SPECIFICATION FOR 'HARNESS OF UNDER-FRAME AND ROOF ARRANGEMENT' FOR HOG COMPLIANT LHB EOG NON-AC LSLRD (31 SEATER) COACHES FOR AMRIT BHARAT RAKE

1.0 This specification covers manufacturing, assembly, supply of readymade `CABLE HARNESSES for UNDER FRAME AND ROOF FOR HOG COMPLIANT LHB EOG NON-AC LSLRD COACHES (31 SEATER)'. These harnesses shall comprise of thin walled flexible elastomeric cables with Copper conductors duly cut to specified lengths and ferruled for cable identification. The free ends of the cables shall be stripped & taped with FRLT cotton insulation tapes of approved makes.

1.1 The harness manufacturer shall quote for supply of the harness without commissioning.

1.2 The firm shall maintain date wise in-house quality control system and in-house quality control records etc. for in-stage process inspection and testing at harness manufacture premises and the same shall be made available to the inspecting official during Type testing.

2.0 SCOPE OF SUPPLY:

TYPE	DESCRIPTION
TYPE-1	Harness of 'Under-frame arrangement' for HOG compliant LHB EOG Non-AC LSLRD (31 Seater) coaches.
TYPE-2	Harness of 'Roof arrangement' for HOG compliant LHB EOG Non-AC LSLRD (31 Seater) Coaches.

a. Procurement of the items specified in BOM of the specification shall be procured from RDSO/RCF/ICF approved vendors mentioned in latest version of the vendor directory issued by RDSO/RCF/ICF respectively, however the procurement of e-beam Cables & Cable Management system shall be done by RDSO Approved Vendors for minimum 80% quantity of total quantity and balance quantity up-to 20% from Developmental vendors as mentioned in latest version of the Vendor directory issued by RDSO.

Based on the procurement of various sizes of e-beam Cables & Cable management System from either Approved or Developmental Sources, the Cable harness shall be categorized as under:

- Category-A: Cable harness with approved source of e-beam Cables & Cable Management System (80% min.)
- Category-B: Cable harness with Developmental source of e-beam Cables & Cable Management System (20% min.)

Category –B type of cable harness may be supplied with e-beam cables & cable management system procured from Developmental Sources, however in no case Category-A type shall be supplied with e-beam cables & cable management system procured from Developmental Sources.

Firm shall maintain a record according to the above classification and offer to RITES/ Inspecting official for inspection in format EDF 0001, Ver. 3.0 (or latest) annexed with the specification.

Note: - The above mentioned criteria is not applicable to Cable Management System of size NW10 & NW70 as the Approved Sources are less than three or only Developmental Sources are there. Therefore, the procurement of size NW10 & NW-70(if applicable) may be done for such sources subject to past performance, capacity, delivery requirements, quality under procurement, nature of item, outstanding order etc. to be treated as bulk orders.

2.1 TYPE-1: HARNESS OF UNDER FRAME ARRANGEMENT' FOR HOG COMPLIANT LHB EOG NON-AC LSLRD (31 SEATER) COACHES:-

2.1 (a): BILL OF MATERIAL FOR UNDERFRAME WIRING:

A) THIN WALLED FLEXIBLE ELASTOMERIC CABLES WITH COPPER CONDUCTORS & ACCESSORIES:-

S.N.	Description	Working voltage	Cable size (in mm^2)	Cable color	Detail drg./ Spec.	QPC	Remarks
1.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Red	ELRS/SPEC /ELC/0019, Rev.-4	57 Mtrs	Feeder cables
2.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Yellow	ELRS/SPEC /ELC/0019, Rev.-4	57 Mtrs	Feeder cables
3.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Blue	ELRS/SPEC /ELC/0019, Rev.-4	57 Mtrs	Feeder cables
4.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	95	Black	ELRS/SPEC /ELC/0019, Rev.-4	57 Mtrs	Feeder cables
5.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	70	GNYE	ELRS/SPEC /ELC/0019, Rev.-4	9.8 Mtrs	For Feeder Earthing
6.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	50	GNYE	ELRS/SPEC /ELC/0019, Rev.-4	0.5 Mtrs	For Feeder Earthing
7.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Red	ELRS/SPEC /ELC/0019, Rev.-4	27.6 Mtrs	Feeder cables
8.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Yellow	ELRS/SPEC /ELC/0019, Rev.-4	27.6 Mtrs	Feeder cables
9.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Blue	ELRS/SPEC /ELC/0019, Rev.-4	27.6 Mtrs	Feeder cables
10.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Black	ELRS/SPEC /ELC/0019, Rev.-4	27.6 Mtrs	Feeder cables

11.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Red	ELRS/SPEC /ELC/0019, Rev.-4	12.5 Mtrs	9 KVA TXR input (750V AC side)
12.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Yellow	ELRS/SPEC /ELC/0019, Rev.-4	12.5 Mtrs	9 KVA TXR input (750V AC side)
13.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Blue	ELRS/SPEC /ELC/0019, Rev.-4	12.5 Mtrs	9 KVA TXR input (750V AC side)
14.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Black	ELRS/SPEC /ELC/0019, Rev.-4	12.5 Mtrs	9 KVA TXR input (750V AC side)
15.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Red	ELRS/SPEC /ELC/0019, Rev.-4	13.5 Mtrs	9 KVA TXR output (415V AC side)
16.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Yellow	ELRS/SPEC /ELC/0019, Rev.-4	13.5 Mtrs	9 KVA TXR output (415V AC side)
17.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Blue	ELRS/SPEC /ELC/0019, Rev.-4	13.5 Mtrs	9 KVA TXR output (415V AC side)
18.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Black	ELRS/SPEC /ELC/0019, Rev.-4	13.5 Mtrs	9 KVA TXR output (415V AC side)
19.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	GNYE	ELRS/SPEC /ELC/0019, Rev.-4	1.1 Mtrs	For Earthing
20.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Red	ELRS/SPEC /ELC/0019, Rev.-4	32.5 Mtrs	9 KVA TXR output (190V AC side)
21.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Yellow	ELRS/SPEC /ELC/0019, Rev.-4	28 Mtrs	9 KVA TXR output (190V AC side)
22.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Blue	ELRS/SPEC /ELC/0019, Rev.-4	28 Mtrs	9 KVA TXR output (190V AC side)
23.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Black	ELRS/SPEC /ELC/0019, Rev.-4	28 Mtrs	9 KVA TXR output (190V AC side)

24.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	GNYE	ELRS/SPEC /ELC/0019, Rev.-4	14.5 Mtrs	HV panel to RBC & HV panel to LV panel
25.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Red	ELRS/SPEC /ELC/0019, Rev.-4	14 Mtrs	BCT-1, BCT-2 to +ve fuse box
26.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Black	ELRS/SPEC /ELC/0019, Rev.-4	11.5 Mtrs	BCT-1, BCT-2 to -ve fuse box
27.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	White	ELRS/SPEC /ELC/0019, Rev.-4	27.5 Mtrs	-ve fuse box
28.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Choco.	ELRS/SPEC /ELC/0019, Rev.-4	33 Mtrs	+ve fuse box
29.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	White	ELRS/SPEC /ELC/0019, Rev.-4	4.5 Mtrs	RBC to HV Panel
30.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	Choco.	ELRS/SPEC /ELC/0019, Rev.-4	135.5 Mtrs	Feeder control cables & HV Panel to RBC
31.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	GNYE	ELRS/SPEC /ELC/0019, Rev.-4	2.0 Mtrs	For Earthing
32.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	White	ELRS/SPEC /ELC/0019, Rev.-4	5 Mtrs	VK1 to HV Panel
33.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Choco.	ELRS/SPEC /ELC/0019, Rev.-4	57 Mtrs	VK1 to HV Panel
34	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	GNYE.	ELRS/SPEC /ELC/0019, Rev.-4	13 Mtrs	RBC To LV Panel
35. *	3x1.0 sqmm multicore cables 600/1000V colour Wh,Br,Blk	-	3x1.0	Wh,Br, Blk	EDTS-132, Rev-' C ' AM-3, Corr-1 (DS-4)	100 Mtrs *	Speed Sensor/ Disc brake Cable
			3x1.0	Wh,Br, Blk	EDTS-132, Rev-' C ' AM-3, Corr-1 (DS-4)	30 Mtrs (3x10 = 30 Mtr)	Net-1/Net-2 Control+ Spare.

36.	Cable marking system	-	-	-	EDML-60, Col-VI (Latest Revision)	1 no.	Heat shrinkable sleeves of M/S TYCO/ Phoenix/ Panduit make
37.	Copper crimping socket for 70 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	20 nos.	ITEM-7
38.	Copper crimping socket for 50 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	2 nos.	ITEM-11 (M-8)
39.	Copper crimping socket for 25 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	8 nos.	ITEM-14
40.	Copper crimping socket for 25 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	8 nos.	ITEM-23
41.	Copper crimping socket for 16 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	10 nos.	ITEM-15
42.	Copper crimping socket for 16 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	10 nos.	ITEM-16
43.	Copper crimping socket for 10 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	18 nos.	ITEM-2
44.	Copper crimping socket for 6 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	10 nos.	ITEM-4
45.	Copper crimping socket for 2.5 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	10 nos.	ITEM-10
46.	Flexible Flame-retardant high performance polyolefin heat shrinkable tubing	-	-	-	EDML-176, Rev- 0	01 set	Loose supply

Note:-

* 3x1.0 sq.mm shield multi-core cables of speed sensors have been shown for reference in BOM as these are being supplied by WSP system suppliers. Only cables for Net-1/Net-2 Control+Spare are to be supplied along-with Harness.

B) CONDUIT SYSTEM FOR CABLE MANAGEMENT & ACCESSORIES FOR UNDER FRAME WIRING:-

Firms supplying these items shall get these tested as per RDSO specification no. RDSO/PE/SPEC/AC/0138-2009 (Latest)

S. N.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC
1.	Polyamide flexible corrugated conduit, NW-17	RDSO/PE/SPEC/AC/0138-2009,(Latest)	A-1	3	134 Mtrs.

2.	Polyamide flexible corrugated conduit, NW-23		A-1	4	76.5 Mtrs.
3.	Polyamide flexible corrugated conduit, NW-29		A-1	5	18 Mtrs.
4.	Polyamide flexible corrugated conduit, NW-36		A-1	6	12 Mtrs.
5.	Polyamide flexible corrugated conduit, NW-48		A-1	7	22 Mtrs.
6.	Straight PG metal thread End fitting PG-16	RDSO/PE/SPEC/AC/0138-2009,(Latest)	A-2	3	28 nos.
7.	Straight PG metal thread End fitting PG-21		A-2	5	22 nos.
8.	Straight PG metal thread End fitting PG-29		A-2	6	4 nos.
9.	Straight PG metal thread End fitting PG-36		A-2	7	2 nos.
10.	Straight PG metal thread End fitting PG-48		A-2	8	4 nos.
11.	Hex.lock nut with PG thread brass PG-16	RDSO/PE/SPEC/AC/0138-2009,(Latest)	A-10	4	28 nos.
12.	Hex.lock nut with PG thread brass PG-21		A-10	5	22 nos.
13.	Hex. lock nut with PG thread brass PG-29		A-10	6	4 nos.
14.	Hex. lock nut with PG thread brass PG-36		A-10	7	2 nos.
15.	Hex. lock nut with PG thread brass PG-48		A-10	8	4 nos.
16.	Tube clamp NW-17	RDSO/PE/SPEC/AC/0138-2009,(Latest)	A-8	3	20 nos.
17.	Tube clamp NW-23		A-8	4	36 nos.
18.	Tube clamp NW-29		A-8	6	15 nos.
19.	Tube clamp NW-36		A-8	7	30 nos.
20.	Tube clamp NW-48		A-8	8	10 nos.
21.	PG thread plug screws PG-16	RDSO/PE/SPEC/AC/0138-2009,(Latest)	A-18	4	16 nos.
22.	PG thread plug screws PG-21		A-18	5	4 nos.

2.1 (b) PREPARATION / BUNCHING OF HARNESS:-

The preparation / bunching of harness shall be done as per under given for Under Frame wiring.

