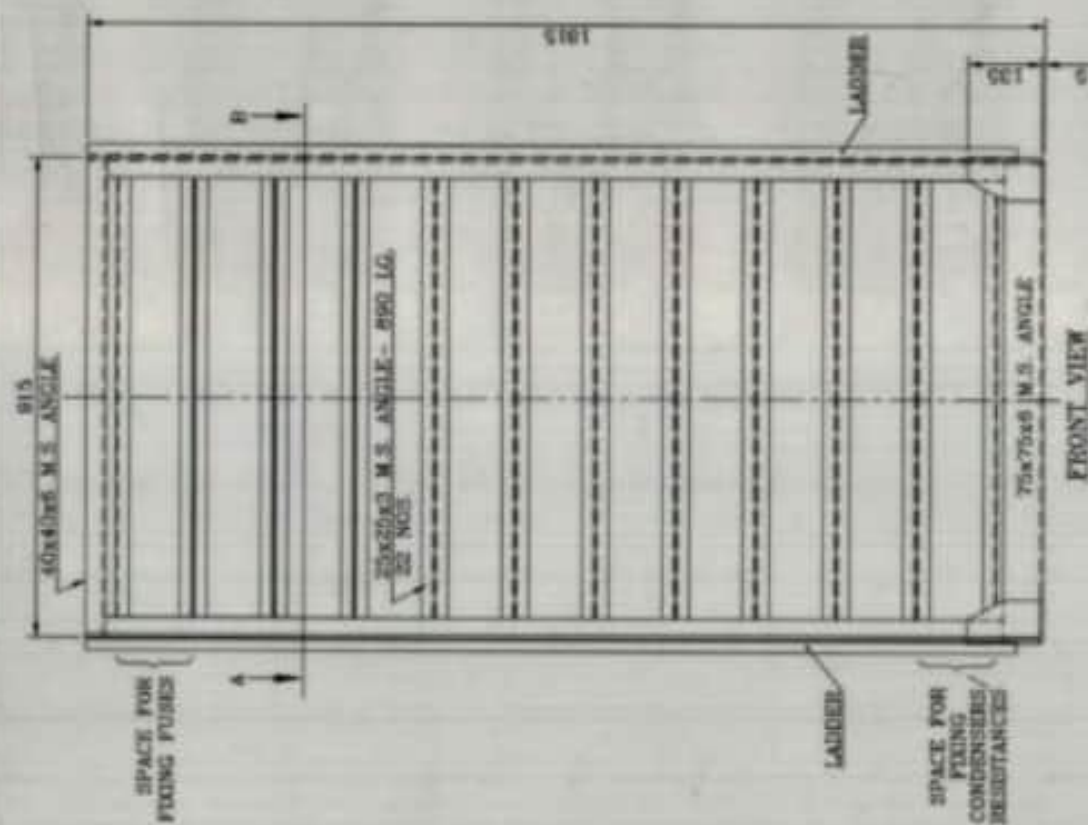
SCALE

SUPERSEDES DRG. NO. - S&T/C-17/2008 DATED 27.09.2001

| | | | | |
|---|------|--|----------------------|-------------|
| DY CSTE/C | DGN. | CABLE TERMINATION RACK
ALL DIMENSIONS ARE IN MM | DRG. NO.
S&T/C-19 | |
| SSTE/C | DRN. | | | SHEET NO. 4 |
| ASTE/C | CHD. | | | |
| APPROVED VIDE NOTE SHEET- 30ND OF SG42/TYP/CDN/DRG. DATED 10.9.01 | | | | |





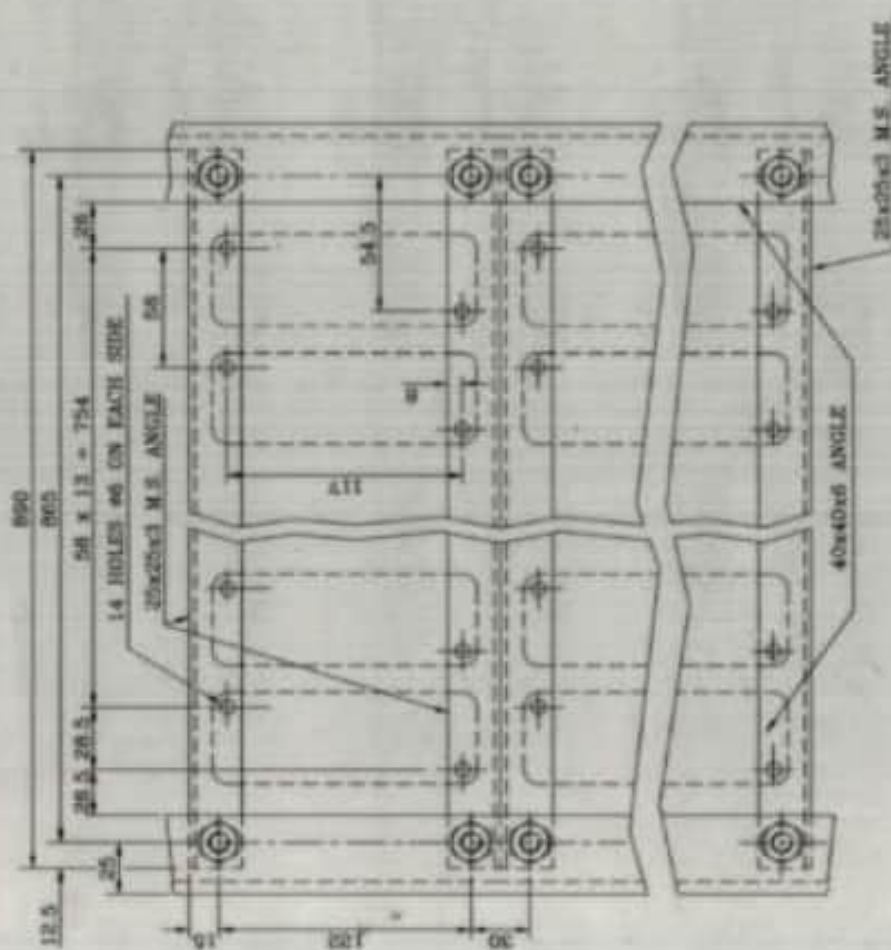
DETAILS OF TERMINAL FIXING
ON HYLAM SHEET
(FOR SIX WAYS & SINGLE WAYS)



- NOTES:-
- 1) UNLESS OTHERWISE STATED ALL HOLES ARE OF 7 DIA. TO BE FASTENED WITH M6 SCREW, NUT & WASHER.
- 2) JOISTS WHERE NO WHOLE PROVIDED FOR FITMENT TO BE FITTED WITH CONTINUOUS ALL-ROUND WELDING.
- 3) HORIZONTAL LAGGERS ARE NOT SHOWN IN ALL VIEWS TO MAINTAIN NEATNESS.
- 4) FIXING ARRANGEMENT OF CONCRETE TO BE DECIDED BY THEMSELVES.
- SCALE:- 1:10

- SEE PLANTING DETAILS IN DETAIL 2/2

| | | | | | | | | | | |
|--|--------------------|---|--|--|--|--|--|------------------------------------|---|--|
| AS PER CITE'S
ORDER AT NY-32
VIDE FILE NO. -
STC 42/9/VOL/V | EASTERN
RAILWAY | APPROVED
 L.P. Sinha
25-04-16
(S. P. SINHA) | | C H E C K E D
 P. K. Sinha
25-04-16
(M. K. SINHA) | | DRAWN
 P. K. Sinha
25-04-16
(S. BHATTACHARYYA) | ALL
DIMENSIONS
ARE IN
MM
(S. CHAKRABORTY)
JCO | RELAY RACK FOR
'Q' SERIES RELAY | SH.No.- 1/3
DRG. NO.
S.I/TYP/0072 | BASED ON APPROVED DRAWING NO. SATC-20/2001. SHEET NO. 15 & 25. |
|--|--------------------|---|--|--|--|--|--|------------------------------------|---|--|



