

SPECIFICATION FOR 'HARNESS OF UNDER FRAME AND ROOF ARRANGEMENT' FOR LHB EOG NON-AC CHAIR CAR COACHES'

- 1.0 This specification covers manufacturing, assembly and supply of readymade 'CABLE HARNESS FOR UNDER FRAME AND ROOF FOR LHB EOG NON-AC CHAIR CAR COACHES'. 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 manufacturer's 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 LHB EOG NON-AC CHAIR CAR COACHES
TYPE-2	HARNESS OF 'ROOF ARRANGEMENT' FOR LHB EOG NON-AC CHAIR CAR COACHES

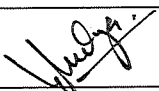
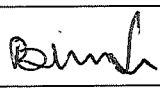
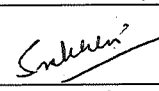
- a. Procurement of the items specified in the BOM of the specification shall be procured from RDSO/RCF/ICF/MCF approved vendors mentioned in latest revision of the vendor directory issued by RDSO/RCF/ICF/MCF respectively. Wherever some specific makes have been mentioned, procurement is to be done from those sources.

2.1 TYPE-1: 'HARNESS OF UNDER FRAME ARRANGEMENT' FOR LHB EOG NON-AC CHAIR CAR COACHES:-

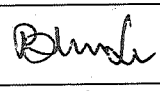
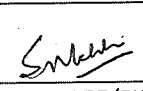
2.1 (a) : BILL OF MATERIAL FOR UNDERFRAME WIRING:

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

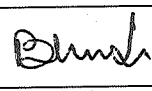
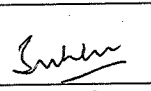
Sr. No.	Description	Working voltage	Cable size (in mm ²)	Cable color	Detail drg./ Spec.	QPC	Remarks
1.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Red	ELRS/SPEC/ELC/00 19, Rev-4	48.2 Mtr	Feeder cables

EDTS-413	Nil	03/03/2021				1 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

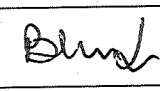
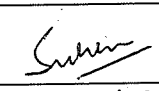
2.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Yellow	ELRS/SPEC/ELC/00 19, Rev-4	48.2 Mtr	Feeder cables
3.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	150	Blue	ELRS/SPEC/ELC/00 19, Rev-4	48.2 Mtr	Feeder cables
4.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	95	Black	ELRS/SPEC/ELC/00 19, Rev-4	48.2 Mtr	Feeder cables
5.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	70	GNYE	ELRS/SPEC/ELC/00 19, Rev-4	9.8 Mtr	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/00 19, Rev-4	0.5 Mtr	For Earthing
7.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Red	ELRS/SPEC/ELC/00 19, Rev-4	20 Mtr	Feeder junction boxes to SBC
8.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Yellow	ELRS/SPEC/ELC/00 19, Rev-4	20 Mtr	Feeder junction boxes to SBC
9.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Blue	ELRS/SPEC/ELC/00 19, Rev-4	20 Mtr	Feeder junction boxes to SBC
10.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	25	Black	ELRS/SPEC/ELC/00 19, Rev-4	20 Mtr	Feeder junction boxes to SBC
11.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Red	ELRS/SPEC/ELC/00 19, Rev-4	11 Mtr	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/00 19, Rev-4	11 Mtr	9 KVA TXR input (750V AC side)

EDTS-413	Nil	03/03/2021				2 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

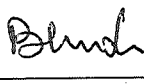
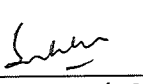
13.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Blue	ELRS/SPEC/ELC/00 19, Rev-4	11 Mtr	9 KVA TXR input (750V AC side)
14.	Thin walled flexible elastomeric cables with copper conductors	above 750 volts upto 1.8KV/ 3.0KV	16	Black	ELRS/SPEC/ELC/00 19, Rev-4	11 Mtr	9 KVA TXR input (750V AC side)
15.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Red	ELRS/SPEC/ELC/00 19, Rev-4	9 Mtr	9 KVA TXR output (415V AC side)
16.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Yellow	ELRS/SPEC/ELC/00 19, Rev-4	9 Mtr	9 KVA TXR output (415V AC side)
17.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Blue	ELRS/SPEC/ELC/00 19, Rev-4	9 Mtr	9 KVA TXR output (415V AC side)
18.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	Black	ELRS/SPEC/ELC/00 19, Rev-4	9 Mtr	9 KVA TXR output (415V AC side)
19.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	16	GNYE	ELRS/SPEC/ELC/00 19, Rev-4	1.1 Mtr	Earthing
20.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Red	ELRS/SPEC/ELC/00 19, Rev-4	9.5 Mtr	BCT
21.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Blue	ELRS/SPEC/ELC/00 19, Rev-4	11.5 Mtr	BCT
22.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	White	ELRS/SPEC/ELC/00 19, Rev-4	28.5 Mtr	-ve fuse box
23.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	10	Choco	ELRS/SPEC/ELC/00 19, Rev-4	31.5 Mtr	+ve fuse box

EDTS-413	Nil	03/03/2021				3 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