Har No.	Nos. & size of cable	Spec. no.	Working voltage	Color code	Length in mm	Ferrules marking	Route	Remarks & Flex. conduit size and length	Group name
1	3 nos., 150 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	21600	12 01 15 02, 12 01 18 02, 12 01 21 02	21	Feeder-1 From A16X1 to HOG Compliant Switch Board Cabinet (To be supplied loose)	FEEDER CABLES (Feeder-1)
	1 no., 95 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	Blk	21600	12 01 24 02	21		
1A	2 nos., 2.5 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch,Ch	23500	46 01 03, 46 01 04	25	Control cables **(NW-17,L=21 Mtrs)**	
1B	3 nos., 150 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	20500	12 01 01 02, 12 01 04 02, 12 01 07 02	10	Feeder-2 From A17X1 to HOG Compliant Switch Board Cabinet (To be supplied loose)	FEEDER CABLES (Feeder-2)
	1 no., 95 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	Blk	20500	12 01 10 02	10		
1C	2 nos., 2.5 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch,Ch	23000	46 01 01, 46 01 02	14	Control cables **(NW-17, L=21 Mtrs)**	
1D	3 nos., 150 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	7900	12 01 01 02 A, 12 01 04 02 A, 12 01 07 02 A	10A	Feeder-1 From A18X1 to HOG Compliant Switch Board Cabinet (To be supplied loose)	FEEDER CABLES (Feeder-3)
	1 no., 95 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	Blk	7900	12 01 10 02 A	10A		
1E	2 nos., 2.5 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch,Ch	10000	46 01 01 A, 46 01 02 A	14A	Control cables **(NW-17, L=7.5 Mtrs)**	
1F	3 nos., 150 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	7000	12 01 15 02 A, 12 01 18 02 A, 12 01 21 02 A	21A	Feeder-1 From A16X1 to HOG Compliant Switch Board Cabinet (To be	FEEDER CABLES

	1 no., 95 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	Blk	7000	12 01 24 02 A	21A	supplied loose)	
1G	2 nos., 2.5 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch,Ch	9000	46 01 03 A, 46 01 04 A	25A	Control cables **(NW-17, L=6.5 Mtrs)**	
2	4 nos., 25 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	13800	12 01 01 01, 12 01 04 01, 12 01 07 01, 12 01 10 01	13	HOG Compliant Switch Board Cabinet to under-slung HV Panel **NW-48, L= 11 Mtrs)**	FEEDER LOOP CABLES
2A	4 nos., 25 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	13800	12 01 15 01, 12 01 18 01, 12 01 21 01, 12 01 24 01	23	HOG Compliant Switch Board Cabinet to under-slung HV Panel(**NW-48, L= 11 Mtrs)**	FEEDER LOOP CABLES
3	4 nos., 16 mm²	ELRS/SPEC /ELC/0019, Rev.-4	above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	12500	12 01 12.02, 12 01 13.02, 12 01 14.02, 12 01 11.02	30	Input cables S1 (750V side) to S7 **(NW-29, L= 11 Mtrs)**	9 KVA Trans-former Input/Output Cables
3A	4 nos., 16 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	R,Y,B, Blk	13500	12 02 16.01, 12 02 17.01, 12 02 18.01, 12 02 19.01	31	Output cables S7 (415V side) to S1 **(NW-36, L=12 Mtrs)**	
3B	4 nos., 6 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	R,Y,B, Blk	13500	12 02 06.01, 12 02 07.01, 12 02 08.01, 12 02 09.01	31A	Output cables S7 (190V side) to S1 **(To be laid with harness. no.3A)**	
4	1 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch	3000	35	35	Battery fuse box +ve (S4) to Battery box (S3) **(NW-17, L=2.5 Mtr)**	DC circuit cables
4A	1 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	W	3000	39	39	Battery fuse box -ve (S5) to Battery (S3) **(NW-17, L=2.5 Mtr)**	

4B	1 no., 10 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch	11500	36	36	RBC (S1B) to LV Panel (S1A) **(NW-17, L=9.5 Mtrs)**	
4C	1 no., 10 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	W	10000	40	40	Battery fuse -ve (S5) to LV Panel (S1A) **(NW-23, L=8 Mtrs)**	
4D	1 no., 10 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Ch	7500	42	42	Battery fuse box +ve (S4) to RBC (S1B) **(NW-17, L=5.5 Mtrs)**	
4E	1 no., 10 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	W	4500	43	43	Battery fuse box -ve (S5) to RBC (S1B) **(NW-17, L= 3.5 Mtrs)**	
5*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C, Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	15000	23 03 10.02, 23 03 11.02, 23 03 12.02	81	HV Panel (S1) to connection box VK4 **(NW-17, L=13 Mtrs)**	Speed sensor cables (MECH)
5A*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C, Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	12000	23 03 07.02, 23 03 08.02, 23 03 09.02	82	HV Panel (S1) to connection box VK3 **(NW-17, L=10 Mtrs)**	
5B	5 nos., 1.5 mm^2	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch,Ch, Ch,Ch, GNYE	13000	32 04 05.21 42 04 04.03 32 04 05.22 42 02 10.03 PE	94	RBC TO LV PANEL (NW-17, L = 12.5Mtrs)	RBC TO LV Panel
5C*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C, Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	15000	23 03 01.02, 23 03 02.02, 23 03 03.02	76 (89)	HV Panel (S1) to connection box VK1 **(NW-23, L=11 Mtrs) (NW-17, L=5** Mtrs to be supplied loose) Route no. 75 & 76 are to be laid in one flexible conduit, NW-23 and to be marked route no. 89.	RBC Signal

5D*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C,Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	12000	23 03 04.02, 23 03 05.02, 23 03 06.02	75 (89)	HV Panel (S1) to connection box VK2 **(To be laid with harness no. 5B)**	
6*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C,Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	10000	23 02 06.01, 23 02 07.01, 23 02 05.06	86	HV PANEL (S1) to through box VK5 (EVS2/EVR2) **(NW-29, L=7 Mtrs)**	Disc brake cables
6A*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C,Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	10000	23 02 01.01, 23 02 02.01, 23 02 05.04		HV Panel (S1) to through box VK5 (EVS1/EVR1) **(To be laid with harness no. 6)**	
6B*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C,Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	13000	23 02 14.01, 23 02 15.01, 23 02 05.10	87	HV Panel (S1) to through box VK7 (EVS4/EVR4) **(NW-23, L=11 Mtrs)**	
6C*	3x1.0 mm^2 + Shielded multi-core	EDTS-132, Rev.C,Am-3, Corr-1 (DS-4)	-	W,Br, Blk,	13000	23 02 10.01, 23 02 11.01, 23 02 05.08		HV Panel (S1) to through box VK7 (EVS3/EVR3) **(To be laid with Har. no. 6B)**	
7	2 nos., 1.5 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	W,Ch	5000	-	41	Air Brake Cable (Mech.) **(NW-17, L=3 Mtrs)**	Air Brake cable (Mech.)
8	2 nos., 2.5 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	W,Ch	4500	52	52	HV Panel (S1) to RBC (S1B) **(NW-17, L=2.5 Mtrs)**	RBC
9	6 nos., 6 mm^2	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	R,R,Y,B, Blk, GNYE	4500	53	53	HV Panel (S1). to RBC (S1B) **(NW-23, L=2.5 Mtrs)**	
10	5 no., 6 mm^2	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	R,Y,B, BLK, GNYE	10000	55	55	HV Panel (S1) to On board LV Panel (S1A) **(NW-23, L=8.5 Mtrs)**	110V AC Supply to On-Board Panel
11	4 nos., 70 mm^2	ELRS/SPEC /ELC/0019,	above 750 volts	GNYE	1250	PE	-	Earthing	Earthing

	8 nos., 70 mm²	Rev.-4	upto 1.8KV/ 3.0KV	GNYE	600	PE	-	Earthing	
	1 no., 50 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
	1 no., 16 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
	2 nos., 16 mm²			GNYE	300	PE	-	Earthing	
	4 nos., 2.5 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
12	3 X1.0 mm² (3 nos.)	EDTS-132, Rev.-C,Am-3,Corr-1 (DS-4)	Upto 750 volts	W,Br, Blk	10000	NET	56	**NET-1&2 (NW-23, L= 8.5 Mtrs)**	NET-1&2 + Spare
13	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Red	4000	BCT-1 to BCT-2	55A	BCT-1 to BCT-2 **(NW-23, L=3 Mtr)**	BCT Cables
13A	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Blk	4000	BCT-1 to BCT-2	56A	BCT-1 to BCT-2 **(NW-23, L=3 Mtr)**	
13B	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Red	10000	BCT-1 to Battery Fuse Box (+ve)	42A	BCT-1 to Battery Fuse Box (+ve) **(NW-23, L=8 Mtr)**	
13C	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Blk	7500	BCT-1 to Battery Fuse Box (-ve)	43A	BCT-1 to Battery Fuse Box (-ve) **(NW-23, L=5.5 Mtr)**	
14	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Choc.	11000	RBC (+ve) to HOG Compliant SBC	36A	RBC (+ve) to HOG Compliant SBC **(NW-17, L= 8 Mtr)**	DC Supply to HOG Compliant SBC
14A	01 no., 10 mm²	ELRS/SPEC /ELC/0019, Rev.-4	Upto 750 volts	Wh.	10000	Battery Fuse Box (-ve) to HOG Compliant SBC	40A	Battery Fuse Box (-ve) to HOG Compliant SBC **(NW-23, L= 7.5 Mtr)**	

Note:-

1. Harness No. 5, 5A, 5C, 5D, 6, 6A, 6B & 6C are marked (*) above for reference as cable for Speed Sensor & Disc Brake (WSP System) is being supplied by WSP Suppliers. Therefore, Harness supplier shall supply Polyamide Conduit only.
2. Reference for Wiring on under frame & Roof shall be taken as per clause no. 7.0.
3. Bunching for under frame cables shall be done as per clause 2.1(b) duly ferruled, legibly marked and laid in Polyamide Flexible/PVC Rigid conduits as per requirements in the coaches at shop floor.

4. Harnesses shall be prepared from multi-color cables only as specified for under frame and Roof wiring. Zero halogen, fire retardant heat shrinkable sleeves of M/S Tyco/Phoenix/Panduit/ Brady makes of appropriate color to be used. The standard length of ferrules should only be used.
5. Multi-core cables shall be as per specification no. EDTS-132, (Latest Revision) to respective data sheets.
6. The marking ferrules for feeder cables shall not be heat shrinked at the time of supply by the harness manufacturer, however to be suitably provided at 750 mm from both ends of the cables such that these ferrules shall not disengage from the cables during laying in the feeder pipes. After laying of the harness in the coach these ferrules shall be heat shrinked in place according to shop requirements.

2.2 TYPE-2: HARNESS OF ROOF ARRANGEMENT' FOR HOG COMPLIANT LHB EOG NON-AC LSLRD (31 SEATER) COACHES:-

2.2 a) BILL OF MATERIAL FOR ROOF WIRING:-

A) THIN WALLED FLEXIBLE ELASTOMERIC CABLES WITH COPPER CONDUCTORS & ACCESSORIES:-

Sr. No.	Description	Working voltage	Cable size (in mm^2)	Cable color	Detail drg./ Spec.	QPC	Remarks/ Location
1.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Red	ELRS/SPEC/ELC/ 0019,Rev.-4	357.8 Mtrs.	Inside coach
2.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Yellow	ELRS/SPEC/ELC/ 0019,Rev.-4	503.5 Mtrs.	Inside coach
3.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Blue	ELRS/SPEC/ELC/ 0019,Rev.-4	217.6 Mtrs.	Inside coach
4.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Black	ELRS/SPEC/ELC/ 0019,Rev.-4	609.8 Mtrs.	Inside coach
5.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	GNYE	ELRS/SPEC/ELC/ 0019,Rev.-4	671.6 Mtrs.	Inside coach
6.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Red	ELRS/SPEC/ELC/ 0019,Rev.-4	27.8 Mtrs.	Inside coach
7.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Yellow	ELRS/SPEC/ELC/ 0019,Rev.-4	66 Mtrs.	Inside coach
8.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Blue	ELRS/SPEC/ELC/ 0019,Rev.-4	39.1 Mtrs.	Inside coach
9.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Black	ELRS/SPEC/ELC/ 0019,Rev.-4	27.5 Mtrs.	Inside coach
10. *	UIC Control cable	-	16-Core	-	RDSO/PE/MS/ AC/0051-2011, Am-1, RCF Anx.-D	50 Mtrs.	Inside Coach

11.	PVC Spout type circular box fire retardant, 4-way dia 20mm	-	-	-	IS:3419-76,T-9, FIG-E	60 nos.	Inside coach
12.	Rigid PVC conduit Dia 20mmx300mm	-	-	-	IS:9537-83,P3, CL.5.1.2	02 nos.	Inside coach
13.	Rigid PVC conduit Dia 20mmx330mm	-	-	-	IS:9537-83,P3, CL.5.1.2	08 nos.	Inside coach
14.	Rigid PVC conduit Dia 20mmx350mm	-	-	-	IS:9537-83,P3, CL.5.1.2	02 nos.	Inside coach
15.	Rigid PVC conduit Dia 20mmx 380 mm	-	-	-	IS:9537-83,P3, CL.5.1.2	22 nos.	Inside coach
16.	Rigid PVC conduit Dia 20mmx450mm	-	-	-	IS:9537-83,P3, CL.5.1.2	16 nos.	Inside coach
17.	Rigid PVC conduit Dia 20mmx700mm (Bell Mouth at one end)	-	-	-	IS:9537-83,P3, CL.5.1.2	08 nos.	Inside coach
18.	Rigid PVC conduit Dia 20mmx1000mm	-	-	-	IS:9537-83,P3, CL.5.1.2	12 nos.	Inside coach
19.	Rigid PVC conduit Dia 20mmx1500mm	-	-	-	IS:9537-83,P3, CL.5.1.2	04 nos.	Inside coach
20.	Rigid PVC conduit Dia 20mmx4000mm	-	-	-	IS:9537-83,P3, CL.5.1.2	20 nos.	Inside coach
21.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	25 mtr.	ITEM-5
22.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	25 mtr.	ITEM-7
23.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	45 mtr.	ITEM-8
24.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	05 mtr.	ITEM-9
25.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	05 mtr.	ITEM-11
26.	FRLT cotton insulation tape, RED	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
27.	FRLT cotton insulation tape, YELLOW	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
28.	FRLT cotton insulation tape, BLUE	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
29.	FRLT cotton insulation tape, BLACK	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
30.	FRLT cotton insulation tape, GREEN	-	-	-	ICF/ELEC/921, Rev.00	3 nos.	-
31.	FRLT cotton insulation tape, WHITE	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
32.	FRLT cotton insulation tape, CHOCO.	-	-	-	ICF/ELEC/921, Rev.00	03 nos.	-
33.	Cable Binder	-	-	-	CC76129, Alt-'a' Item-1	100 nos.	M/s EVEREST, NOVAFLEX, Panduit & M V Electro systems & other Approved Make
34.	Cable Binder	-	-	-	CC76129, Alt-'a' Item-2	100 nos.	
35.	Cable Binder	-	-	-	CC76129, Alt-'a' Item-4	100 nos.	