DETAIL OF RELAY FIXING ARRANGEMENTS

SUPERIMPOSED SKETCH DRAWING NO. SAT/C-29/2001
SHEET NO. 5/5

AS PER COST'S
ORDER AT NP-32
VIDE FILE NO -
SC 42/0/VOL/V

EASTERN
RAILWAY

APPR
P. Simeon
29/9/16
L. P. Simeon

2-6-4-12
(18, 2007)

6

John
12.12.16
(ATANKI DEY)

| | | | |
|---------------------------|---|---|---|
| E | C | K | E |
| 26.04.16
(M 13-04-000) | | | |

10/10/10

| | |
|------|---------------|
| NAME | CHANDRASEKHAR |
| DATE | 24/11/23 |

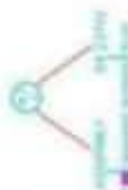
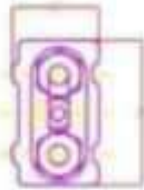
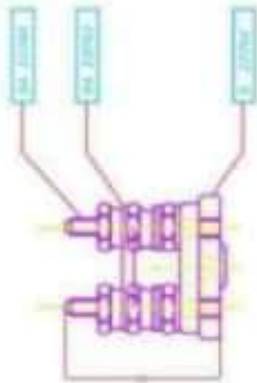
| | |
|---------|--------------------------|
| REL. Q. | ALL DIMENSIONS ARE IN MM |
|---------|--------------------------|

RAY RACK
SERIES R

SH.No.:
ORD. NO.:
S.I./TYPE:

SALES OF THE ABOVE-OWNED PUBLISHED AND UNPUBLISHED BOOKS OF THE

TERMINAL BLOCK (SMALL)
- 1/2" (12.7mm) DIA. HOLES
- 1/2" (12.7mm) DIA. HOLES



1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

S 23742

R. D. S. O.

TERMINAL BLOCK (SMALL)
- INSULATING BASE



1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

S 23743

R. D. S. O.

TERMINAL BLOCK (SMALL)
- 1/2" (12.7mm) DIA. HOLES

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

S 23741

R. D. S. O.

TERMINAL BLOCK (SMALL)

1. All dimensions are in millimeters.
2. All dimensions are in inches.
3. All dimensions are in millimeters.
4. All dimensions are in inches.

S&T Drawing

Chapter - 5

**Power Supply
Equipments, Batteries etc.**

Eastern Railway

No.SG.42/2/Vol-III

Kolkata, dated: 26-11-2025.

CSTE/Plg-I, CSTE/Proj, CSTE/HQ, CSTE/Con, CSE, CSE-II, CCE,
Sr. DSTE/ HWH /SDAH/ ASN/ MLDT,
Dy CSTE/ W/ SDAH/ HWH, Dy CSTE/T/HQ,
Dy CSTE/W/II SDAH, Dy CSTE/W/III/SDAH,
Dy CSTE/Proj/ASN, Dy CSTE/Proj/II/ASN,
Dy CSTE/ Con/ HWH/ SDAH, Dy CSTE/Con/II/HQ
Dy CSTE/W/D&D/HQ, Dy CSTE/Con/D&D/HQ
Dy CPM/S&T/GSU/SDAH,
Eastern Railway.

Sub:-Drawings and Details of IPS as per RDSO Spec. No.
RDSO/SPN/165/2023 Ver. 4.0 Amdt. 1 or latest for Central, End Goomty
and ABS-IB-LC.

Ref- This office even letter no dated- 15.09.2025

Drawings and Details like Information by Indentor, Typical scheme for IPS Block Diagram, Toolkit, Spares and SPDs for IPS for Central, End Goomty and ABS-IB-LC is attached herewith for procurement.

- 1) Drawings and Details for IPS 300 AH for Central (Page no-2 to 6).
- 2) Drawings and Details for IPS 200 AH for End Goomty (Page no-7 to 11).
- 3) Drawings and Details for IPS 200 AH for ABS-IB-LC (Page no-12 to 16).

Above shall be the minimum configuration to be followed for each type of IPS. Additional modules can be added for any other specific requirement.

It supersedes earlier letter even No. dated.15.09.2025.

**BRAJESH
KUSHWAHA**

Digitally signed by BRAJESH
KUSHWAHA
Date: 2025.11.26 17:58:53
+05'30'

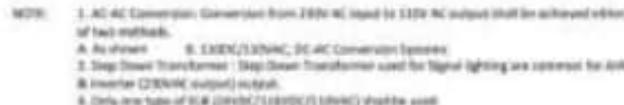
(Brajesh Kushwaha)
Dy. CSTE/HQ
for Principal Chief Signal & Telecom. Engineer,
Eastern Railway

**IPS for SJDAH for Central
INFORMATION BY INDENTOR**

| SN | Item | To Be Filled IN | External Consults to be provided with SPD as per specs |
|---|--|----------------------|--|
| 1 | SPS based integrated power supply system (SPS) suitable for signaling installations without ATPC at Station / SPS / LC Cate (up to 1000signalling load) (Mention any of the above) | ABC | |
| 2 | Total number of SPS based integrated power supply system (SPS) required with same configuration. | 1 | |
| 3 | RE area/ Non-RE area | RE AREA ONLY | |
| 4 | Type of Battery (Low Maintenance or VRLA or any other cells approved by RDSO) | LPLA | |
| 5 | Capacity of Battery (120AH / 200AH / 300AH) | 200 | |
| 6 | Requirement of Battery Rack - If yes type of Battery racks (MS) for VRLA batteries. Wooden rack for low maintenance batteries. | NOT REQUIRED | |
| 7 | Distance between SPS Room Isolative Monitoring Panel installation Place. (In meters)(vendor will provide cable up to 100 mtr with each SPS) | | This table is not required. Railway will use 12x1.5 Sign Cable |
| 8 | Distance between SPS rack & battery. (In meters) | 100 Meters | |
| 9 | SPS Charger P/N, Module (N+1) | 4+1=5 | |
| 10 | Required Load in KVA for Track circuit/LC Gate
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note - N is no of modules required based on load calculation of Track circuit. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 11 | Required Load in KVA for Signal lighting/TLD
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note - N is no of modules required based on load calculation of Signal lighting. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 12 | Details of DC-DC converters
Note: Purchaser should write NO, if particular modules are not required. Number of modules shall be chosen considering total system load up to 15 KVA. | | |
| STANDARD DC-DC MODULES | | | |
| Module | Rating | No of Modules | |
| i) Relay Internal (n+2) | 24-32v/ 10 A for M to C Relay | 4 | |
| ii) Relay External (n+1) (BWR END/WRM END) | 24-32v/ 10 A for M to C Relays | 4 | External |
| iii) Aux Counter (n+1) | 24-40v/ 10 A | 10 | External |
| iv) WKT & Magnets (n+1) | 12-24v/01 A | 5 | |
| v) Block Table (n+2) | 03-06 W/O 1 A | 4 | |
| vi) Data Logger (n+1) 02 Numbers(Mandatory) | 24-32v/10A | 2 | |
| vii) Spare Cell (n+2) 02 Numbers (Mandatory) | 3-12/5A | 5 | |
| viii) AFDAQ | 24-32v/10A | 2 | |
| ix) ADPMG | 24-32v/10A | 2 | External |
| x) FUTURE SLOTS/SP | 24-40v/ 10 A | 2 | External |
| xi) Electric Lifting Barrier (n+1) | 24v-32v/10A | 2 | External |
| xii) RS232C Reed Box Main/Stand (n+5) | 24v-32v/10A | 2 | External |
| xiii) RS232C Cabinet Fan/Light (n+1) | 24v-32v/10A | 5 | |
| Total Module Required in DC-DC Converter Section | | 49 | |