24.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Red	ELRS/SPEC/ELC/00 19, Rev-4	38 Mtr	9 KVA TXR output (190V AC side) & RBC
25.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Yellow	ELRS/SPEC/ELC/00 19, Rev-4	38 Mtr	9 KVA TXR output (190V AC side) & RBC
26.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Blue	ELRS/SPEC/ELC/00 19, Rev-4	38 Mtr	9 KVA TXR output (190V AC side) & RBC
27.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	Black	ELRS/SPEC/ELC/00 19, Rev-4	38 Mtr	9 KVA TXR output (190V AC side) & RBC
28.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	GNYE	ELRS/SPEC/ELC/00 19, Rev-4	8 Mtr	RBC Input
29.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	White	ELRS/SPEC/ELC/00 19, Rev-4	8 Mtr	RBC to HV Panel
30.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	Choco	ELRS/SPEC/ELC/00 19, Rev-4	110 Mtr	Feeder control cables and HV Panel to RBC
31.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	2.5	GNYE	ELRS/SPEC/ELC/00 19, Rev-4	2 Mtr	Earthing
32.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Red	ELRS/SPEC/ELC/00 19, Rev-4	44 Mtr	Exhaust Fan
33.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Black	ELRS/SPEC/ELC/00 19, Rev-4	44 Mtr	Exhaust Fan
34.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	GNYE	ELRS/SPEC/ELC/00 19, Rev-4	44 Mtr	Exhaust Fan

EDTS-413	Nil	03/03/2021				4 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

35.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	White	ELRS/SPEC/ELC/00 19, Rev-4	10 Mtr	HV panel to VK11
36.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Choco-late	ELRS/SPEC/ELC/00 19, Rev-4	10 Mtr	HV panel to VK11
37.	3x1.0 sqmm multicore cables 600/1000V colour Wh, Br, Blk	-	3x1.0	Wh, Br, Blk	EDTS-132, Rev-' C ' AM-3 (DS-4)	98 Mtr *	Speed sensor/disc brake cables
			3x1.0	Wh, Br, Blk	EDTS-132, Rev-' C ' AM-3 (DS-4)	60 Mtr (3X20 Mtr)	NET-1 & 2 + SPARE
38.	Cable marking system	-	-	-	EDML-60, Col-VI (Latest Revision)	1 no.	Heat shrinkable sleeves of M/s TYCO/Phoenix/Panduit make
39.	Copper crimping socket for 70 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	20 nos.	ITEM-7 (M12)
40.	Copper crimping socket for 50 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	2 nos.	ITEM-10 (M10)
41.	Copper crimping socket for 25 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	8 nos.	ITEM-23 (M16)
42.	Copper crimping socket for 25 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	4 nos.	ITEM-14 (M8)
43.	Copper crimping socket for 16 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	16 nos.	ITEM-15 (M10)
44.	Copper crimping socket for 16 sq.mm cable	-	-	-	EDTS-200 (Latest Revision)	10 no.	ITEM-17 (M6)
45.	Copper crimping socket for 10 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	20 nos.	ITEM-2 (M6)
46.	Copper crimping socket for 6 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	8 nos.	ITEM-4 (M6)

EDTS-413	Nil	03/03/2021				5 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

47.	Copper crimping socket for 6 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	10 nos.	ITEM-5 (M8)
48.	Copper crimping socket for 2.5 sq.mm cable	-	-	-	EDTS-201 (Latest Revision)	8 nos.	ITEM-10 (M6)

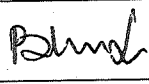
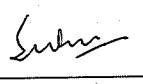
Note:-

* 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 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 (Rev-1).

Sr. No.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC
1.	Polyamide flexible corrugated conduit, NW-17	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-1	3	186 Mtr
2.	Polyamide flexible corrugated conduit, NW-23		A-1	4	74 Mtr
3.	Polyamide flexible corrugated conduit, NW-29		A-1	5	9 Mtr
4.	Polyamide flexible corrugated conduit, NW-36		A-1	6	7 Mtr
5.	Polyamide flexible corrugated conduit, NW-48		A-1	7	16.5 Mtr **
6.	Straight PG metal thread End fitting PG-16	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-2	3	34 nos.
7.	Straight PG metal thread End fitting PG-21		A-2	5	12 nos.
8.	Straight PG metal thread End fitting PG-29		A-2	6	2 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	2 nos. **
11.	Hex. lock nut with PG thread brass PG-16	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-10	4	34 nos.
12.	Hex. lock nut with PG thread brass PG-21		A-10	5	12 nos.

EDTS-413	Nil	03/03/2021				6 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

13.	Hex. lock nut with PG thread brass PG-29		A-10	6	2 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	2 nos. **
16.	Tube clamp NW-17	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-8	3	15 nos.
17.	Tube clamp NW-23		A-8	4	14 nos.
18.	Tube clamp NW-29		A-8	6	11 nos.
19.	Tube clamp NW-36		A-8	7	22 nos.
20.	Tube clamp NW-48		A-8	8	10 nos. **
21.	PG thread plug screws PG-16	RDSO/PE/SPEC/AC/0138-2009,Rev.1 (Annexure-A)	A-18	4	16 nos.
22.	PG thread plug screws PG-21		A-18	5	4 nos.