36.	Copper Crimping Socket for 4 sq. mm. cable (for EFT circuit and termination at EFT)	-	-	-	EDTS-201 (Latest), Table-1	12 nos.	Item-8 (M6)
37.	Copper Crimping Socket for 4 sq. mm. cable (for EFT circuit and termination at RSW panel)	-	-	-	EDTS-201 (Latest), Table-1	04 nos.	Item-12 (M8)

NOTE:
* UIC Control Cable 16-core is in the scope of RCF.

B) CONDUIT SYSTEM FOR CABLE MANAGEMENT & ACCESSORIES(ROOF WIRING):-

Firms supplying these items shall get these tested as per RDSO specification no. RDSO/PE/SPEC/AC/0138-2009, (Latest).

Sr. No.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC
1.	Polyamide Flexible Corrugated Conduit, NW-17	RDSO/PE/SPEC/AC/0138-2009, (Latest)	A-1	3	42.5 mt.
2.	Polyamide Flexible Corrugated Conduit, NW-23		A-1	4	10 mt.
3.	Tube clamp NW-17	RDSO/PE/SPEC/AC/0138-2009, (Latest)	A-8	3	5 nos.
4.	Tube clamp NW-23		A-8	4	5 nos.
5.	Spout- 4way- (NW-17)		A-16	1	12 nos.

Note: -
1. Reference for Wiring on under frame & Roof shall be taken as per clause no. 7.0.
2. Bunching for Roof cables shall be done as per Annexure-B with duly ferruled, legibly marked and laid in polyamide flexible/PVC Rigid conduits as per wiring requirements in the coaches at shop floor. Cable protection system shall be supplied as per BOM of clause 2.2 (B).
3. Identification shall be made with colored, zero halogen fire retardant heat shrinkable sleeves of **M/S TYCO/Phoenix/Panduit /MV make** upto 100mm length.

3.0 TECHNICAL REQUIREMENTS:

3.1 While manufacturing of cable harnesses essential safety requirements for voltage grade segregation, crimping etc. shall be strictly followed as per instructions laid down in under given documents:

a) General requirements shall be as per RDSO Spec. no. EL/TL/56-92 (Code of practice for train Lighting maintenance on Prevention of Fires on 110V DC).

b) Instructions laid down in Code of practice for wiring End On Generation Train Lighting system working at 750VAC,ELPS/SPEC/EOG-01(MARCH-94) shall be followed.

c) Work instructions for preparation of Harness to RCF document no. EDW0003 Ver.-02 or the Latest version.

d) Work instructions for crimping of cable ends and cable terminations to RCF document no. EDW0006 Ver.-01 or the Latest version.

e) Schedule of Technical Requirements **(STR) no. RCF/EL/0015-2011 (Rev.-C)** shall be strictly followed for preparation of ready-made harness.

3.2 Stripping of the cables at the ends shall be done where crimping sockets are not provided for ease of wiring.

3.3 The complete Roof Wiring Harness shall be made according to the Annexure-B.

3.4 Technical Staff:-

a) The staff with minimum qualification `ITI' with **02** years experience or minimum **05** years experience for non ITI's in manufacturing harness of power-wiring/control wiring in panels or other similar works having intricate design.

b) The Supervisor staff for the skilled worker should be minimum graduate in Electrical/Electronics with 02 years experience in the same field or should be diploma holder in Electrical/Electronics discipline with at least **05** years experience in manufacturing of harness of power wiring control wiring in panels or other similar works. The firm shall deploy supervisors/staff in adequate nos. so as to match the delivery schedules as accepted by them against the contract".

3.5 Proper cutting/crimping tools for various sizes of cables shall be available for the staff for ease of crimping & cutting of cables.

3.6 Marking ferrules shall be of computer generated type for easy identification of the cables with the help of shrinking sleeves (self-extinguishing) of suitable size horizontally printed cable markers of Tyco/Phoenix/Panduit make only.

3.7 Test for thin walled flexible elastomeric cables with copper conductors for its basic properties may be conducted on any sample picked up from the supply. The cost for the testing will be borne by the firm. The specific tests to be done are covered in clause 4.9.

3.8 The firm shall take prompt action or act promptly within a reasonable time upon a short notice to rectify the defects/deficiency/deficiency noticed/reported by RCF in the cable harness supplied by the firm. Failure to do the needful up to the satisfaction of the RCF, Firm's contract may be rescind immediately or terminated without any further notice or may be levied penalty corresponding to the delay caused in the coach turn out for which the decision of the nominated `**Competent Authority' shall be Final and Binding on the firm".**

3.9 The firm's premises may be inspected by representative of PCEE/RCF on any day on a short notice to ensure compliance to the various stipulations of the specifications, laid down standards including work instructions for the cable harness manufacturing practices. If anything is not laid or specified therein this specification, the work shall be completed as per the best-established Engineering Practices/Procedures being followed in the Industry. "The firm shall extend all the necessary help to allow visiting all the infrastructure facilities, M&P, Tools, Testing facilities, examination of related quality records/documents etc. during his visit"

3.10 All the Rigid Conduits, Flexible Conduits, End Fittings shall be in firm's scope of supply. However Clamps & it's Hardware's etc. will be in RCF scope of supply.

3.11 Only those firms shall be considered which have adequate infrastructure to make similar nature wiring/ harness at its manufacturing unit and conforming to STR.

3.12 Firm shall fill-up proforma for guaranteed performance as per **Annexure-`A'** and furnish details along with tender. It is perquisite without which offer shall be considered technically disqualified.

3.13 The Cable & Conduit manufacturer shall submit a certificate along with each lot of supply that the same raw material has been used in manufacturing of the present supply as was used on which the type tests were conducted.

3.14 Every letter from the firm shall have name and designation of the official signing the letter with the signature.

3.15 Procurement of the items specified in the BOM of the specification shall be from RDSO/RCF/ICF approved vendors mentioned in latest version of the vendor directory issued by RDSO/RCF/ICF respectively, however the procurement of cables shall be done from RDSO 'approved vendors' for minimum 80% quantity of NPQ and balance 20% quantity from 'developmental vendors' as mentioned in the latest version of vendor directory issued by RDSO.

Based on the procurement of various sizes of cables from either approved or developmental sources, the cable harness shall be categorized as under:

Category-A: Cable Harness with approved sources of cables (80% min.)
Category-B: Cable Harness with developmental sources of cables (up to 20%)

Category-B type of cable harnesses may be supplied with cables procured from developmental sources however in no case Category-A type shall be supplied with cables procured from developmental sources.

Firm shall maintain a record according to the above classification and offer to M/s RITES/inspecting official for inspection in format EDF 0001 with the specification.

4.0 TESTS:

4.1 Inspecting agency /RITES shall carry out the tests in harness manufacturer's premises as per acceptance and routine tests specified in the tender specification. Check list Proforma consisting of testing details, observations/measurements and acceptability of the measurements should be prepared and testing to be done as per Proforma jointly with the firm's engineer. This should be submitted along with the inspection certificate to RCF.

4.2 Cables prescribed in RDSO/RCF specification of cables received by the harness manufacturer shall be inspected by RITES for acceptance and routine tests at cable manufacturer premises and certificate to this effect should be submitted by cable harness manufacturer to RCF.

4.3 Cable management system prescribed in RDSO specification RDSO/PE/SPEC/AC/0138-2009, (Latest) shall be inspected by RITES (RA Berlin- in case of imported manufacturer) for acceptance and routine tests and certificate to this effect should be submitted by cable harness manufacturer to RCF.

4.4 The format for inspection based upon the tests stipulated in specification shall be as per clause no.-4.10.

4.5 Firm's internal testing to be done by qualified person as per para 3.4 (b) of this specification and submitted to RCF.

4.6 **TYPE TEST:**

All the type tests mentioned in Clause 4.9 & 4.10 shall be carried out on a prototype unit. The firm manufacturing for the first time shall get the prototype approved from PCEE/RCF.

4.7 ROUTINE TEST:

Routine tests mentioned in clause 4.9 shall be carried out on each unit by the manufacturer at his works to ensure compliance with the specification and the drawings.

4.8 ACCEPTANCE TEST:

a) Acceptance tests for cables will be done at cable manufacturer's premises as per RDSO specification no. ELRS/SPEC/ELC/0019 (Latest Revision).

b) Acceptance tests for conduits etc. for cable management system will be done as per RDSO specification no. RDSO/PE/SPEC/AC/0138-2009, (Latest) for supply for Non-RDSO approved sources but RCF approved sources, clause 7.0 is to be followed.

c) Acceptance test mentioned in clause 4.9 cable harness manufacturer to be witnessed by inspecting agency nominated by the purchaser at the works of the cable harness manufacturer, on the samples picked up by the inspecting authority. All the acceptance tests shall be carried out at firm's premises at the manufacturer's cost. Inspecting officer will witness the tests.
A copy of the internal tests conducted by the firm shall be supplied to inspecting/purchasing authority. Inspecting agency shall maintain record of all the tests conducted for future reference and will check the authenticity and the originality of the bill of material for each item by seeing the invoices invariably to avoid spurious material being safety involved.

4.9 TABLE FOR TESTS:-

Tests for harnesses at firm`s premises:

S.No	Tests	Type Test	Routine Test	Acceptance Test
1	Visual inspection, including inspection of wiring and electrical operational test. (Visual inspection for proper assembly, compatibility of sub-components & wiring etc.)	YES	YES	YES
2	Checking of electrical continuity	YES	YES	YES
3	Checking of cable routing & alignment as per requirements	YES	YES	YES
4	Test for verification of dielectric properties. (shall withstand (2.0 KV for 1 minute)	YES	YES	-
5	Test for verification of insulation resistance. (>100 MΩ with 500 V Megger).	YES	YES	-
6	Compliance to safety related codes of practice as per para 4.0 of this specification.	YES	YES	YES
7	Originality of the bill of the material with proof of the invoices	YES	YES	YES
8	Check of crimping joints	YES	YES	-

	a) mV drop Test. b) Pull out Test.			
9.	Test for thin walled flexible elastomeric cables with copper conductors	YES	YES	YES
10.	Test for cable protection system	YES	YES	YES
11.	Test for marking ferrules	YES	YES	YES
12.	Test for copper crimping sockets	YES	YES	YES
13.	Test for FRLT tape	YES	YES	YES
14.	Test for cable alley/ duct	YES	YES	YES
15.	Test for rigid PVC Conduit to IS;9537 (Part-3)	YES	YES	YES

4.10 a): Details of testing:

S. No.	Details of testing	Remarks of Rites Inspecting official
1.	Tests for thin walled flexible elastomeric cables with copper conductors to RDSO Specification no. ELRS/SPEC/ELC/0019(Latest)	
a	Test for thickness of insulation and sheath as per applicable clause of RDSO spec (5% of each cable size to be checked.)	
b	High voltage test (water immersion test) as per applicable clause of RDSO spec. (on two cable size of cable used)	
c	Insulation resistance test as per applicable clause of RDSO spec. (on one cable size different from HV test)	
d	Tracking resistance as per applicable clause of RDSO spec.(on two size not covered in HV test & IR test)	
e	Strip ability as per applicable clause of RDSO spec. (10 samples in prototype testing and five samples in acceptance/routine test of different size 1mm to 6mm)	
f	Wind ability of the finished cable as per applicable clause of RDSO spec. (One sample 1-6 sq. mm & one sample more than 6 sq. mm)	
g	Slippage test as per applicable clause of the RDSO spec. (two samples for size less than 25mm dia and two samples for dia more than 25mm)	
2.	**Cable Protection System- Testing as per RDSO Spec. No. RDSO/PE/SPEC/AC/0138(Latest)**	
a	Make	
b	Type / Series used for	
i	Conduit	
	Checking of dimensions	
	Compression test (two sample of each size)	
	Impact test (one sample of each sizes)	
	Flexing test (2 samples of each type of fitting.)	
	di-electric strength (one sample of each size)	
ii	End fitting – Tensile test (of different five sizes)	
iii	Tube clamps – Dimensional check as per – two sample of each size	
iv	Lock nuts – Dimensional check as per – two sample of each size.	
3.	**Marking ferrules**	
	Computer generated (verification of make/brand)	Tyco / Phoenix / Panduit /MV/____
4.	**Copper crimping sockets**	
	Visual inspection and checking of dimensions as per cl 5.6 of EDTS200 (five sample of each)	
	Crimping test as per cl 5.7 of EDTS200 (Two sample of size less than 6mm^2 and two sample of 6mm^2)	

	Flattening test as per cl 5.8 of EDTS200	
5.	**FRLT tape**	
	ISI marked Resistance to flame propagation as per clause 6.0 of IS:7809 for 2 samples	
	Electrical strength as per clause 7.1 of IS:7809 for 5 samples IR value	
6.	**Cable alley / duct**	
	Make/catalogue number used verify make of _____ test certificates.	
7.	**Acceptance test for PVC Conduit to IS:9537**	
a	Checking of dimensions as clause 7 of IS.	
b	Bending test (at room temperature) as per clause 9.2 of IS spec.	
c	Compression test as per cl. 9.3 of IS spec (5 sample in prototype and 2 samples in acceptance /routine)	
d	Collapse test as per cl. 9.5 of IS spec (One sample)	
e	Resistance to burning as per cl. 11 of IS spec. (2 samples)	
f	Electrical characteristics as per cl. 12 of IS spec.	