| | | | |
|----------------------------------|---|-----|--|
| 13 110 DC Terminations | | | |
| i) 1 ROOM MAIN | Fuse 10 A | | |
| ii) 1 ROOM STANDBY | Fuse 10 A | | |
| iii) 5M Room MAIN | Fuse 6 A | | |
| iv) 5M Room STANDBY | Fuse 6 A | | |
| v) Maintenance Room Main | Fuse 6 A | | |
| vi) Maintenance Room Standby | Fuse 6 A | | |
| vii) 110 VDC Hand Generator Type | Fuse - 10 A | | External |
| viii) POINT | Fuse - 32 A | | External |
| ix) Spare 1 | Fuse - 32 A | | |
| x) Spare 2 | Fuse - 32 A | | |
| 14 | Provision of Remote test unit/ test device along with sensors for Remote monitoring of Voltage and current of SPS modules | NO | |
| 15 | Integration of Remote Test unit with existing ROPMS system | YES | |
| 16 | Requirement of Extended Warranty Period (Numbers of years) | NO | As per specs only i.e. 4 years from date of supply |

STANDARD IPS MODULE. WAYSIDE STATION: CENTRAL E3, Track Cnts, MSDAC, BOTH Side BPAC, Block Instruments (F5BBI/SSBPACID), DATALOGGE, AFDA5



| | | Description | Amount | SIGNATURE |
|----------------|----|-------------|--------|-----------|
| Station/Refuel | | 100 | | |
| Greases | | 4000/1000 | | |
| Others | 10 | 10000/10000 | | |

IPS for 300AH for Central

DETAILS OF TOOLS IN TOOLKIT WITH IPS

Note:- Every IPS shall be supplied along with tool kit and shall be placed inside the IPS rack in a suitable Bag/Box.

| SN | Description of Tools | Size | Make | Quantity |
|----|------------------------------|-------------------------|---------|----------|
| 1 | Double ended spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 2 | Box spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 3 | Screw driver set (05 pieces) | 6" | Taparia | 01 set |
| 4 | Screw driver small/ signet | - | Taparia | 01 |
| 5 | Screw driver big | 12" | Taparia | 01 |
| 6 | Cutting plier | 6" | Taparia | 01 |
| 7 | Nose plier | 6" | Taparia | 01 |
| 8 | Plier | 6" | Taparia | 01 |
| 9 | Adjustable Torque wrench | - | Taparia | 01 |

IPS for 300AH for Central

| LIST OF SPARES TO BE SUPPLIED WITH IPS 300 AH for Central | | |
|--|--|------------------|
| 1 | FRBC MODULE (as cold stand by) | 1 Module |
| 2 | Inverter Module as cold stand by | 1 Module 2 KVA |
| 3 | DC-DC Converter Module | |
| i | 24-32/10A | 2 Modules |
| ii | 24-40/10A | 2 Modules |
| iii | 12-28/10A | 1 Module |
| iv | 12-28/1A | 1 Module |
| v | 03-06 V/0.1 A | 1 Module |
| 4 | Automatic Voltage Regulator (AVR) | 1 Module 2 KVA |
| 5 | Fuses . All types of fuses used in IPS subsystem | 1 set |
| 6 | Transformer as cold standby | 2 Modules 500 VA |
| 7 | Fan. Used for INV/SMR/AC-AC conv | 2 Nos |
| 8 | Cells LMLA 2V/300 AH | 5 Nos |

IPS for 300AH for Central

SPO

| | | | | | |
|----------------------------------|---------------|-----------|------------|------------|--|
| | IPS 2023 | | | | Warranty 4 Years from supply |
| | | | Indication | PF Contact | |
| SPD Box | Line-Neutral | B Type I | YES | YES | Spark Gap Type |
| | Line-Neutral | C Type II | YES | YES | Thermal Disconnecting Type |
| | Neutral-Earth | B Type I | YES | YES | Spark Gap Type |
| External Circuits | | C Type II | YES | Yes | Thermal Disconnecting Type |
| | | | | | for 224V-110V AC/DC supplies at the output side inside the rack of IPS. These shall be provided for External circuits i.e. Relay external circuit, Axle counter circuit, point machine circuit, AC-AC converters, Inverter output and output of any other modules which are directly connected to external circuits. |
| Note: B&C Shall be from same OEM | | | | | |

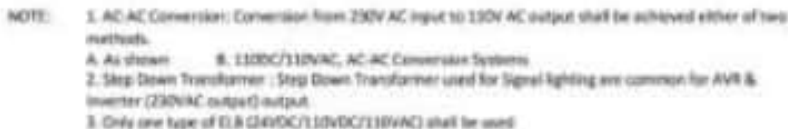
IPS 200 AH for End Goentry
INFORMATION BY INDENTOR

| SN | Item | To Be Filled In | External Circuits to be provided with SPD as per specs |
|---|--|------------------------------|---|
| 1 | SPMS based integrated power supply system (IPS) suitable for signaling installations without APTC at Station / SBG / LC Gate (up to 25KVA/signaling load) (Mention any of the above) | NO | |
| 2 | Total number of SPMS based integrated power supply system (IPS) required with same configuration. | 1 | |
| 3 | AC area/ Non AC area | AC 302A ONLY | |
| 4 | Type of Battery (Low Maintenance or VRLA or any other cells approved by RDSO) | LM/A | |
| 5 | Capacity of Battery (120Ah / 200Ah / 300Ah) | 200 | |
| 6 | Requirement of Battery Rack - If yes type of Battery racks (RIS) for VRLA batteries. Wooden rack for low maintenance batteries. | NOT REQUIRED | |
| 7 | Distance between IPS Room & Status Monitoring Panel installation Place. (in meters) (Vendor will provide cable up to 100 mtr with each IPS) | | Fire cable is not required. Battery will be 2x4x1.5 Bgg Cable |
| 8 | Distance between IPS rack & battery. (in meters) | 100 Meters | |
| 9 | SPMS Charger FRBC Module (N+1) | 3+1=4 | |
| 10 | Required Load in KVA for Track circuit/LC Gate
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note - N is no of modules required based on load calculation of Track circuit. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 11 | Required Load in KVA for Signal lighting/ELD
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note - N is no of modules required based on load calculation of Signal lighting. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 12 | Details of DC-DC converter
Note: Purchaser should write NS, if particular modules are not required. Number of modules shall be chosen considering total system load up to 15 KVA. | | |
| STANDARD DC-DC MODULES | | | |
| | Module | Rating | No. of Modules |
| i | Relay Internal (n+2) | 24-32V/10 A for M No C Relay | 3 |
| ii | Relay External (n+1) (BWH SH/WH/WH/WH) | 24-32V/10 A for M No C Relay | 0 |
| iii | Aux Counter (n+1) | 24-40V/10 A | 0 |
| iv | WKT & Magneto (n+1) | 12-20V/10 A | 2 |
| v | Mux Tape (n+1) | 65-66 V/10 A | 0 |
| vi | Delta Logger (n+1) 62 Numbers (Mandatory) | 24-32V/10A | 3 |
| vii | Spare Cell (n+1) 63 Numbers (Mandatory) | 0-12/5A | 3 |
| viii | Panel Indicators | 12-20V/10 A | 2 |
| ix | AFDAS | 24-32V/10A | 2 |
| x | KDPMS | 24-32V/10A | 2 |
| xi | PULSAR S/DTS(SF) | 24-40V/10 A | 2 |
| xii | Electro Lifting Barrier (n+1) | 24V-32V/10A | 2 |
| xiii | WSDMC Based Box Main/Door (n+1) | 24V-32V/10A | 2 |
| xiv | WSDMC Cabinet Fan/Light (n+1) | 24V-32V/10A | 2 |
| Total Module Required in DC-DC Converter Section | | 34 | |