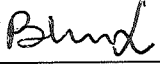
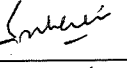
Note:-

** Marked items shall not be procured as these items are available in RCF depots.

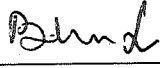
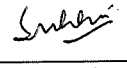
2.1 (b) PREPARATION / BUNCHING OF HARNESS:-

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

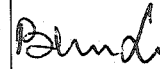
Har. No.	Nos. & size of cable	Spec. no.	Working voltage	Color code	Length in mm	Ferrules marking	Route	Remarks and Flexible conduit size and length	Group Name
1	3 nos., 150 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	24100	12 01 01 02, 12 01 04 02, 12 01 07 02	10	Feeder-1 From A17X1 to A18X1 (To be supplied loose)	FEEDER CABLES (Feeder-1)
	1 no., 95 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	Blk	24100	12 01 10 02	10		
1A	2 nos., 2.5 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Upto 750 volts	Ch, Ch	25500	46 01.01, 46 01.02	14	Control cables (NW-17, L=24 Mtrs)	
1B	3 nos., 150 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	R,Y,B	24100	12 01 15 02, 12 01 18 02, 12 01 21 02	21	Feeder-2 From A16X1 to A19X1 (To be supplied loose)	CABLES (Feeder-2)

EDTS-413	Nil	03/03/2021				7 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

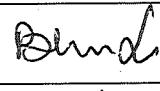
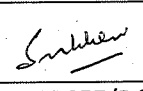
	1 no., 95 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	Blk	24100	12 01 24 02	21		
1C	2 nos., 2.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch, Ch	25500	46 01 03, 46 01 04	25	Control cables (NW-17, L=24 Mtrs)	
2	4 nos., 25 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	11000	12 01 01 01, 12 01 04 01, 12 01 07 01, 12 01 10 01	13	Loop from Feeder to HV Panel A17X1 to S1 (NW-48, L=9 Mtrs)	FEEDER LOOP
2A	4 nos., 25 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	9000	12 01 15 01, 12 01 18 01, 12 01 21 01, 12 01 24 01	23	Loop from Feeder to HV Panel A16X1 to S1 (NW-48, L=7.5 Mtrs)	FEEDER LOOP CABLES
3	4 nos., 16 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	R,Y,B, Blk	11000	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=9 Mtrs)	9 KVA TRANS-FORMER INPUT/ OUTPUT CABLES
3A	4 nos., 16 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	R,Y,B, Blk	9000	12 02 06.01, 12 02 07.01, 12 02 08.01, 12 02 09.01	31	Output cables S7 (415V side) to S1 (NW-36, L=7 Mtrs)	
3B	4 nos., 6 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	R,Y,B, Blk	9000	12 02 16.01, 12 02 17.01, 12 02 18.01, 12 02 19.01	31A	Output cables S7 (190V side) to S1 (To be laid with harness no.3A)	
4	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch	2500	35	35	Battery fuse box +ve (S4) to Battery box (S3) (NW-17, L=1 Mtr)	DC CIRCUIT CABLES
4A	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	W	2500	39	39	Battery fuse box -ve (S5) to Battery (S3) (NW-17, L=1 Mtr)	

EDTS-413	Nil	03/03/2021				8 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

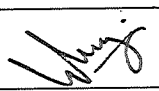
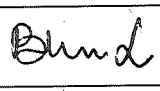
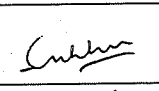
4B	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch	21000	36	36	Battery fuse +ve (S4) to LV Panel (S1A) (NW-17, L=19 Mtrs)	
4C	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	W	16000	40	40	Battery fuse - ve (S5) to LV Panel (S1A) (NW-17, L=14 Mtrs)	
4D	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch	8000	42	42	Battery fuse box +ve (S4) to RBC (S1B) (NW-17, L=6 Mtrs)	
4E	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	W	10000	43	43	Battery fuse box -ve (S5) to RBC (S1B) (NW-17, L=8 Mtrs)	
5 *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	12000 *	23 03 10.02, 23 03 11.02, 23 03 12.02	81	HV Panel (S1) to connection box VK4 (NW- 17, L=10 Mtrs)	SPEED SENSOR CABLES (MECH.)
5A *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	9000 *	23 03 07.02, 23 03 08.02, 23 03 09.02	82	HV Panel (S1) to connection box VK3 (NW- 17, L=7 Mtrs)	
5B *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	18000 *	23 03 01.02, 23 03 02.02, 23 03 03.02	76 (89)	HV Panel (S1) to connection box VK1 (NW-23, L=13 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.	