4.10 (b): Tests after commissioning of the coach at RCF:

S.No	Tests	Type Test	Routine Test	Acceptance Test	Clause of IS:8623(P-I)-93
1	Verification of insulation resistance	YES	YES	YES	8.3.4
2	Checking of electrical continuity of all the circuits.	YES	YES	YES	8.3.3
3.	Verification of die electric properties	YES	YES	YES	8.2.2

The accuracy of measuring instruments used for both type and routine tests shall be of class 1.5.

5.0 APPROVALS:

5.1 Firms manufacturing for the first time shall get the Prototype Inspection done by the office of the PCEE/RCF.

5.2 **Firm supplying the Coach Harness for first time shall supply one set of coach harness for validation on coach before bulk supply.**

6.0 PACKING AND TRACEABILITY:-

1. Packing per coach set shall be done as per packing conditions. However either card board packing in single unit or plastic containers (returnable basis) shall be used for supplying the material. The packing shall be legibly marked for the type of coach applicable for.
2. All the loose wiring for lavatory area & other locations shall be segregated and bunched separately before packing.
3. Performa invoice of all the major items like cable, crimping sockets etc. shall be supplied along with each supply of material.
4. Every unit of supply item shall be numbered / marked for identification, traceability and analysis. The following details shall be imprinted on the number plate of each unit
   a) Serial Number
   b) Year and month of manufacture
   c) Name of the item

7.0 ENCLOSURES:

S.No	Drawing/Spec. no.	Description
1.	RDSO Spec. no. EL/TL/56-92	Code of practice for Train Lighting maintenance on Prevention of Fires on 110V D.C
2.	RDSO Spec. no. EL/TL/001	Code of practice for End On Generation for Train Lighting system working at 750VAC
3.	RCF/EL/0015-2011 (Rev. `C')	Schedule of technical requirements (STR) for ready-made harness.
4.	EDW0003 Ver.– 1.0 or Latest	Work instructions for preparation of Harness
5.	EDW0006 Ver.– 3.0 or Latest	Work instructions for crimping of cable ends and cable terminations
6.	Annexure-A	Performa for Performance Guarantee
7.	**Annexure-B**	Preparation/Bunching of Harness for Jumper and Branch wiring for Non AC LSLRD Coaches (31-Seater)
8.	**SKED-1035, Alt-'Nil'**	Drawing of Jumper & Branch Wiring of Roof for Non AC LSLRD Coaches. (31-Seater)

ANNEXURE `A' TO SPEC. NO. EDTS-458, REV-Nil

PERFORMA FOR PERFORMANCE GUARANTEE

S. No.	ITEMS DESCRIPTION	COMPLIANCE (YES/NO)
1.	Compliance of **STR** (if Yes, enclose clause by clause comments)	
2.	Compliance of qualified technical staff (if Yes, enclose the details)	
3.	Compliance of adequate space and condition for manufacturing, assembly (if yes, enclose the details)	
4.	Compliance of in-house testing facilities (if Yes, enclose the details)	
5.	Compliance of other details to improve the quality (if Yes, enclose the details)	

Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.				Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From		To					
JUMPER WIRING (+VE) CUBICLE TO GUARD ROOM CENTRALISED FDB										
1	CUBICLE	CFDB-1	CFDB-1	LI+	LI+	CUBICLE	4	Y	9800	LOOSE
			CFDB-1	LII+	LII+	CUBICLE	4	Y	9800	
			CFDB-1	F+	F+	CUBICLE	4	R	9800	
2	CUBICLE	VHF BOX (GUARD ROOM)	VHF BOX	LI+	LI+	CUBICLE	4	Y	10400	LOOSE
JUMPER WIRING (+VE) FOR CENTRALISED FDB DOORWAY AREA										
3	CFDB-1	CFDB-2	CFDB-2	LI+	LI+	CFDB-1	4	Y	7500	LOOSE
			CFDB-2	LII+	LII+	CFDB-1	4	Y	7500	
			CFDB-2	F+	F+	CFDB-1	4	R	7500	
3A	CUBICLE	CFDB-2	CFDB-2	LSI+	LSI+	CFDB-1	1.5	Y	7500	
			CFDB-2	LSII+	LSII+	CFDB-1	1.5	Y	7500	
4	CFDB-2	CFDB-3	CFDB-3	LI+	LI+	CFDB-2	4	Y	10500	LOOSE
			CFDB-3	LII+	LII+	CFDB-2	4	Y	10500	
			CFDB-3	F+	F+	CFDB-2	4	R	10500	
			CFDB-3	LSI+	LSI+	CFDB-2	1.5	Y	10500	
			CFDB-3	LSII+	LSII+	CFDB-2	1.5	Y	10500	
5	SW-1, VHF BOX (GUARD ROOM LIGHT	CFDB-1	CFDB-1	LI+	LI+	VHF BOX	1.5	Y	5000	LOOSE
	SW-2, VHF BOX (GUARD ROOM LIGHT		CFDB-1	LI+	LI+	VHF BOX	1.5	Y	6000	LOOSE
6	VHF BOX (LUGGAGE LIGHT SW)	CFDB-3	CFDB-3	LI+	LI+	VHF BOX	1.5	Y	20000	LOOSE
JUMPER WIRING (-VE & PE) CUBICLE TO GUARD ROOM CENTRALISED FDB										
7	CUBICLE	CFDB-4	CFDB-4	L-	L-	CUBICLE	4	B	9500	LOOSE
			CFDB-4	F-	F-	CUBICLE	4	BLK	9500	
			CFDB-4	PE	PE	CUBICLE	1.5	GNYE	9500	
8	CUBICLE	CFDB-5	CFDB-5	LS-	LS-	CUBICLE	1.5	BLK	7000	
9	CUBICLE	VHF BOX (GUARD ROOM)	VHF BOX	L-	L-	CUBICLE	4	B	11600	
JUMPER WIRING (-VE & PE) FOR CENTRALISED FDB DOORWAY AREA										
10	CFDB-4	CFDB-5	CFDB-5	L-	L-	CFDB-4	4	B	7500	LOOSE
			CFDB-5	F-	F-	CFDB-4	4	BLK	7500	
			CFDB-5	PE	PE	CFDB-4	1.5	GNYE	7500	
11	CFDB-5	CFDB-6	CFDB-6	L-	L-	CFDB-5	4	B	10500	LOOSE
			CFDB-6	F-	F-	CFDB-5	4	BLK	10500	
			CFDB-6	LS-	LS-	CFDB-5	1.5	BLK	10500	
			CFDB-6	PE	PE	CFDB-5	1.5	GNYE	10500	
BRANCH WIRING (+VE) (CENTRALISED FDB-1) DOORWAY GUARD ROOM: LIGHT CIRCUIT										
12	CFDB-1	DL-1	DL-1	LI+	LI+	CFDB-1	1.5	Y	1500	LOOSE
13		DL-2	DL-2	LI+	LI+	CFDB-1	1.5	Y	3200	
14		GL-1	GL-1	LI+	LI+	CFDB-1	1.5	Y	4000	
15		LL-1	LL-1	LI+	LI+	CFDB-1	1.5	Y	6000	
BRANCH WIRING (+VE) (CENTRALISED FDB-1) GUARD ROOM: LIGHT & FAN CIRCUIT										
16	CFDB-1	LSW-1	LSW-1	LI+	LI+	CFDB-1	1.5	Y	3500	BUNCHING
17	LSW-1	LED-1	LED-1	LI+	LI+	LSW-1	1.5	Y	2500	
18	CFDB-1	LSW-2	LSW-2	LII+	LII+	CFDB-1	1.5	Y	6000	
19	LSW-2	LED-2	LED-2	LII+	LII+	LSW-2	1.5	Y	2500	
20	CFDB-1	FSW-1	FSW-1	F+	F+	CFDB-1	1.5	R	3500	

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Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.				Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From		To					
21	FSW-1	F-1	F-1	F+	F+	FSW-1	1.5	R	3000	
22	CFDB-1	FSW-2	FSW-2	F+	F+	CFDB-1	1.5	R	6000	
23	FSW-2	F-2	F-2	F+	F+	FSW-2	1.5	R	3000	
BRANCH WIRING (+VE) (CENTRALISED FDB-1) CREW ROOM: LIGHT & FAN CIRCUIT										
24	CFDB-1	LSW-3	LSW-3	LII+	LII+	CFDB-1	1.5	Y	5000	BUNCHING
25	LSW-3	LED-3	LED-3	LII+	LII+	LSW-3	1.5	Y	2500	
26	CFDB-1	LSW-4	LSW-4	LI+	LI+	CFDB-1	1.5	Y	7500	
27	LSW-4	LED-4	LED-4	LI+	LI+	LSW-4	1.5	Y	2500	
28	CFDB-1	FSW-3	FSW-3	F+	F+	CFDB-1	1.5	R	6500	
29	FSW-3	F-3	F-3	F+	F+	FSW-3	1.5	R	4000	
30	CFDB-1	FSW-4	FSW-4	F+	F+	CFDB-1	1.5	R	9000	
31	FSW-4	F-4	F-4	F+	F+	FSW-4	1.5	R	3000	
BRANCH WIRING (-VE & PE) (CENTRALISED FDB-4) DOORWAY GUARD ROOM: LIGHT CIRCUIT										
32	CFDB-4	DL-1	DL-1	L-	L-	CFDB-4	1.5	B	3200	LOOSE
		DL-1	DL-1	L(PE)	L(PE)	CFDB-4	1.5	GNYE	3200	
33		DL-2	DL-2	L-	L-	CFDB-4	1.5	B	1500	
		DL-2	DL-2	L(PE)	L(PE)	CFDB-4	1.5	GNYE	1500	
34		GL-1	GL-1	L-	L-	CFDB-4	1.5	B	4000	
		GL-1	GL-1	L(PE)	L(PE)	CFDB-4	1.5	GNYE	4000	
35		LL-1	LL-1	L-	L-	CFDB-4	1.5	B	3000	
		LL-1	LL-1	L(PE)	L(PE)	CFDB-4	1.5	GNYE	3000	
BRANCH WIRING (-VE & PE) (CENTRALISED FDB-4) GUARD ROOM: LIGHT & FAN CIRCUIT										
36	CFDB-4	LED-1	LED-1	L-	L-	CFDB-4	1.5	B	4800	BUNCHING
		LED-1	LED-1	L(PE)	L(PE)	CFDB-4	1.5	GNYE	4800	
37		LED-2	LED-2	L-	L-	CFDB-4	1.5	B	3000	
		LED-2	LED-2	L(PE)	L(PE)	CFDB-4	1.5	GNYE	3000	
38		F-1	F-1	F-	F-	CFDB-4	1.5	BLK	4500	
		F-1	F-1	F(PE)	F(PE)	CFDB-4	1.5	GNYE	4500	
39		F-2	F-2	F-	F-	CFDB-4	1.5	BLK	3800	
		F-2	F-2	F(PE)	F(PE)	CFDB-4	1.5	GNYE	3800	
BRANCH WIRING (-VE & PE) (CENTRALISED FDB-4) CREW ROOM: LIGHT & FAN CIRCUIT										
40	CFDB-4	LED-3	LED-3	L-	L-	CFDB-4	1.5	B	6500	BUNCHING
		LED-3	LED-3	L(PE)	L(PE)	CFDB-4	1.5	GNYE	6500	
41		LED-4	LED-4	L-	L-	CFDB-4	1.5	B	5000	
		LED-4	LED-4	L(PE)	L(PE)	CFDB-4	1.5	GNYE	5000	
42		F-3	F-3	F-	F-	CFDB-4	1.5	BLK	5500	
		F-3	F-3	F(PE)	F(PE)	CFDB-4	1.5	GNYE	5500	
43		F-4	F-4	F-	F-	CFDB-4	1.5	BLK	4800	
		F-4	F-4	F(PE)	F(PE)	CFDB-4	1.5	GNYE	4800	
BRANCH WIRING (+VE) (CENTRALISED FDB-2) MIDDLE DOORWAY AREA: LIGHT CIRCUIT										
44	CFDB-2	LL-2	LL-2	LI+	LI+	CFDB-2	1.5	Y	3000	LOOSE
45		LL-3	LL-3	LI+	LI+	CFDB-2	1.5	Y	5600	
46		GL-2	GL-2	LI+	LI+	CFDB-2	1.5	Y	4000	
47		DL-3	DL-3	LI+	LI+	CFDB-2	1.5	Y	1500	
48		DL-4	DL-4	LI+	LI+	CFDB-2	1.5	Y	3200	
BRANCH WIRING (+VE) (CENTR. FDB-2) PASSENGER COMPARTMENT-1: LIGHT & FAN CIRCUIT										
49	CFDB-2	LED-5	LED-5	LI+	LI+	CFDB-2	1.5	Y	3000	BUNCHING
50		LED-6	LED-6	LII+	LII+	CFDB-2	1.5	Y	4500	
51	CFDB-2	FSW-5	FSW-5	F+	F+	CFDB-2	1.5	R	3500	
52	FSW-5	F-5	F-5	F+	F+	FSW-5	1.5	R	3000	
53	CFDB-2	FSW-6	FSW-6	F+	F+	CFDB-2	1.5	R	3500	