1.3 150 DC Terminations

| | | | |
|------|---|-------------|---|
| i | SI ROOM MAIN | Fuse - 10 A | |
| ii | SI ROOM STANDBY | Fuse - 10 A | |
| iii | Maintenance Room Main | Fuse - 4 A | |
| iv | Maintenance Room Standby | Fuse - 4 A | |
| v | ELB 110 VDC Hand Generator Type | Fuse - 10 A | External |
| vi | PCINT | Fuse - 32 A | External |
| vii | Spent 1 | Fuse - 32 A | |
| viii | Spent 2 | Fuse - 20 A | |
| 14 | Provision of Remote test unit/ IoT device along with sensors for Remote monitoring of Voltage and number of IPS modules | NO | |
| 15 | Integration of Remote Test unit with existing KDPMS system | YES | |
| 16 | Requirement of Extended Warranty Period (Number of years) | NO | As per specs i.e. 4 years from Date of supply |

STANDARD IPS MODULE, WAYSIDE STATION: DISTRIBUTED EI, END GOOMTY, Track Ckts, MSDAC, BPAC, DATA LOGGER, AFDAS.



| | | | | | |
|-----------------|----|--|----------------|------|-----------|
| | | | Designation | NAME | SIGNATURE |
| Station/ED Unit | | | ED | | |
| Division | | | ASTC/ISFE | | |
| Railway | ER | | IS/ISFE/DyCSFE | | |

IPS 200 AH for End Goomty

DETAILS OF TOOLS IN TOOL KIT WITH IPS

Note:- Every IPS shall be supplied along with tool kit and shall be placed inside the IPS rack in a suitable Bag/Box.

| SN | Description of Tools | Size | Make | Quantity |
|----|------------------------------|-------------------------|---------|----------|
| 1 | Double ended spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 2 | Box spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 3 | Screw driver set (05 pieces) | 6" | Taparia | 01 set |
| 4 | Screw driver small/ aligner | -- | Taparia | 01 |
| 5 | Screw driver big | 12" | Taparia | 01 |
| 6 | Cutting plier | 6" | Taparia | 01 |
| 7 | Nose plier | 6" | Taparia | 01 |
| 8 | Plier | 6" | Taparia | 01 |
| 9 | Adjustable Torque wrench | - | Taparia | 01 |

IPS 200 AH for End Goomty

| LIST OF SPARES TO BE SUPPLIED WITH IPS 200 AH for END GOOMTY | | |
|--|--|------------------|
| 1 | FRBC MODULE (as cold stand by) | 1 Module |
| 2 | Invertor Module as cold stand by | 1 Module 2 KVA |
| 3 | DC-DC Converter Module | |
| i | 24-32/10A | 2 Modules |
| ii | 24-40/10A | 2 Modules |
| iii | 12-28/10A | 1 Module |
| iv | 12-28/1A | 1 Module |
| 4 | Automatic Voltage Regulator (AVR) | 1 Module 2 KVA |
| 5 | Fuses . All types of fuses used in IPS subsystem | 1 set |
| 6 | Transformer as cold standby | 2 Modules 500 VA |
| 7 | Fan. Used for INV/SMR/AC-AC conv | 2 Nos |
| 8 | Cella LMLA 2V/200AH | 5 Nos |

IPS 200 AH for End Goomty

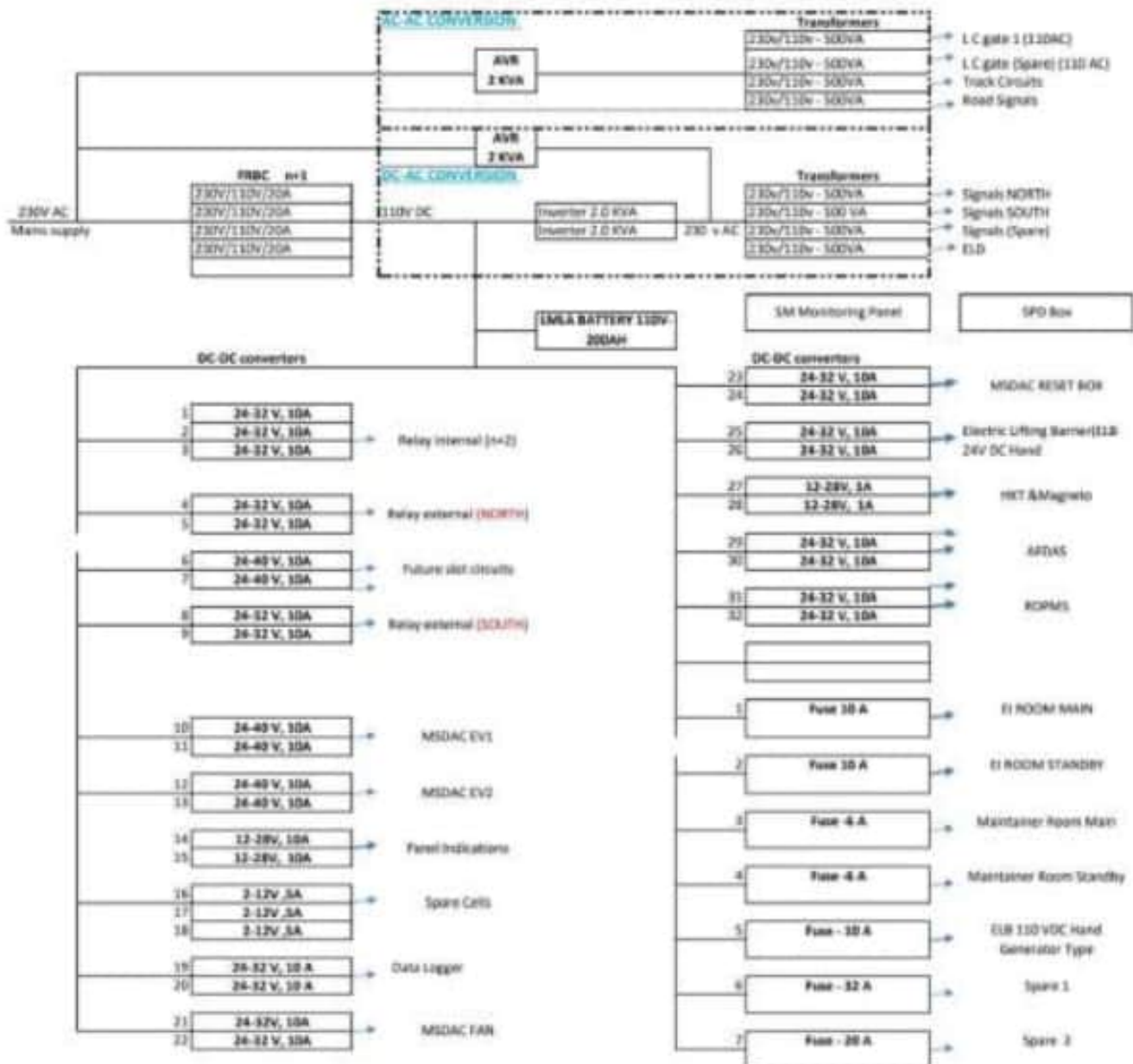
SPD

| | | | | | |
|---|-----------------|-----------|------------|------------|-------------------------------------|
| | IPS 2023 | | | | Warranty 4 Years from supply |
| | | | Indication | PF Contact | |
| SPD Box | Line-Neutral | B Type I | YES | YES | Spark Gap Type |
| | Line-Neutral | C Type II | YES | YES | Thermal Disconnecting Type |
| | Neutral-Earth | B Type I | YES | YES | Spark Gap Type |
| | | | | | |
| External Circuits | | C Type II | YES | Yes | Thermal Disconnecting Type |
| for 24V-110V AC/DC supplies at the output side inside the rack of IPS. These shall be provided for External circuits i.e. Relay external circuit, Axle counter circuit, point machine circuit, AC-AC converters, Inverter output and output of any other modules which are directly connected to external circuits. | | | | | |
| Note: B&C Shall be from same OEM | | | | | |