EDTS-413	Nil	03/03/2021				9 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

5C *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	15000 *	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)	DISC BRAKE CABLES (MECH.)
6 *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	12000 *	23 02 06.01, 23 02 07.01, 23 02 05.06	86	HV PANEL (S1) to through box VK5 (EVS2/EVR2) (NW-23, L=10 Mtrs)	
6A *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	12000 *	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 (DS-4)	-	W, Br, Blk	10000 *	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=8 Mtrs)	
6C *	3x1.0 mm ² + Shielded multi- core	EDTS-132, Rev-C, Am- 3 (DS-4)	-	W, Br, Blk	10000 *	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 harness no. 6B)	
7	2 nos., 1.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch, W	10000	-	41	Air Brake Mech. Unit (NW-17, L=8 Mtrs)	AIR BRAKE CABLE
8	2 nos., 2.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	Ch, W	8000	52	52	HV Panel (S1) to RBC (S1B) (NW-17, L=6 Mtrs)	RBC
9	5 nos., 6 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	R,Y,B, Blk, GNYE	8000	53	53	HV Panel (S1) to RBC (S1B) (NW-23, L=6 Mtrs)	

EDTS-413	Nil	03/03/2021				10 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

10	4 no., 6 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	R,Y,B, Blk	21000	55	55	HV Panel (S1) to On board LV Panel (S1A) (NW-23, L=19 Mtrs)	110V AC SUPPLY TO ON-BOARD
11A	8 nos., 70 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	GNYE	600	PE	-	Earthing	EARTHING CABLES
11B	4 nos., 70 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Above 750 volts upto 1.8KV/ 3.0KV	GNYE	1250	PE	-	Earthing	
11C	1 no., 50 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
11D	1 no., 16 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
11E	2 nos., 16 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	GNYE	300	PE	-	Earthing	
11F	4 nos., 2.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 volts	GNYE	500	PE	-	Earthing	
12	3 nos., 3 X1.0 mm ²	EDTS-132, Rev-C, Am- 3 (DS-4)	Upto 750 volts	-	20000	NET	56	Net-1 & 2 Control (NW-23, L=18 Mtrs)	NET-1 & 2 +SPARE
13	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	Red	3500	BCT +ve		BCT-1 to BCT-2 (NW-17, L=2.5 Mtrs)	BCT-1 & 2
14	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	Blue	3500	BCT -ve		BCT-1 to BCT-2 (NW-17, L=2.5 Mtrs)	
15	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	Red	6000	BCT		BCT-1 to Battery Fuse box +ve (NW- 17, L=5 Mtrs)	
16	1 no., 10 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	Blue	8000	BCT		BCT-1 to Battery Fuse box -ve (NW- 17, L=6 Mtrs)	

EDTS-413	Nil	03/03/2021				11 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

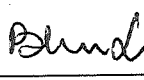
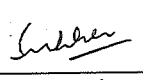
17	3 no., 1.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	R, Blk, GNYE	25000	Ex. Fan-1		Exhaust Fan-1 (NW-17, L=22 Mtrs)	EXHAUST FAN
18	3 no., 1.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750 V	R, Blk, GNYE	19000	Ex. Fan-2		Exhaust Fan-2 (NW-17, L=15 Mtrs)	

Note:-

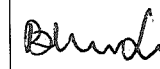
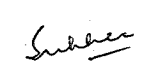
1. Harness No. 5, 5A, 5B, 5C, 6, 6A, 6B & 6C are marked (*) above for reference as cable for Speed Sensor & Disc Brake (WSP System) is being supplied by WSP Suppliers. Therefore, Harness supplier shall supply Polyamide Conduit only.
2. Reference for Wiring on under frame & Roof shall be taken as per 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 shrunk 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 shrunk in place according to shop requirements.

TYPE-2: 'HARNESS OF ROOF ARRANGEMENT' FOR LHB EOG NON-AC CHAIR CAR COACHES:-**2.2 (a) BILL OF MATERIAL FOR ROOF WIRING:-****A) THIN WALLED FLEXIBLE ELASTOMERIC CABLES WITH COPPER CONDUCTORS & ACCESSORIES:-**

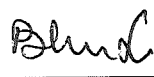
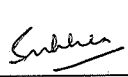
Sr. No.	Description	Working voltage	Cable size (in mm ²)	Cable colour	Detail drg./ Spec.	QPC	Remarks/ Location
1.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Red	ELRS/SPEC/ELC/0019, Rev-4	335.8 Mtr	Inside coach
2.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Yellow	ELRS/SPEC/ELC/0019, Rev-4	191.9 Mtr	Inside coach
3.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Blue	ELRS/SPEC/ELC/0019, Rev-4	135 Mtr	Inside coach

EDTS-413	Nil	03/03/2021				12 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