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Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.				Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From		To					
54	FSW-6	F-6	F-6	F+	F+	FSW-6	1.5	R	3500	
55	CFDB-2	FSW-7	FSW-7	F+	F+	CFDB-2	1.5	R	7000	
56	FSW-7	F-7	F-7	F+	F+	FSW-7	1.5	R	3000	
BRANCH WIRING (+VE) (CENTR. FDB-2) PASSENGER COMPARTMENT-2: LIGHT & FAN CIRCUIT										
57	CFDB-2	LED-7	LED-7	LII+	LII+	CFDB-2	1.5	Y	5500	BUNCHING
58		LED-8	LED-8	LI+	LI+	CFDB-2	1.5	Y	7000	
59	CFDB-2	FSW-8	FSW-8	F+	F+	CFDB-2	1.5	R	6800	
60	FSW-8	F-8	F-8	F+	F+	FSW-8	1.5	R	4000	
61	CFDB-2	FSW-9	FSW-9	F+	F+	CFDB-2	1.5	R	6800	
62	FSW-9	F-9	F-9	F+	F+	FSW-9	1.5	R	4500	
63	CFDB-2	FSW-10	FSW-10	F+	F+	CFDB-2	1.5	R	9500	
64	FSW-10	F-10	F-10	F+	F+	FSW-10	1.5	R	4000	
BRANCH WIRING (-VE & PE) (CENTRALISED FDB-5) MIDDLE DOORWAY AREA: LIGHT CIRCUIT										
65	CFDB-5	LL-2	LL-2	L-	L-	CFDB-5	1.5	B	5600	LOOSE
		LL-2	LL-2	L(PE)	L(PE)	CFDB-5	1.5	GNYE	5600	
66		LL-3	LL-3	L-	L-	CFDB-5	1.5	B	3000	
		LL-3	LL-3	L(PE)	L(PE)	CFDB-5	1.5	GNYE	3000	
67		GL-2	GL-2	L-	L-	CFDB-5	1.5	B	4000	
		GL-2	GL-2	L(PE)	L(PE)	CFDB-5	1.5	GNYE	4000	
68		DL-3	DL-3	L-	L-	CFDB-5	1.5	B	3200	
		DL-3	DL-3	L(PE)	L(PE)	CFDB-5	1.5	GNYE	3200	
69		DL-4	DL-4	L-	L-	CFDB-5	1.5	B	1500	
		DL-4	DL-4	L(PE)	L(PE)	CFDB-5	1.5	GNYE	1500	
BRANCH WIRING (-VE & PE) (CENTR. FDB-5) PASSENDER COMPTT-1: LIGHT & FAN CIRCUIT										
70	CFDB-5	LED-5	LED-5	L-	L-	CFDB-5	1.5	B	5300	BUNCHING
		LED-5	LED-5	L(PE)	L(PE)	CFDB-5	1.5	GNYE	5300	
71		LED-6	LED-6	L-	L-	CFDB-5	1.5	B	3800	
		LED-6	LED-6	L(PE)	L(PE)	CFDB-5	1.5	GNYE	3800	
72		F-5	F-5	F-	F-	CFDB-5	1.5	BLK	5000	
		F-5	F-5	F(PE)	F(PE)	CFDB-5	1.5	GNYE	5000	
73		F-6	F-6	F-	F-	CFDB-5	1.5	BLK	4500	
		F-6	F-6	F(PE)	F(PE)	CFDB-5	1.5	GNYE	4500	
74		F-7	F-7	F-	F-	CFDB-5	1.5	BLK	4000	
		F-7	F-7	F(PE)	F(PE)	CFDB-5	1.5	GNYE	4000	
BRANCH WIRING (-VE & PE) (CENTR. FDB-5) PASSENDER COMPTT-2: LIGHT & FAN CIRCUIT										
75	CFDB-5	LED-7	LED-7	L-	L-	CFDB-5	1.5	B	7500	BUNCHING
		LED-7	LED-7	L(PE)	L(PE)	CFDB-5	1.5	GNYE	7500	
76		LED-8	LED-8	L-	L-	CFDB-5	1.5	B	6000	
		LED-8	LED-8	L(PE)	L(PE)	CFDB-5	1.5	GNYE	6000	
77		F-8	F-8	F-	F-	CFDB-5	1.5	BLK	7200	
		F-8	F-8	F(PE)	F(PE)	CFDB-5	1.5	GNYE	7200	
78		F-9	F-9	F-	F-	CFDB-5	1.5	BLK	6700	
		F-9	F-9	F(PE)	F(PE)	CFDB-5	1.5	GNYE	6700	
79		F-10	F-10	F-	F-	CFDB-5	1.5	BLK	6200	
		F-10	F-10	F(PE)	F(PE)	CFDB-5	1.5	GNYE	6200	
BRANCH WIRING (+VE) (CENTR. FDB-3) PASSENGER COMPARTMENT-3: LIGHT & FAN CIRCUIT										
80	CFDB-3	LED-9	LED-9	LI+	LI+	CFDB-3	1.5	Y	5500	
81		LED-10	LED-10	LII+	LII+	CFDB-3	1.5	Y	7000	
82	CFDB-3	FSW-11	FSW-11	F+	F+	CFDB-3	1.5	R	5800	

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Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.				Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From		To					
83	FSW-11	F-11	F-11	F+	F+	FSW-11	1.5	R	3000	BUNCHING
84	CFDB-3	FSW-12	FSW-12	F+	F+	CFDB-3	1.5	R	5800	
85	FSW-12	F-12	F-12	F+	F+	FSW-12	1.5	R	3500	
86	CFDB-3	FSW-13	FSW-13	F+	F+	CFDB-3	1.5	R	9500	
87	FSW-13	F-13	F-13	F+	F+	FSW-13	1.5	R	3000	
88	CFDB-3	LED-11	LED-11	LI+	LI+	CFDB-3	1.5	Y	9000	
89	CFDB-3	BFSW-1	BFSW-1	F+	F+	CFDB-3	1.5	R	9500	
90	BFSW-1	BF-1	BF-1	F+	F+	BFSW-1	1.5	R	4500	LOOSE
BRANCH WIRING (+VE) (CENTR. FDB-3) LUGGAGE SIDE DOORWAY AREA: LIGHT CIRCUIT										
91	CFDB-3	LL-4	LL-4	LI+	LI+	CFDB-3	1.5	Y	2500	LOOSE
92		DL-5	DL-5	LI+	LI+	CFDB-3	1.5	Y	1500	
93		DL-6	DL-6	LI+	LI+	CFDB-3	1.5	Y	3200	
BRANCH WIRING (+VE) (CENTR.FDB-3) DIVYANGJAN PASSENGER AREA : LIGHT & FAN CIRCUIT										
94	CFDB-3	LED-12	LED-12	LI+	LI+	CFDB-3	1.5	Y	4000	BUNCHING
95		LED-13	LED-13	LII+	LII+	CFDB-3	1.5	Y	5500	
96	CFDB-3	FSW-14	FSW-14	F+	F+	CFDB-3	1.5	R	4800	
97	FSW-14	F-14	F-14	F+	F+	FSW-14	1.5	R	4000	
98	CFDB-3	FSW-15	FSW-15	F+	F+	CFDB-3	1.5	R	4800	
99	FSW-15	F-15	F-15	F+	F+	FSW-15	1.5	R	5000	
100	CFDB-3	FSW-16	FSW-16	F+	F+	CFDB-3	1.5	R	4800	
101	FSW-16	F-16	F-16	F+	F+	FSW-16	1.5	R	6000	
BRANCH WIRING (+VE) (CENTR.FDB-3) LUGGAGE AREA : LIGHT CIRCUIT										
102	CFDB-3	LED-14	LED-14	LI+	LI+	CFDB-3	1.5	Y	8500	BUNCHING
103		LED-15	LED-15	LI+	LI+	CFDB-3	1.5	Y	9500	
BRANCH WIRING (-VE & PE) (CENTR. FDB-6) PASSENGER COMPTT-3: LIGHT & FAN CIRCUIT										
104	CFDB-6	LED-9	LED-9	L-	L-	CFDB-6	1.5	B	7400	BUNCHING
		LED-9	LED-9	L(PE)	L(PE)	CFDB-6	1.5	GNYE	7400	
105		LED-10	LED-10	L-	L-	CFDB-6	1.5	B	6000	
		LED-10	LED-10	L(PE)	L(PE)	CFDB-6	1.5	GNYE	6000	
106		F-11	F-11	F-	F-	CFDB-6	1.5	BLK	7000	
		F-11	F-11	F(PE)	F(PE)	CFDB-6	1.5	GNYE	7000	
107		F-12	F-12	F-	F-	CFDB-6	1.5	BLK	6500	
		F-12	F-12	F(PE)	F(PE)	CFDB-6	1.5	GNYE	6500	
108		F-13	F-13	F-	F-	CFDB-6	1.5	BLK	6000	
		F-13	F-13	F(PE)	F(PE)	CFDB-6	1.5	GNYE	6000	
109	CFDB-6	LED-11	LED-11	L-	L-	CFDB-6	1.5	B	5000	LOOSE
		LED-11	LED-11	L(PE)	L(PE)	CFDB-6	1.5	GNYE	5000	
110		BF-1	BF-1	F-	F-	CFDB-6	1.5	BLK	5500	
		BF-1	BF-1	F(PE)	F(PE)	CFDB-6	1.5	GNYE	5500	
BRANCH WIRING (-VE & PE) (CENTR. FDB-6) LUGGAGE SIDE DOORWAY AREA: LIGHT CIRCUIT										
111	CFDB-6	LL-4	LL-4	L-	L-	CFDB-6	1.5	B	5500	LOOSE
		LL-4	LL-4	L(PE)	L(PE)	CFDB-6	1.5	GNYE	5500	
112		DL-5	DL-5	L-	L-	CFDB-6	1.5	B	3000	
		DL-5	DL-5	L(PE)	L(PE)	CFDB-6	1.5	GNYE	3000	
113		DL-6	DL-6	L-	L-	CFDB-6	1.5	B	1500	
		DL-6	DL-6	L(PE)	L(PE)	CFDB-6	1.5	GNYE	1500	
BRANCH WIRING(-VE & PE) (CENTR.FDB-6) DIVYANGJAN PASSENGER AREA:LIGHT & FAN CKT										
114		LED-12	LED-12	L-	L-	CFDB-6	1.5	B	5000	
		LED-12	LED-12	L(PE)	L(PE)	CFDB-6	1.5	GNYE	5000	
115		LED-13	LED-13	L-	L-	CFDB-6	1.5	B	3500	
		LED-13	LED-13	L(PE)	L(PE)	CFDB-6	1.5	GNYE	3500	

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Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.		Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From	To				
116	CFDB-6	F-14	F-14 F-	F- CFDB-6	1.5	BLK	5100	BUNCHING
		F-14	F-14 F(PE)	F(PE) CFDB-6	1.5	GNYE	5100	
117		F-15	F-15 F-	F- CFDB-6	1.5	BLK	4100	
		F-15	F-15 F(PE)	F(PE) CFDB-6	1.5	GNYE	4100	
118		F-16	F-16 F-	F- CFDB-6	1.5	BLK	4100	
		F-16	F-16 F(PE)	F(PE) CFDB-6	1.5	GNYE	4100	
BRANCH WIRING(-VE & PE) (CENTR.FDB-6) LUGGAGE AREA:LIGHT CKT								
119	CFDB-6	LED-14	LED-14 L-	L- CFDB-6	1.5	B	8500	LOOSE
		LED-14	LED-14 L(PE)	L(PE) CFDB-6	1.5	GNYE	8500	
120		LED-15	LED-15 L-	L- CFDB-6	1.5	B	9500	
		LED-15	LED-15 L(PE)	L(PE) CFDB-6	1.5	GNYE	9500	
3-PIN MOBILECHARGING SOCKET CIRCUIT - JUMPER WIRING								
121	CUBICLE	CFDB-1	CFDB-1 B	B CUBICLE	1.5	B	9800	BUNCHING
			CFDB-1 Y	Y CUBICLE	1.5	Y	9800	
			CFDB-1 BLK	BLK CUBICLE	1.5	BLK	9800	
			CFDB-1 GNYE	GNYE CUBICLE	1.5	GNYE	9800	
122	CFDB-1	CFDB-2	CFDB-2 B	B CFDB-1	1.5	B	7000	BUNCHING
			CFDB-2 Y	Y CFDB-1	1.5	Y	7000	
			CFDB-2 BLK	BLK CFDB-1	1.5	BLK	7000	
			CFDB-2 GNYE	GNYE CFDB-1	1.5	GNYE	7000	
123	CFDB-2	CFDB-3	CFDB-3 B	B CFDB-2	1.5	B	10000	BUNCHING
			CFDB-3 Y	Y CFDB-2	1.5	Y	10000	
			CFDB-3 BLK	BLK CFDB-2	1.5	BLK	10000	
			CFDB-3 GNYE	GNYE CFDB-2	1.5	GNYE	10000	
124	CUBICLE	CFDB-4	CFDB-4 R	R CUBICLE	1.5	R	9500	BUNCHING
			CFDB-4 BLK	BLK CUBICLE	1.5	BLK	9500	
			CFDB-4 GNYE	GNYE CUBICLE	1.5	GNYE	9500	
125	CFDB-4	CFDB-5	CFDB-5 R	R CFDB-4	1.5	R	7000	BUNCHING
			CFDB-5 BLK	BLK CFDB-4	1.5	BLK	7000	
			CFDB-5 GNYE	GNYE CFDB-4	1.5	GNYE	7000	
126	CFDB-5	CFDB-6	CFDB-6 R	R CFDB-5	1.5	R	9500	BUNCHING
			CFDB-6 BLK	BLK CFDB-5	1.5	BLK	9500	
			CFDB-6 GNYE	GNYE CFDB-5	1.5	GNYE	9500	
3-PIN MOBILE CHARGING SOCKET CIRCUIT - BRANCH WIRING : GUARD & CREW ROOM								
127	CFDB-1	MCS-1	MCS-1 Y	MCS-1(Y) CFDB-1	1.5	Y	3500	LOOSE
	CFDB-1	MCS-1	MCS-1 BLK	MCS-1(BLK) CFDB-1	1.5	BLK	3500	
	CFDB-1	MCS-1	MCS-1 GNYE	MCS-1(GNYE) CFDB-1	1.5	GNYE	3500	
128	CFDB-1	MCS-2	MCS-2 B	MCS-2(B) CFDB-1	1.5	B	5000	LOOSE
	CFDB-1	MCS-2	MCS-2 BLK	MCS-2(BLK) CFDB-1	1.5	BLK	5000	
	CFDB-1	MCS-2	MCS-2 GNYE	MCS-2(GNYE) CFDB-1	1.5	GNYE	5000	
3-PIN MOBILE CHARGING SOCKET CIRCUIT - BRANCH WIRING : PASSENGER COMPTT.-1 (CABIN SIDE)								
129	CFDB-2	MCS-3	MCS-3 Y	MCS-3(Y) CFDB-2	1.5	Y	3500	LOOSE
	CFDB-2	MCS-3	MCS-3 BLK	MCS-3(BLK) CFDB-2	1.5	BLK	3500	
	CFDB-2	MCS-3	MCS-3 GNYE	MCS-3(GNYE) CFDB-2	1.5	GNYE	3500	
130	CFDB-2	MCS-4	MCS-4 Y	MCS-4(Y) CFDB-2	1.5	Y	3500	
	CFDB-2	MCS-4	MCS-4 BLK	MCS-4(BLK) CFDB-2	1.5	BLK	3500	
	CFDB-2	MCS-4	MCS-4 GNYE	MCS-4(GNYE) CFDB-2	1.5	GNYE	3500	