IPS 200 AH for ARS-IR-1C
INFORMATION BY INDENTOR

| S/N | Item | To Be Filled IN | External Circuits to be provided with SPD as per specs |
|-------------------------------|---|---|--|
| 1 | IMPS based integrated power supply system (IPS) suitable for signaling installations without APTC at Station / BTS / LC Gate (up to 1500m signaling road) (Mention any of the above) | ABC | |
| 2 | Total number of IMPS based integrated power supply system (IPS) required with same configuration | 1 | |
| 3 | RE area/ Non-RE area | RE AREA ONLY | |
| 4 | Type of Battery (Low Maintenance or VRLA or any other with approval by RDSO) | UNLA | |
| 5 | Capacity of Battery (120AH / 200AH / 300AH) | 200 | |
| 6 | Requirement of Battery Rack -- If yes type of Battery racks (BR) for VRLA batteries. Wooden rack for low maintenance batteries. | NOT REQUIRED | |
| 7 | Distance between IPS Room Attitude Monitoring Panel installation Place, (in meters)(vendor will provide cable up to 100 mtr with each IPS) | | This cable is not required. Railway will lay 12x1.5 Naga Cable |
| 8 | Distance between IPS rack & battery, (in meters) | 100 Meters | |
| 9 | IMPS Charger FRBC Module (N=1) | 5+5+5 | |
| 10 | Required Load in KVA for Track circuit/LC Gate
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note - N is no of modules required based on load calculation of Track circuit. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 11 | Required Load in KVA for Signal lighting/RLD
(a) 500 VA X N
(b) 1.0 KVA X N
(c) 1.5 KVA X N
Note -- N is no of modules required based on load calculation of Signal lighting. Purchaser should choose only one option out of the three options (a) or (b) or (c). | 500 VA X 4 | External |
| 12 | Details of DC-DC converter
Note: Purchaser should write N/A if particular modules are not required. Number of modules shall be chosen considering total system load up to 15 KVA. | | |
| STANDARD DC-DC MODULES | | | |
| | Module | Rating | No. of Modules |
| i | Relay Internal (n+2) | 24-32V/10 A for R to C Relay | 3 |
| ii | Relay External (n+1) | 24-32V/ 10 A for H to C Relay | 4 |
| iii | Relay Counter (n+1) | 24-40V/ 10 A | 4 |
| iv | IRF & Magnet (n+1) | 12-20V/0.1 A | 2 |
| v | Block Test (n+1) | 03-06 W/0.1 A | 3 |
| vi | Data Logger (n+1) 02 Numbers(Mandatory) | 24-32V/10A | 2 |
| vii | Spares Cell (n+1) 02 Numbers (Mandatory) | 2-12/5A | 2 |
| viii | Panel Indicators | 12-20V/10 A | 2 |
| ix | AFDAS | 24-32V/10A | 2 |
| x | ADPMG | 24-32V/10A | 2 |
| xi | PL/TUNE 5(075/SP) | 24-40V/ 10 A | 2 |
| xii | Heads Up/Long Barrier (n+1) | 24V-32V/10A | 2 |
| xiii | MSDAC Based Box Main/Stand (n+1) | 24V-32V/10A | 2 |
| xiv | MSDAC Cabinet Fan/Light (n+1) | 24V-32V/10A | 2 |
| | | Total Module Required in DC-DC Converter Section | 32 |
| 13 110 DC Terminations | | | |
| i | SI ROOM MAIN | Fuse 10 A | |
| ii | SI ROOM STANDBY | Fuse 10 A | |
| iii | Maintainer Room Main | Fuse 6 A | |
| iv | Maintainer Room Standby | Fuse 6 A | |
| v | 11.8 110 VDC Hand Generator Type | Fuse - 10 A | External |
| vi | Spares 1 | Fuse - 32 A | |
| vii | Spares 2 | Fuse - 20 A | |
| | | | |
| 14 | Provision of Remote test unit/ IoT device along with sensors for Remote monitoring of Voltage and current of IPS modules | NO | |
| 15 | Integration of Remote Test unit with existing ROPMS system. | YES | |
| 16 | Requirement of Extended Warranty Period (Number of years) | NO | All per specs only i.e. 4 years from Date of supply |

IPS 200 AH for ABS-IB-LC
STANDARD IPS MODULE LC, IB, Autohut



- NOTE: 1. AC-AC Conversion: Conversion from 230V AC input to 110V AC output shall be achieved either of two methods.
A. As shown B. 110DC/110VAC, DC-AC Conversion Systems
2. Step Down Transformer : Step Down Transformer used for Signal lighting are common for AVR & Inverter (230VAC output) output.
3. Only one type of EIB (24VDC/110VDC/110VAC) shall be used.

| | | Designation | NAME | SIGNATURE |
|----------------|----|---------------|------|-----------|
| Station/EI Hut | | SSR | | |
| Division | | AGTE/DSTE | | |
| Railway | IR | S-DSTE/DyCSTE | | |

IPS 200 AH for ABS-IB-LC

DETAILS OF TOOLS IN TOOLKIT WITH IPS

Note:- Every IPS shall be supplied along with tool kit and shall be placed inside the IPS rack in a suitable Bag/Box.

| SN | Description of Tools | Size | Make | Quantity |
|----|------------------------------|-------------------------|---------|----------|
| 1 | Double ended spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 2 | Box spanner | 6-7, 8-9, 10-11 & 12-13 | Taparia | 01 each |
| 3 | Screw driver set (05 pieces) | 6" | Taparia | 01 set |
| 4 | Screw driver small/ aligner | - | Taparia | 01 |
| 5 | Screw driver big | 12" | Taparia | 01 |
| 6 | Cutting plier | 5" | Taparia | 01 |
| 7 | Nose plier | 5" | Taparia | 01 |
| 8 | Plier | 6" | Taparia | 01 |
| 9 | Adjustable Torque wrench | - | Taparia | 01 |

IPS 200 AH for ABS-IB-LC

| | LIST OF SPARES TO BE SUPPLIED WITH IPS for IPS 200 AH for ABS-IB-LC | | |
|-----|--|--|------------------|
| | | | |
| 1 | FRBC MODULE (as cold stand by) | | 1 Module |
| 2 | Invertor Module as cold stand by | | 1 Module 2 KVA |
| 3 | DC-DC Converter Module | | |
| i | 24-32/10A | | 2 Modules |
| ii | 24-40/10A | | 2 Modules |
| iii | 12-28/10A | | 1 Module |
| iv | 12-28/1A | | 1 Module |
| 4 | Automatic Voltage Regulator (AVR) | | 1 Module 2 KVA |
| 5 | Fuses . All types of fuses used in IPS subsystem | | 1 set |
| 6 | Transformer as cold standby | | 2 Modules 500 VA |
| 7 | Fan. Used for INV/SMR/AC-AC conv | | 2 Nos |
| 8 | Cella LMLA 2V/200AH | | 5 Nos |