4.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Black	ELRS/SPEC/ELC/0019, Rev-4	191.8 Mtr	Inside coach
5.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	GNYE	ELRS/SPEC/ELC/0019, Rev-4	120.3 Mtr	Inside coach
6.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Red	ELRS/SPEC/ELC/0019, Rev-4	73.3 Mtr	Inside coach
7.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Yellow	ELRS/SPEC/ELC/0019, Rev-4	67 Mtr	Inside coach
8.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Blue	ELRS/SPEC/ELC/0019, Rev-4	99.2 Mtr	Inside coach
9.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	4	Black	ELRS/SPEC/ELC/0019, Rev-4	25.8 Mtr	Inside coach
10.	PVC Spout type circular box fire retardant, 4-way dia 20mm	-	-	-	IS:3419-76,T-9, FIG-E	55 nos.	Inside coach
11.	Rigid PVC conduit Dia 20mmx4000mm	-	-	-	IS:9537-83,P3, CL.5.1.2	24 nos.	Inside coach
12.	Rigid PVC conduit Dia 20mmx3500mm	-	-	-	IS:9537-83,P3, CL.5.1.2	08 nos.	Inside coach
13.	Rigid PVC conduit Dia 20mmx2100mm	-	-	-	IS:9537-83,P3, CL.5.1.2	16 nos.	Inside coach
14.	Rigid PVC conduit Dia 20mmx2000mm	-	-	-	IS:9537-83,P3, CL.5.1.2	16 nos.	Inside coach
15.	Rigid PVC conduit Dia 20mmx1100mm	-	-	-	IS:9537-83,P3, CL.5.1.2	18 nos.	Inside coach
16.	Rigid PVC conduit Dia 20mmx900mm	-	-	-	IS:9537-83,P3, CL.5.1.2	10 nos.	Inside coach
17.	Rigid PVC conduit Dia 20mmx600mm	-	-	-	IS:9537-83,P3, CL.5.1.2	09 nos.	Inside coach
18.	Rigid PVC conduit Dia 20mmx500mm	-	-	-	IS:9537-83,P3, CL.5.1.2	06 nos.	Inside coach
19.	Rigid PVC conduit Dia 20mmx350mm	-	-	-	IS:9537-83,P3, CL.5.1.2	10 nos.	Inside coach
20.	Rigid PVC conduit Dia 20mmx500mm (Bell mouth at one end)	-	-	-	IS:9537-83,P3, CL.5.1.2	36 nos.	Inside coach

EDTS-413	Nil	03/03/2021				13 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

21.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	66 Mtr	ITEM-5
22.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	50 Mtr	ITEM-7
23.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	45 Mtr	ITEM-8
24.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	5 Mtr	ITEM-9
25.	Cable jacket system	-	-	-	EDTS-138 (Latest Revision)	5 Mtr	ITEM-11
26.	FRLT cotton insulation tape, RED	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
27.	FRLT cotton insulation tape, YELLOW	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
28.	FRLT cotton insulation tape, BLUE	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
29.	FRLT cotton insulation tape, BLACK	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
30.	FRLT cotton insulation tape, GREEN	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
31.	FRLT cotton insulation tape, CHOCO	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
32.	FRLT cotton insulation tape, WHITE	-	-	-	ICF/ELEC/921,Rev.00	3 nos.	-
33.	Cable Binder	-	-	-	CC76129, Alt 'a' Item-1	100 nos.	M/s EVEREST, NOVALEX, Panduit & M V Electro – systems
34.	Cable Binder	-	-	-	CC76129, Alt 'a' Item-2	100 nos.	M/s EVEREST, NOVALEX, Panduit & M V Electro – systems
35.	Cable Binder	-	-	-	CC76129, Alt 'a' Item-3	100 nos.	M/s EVEREST, NOVALEX, Panduit & M V Electro – systems
36.	Copper crimping socket for 4 sq. mm cable (for EFT circuit and termination at EFT)	-	-	-	EDTS-201 (Latest Revision), 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 Revision), Table-1	04 nos.	ITEM-12 (M8)

EDTS-413	Nil	03/03/2021				14 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

38.	Copper crimping socket for 1.5 sq. mm cable	-	-	-	EDTS-201 (Latest Revision), Table-1	10 nos.	ITEM-11 (M5)
-----	---	---	---	---	-------------------------------------	---------	--------------

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, Rev-1.

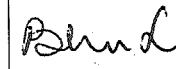
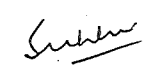
Sr. No.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC
1	Polyamide flexible corrugated conduit, NW-17	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-1	3	20 Mtrs.
2	Polyamide flexible corrugated conduit, NW-23		A-1	4	10 Mtrs.
3	Tube clamp NW-17		A-8	3	5 nos.
4	Tube clamp NW-23		A-8	4	5 nos.
5	Straight PG metal thread End fitting PG-21		A-2	5	12 nos.
6	Hex. lock nut with PG thread brass PG-21		A-10	5	12 nos.

2.2 (b) PREPARATION / BUNCHING OF HARNESS FOR ROOF WIRING:-**Note: -**

- Reference for Wiring on under frame & Roof shall be taken as per clause no. 7.0.
- 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).
- Identification shall be made with colored, zero halogen fire retardant heat shrinkable sleeves of M/S TYCO/Phoenix/Panduit/MV make up-to 100 mm 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:
- 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).
 - 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.
 - Work instructions for preparation of Harness to RCF document no. EDW0003 Ver.-02 or the Latest version.
 - Work instructions for crimping of cable ends and cable terminations to RCF document no. EDW0006 Ver.-01 or the Latest version.

EDTS-413	Nil	03/03/2021				15 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

- 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.

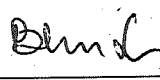
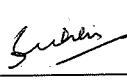
3.7 Test for thin walled flexible elastomeric cables with copper conductors for its basic properties may be conducted on any sample picked up from the supply. The cost for the testing will be borne by the firm. The specific tests to be done are covered in clause 4.9.

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 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.