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Annexure-B to EDTS-458, Rev.- Nil

Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.			Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From		To				
131	CFDB-2	MCS-5	MCS-5	B	MCS-5(B) CFDB-2	1.5	B	3500	
	CFDB-2	MCS-5	MCS-5	BLK	MCS-5(BLK) CFDB-2	1.5	BLK	3500	
	CFDB-2	MCS-5	MCS-5	GNYE	MCS-5(GNYE) CFDB-2	1.5	GNYE	3500	
3-PIN MOBILE CHARGING SOCKET CIRCUIT - BRANCH WIRING : PASSENGER COMPTT.-2 (CABIN SIDE)									
132	CFDB-2	MCS-6	MCS-6	B	MCS-6(B) CFDB-2	1.5	B	5800	LOOSE
	CFDB-2	MCS-6	MCS-6	BLK	MCS-6(BLK) CFDB-2	1.5	BLK	5800	
	CFDB-2	MCS-6	MCS-6	GNYE	MCS-6(GNYE) CFDB-2	1.5	GNYE	5800	
133	CFDB-2	MCS-7	MCS-7	B	MCS-7(B) CFDB-2	1.5	B	5800	
	CFDB-2	MCS-7	MCS-7	BLK	MCS-7(BLK) CFDB-2	1.5	BLK	5800	
	CFDB-2	MCS-7	MCS-7	GNYE	MCS-7(GNYE) CFDB-2	1.5	GNYE	5800	
134	CFDB-2	MCS-8	MCS-8	Y	MCS-8(Y) CFDB-2	1.5	Y	5800	
	CFDB-2	MCS-8	MCS-8	BLK	MCS-8(BLK) CFDB-2	1.5	BLK	5800	
	CFDB-2	MCS-8	MCS-8	GNYE	MCS-8(GNYE) CFDB-2	1.5	GNYE	5800	
3-PIN MOBILE CHARGING SOCKET CIRCUIT - BRANCH WIRING : PASSENGER COMPTT.-3 (CABIN SIDE)									
135	CFDB-3	MCS-9	MCS-9	Y	MCS-9(Y) CFDB-3	1.5	Y	5800	BUNCHING
	CFDB-3	MCS-9	MCS-9	BLK	MCS-9(BLK) CFDB-3	1.5	BLK	5800	
	CFDB-3	MCS-9	MCS-9	GNYE	MCS-9(GNYE) CFDB-3	1.5	GNYE	5800	
136	CFDB-3	MCS-10	MCS-10	Y	MCS-10(Y) CFDB-3	1.5	Y	5800	
	CFDB-3	MCS-10	MCS-10	BLK	MCS-10(BLK) CFDB-3	1.5	BLK	5800	
	CFDB-3	MCS-10	MCS-9	GNYE	MCS-10(GNYE) CFDB-3	1.5	GNYE	5800	
137	CFDB-3	MCS-11	MCS-11	B	MCS-11(B) CFDB-3	1.5	B	5800	
	CFDB-3	MCS-11	MCS-11	BLK	MCS-11(BLK) CFDB-3	1.5	BLK	5800	
	CFDB-3	MCS-11	MCS-11	GNYE	MCS-11(GNYE) CFDB-3	1.5	GNYE	5800	
3-PIN MOBILE CHARGING SOCKET CIRCUIT - BRANCH WIRING : DIVYANGJAN AREA (CABIN SIDE)									
138	CFDB-3	MCS-12	MCS-12	B	MCS-12(B) CFDB-3	1.5	B	3800	LOOSE
	CFDB-3	MCS-12	MCS-12	BLK	MCS-12(BLK) CFDB-3	1.5	BLK	3800	
	CFDB-3	MCS-12	MCS-12	GNYE	MCS-12(GNYE) CFDB-3	1.5	GNYE	3800	
139	CFDB-3	MCS-13	MCS-13	B	MCS-13(B) CFDB-3	1.5	B	3800	
	CFDB-3	MCS-13	MCS-13	BLK	MCS-13(BLK) CFDB-3	1.5	BLK	3800	
	CFDB-3	MCS-13	MCS-13	GNYE	MCS-13(GNYE) CFDB-3	1.5	GNYE	3800	
140	CFDB-3	MCS-14	MCS-14	Y	MCS-14(Y) CFDB-3	1.5	Y	3800	
	CFDB-3	MCS-14	MCS-14	BLK	MCS-14(BLK) CFDB-3	1.5	BLK	3800	
	CFDB-3	MCS-14	MCS-14	GNYE	MCS-14(GNYE) CFDB-3	1.5	GNYE	3800	
3-PIN MOBILE CHARGING SOCKET CKT- BRANCH WIRING : GUARD & CREW ROOM (CORRIDOR SIDE)									
141	CFDB-4	MCS-15	MCS-15	R	MCS-15(R) CFDB-4	1.5	R	3500	LOOSE
	CFDB-4	MCS-15	MCS-15	BLK	MCS-15(BLK) CFDB-4	1.5	BLK	3500	
	CFDB-4	MCS-15	MCS-15	GNYE	MCS-15(GNYE) CFDB-4	1.5	GNYE	3500	
142	CFDB-4	MCS-16	MCS-16	R	MCS-16(R) CFDB-4	1.5	R	5500	LOOSE
	CFDB-4	MCS-16	MCS-16	BLK	MCS-16(BLK) CFDB-4	1.5	BLK	5500	
	CFDB-4	MCS-16	MCS-15	GNYE	MCS-16(GNYE) CFDB-4	1.5	GNYE	5500	
143	CFDB-4	MCS-17	MCS-17	R	MCS-17(R) CFDB-4	1.5	R	5000	
	CFDB-4	MCS-17	MCS-17	BLK	MCS-17(BLK) CFDB-4	1.5	BLK	5000	
	CFDB-4	MCS-17	MCS-17	GNYE	MCS-17(GNYE) CFDB-4	1.5	GNYE	5000	
3-PIN MOBILE CHARGING SOCKET CKT- BRANCH WIRING : PASSENGER COMPTT.-1 (CORRIDOR SIDE)									
144	CFDB-5	MCS-18	MCS-18	R	MCS-18(R) CFDB-5	1.5	R	3500	LOOSE
	CFDB-5	MCS-18	MCS-18	BLK	MCS-18(BLK) CFDB-5	1.5	BLK	3500	
	CFDB-5	MCS-18	MCS-18	GNYE	MCS-18(GNYE) CFDB-5	1.5	GNYE	3500	

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Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.		Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From	To				
3-PIN MOBILE CHARGING SOCKET CKT- BRANCH WIRING : PASSENGER COMPTT.-2 (CORRIDOR SIDE)								
145	CFDB-5	MCS-19	MCS-19 R	MCS-19(R) CFDB-5	1.5	R	5500	LOOSE
	CFDB-5	MCS-19	MCS-19 BLK	MCS-19(BLK) CFDB-5	1.5	BLK	5500	
	CFDB-5	MCS-19	MCS-19 GNYE	MCS-19(GNYE) CFDB-5	1.5	GNYE	5500	
3-PIN MOBILE CHARGING SOCKET CKT- BRANCH WIRING : PASSENGER COMPTT.-3 (CORRIDOR SIDE)								
146	CFDB-6	MCS-20	MCS-20 R	MCS-20(R) CFDB-6	1.5	R	5500	LOOSE
	CFDB-6	MCS-20	MCS-20 BLK	MCS-20(BLK) CFDB-6	1.5	BLK	5500	
	CFDB-6	MCS-20	MCS-20 GNYE	MCS-20(GNYE) CFDB-6	1.5	GNYE	5500	
147	CFDB-6	MCS-21	MCS-21 R	MCS-21(R) CFDB-6	1.5	R	3500	
	CFDB-6	MCS-21	MCS-21 BLK	MCS-21(BLK) CFDB-6	1.5	BLK	3500	
	CFDB-6	MCS-21	MCS-21 GNYE	MCS-21(GNYE) CFDB-6	1.5	GNYE	3500	
EXHAUST FAN-1 CIRCUIT (FOR GUARD ROOM LAVATORY)								
148	CUBICLE	EX. FAN-1	EX. FAN-1	EX. F-1 CUBICLE	1.5	R	11000	BUNCHING
	CUBICLE	EX. FAN-1	EX. FAN-1	EX. F-1 CUBICLE	1.5	Y	11000	
	CUBICLE	EX. FAN-1	EX. FAN-1	EX. F-1 CUBICLE	1.5	B	11000	
	CUBICLE	EX. FAN-1	EX. FAN-1	EX. F-1 CUBICLE	1.5	GNYE	11000	
EXHAUST FAN-2 CIRCUIT (FOR PASSENGER & DIVYANGJAN AREA LAVATORY)								
149	CUBICLE	EX. FAN-2	EX. FAN-2	EX. F-2 CUBICLE	1.5	R	6000	BUNCHING
	CUBICLE	EX. FAN-2	EX. FAN-2	EX. F-2 CUBICLE	1.5	BLK	6000	
	CUBICLE	EX. FAN-2	EX. FAN-2 (PE)	EX. F-2 CUBICLE	1.5	GNYE	6000	
150	CUBICLE	EX. FAN-3	EX. FAN-3	EX. F-3 CUBICLE	1.5	Y	6000	
	CUBICLE	EX. FAN-3	EX. FAN-3	EX. F-3 CUBICLE	1.5	BLK	6000	
	CUBICLE	EX. FAN-3	EX. FAN-3 (PE)	EX. F-3 CUBICLE	1.5	GNYE	6000	
151	CUBICLE	EX. FAN-4	EX. FAN-4	EX. F-4 CUBICLE	1.5	B	14000	
	CUBICLE	EX. FAN-4	EX. FAN-4	EX. F-4 CUBICLE	1.5	BLK	14000	
	CUBICLE	EX. FAN-4	EX. FAN-4 (PE)	EX. F-4 CUBICLE	1.5	GNYE	14000	
VHF BOX CIRCUIT (TAIL LIGHT / SIDE LIGHT)								
152	VHF BOX (GUARD ROOM)	TAIL LIGHT	TL (+VE)	VHF BOX (+VE)	1.5	R	27000	BUNCHING
153	VHF BOX (GUARD ROOM)	TAIL LIGHT	TL (-VE)	VHF BOX (-VE)	1.5	BLK	27000	
154	VHF BOX (GUARD ROOM)	SIDE LIGHT-1	SL-1 (+VE)	VHF BOX (+VE)	1.5	R	5000	
155	VHF BOX (GUARD ROOM)	SIDE LIGHT-1	SL-1 (-VE)	VHF BOX (-VE)	1.5	BLK	5000	
156	VHF BOX (GUARD ROOM)	SIDE LIGHT-2	SL-2 (+VE)	VHF BOX (+VE)	1.5	R	6000	
157	VHF BOX (GUARD ROOM)	SIDE LIGHT-2	SL-2 (-VE)	VHF BOX (-VE)	1.5	BLK	6000	
158	CUBICLE	CS FOR TAIL LIGHT VHF BOX	CS FOR VHF BOX (PH)	CUBICLE (PH)	1.5	R	10700	BUNCHING
	CUBICLE	CS FOR TAIL LIGHT VHF BOX	CS FOR VHF BOX (N)	CUBICLE (N)	1.5	BLK	10700	
	CUBICLE	CS FOR TAIL LIGHT VHF BOX	CS FOR VHF BOX (PE)	CUBICLE (PE)	1.5	GNYE	10700	