IPS 200 AH for ABS-IB-LC

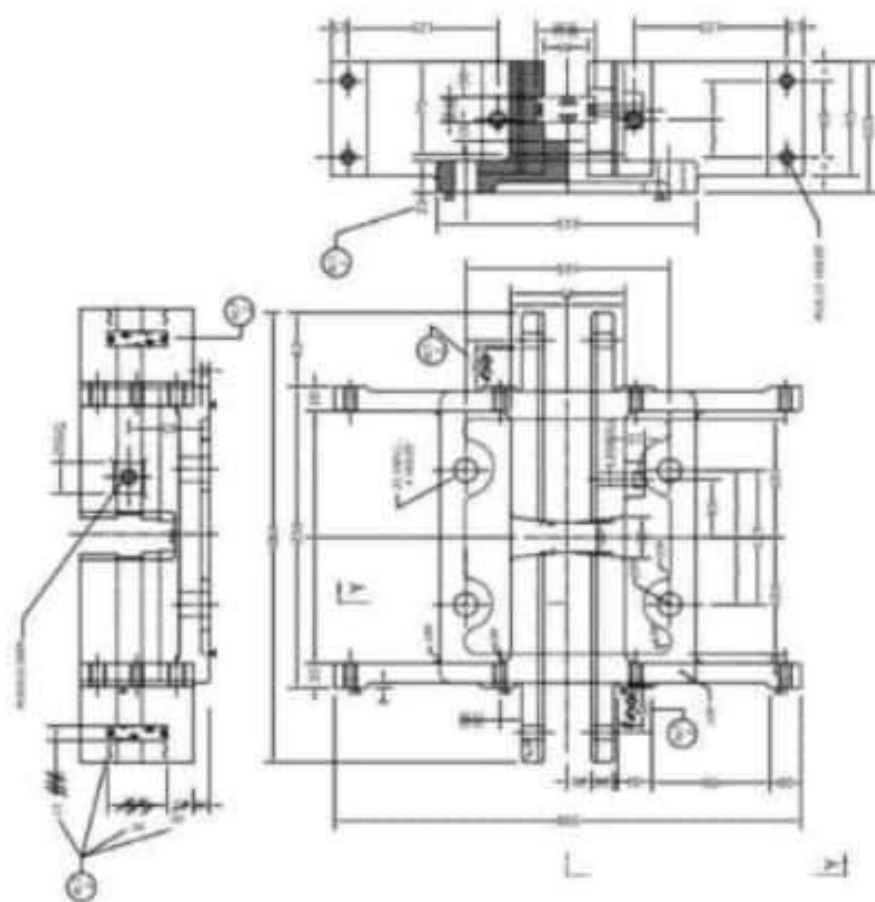
SPD

| | | | | | |
|--|---------------|-----------|------------|------------|------------------------------|
| | IPS 2023 | | | | Warranty 4 Years from supply |
| | | | Indication | PF Contact | |
| SPD Box | Line-Neutral | B Type I | YES | YES | Spark Gap Type |
| | Line-Neutral | C Type II | YES | YES | Thermal Disconnecting Type |
| | Neutral-Earth | B Type I | YES | YES | Spark Gap Type |
| | | | | | |
| External Circuits | | C Type II | YES | Yes | Thermal Disconnecting Type |
| for 224V-110V AC/DC supplies at the output side inside the rack of IPS. These shall be provided for External circuits i.e. Relay external circuit, Axle counter circuit, point machine circuit, AC-AC converters, inverter output and output of any other modules which are directly connected to external circuits. | | | | | |
| Note: B&C Shall be from same OEM | | | | | |

S&T Drawing

Chapter - 6

**Point machine and
associated items.**



SECTION VV

| | | | | |
|---|----|----|----|----|
| | R. | D. | S. | O. |
| KEY LOCK: FACING POINTS
(M.P. TYPE) - BASE | | | | |
| | | | | |
| | | | | |
| I.R.S.(S) | | | | |
| 53153/M | | | | |

| | | |
|---|--|------|
| 1 | <p>compendio de las leyes de</p> <p>1. de 19 de mayo de 1911</p> <p>2. de 19 de mayo de 1911</p> <p>3. de 19 de mayo de 1911</p> <p>4. de 19 de mayo de 1911</p> <p>5. de 19 de mayo de 1911</p> <p>6. de 19 de mayo de 1911</p> <p>7. de 19 de mayo de 1911</p> <p>8. de 19 de mayo de 1911</p> <p>9. de 19 de mayo de 1911</p> <p>10. de 19 de mayo de 1911</p> <p>11. de 19 de mayo de 1911</p> <p>12. de 19 de mayo de 1911</p> <p>13. de 19 de mayo de 1911</p> <p>14. de 19 de mayo de 1911</p> <p>15. de 19 de mayo de 1911</p> <p>16. de 19 de mayo de 1911</p> <p>17. de 19 de mayo de 1911</p> <p>18. de 19 de mayo de 1911</p> <p>19. de 19 de mayo de 1911</p> <p>20. de 19 de mayo de 1911</p> <p>21. de 19 de mayo de 1911</p> <p>22. de 19 de mayo de 1911</p> <p>23. de 19 de mayo de 1911</p> <p>24. de 19 de mayo de 1911</p> <p>25. de 19 de mayo de 1911</p> <p>26. de 19 de mayo de 1911</p> <p>27. de 19 de mayo de 1911</p> <p>28. de 19 de mayo de 1911</p> <p>29. de 19 de mayo de 1911</p> <p>30. de 19 de mayo de 1911</p> <p>31. de 19 de mayo de 1911</p> <p>32. de 19 de mayo de 1911</p> <p>33. de 19 de mayo de 1911</p> <p>34. de 19 de mayo de 1911</p> <p>35. de 19 de mayo de 1911</p> <p>36. de 19 de mayo de 1911</p> <p>37. de 19 de mayo de 1911</p> <p>38. de 19 de mayo de 1911</p> <p>39. de 19 de mayo de 1911</p> <p>40. de 19 de mayo de 1911</p> <p>41. de 19 de mayo de 1911</p> <p>42. de 19 de mayo de 1911</p> <p>43. de 19 de mayo de 1911</p> <p>44. de 19 de mayo de 1911</p> <p>45. de 19 de mayo de 1911</p> <p>46. de 19 de mayo de 1911</p> <p>47. de 19 de mayo de 1911</p> <p>48. de 19 de mayo de 1911</p> <p>49. de 19 de mayo de 1911</p> <p>50. de 19 de mayo de 1911</p> <p>51. de 19 de mayo de 1911</p> <p>52. de 19 de mayo de 1911</p> <p>53. de 19 de mayo de 1911</p> <p>54. de 19 de mayo de 1911</p> <p>55. de 19 de mayo de 1911</p> <p>56. de 19 de mayo de 1911</p> <p>57. de 19 de mayo de 1911</p> <p>58. de 19 de mayo de 1911</p> <p>59. de 19 de mayo de 1911</p> <p>60. de 19 de mayo de 1911</p> <p>61. de 19 de mayo de 1911</p> <p>62. de 19 de mayo de 1911</p> <p>63. de 19 de mayo de 1911</p> <p>64. de 19 de mayo de 1911</p> <p>65. de 19 de mayo de 1911</p> <p>66. de 19 de mayo de 1911</p> <p>67. de 19 de mayo de 1911</p> <p>68. de 19 de mayo de 1911</p> <p>69. de 19 de mayo de 1911</p> <p>70. de 19 de mayo de 1911</p> <p>71. de 19 de mayo de 1911</p> <p>72. de 19 de mayo de 1911</p> <p>73. de 19 de mayo de 1911</p> <p>74. de 19 de mayo de 1911</p> <p>75. de 19 de mayo de 1911</p> <p>76. de 19 de mayo de 1911</p> <p>77. de 19 de mayo de 1911</p> <p>78. de 19 de mayo de 1911</p> <p>79. de 19 de mayo de 1911</p> <p>80. de 19 de mayo de 1911</p> <p>81. de 19 de mayo de 1911</p> <p>82. de 19 de mayo de 1911</p> <p>83. de 19 de mayo de 1911</p> <p>84. de 19 de mayo de 1911</p> <p>85. de 19 de mayo de 1911</p> <p>86. de 19 de mayo de 1911</p> <p>87. de 19 de mayo de 1911</p> <p>88. de 19 de mayo de 1911</p> <p>89. de 19 de mayo de 1911</p> <p>90. de 19 de mayo de 1911</p> <p>91. de 19 de mayo de 1911</p> <p>92. de 19 de mayo de 1911</p> <p>93. de 19 de mayo de 1911</p> <p>94. de 19 de mayo de 1911</p> <p>95. de 19 de mayo de 1911</p> <p>96. de 19 de mayo de 1911</p> <p>97. de 19 de mayo de 1911</p> <p>98. de 19 de mayo de 1911</p> <p>99. de 19 de mayo de 1911</p> <p>100. de 19 de mayo de 1911</p> | 1911 |
|---|--|------|

| | |
|-------------------------|---|
| NAME
of
applicant | 
NEW YORK STATE
DEPARTMENT OF
TAXATION AND
FINANCE
DIVISION OF TAX SERVICES
TAXPAYER IDENTIFICATION NUMBER |
| DATE
of
entry | DO NOT
WRITE IN
THESE SPACES |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