EDTS-413	Nil	03/03/2021				16 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

- 3.12** Firm shall fill-up proforma for guaranteed performance as per **Annexure-'A'** and furnish details along with tender. It is prerequisite 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.)

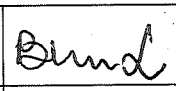
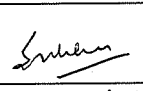
Category-B: Cable Harness with developmental sources of cables (up to 20%)

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.

EDTS-413	Nil	03/03/2021				17 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

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.

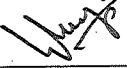
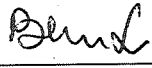
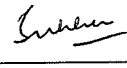
4.8 ACCEPTANCE TEST:

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

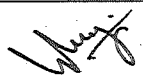
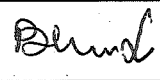
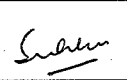
S.No	Tests	Type Test	Routine Test	Acceptance Test
1.	Visual inspection, including inspection of wiring and electrical operational test. (Visual inspection for proper assembly, compatibility of sub-components & wiring etc.)	YES	YES	YES
2.	Checking of electrical continuity	YES	YES	YES
3.	Checking of cable 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	-

EDTS-413	Nil	03/03/2021				18 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

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 a) mV drop Test. b) Pull out Test.	YES	YES	-
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

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.	

EDTS-413	Nil	03/03/2021				19 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

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.	

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 dielectric properties	YES	YES	YES	8.2.2

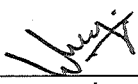
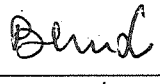
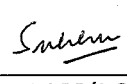
The accuracy of measuring instruments used for both type and routine tests shall be of class 1.5.

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:-

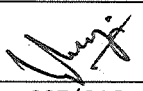
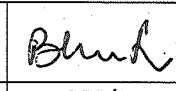
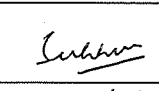
- Packing of harnesses shall be done as per Packing Instructions mentioned in the relevant PO's placed on the firm. Harnesses shall be bunched together and shall be supplied as single unit per coach. Each harness shall be duly bunched individually and legibly marked as per details specified in the specification on it for under frame and Roof arrangement.
- 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.

EDTS-413	Nil	03/03/2021				20 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

3. All the loose wiring for lavatory area & other locations shall be segregated and bunched separately before packing.
4. Purchase invoice of all the major items like cable, crimping sockets etc. shall be supplied along with each supply of material.
5. 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:

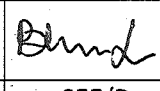
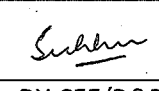
S.No	Drawing/Spec. no.	Description
1.	RDSO Spec. no. EL/TL/56-92	Code of practice for Train Lighting maintenance on Prevention of Fires on 110V D.C.
2.	RDSO Spec. no. EL/TL/001	Code of practice for End On Generation for Train Lighting system working at 750VAC.
3.	RCF/EL/0015-2011 (Rev. 'C')	Schedule of technical requirements (STR) for ready-made harness.
4.	EDW0003 Ver. – 02.	Work instructions for preparation of Harness.
5.	EDW0006 Ver. – 01	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 & Branch wiring for roof.
8.	SKED-789	Drawing of Jumper & Branch wiring of roof for LWSCZ coach.

EDTS-413	Nil	03/03/2021				21 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

ANNEXURE 'A' TO SPEC. NO. EDTS-413, 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)	

EDTS-413	Nil	03/03/2021				22 of 22
Spec. no.	Rev.	Date	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