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Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

Har. No.	Location		Ferrule no.		Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From	To				
LIMIT SWITCH CIRCUIT (+VE BRANCH WIRING)								
159	CFDB-2	LS-1	LS-1 LSI+	LS-1,LSI+ CFDB-2	1.5	Y	2500	LOOSE
160	CFDB-2	LS-2	LS-2 LSI+	LS-2,LSI+ CFDB-2	1.5	Y	4500	
161	CFDB-3	LS-3	LS-3 LSI+	LS-3,LSI+ CFDB-3	1.5	Y	5000	
162	CFDB-3	LS-4	LS-4 LSI+	LS-4,LSI+ CFDB-3	1.5	Y	2800	
163	LS-1	CFDB-2	CFDB-2 LSII+	LSII+ LS-1	1.5	Y	2500	LOOSE
164	LS-2	CFDB-2	CFDB-2 LSII+	LSII+ LS-2	1.5	Y	4700	
165	LS-3	CFDB-3	CFDB-3 LSII+	LSII+ LS-3	1.5	Y	5000	
166	LS-4	CFDB-3	CFDB-3 LSII+	LSII+ LS-4	1.5	Y	2800	
LIMIT SWITCH CIRCUIT (-VE & PE BRANCH WIRING)								
167	CFDB-5	LS-1	LS-1 LS-	LS-1,LS- CFDB-5	1.5	BLK	5800	BUNCHING
168	CFDB-5	LS-1	LS-1 LS (PE)	LS-1,LS(PE) CFDB-5	1.5	GNYE	5800	
169	CFDB-5	LS-2	LS-2 LS-	LS-2,LS- CFDB-5	1.5	BLK	8000	BUNCHING
170	CFDB-5	LS-2	LS-2 LS (PE)	LS-2,LS(PE) CFDB-5	1.5	GNYE	8000	
171	CFDB-6	LS-3	LS-3 LS-	LS-3,LS- CFDB-6	1.5	BLK	6800	BUNCHING
172	CFDB-6	LS-3	LS-3 LS (PE)	LS-3,LS(PE) CFDB-6	1.5	GNYE	6800	
173	CFDB-6	LS-4	LS-4 LS-	LS-4,LS- CFDB-6	1.5	BLK	6000	BUNCHING
174	CFDB-6	LS-4	LS-4 LS (PE)	LS-4,LS(PE) CFDB-6	1.5	GNYE	6000	
PACIL CIRCUIT								
175	CUBICLE	PACIL-1	PACIL-1	PACIL-1(Y) CUBICLE	1.5	Y	9500	LOOSE
176	CUBICLE	PACIL-1	PACIL-1	PACIL-1(BLK) CUBICLE	1.5	BLK	15000	
	CUBICLE	PACIL-1	PACIL-1	PACIL-1(GNYE) CUBICLE	1.5	GNYE	15000	
177	CUBICLE	PACIL-2	PACIL-2	PACIL-2(Y) CUBICLE	1.5	Y	15000	
178	CUBICLE	PACIL-2	PACIL-2	PACIL-2(BLK) CUBICLE	1.5	BLK	9500	
	CUBICLE	PACIL-2	PACIL-2	PACIL-2(GNYE) CUBICLE	1.5	GNYE	9500	
AEL CIRCUIT								
179	CUBICLE	AEL-1	AEL-1 (+VE)	AEL-1(+VE) CUBICLE	1.5	Y	10000	LOOSE
180	CUBICLE	AEL-1	AEL-1 (-VE)	AEL-1(-VE) CUBICLE	1.5	BLK	10000	
181	CUBICLE	AEL-1	AEL-1 (PE)	AEL-1(PE) CUBICLE	1.5	GNYE	10000	
182	CUBICLE	AEL-2	AEL-2 (+VE)	AEL-2(+VE) CUBICLE	1.5	Y	8000	LOOSE
183	CUBICLE	AEL-2	AEL-2 (-VE)	AEL-2(-VE) CUBICLE	1.5	BLK	8000	
184	CUBICLE	AEL-2	AEL-2 (PE)	AEL-2(PE) CUBICLE	1.5	GNYE	8000	
185	CUBICLE	AEL-3	AEL-3 (+VE)	AEL-3(+VE) CUBICLE	1.5	Y	8000	LOOSE
186	CUBICLE	AEL-3	AEL-3 (-VE)	AEL-3(-VE) CUBICLE	1.5	BLK	8000	
187	CUBICLE	AEL-3	AEL-3 (PE)	AEL-3(PE) CUBICLE	1.5	GNYE	8000	
188	CUBICLE	AEL-4	AEL-4 (+VE)	AEL-4(+VE) CUBICLE	1.5	Y	15000	LOOSE
189	CUBICLE	AEL-4	AEL-4 (-VE)	AEL-4(-VE) CUBICLE	1.5	BLK	15000	
190	CUBICLE	AEL-4	AEL-4 (PE)	AEL-4(PE) CUBICLE	1.5	GNYE	15000	
191	CUBICLE	AEL-5	AEL-5 (+VE)	AEL-5(+VE) CUBICLE	1.5	Y	21000	
192	CUBICLE	AEL-5	AEL-5 (-VE)	AEL-5(-VE) CUBICLE	1.5	BLK	21000	
193	CUBICLE	AEL-5	AEL-5 (PE)	AEL-5(PE) CUBICLE	1.5	GNYE	21000	
194	CUBICLE	AEL-6	AEL-6 (+VE)	AEL-6(+VE) CUBICLE	1.5	Y	23000	
195	CUBICLE	AEL-6	AEL-6 (-VE)	AEL-6(-VE) CUBICLE	1.5	BLK	23000	
196	CUBICLE	AEL-6	AEL-6 (PE)	AEL-6(PE) CUBICLE	1.5	GNYE	23000	
ELECTRO PNEUMATIC PRESSURISED FLUSHING SYSTEM CIRCUIT								
197	CFDB-1	FLUSH-1	FLUSH-1 (+VE)	FLUSE-1(+VE) CFDB-1	1.5	Y	12000	LOOSE
198	CFDB-4	FLUSH-1	FLUSH-1 (-VE)	FLUSE-1(-VE) CFDB-4	1.5	BLK	11000	
	CFDB-4	FLUSH-1	FLUSH-1 (PE)	FLUSE-1(PE) CFDB-4	1.5	GNYE	11000	
199	CFDB-2	FLUSH-2	FLUSH-2 (+VE)	FLUSE-2(+VE) CFDB-2	1.5	Y	9000	
200	CFDB-5	FLUSH-2	FLUSH-2 (-VE)	FLUSE-2(-VE) CFDB-5	1.5	BLK	9000	
	CFDB-5	FLUSH-2	FLUSH-2 (PE)	FLUSE-2(PE) CFDB-5	1.5	GNYE	7000	
201	CFDB-2	FLUSH-3	FLUSH-3 (+VE)	FLUSE-3(+VE) CFDB-2	1.5	Y	7000	
202	CFDB-5	FLUSH-3	FLUSH-3 (-VE)	FLUSE-3(-VE) CFDB-5	1.5	BLK	9000	
	CFDB-5	FLUSH-3	FLUSH-3 (PE)	FLUSE-3(PE) CFDB-5	1.5	GNYE	9000	

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Preparation/Bunching of Harness for Jumper/Branch wiring for Roof of LSLRD Coach (Amrit Bharat Rake)

(B)

Har. No.	Location		Ferrule no.		Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From	To				
203	CFDB-3	FLUSH-4	FLUSH-4 (+VE)	FLUSE-4(+VE) CFDB-3	1.5	Y	16000	
204	CFDB-6	FLUSH-4	FLUSH-4 (-VE)	FLUSE-4(-VE) CFDB-6	1.5	BLK	18000	
	CFDB-6	FLUSH-4	FLUSH-4 (PE)	FLUSE-4(PE) CFDB-6	1.5	GNYE	18000	
CUBICLE TO CONTROL BOX FOR EXTERNAL EMERGENCY LIGHT FITTING								
205	CUBICLE	C BOX-1	C.BOX-1 (+VE)	CB-1(+VE) CUBICLE	1.5	Y	11000	LOOSE
206	CUBICLE	C BOX-1	C.BOX-1 (-VE)	CB-1(-VE) CUBICLE	1.5	BLK	11000	
	CUBICLE	C BOX-1	C.BOX-1 (PE)	CB-1(PE) CUBICLE	1.5	GNYE	11000	
207	CUBICLE	C BOX-2	C.BOX-2 (+VE)	CB-2(+VE) CUBICLE	1.5	R	18000	
208	CUBICLE	C BOX-2	C.BOX-2 (-VE)	CB-2(-VE) CUBICLE	1.5	BLK	18000	
	CUBICLE	C BOX-2	C.BOX-2 (PE)	CB-2(PE) CUBICLE	1.5	GNYE	18000	
CONTROL BOX TO EXTERNAL EMERGENCY LIGHT FITTING								
209	C.BOX-1	EEL-1	EEL-1 +VE	C.BOX-1 +VE	1.5	Y	6000	LOOSE
210	C.BOX-1	EEL-1	EEL-1 -VE	C.BOX-1 -VE	1.5	BLK	6000	
	C.BOX-1	EEL-1	EEL-1 PE	C.BOX-1 PE	1.5	GNYE	6000	
211	C.BOX-1	EEL-2	EEL-2 +VE	C.BOX-1 +VE	1.5	Y	4000	
212	C.BOX-1	EEL-2	EEL-2 -VE	C.BOX-1 -VE	1.5	BLK	4000	
	C.BOX-1	EEL-2	EEL-2 PE	C.BOX-1 PE	1.5	GNYE	4000	
213	C.BOX-2	EEL-3	EEL-3 +VE	C.BOX-2 +VE	1.5	Y	4000	
214	C.BOX-2	EEL-3	EEL-3 -VE	C.BOX-2 -VE	1.5	BLK	4000	
	C.BOX-2	EEL-3	EEL-3 PE	C.BOX-2 PE	1.5	GNYE	4000	
215	C.BOX-2	EEL-4	EEL-4 +VE	C.BOX-2 +VE	1.5	Y	6000	
216	C.BOX-2	EEL-4	EEL-4 -VE	C.BOX-2 -VE	1.5	BLK	6000	
	C.BOX-2	EEL-4	EEL-4 PE	C.BOX-2 PE	1.5	GNYE	6000	
CUBICLE (LV PANEL TO PIS)								
217	LV PANEL	PIS	PIS (+VE)	LV PANEL PIS (+VE)	1.5	R	6500	LOOSE
218	LV PANEL	PIS	PIS (-VE)	LV PANEL PIS (-VE)	1.5	BLK	6500	
CUBICLE (LV PANEL TO CCTV)								
219	LV PANEL	CCTV	CCTV (+VE)	LV PANEL CCTV (+VE)	1.5	Y	6500	LOOSE
220	LV PANEL	CCTV	CCTV (-VE)	LV PANEL CCTV (-VE)	1.5	B	6500	
CUBICLE (LV PANEL TO FDS)								
221	LV PANEL	FDS	FDS (+VE)	LV PANEL FDS (+VE)	1.5	R	6500	LOOSE
222	LV PANEL	FDS	FDS (-VE)	LV PANEL FDS (-VE)	1.5	BLK	6500	
CUBICLE (LV PANEL TO TB-1,ETBU-2) PP END								
223	LV PANEL	TB-1	TB-1(+VE)	LV PANEL TB-1 (+VE)	1.5	R	12500	LOOSE
224	LV PANEL	TB-1	TB-1 (-VE)	LV PANEL TB-1 (-VE)	1.5	BLK	12500	
(TB-1 TO ETBU-2) PP END								
225	TB-1	ETBU-2	ETBU-2(+VE)	TB-2 (+VE)	1.5	R	6500	LOOSE
226	TB-1	ETBU-2	ETBU-2 (-VE)	TB-2 (-VE)	1.5	BLK	6500	
(TB-1 TO TB-2) PP-END TO NPP-END								
227	TB-1	TB-2	TB-1(+VE)	TB-2 (+VE)	1.5	R	6500	LOOSE
228	TB-1	TB-2	TB-1 (-VE)	TB-2 (+VE)	1.5	BLK	6500	
(TB-2 TO ETBU-1) NPP END								
229	TB-1	ETBU-1	ETBU-1(+VE)	TB-1 (+VE)	1.5	R	6500	LOOSE
230	TB-1	ETBU-1	ETBU-1 (-VE)	TB-1 (+VE)	1.5	BLK	6500	

Date: 29/09/2025

SSE/CAD

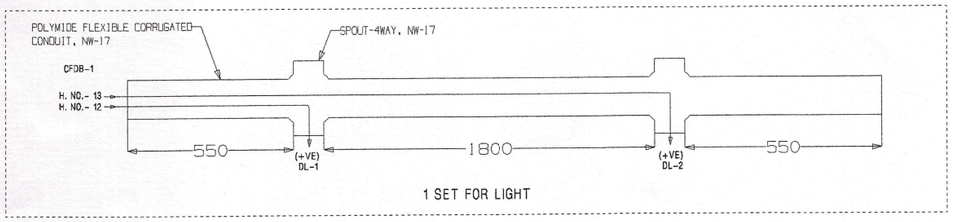
SEE/VD

DY.CEE/D

(2)