1. A. L. T. 1977. *Journal of the Royal Society of Medicine* 70: 111-115.
2. A. L. T. 1977. *Journal of the Royal Society of Medicine* 70: 116-117.
3. A. L. T. 1977. *Journal of the Royal Society of Medicine* 70: 118-119.

* *Direct and indirect emissions* (CO₂ emissions) are based on

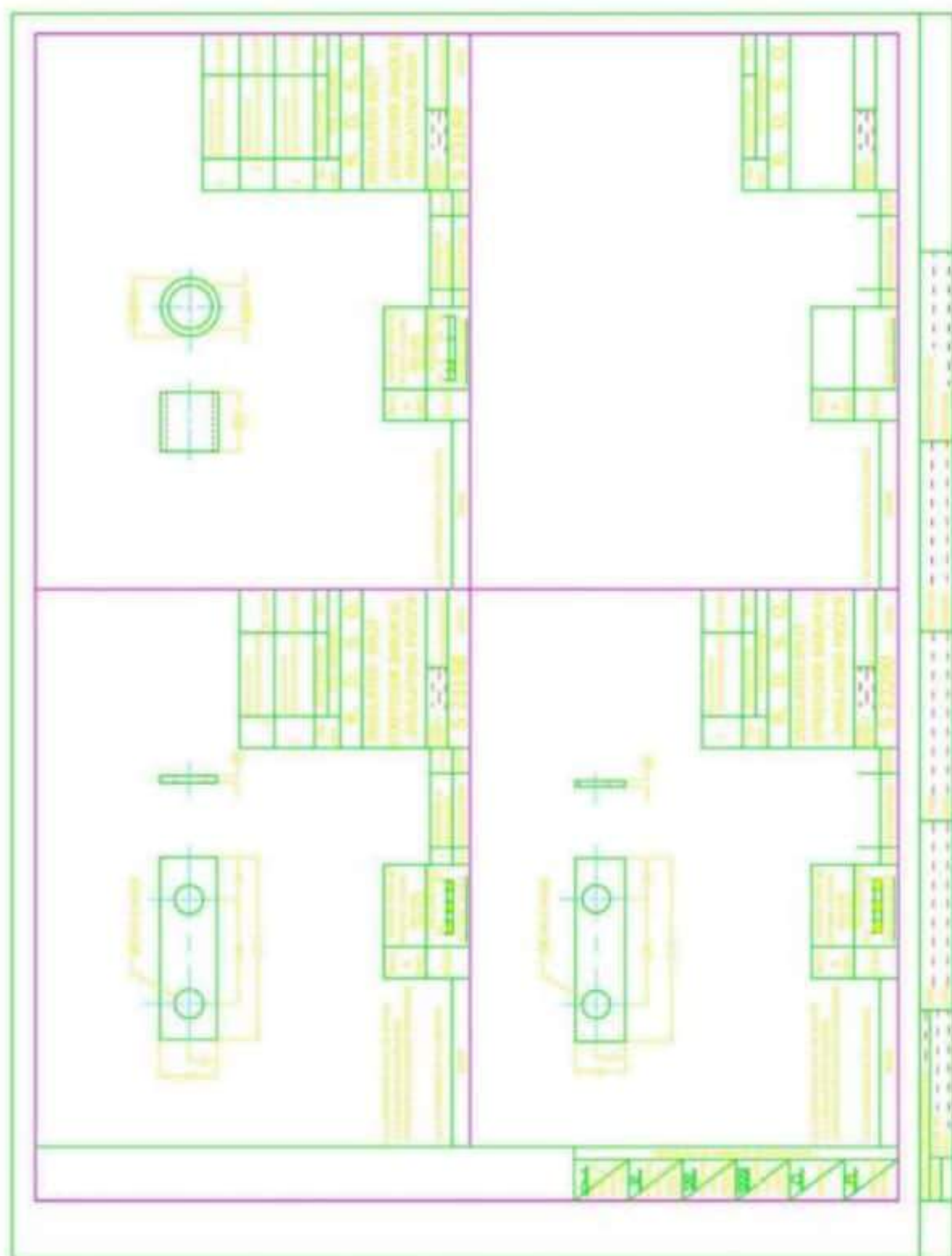
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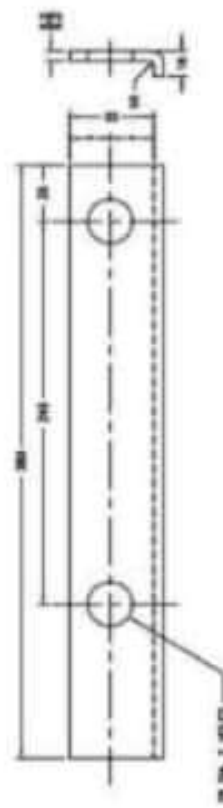
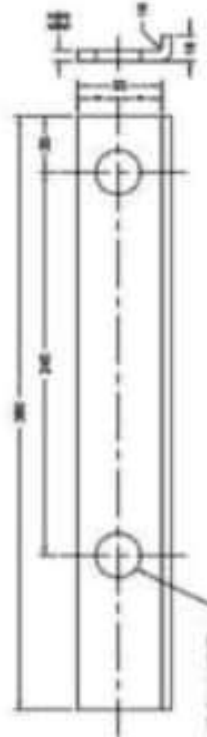
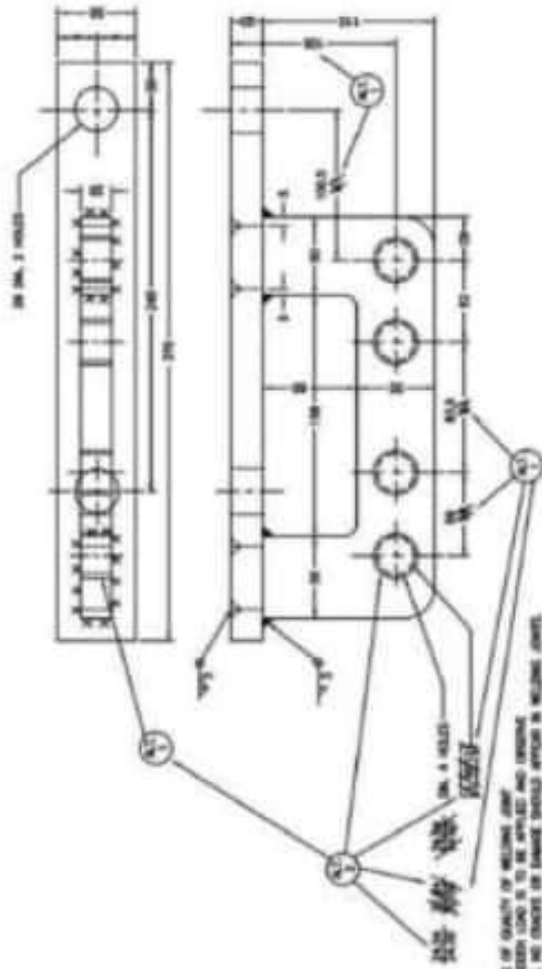
† All comparisons were significant at $p < 0.05$ using the Bonferroni test.