Harness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	Location		Ferrule no.		ferrule marking	Cable size (in mm ²)	Color code	Length in mm	Remarks
	From	To	From	To					
--- FDB CIRCUIT (+VE) (LI+ CIRCUIT)---									
POSITIVE JUMPER WIRING (CUBICLE TO PP END DOOR WAY)									
1	CUBICLE	FDB-23	LI+	FDB-23	JB LI+	4	Y	4000	Loose
POSITIVE JUMPER WIRING (PP END DOOR WAY TO FDB-9)									
2	FDB-23	FDB-9	LI+	FDB-9	FDB-23 LI+	4	Y	5000	Loose
POSITIVE JUMPER WIRING (FDB-9 TO FDB-7)									
3	FDB-9	FDB-7	LI+	FDB-7	FDB-9 LI+	4	Y	4100	Loose
POSITIVE JUMPER WIRING (FDB-7 TO FDB-5)									
4	FDB-7	FDB-5	LI+	FDB-5	FDB-7 LI+	4	Y	4200	Loose
POSITIVE JUMPER WIRING (FDB-5 TO FDB-3)									
5	FDB-5	FDB-4	LI+	FDB-4	FDB-5 LI+	4	Y	2400	Loose
POSITIVE JUMPER WIRING (FDB-3 TO FDB-1)									
6	FDB-4	FDB-2	LI+	FDB-2	FDB-4 LI+	4	Y	4100	Loose
--- FDB CIRCUIT (+VE) (LII+ CIRCUIT)---									
POSITIVE JUMPER WIRING (CUBICLE TO FDB-8)									
7	CUBICLE	FDB-8	LII+	FDB-8	JB LII+	4	Y	8500	Loose
POSITIVE JUMPER WIRING (FDB-8 TO FDB-6)									
8	FDB-8	FDB-6	LII+	FDB-6	FDB-8 LII+	4	Y	4100	Loose
POSITIVE JUMPER WIRING (FDB-6 TO FDB-4)									
9	FDB-6	FDB-4	LII+	FDB-4	FDB-6 LII+	4	Y	4400	Loose
POSITIVE JUMPER WIRING (FDB-4 TO FDB-3)									
10	FDB-4	FDB-3	LII+	FDB-3	FDB-4 LII+	4	Y	2100	Loose
POSITIVE JUMPER WIRING (FDB-3 TO FDB-1)									
11	FDB-3	FDB-1	LII+	FDB-1	FDB-3 LII+	4	Y	4100	Loose
POSITIVE JUMPER WIRING FOR FDB (DOOR WAY TO DOOR WAY)									
12	FDB-23	FDB-21	LI+	FDB-21	FDB-23 LI+	4	Y	20000	Loose
--- FDB CIRCUIT (-VE)---									
NEGATIVE JUMPER WIRING (CUBICLE TO PP END DOORWAY)									
13	CUBICLE	FDB-24	L-	FDB-24	JB L-	4	B	5000	Loose
NEGATIVE JUMPER WIRING (FDB-24 TO FDB-19)									
14	FDB-24	FDB-19	L-	FDB-19	FDB-24 L-	4	B	5000	Loose
NEGATIVE JUMPER WIRING (FDB-19 TO FDB-18)									
15	FDB-19	FDB-18	L-	FDB-18	FDB-19 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING (FDB-18 TO FDB-17)									
16	FDB-18	FDB-17	L-	FDB-17	FDB-18 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING (FDB-17 TO FDB-16)									
17	FDB-17	FDB-16	L-	FDB-16	FDB-17 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING (FDB-16 TO FDB-15)									
18	FDB-16	FDB-15	L-	FDB-15	FDB-16 L-	4	B	2300	Loose
NEGATIVE JUMPER WIRING (FDB-15 TO FDB-14)									
19	FDB-15	FDB-14	L-	FDB-14	FDB-15 L-	4	B	2300	Loose
NEGATIVE JUMPER WIRING (FDB-14 TO FDB-13)									
20	FDB-14	FDB-13	L-	FDB-13	FDB-14 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING (FDB-13 TO FDB-12)									
21	FDB-13	FDB-12	L-	FDB-12	FDB-13 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING (FDB-12 TO FDB-11)									
22	FDB-12	FDB-11	L-	FDB-11	FDB-12 L-	4	B	2100	Loose
NEGATIVE JUMPER WIRING FOR FDB (DOOR WAY TO DOOR WAY)									
23	FDB-24	FDB-22	L-	FDB-22	FDB-24 L-	4	B	20000	Loose
--- FAN CIRCUIT (+VE)---									
POSITIVE JUMPER WIRING (CUBICLE TO FDB-9)									
24	CUBICLE	FDB-9	F+	FDB-9	JB F+	4	R	8000	Loose
POSITIVE JUMPER WIRING (FDB-9 TO FDB-8)									
25	FDB-9	FDB-8	F+	FDB-8	FDB-9 F+	4	R	2200	Bunching
POSITIVE JUMPER WIRING (FDB-8 TO FDB-7)									
26	FDB-8	FDB-7	F+	FDB-7	FDB-8 F+	4	R	2200	Bunching
POSITIVE JUMPER WIRING (FDB-7 TO FDB-6)									
27	FDB-7	FDB-6	F+	FDB-6	FDB-7 F+	4	R	2200	Bunching
POSITIVE JUMPER WIRING (FDB-6 TO FDB-5)									
28	FDB-6	FDB-5	F+	FDB-5	FDB-6 F+	4	R	2300	Bunching
POSITIVE JUMPER WIRING (FDB-5 TO FDB-4)									