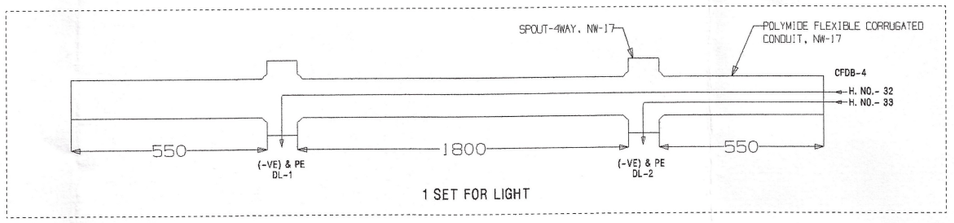
15	16	17	18	19
ALT.NO / ALT.DATE	ZONE	ALTERATIONS		AUTHORITY

BRANCH WIRING (+VE) DOORWAY GUARD ROOM



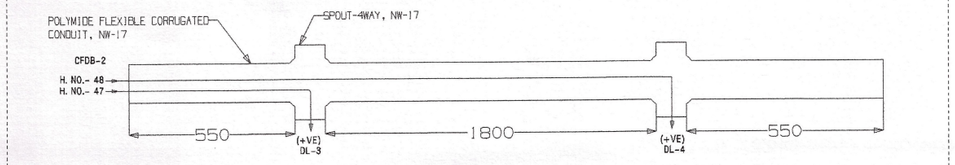
1 SET FOR LIGHT

BRANCH WIRING (-VE) & PE DOORWAY GUARD ROOM



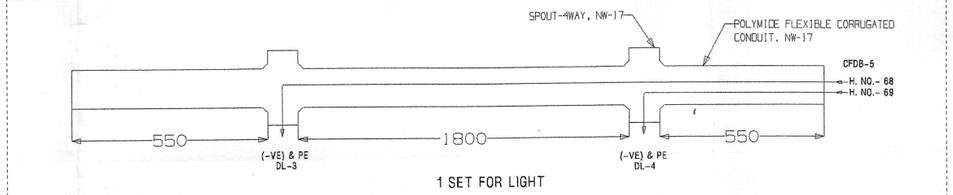
1 SET FOR LIGHT

BRANCH WIRING (+VE) MIDDLE DOORWAY AREA



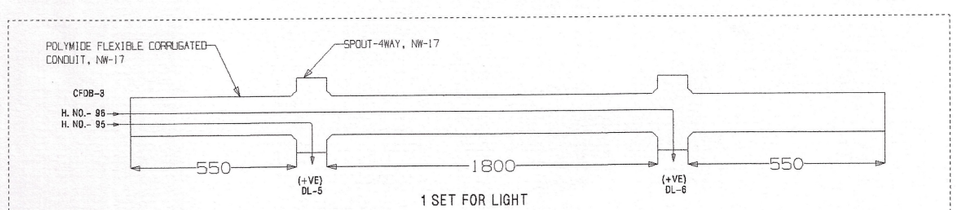
1 SET FOR LIGHT

BRANCH WIRING (-VE) & PE MIDDLE DOORWAY AREA



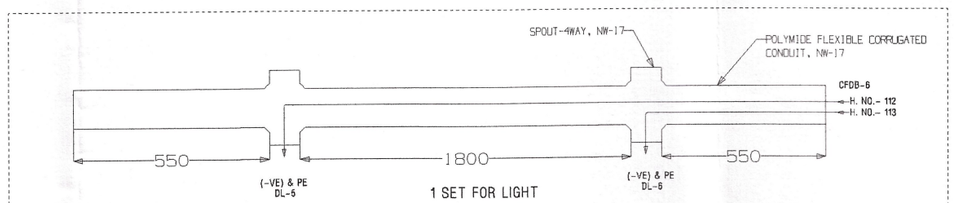
1 SET FOR LIGHT

BRANCH WIRING (+VE) LUGAGE SIDE DOORWAY AREA



1 SET FOR LIGHT

BRANCH WIRING (-VE) & PE LUGAGE SIDE DOORWAY AREA



1 SET FOR LIGHT

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES:	NIL		
WEIGHT	FILE	D:\\SKED-1035s1.prt				
NIL KG		JUMPER AND BRANCH WIRING OF ROOF FOR LHB NON-AC LSLRD AMRIT BHARAT COACH			SCALE / SSE/ED	
S.AREA					CHD	
NIL M^2					DRN	
~~LENGTH/DIA~~						
NIL M		RAIL COACH FACTORY, KAPURTHALA			REF.DRG.No. NIL	
~~WIDTH/THICK.~~		रेल कोच फैक्टरी कपूरथला		IRS	PL NO.	NIL
NIL M					DRG.NO.	SKED-1035
HEIGHT		SEE/VD		DY.CEE/D	ALT. NIL	SIZE A1 SHEET 1/2
NIL M						

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008

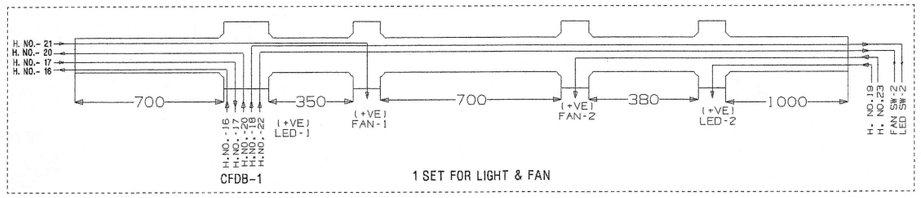
DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

DATE OF FIRST ISSUE 29/09/2025

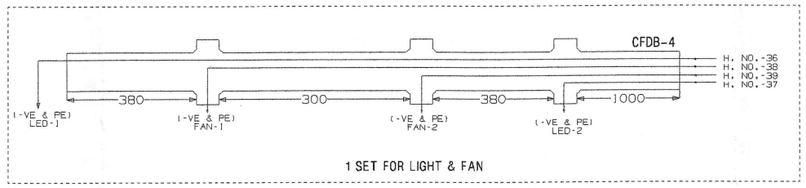
ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY

BRANCH WIRING FOR LIGHT,FAN & LS ,DIA-20MM RIGID PVC CONDUITS DETAILS

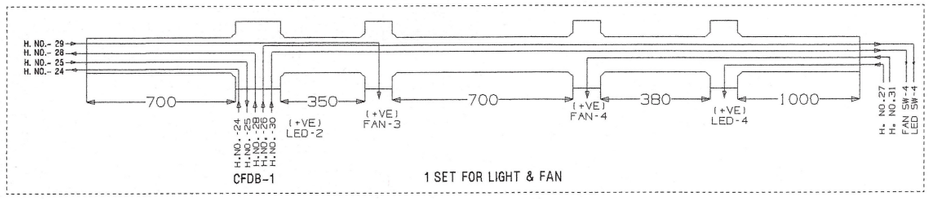
BRANCH WIRING (+VE) (CFDB-1) FOR GUARD ROOM LIGHT & FAN CIRCUIT



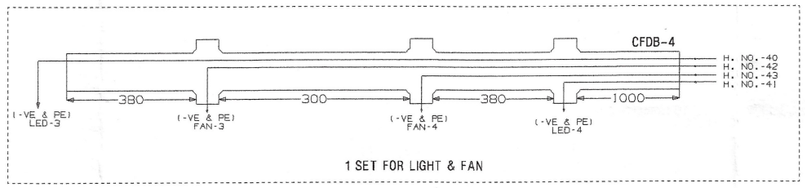
BRANCH WIRING (-VE & PE) (CFDB-4) FOR GUARD ROOM LIGHT & FAN CIRCUIT



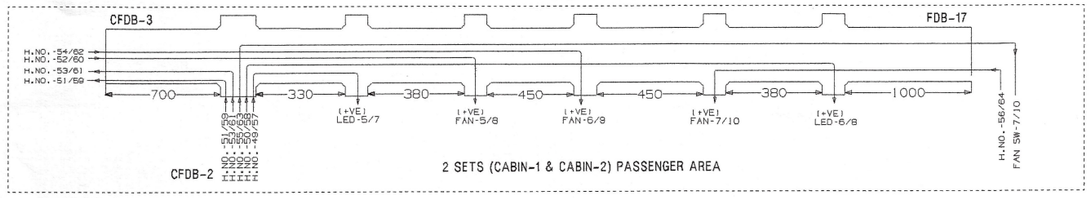
BRANCH WIRING (+VE) (CFDB-1) FOR CREW ROOM LIGHT & FAN CIRCUIT



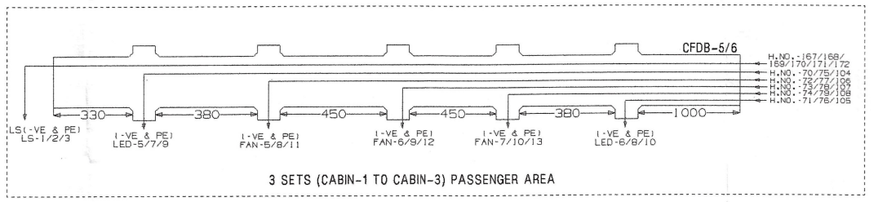
BRANCH WIRING (-VE & PE) (CFDB-4) FOR CREW ROOM LIGHT & FAN CIRCUIT



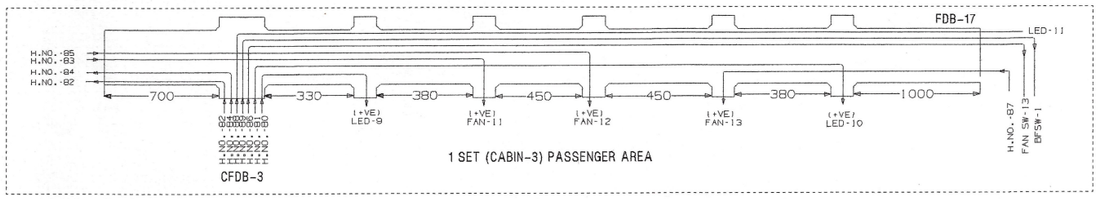
BRANCH WIRING FOR LIGHT & FAN (+VE) FOR PASSENGER CABIN



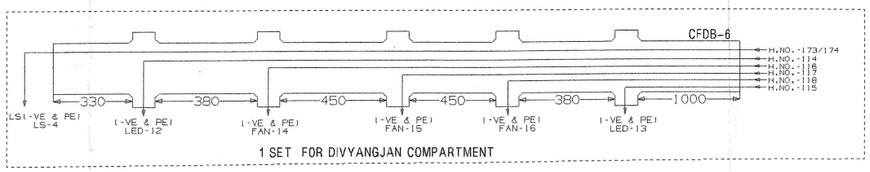
BRANCH WIRING FOR LIGHT, FAN & LSN(-VE) & PE FOR PASSENGER CABIN



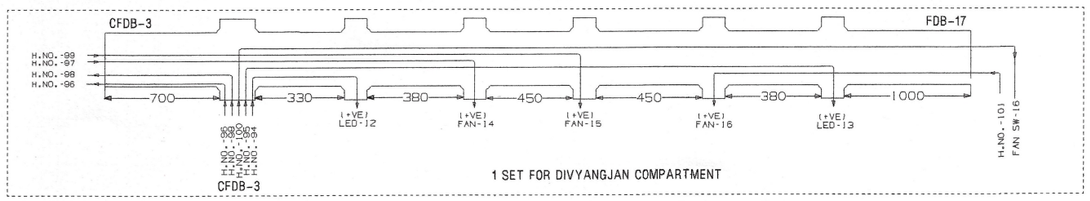
BRANCH WIRING FOR LIGHT & FAN (+VE) FOR PASSENGER CABIN



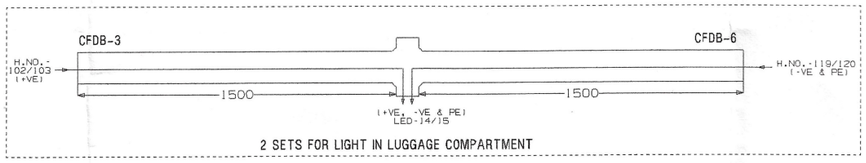
BRANCH WIRING FOR LIGHT & FAN (-VE & PE) FOR DIVYANGJAN COMPARTMENT



BRANCH WIRING FOR LIGHT & FAN (+VE) FOR DIVYANGJAN COMPARTMENT



BRANCH WIRING FOR LIGHT (-VE) FOR LUGGAGE



NOTE:-

1. ∅ 20MM RIGID PVC CONDUIT SHALL ONLY BE USED.
2. ALL DIMENSIONS IN MM.

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES: NIL			
WEIGHT	FILE	D:\\SKED-1035s2.prt				
NIL KG		JUMPER AND BRANCH WIRING OF ROOF FOR LHB NON-AC LSLRD AMRIT BHARAT COACH		SCALE	SSE/ED	
S.AREA					CHD	
NIL M²					DRN	
~~LENGTH/DIA~~						
NIL M		RAIL COACH FACTORY, KAPURTHALA		REF.DRG.No. NIL		
~~WIDTH/THICK.~~		रेलकोच फैक्टरी कपूरथला	IRS	PL NO.	NIL	
NIL M				DRG.NO.	SKED-1035	
HEIGHT						
NIL M		SEE/VD	DY.CEE/D	ALT. NIL	SIZE A1	SHEET 2/2

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FOR UNTOLERANCED DIMENSIONS REFER MDG0008	DATE OF FIRST ISSUE 29/09/2025