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W/ESTIC 5

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| | | | | | | | |
|---|--|---|--|--|--|-------------------|--|
| 1. ALL DIMENSIONS IN MILLIMETERS.
NOTE | | THERMOPLASTIC
POLY ETHYLENE
MALLER
MALLER
SPED
RES. 50% C/14/10
PB 1 5 27 | | 1. MARKS & DIMS IN 1:10
2. DESCRIPTION DATE | | 3-4-1982 | |
| | | SCALE
10 5 10 20
30 40 50 60 70 80 90 100 | | R. D. S. O.
LAYOUT - FACING POINT B.G.
- INSULATION PLATE (L.H.) | | RDSO/S 3266 | |
| 1. LAYOUT - FACING POINT
B.G. FITTED WITH 100%
THERMOPLASTIC
INSULATION PLATE (L.H.) | | 2. NO. OF
DFT. | | 3. NO. OF
DFT. | | 4. NO. OF
DFT. | |

| | | | | | |
|---|---------------------------|-------------------|---------------------------|--------------------------------|-----------------|
| 1. REPORTING OFFICER'S NO.
2. DATE
3. TIME | S.P. STATUS
Out | WIT
(4) | CASE NO.
RAISED | STATION/PC/Jurisdiction | APPROVED |
|---|---------------------------|-------------------|---------------------------|--------------------------------|-----------------|

28 DRILL, 4 HOLES



NYLON TYPE 66
NATURAL COLOUR
IS : S 40
IRS : S 23



MATL
&
SPEC

SCALE

1. ALL DIMENSIONS IN MILLIMETRES

NOTE

| | | |
|--|-------------------|------------|
| 1 | LOCKING BAR ASSY. | RDSGA 3400 |
| NO. | DESCRIPTION | 10. |
| OFF. | FOR ASSEMBLY | |
| R. D. S. O. | | |
| LOCKING BAR ASSEMBLY
- INSULATING FLATE | | |
| 5.410
CANCELED
BY | | 8.7.97 |
| RDSO/S 3404 | | |

| | | |
|------|------------------------|----------|
| 1 | DIM. 3 ALTERED
AS 8 | 13.12.98 |
| ALT. | DESCRIPTION | DATE |

| NO. | DESCRIPTION | DATE | BY | CHKD. | APPROVED |
|-----|---|---------|----|-------|----------|
| 1 | REGULATION PLATE FOR LEADING STRETCHER BAR | 5 8304 | | | |
| 2 | LOCK & DETECTOR ROD - BUSH (FOR THICK WEB SWITCHES) | 5 22179 | | | |
| 3 | SWITCH DETENTION BRACKET - REGULATION BUSH | 5 23199 | | | |
| 4 | LOCK & DETECTOR ROD - BUSH (FOR THICK WEB SWITCHES) | 5 22179 | | | |
| 5 | SWITCH DETENTION BRACKET - REGULATION BUSH | 5 23199 | | | |

100mm

50mm

10mm

20mm

10mm

100mm

10mm

5mm

1. ALL DIMENSIONS IN MILLIMETRES.

NOTE

✓

1. ALL DIMENSIONS IN MILLIMETRES.

NOTE

✓

2. DIMENSIONS ARE IN MILLIMETRES.

NOTE

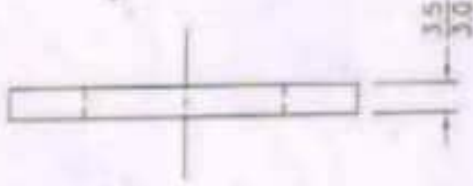
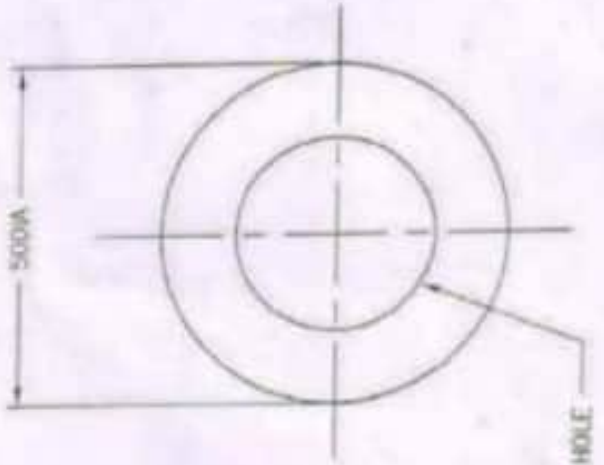
✓

2. DIMENSIONS ARE IN MILLIMETRES.

NOTE

✓

| NO. | DESCRIPTION | DATE | BY | CHKD. | APPROVED |
|-----|---|---------|----|-------|----------|
| 1 | REGULATION PLATE FOR LEADING STRETCHER BAR | 5 8304 | | | |
| 2 | LOCK & DETECTOR ROD - BUSH (FOR THICK WEB SWITCHES) | 5 22179 | | | |
| 3 | SWITCH DETENTION BRACKET - REGULATION BUSH | 5 23199 | | | |
| 4 | LOCK & DETECTOR ROD - BUSH (FOR THICK WEB SWITCHES) | 5 22179 | | | |
| 5 | SWITCH DETENTION BRACKET - REGULATION BUSH | 5 23199 | | | |



• 31.5 DIA HOLE
32.0

| | |
|-----------|--|
| MATL | <div> <div> THERMOPLASTIC
POLY URETHANE </div> <div> MOULDED
INSULATION </div> <div> #050/SPN/S/168/02 </div> <div> IRS : S 23 </div> </div> |
| &
SPEC | |
| SCALE | <div> MILLIMETRES </div> <div> 10 0 20 40 </div> <div> DO NOT SCALE </div> |

1. ALL DIMENSIONS IN MILLIMETRES.

NOTE

| | | |
|--|---|-------------------|
| 6 | LAYOUT FACING POINT
1 IN 12 TURNOUT
B.G. ON P.S.C.
SLEEPERS FITTED WITH
IRS ELECTRIC PR M/C
(60 Kg & 52 Kg) | RO50/S
3261-62 |
| 6 | LAYOUT FACING POINT
B.G. FITTED WITH
HIGH THRUST ROTARY
LOCK TYPE POINT
M/C (WITH PIN JOINT)
(52 Kg & 90 R) | RO50/S
3262-63 |
| 8 | LAYOUT FACING POINT 1
IN 12 TURNOUT B.G. WITH
THICK WEB TONGUE RAIL
ON PSC SLEEPERS
FITTED WITH IRS POINT
MACHINE 220 mm STROKE
(60 Kg & 52 Kg) | RO50/S
3465-66 |
| 4 | LAYOUT 1 IN 12 TURNOUT
B.G. 60 Kg (WITH ZU-60
THICK WEB TONGUE RAIL) ON
PSC SLEEPERS FITTED WITH
IRS PR M/C (220 mm STROKE)
FOR INDEPENDENT SWITCH
LOCKING & CLAMP POINT LOCK
(160 mm) THROW OF POINT) | RO50/S
3454 |
| 8 | B.G. 53 Kg (WITH ZU 2-48
THICK WEB TONGUE RAIL) | RO50/S
3455 |
| NO.
OFF. | DESCRIPTION
FOR ASSEMBLY. | NO. |
| R. D. S. O. | | |
| INSULATING WASHER | | |
| <div> <div> STAMP
CANCELLED
RECD </div> <div> 8640/1 </div> </div> | | |
| ALT. DESCRIPTION | | DATE |