Harness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	Location		Ferrule no.		ferrule marking	Cable size (in mm ²)	Color code	Length in mm	Remarks	
	From	To	From	To						
29	FDB-5	FDB-4	F+	FDB-4	FDB-5 F+	F+	4	R	2300	Bunching
POSITIVE JUMPER WIRING (FDB-4 TO FDB-3)										
30	FDB-4	FDB-3	F+	FDB-3	FDB-4 F+	F+	4	R	2200	Bunching
POSITIVE JUMPER WIRING (FDB-3 TO FDB-2)										
31	FDB-3	FDB-2	F+	FDB-2	FDB-3 F+	F+	4	R	2200	Bunching
POSITIVE JUMPER WIRING (FDB-2 TO FDB-1)										
32	FDB-2	FDB-1	F+	FDB-1	FDB-2 F+	F+	4	R	2200	Bunching
--- FAN CIRCUIT (-VE)---										
NEGATIVE JUMPER WIRING (CUBICLE TO FDB-19)										
33	CUBICLE	FDB-19	F-	FDB-19	JB F-	F-	4	BLK	8000	Loose
NEGATIVE JUMPER WIRING (FDB-19 TO FDB-18)										
34	FDB-19	FDB-18	F-	FDB-18	FDB-19 F-	F-	4	BLK	2200	Bunching
NEGATIVE JUMPER WIRING (FDB-18 TO FDB-17)										
35	FDB-18	FDB-17	F-	FDB-17	FDB-18 F-	F-	4	BLK	2200	Bunching
NEGATIVE JUMPER WIRING (FDB-17 TO FDB-16)										
36	FDB-17	FDB-16	F-	FDB-16	FDB-17 F-	F-	4	BLK	2200	Bunching
NEGATIVE JUMPER WIRING (FDB-16 TO FDB-15)										
37	FDB-16	FDB-15	F-	FDB-15	FDB-16 F-	F-	4	BLK	2300	Bunching
NEGATIVE JUMPER WIRING (FDB-15 TO FDB-14)										
3	FDB-15	FDB-14	F-	FDB-14	FDB-15 F-	F-	4	BLK	2300	Bunching
NEGATIVE JUMPER WIRING (FDB-14 TO FDB-13)										
39	FDB-14	FDB-13	F-	FDB-13	FDB-14 F-	F-	4	BLK	2200	Bunching
NEGATIVE JUMPER WIRING (FDB-13 TO FDB-12)										
40	FDB-13	FDB-12	F-	FDB-12	FDB-13 F-	F-	4	BLK	2200	Bunching
NEGATIVE JUMPER WIRING (FDB-12 TO FDB-11)										
41	FDB-12	FDB-11	F-	FDB-11	FDB-12 F-	F-	4	BLK	2200	Bunching
LIMIT SWITCH FOR ALARM CHAIN PULLING										
42	CUBICLE	LS-2	LS-1	LS-1	LS-1	1.5	Y	5500	Loose	
43	CUBICLE	LS-2	LS-2	LS-2	LS-2	1.5	Y	5500		
44	CUBICLE	LS-2	LSN	LSN	LSN	1.5	BLK	5500		
45	LS-2	LS-1	LS-1	LS-1	LS-1	1.5	Y	23500	Loose	
46	LS-2	LS-1	LS-2	LS-2	LS-2	1.5	Y	23500		
47	LS-2	LS-1	LSN	LSN	LSN	1.5	BLK	23500		

Harrness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	From	To	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
	Location	Location					
MOBILE CHARGING SOCKET CIRCUIT (CUBICLE TO MCS-9)							
48	CUBICLE	MCS-9	MCS-9	1.5	R	6500	LOOSE
49	CUBICLE	MCS-9	MCS-9	1.5	BLK	6500	
50	CUBICLE	MCS-9	MCS-9	1.5	GNYE	6500	
48A	MCS-9	LOOP	LOOP	1.5	R	1000	
49A	MCS-9	LOOP	LOOP	1.5	BLK	1000	
50A	MCS-9	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-9 TO MCS-8)							
51	MCS-9	MCS-8	MCS-8	1.5	R	4800	BUNCHING
52	MCS-9	MCS-8	MCS-8	1.5	BLK	4800	
53	MCS-9	MCS-8	MCS-8	1.5	GNYE	4800	
51A	MCS-8	LOOP	LOOP	1.5	R	1000	LOOSE
52A	MCS-8	LOOP	LOOP	1.5	BLK	1000	
53A	MCS-8	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-8 TO MCS-7)							
54	MCS-8	MCS-7	MCS-7	1.5	R	4800	BUNCHING
55	MCS-8	MCS-7	MCS-7	1.5	BLK	4800	
56	MCS-8	MCS-7	MCS-7	1.5	GNYE	4800	
54A	MCS-7	LOOP	LOOP	1.5	R	1000	LOOSE
55A	MCS-7	LOOP	LOOP	1.5	BLK	1000	
56A	MCS-7	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-7 TO MCS-6)							
57	MCS-7	MCS-6	MCS-6	1.5	R	4800	BUNCHING
58	MCS-7	MCS-6	MCS-6	1.5	BLK	4800	
59	MCS-7	MCS-6	MCS-6	1.5	GNYE	4800	
57A	MCS-6	LOOP	LOOP	1.5	R	1000	LOOSE
58A	MCS-6	LOOP	LOOP	1.5	BLK	1000	
59A	MCS-6	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-6 TO MCS-5)							
60	MCS-6	MCS-5	MCS-5	1.5	R	4800	BUNCHING
61	MCS-6	MCS-5	MCS-5	1.5	BLK	4800	
62	MCS-6	MCS-5	MCS-5	1.5	GNYE	4800	
60A	MCS-5	LOOP	LOOP	1.5	R	1000	LOOSE
61A	MCS-5	LOOP	LOOP	1.5	BLK	1000	
62A	MCS-5	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-5 TO MCS-4)							
63	MCS-5	MCS-4	MCS-4	1.5	R	4800	BUNCHING
64	MCS-5	MCS-4	MCS-4	1.5	BLK	4800	
65	MCS-5	MCS-4	MCS-4	1.5	GNYE	4800	
63A	MCS-4	LOOP	LOOP	1.5	R	1000	LOOSE
64A	MCS-4	LOOP	LOOP	1.5	BLK	1000	
65A	MCS-4	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-4 TO MCS-3)							
66	MCS-4	MCS-3	MCS-3	1.5	R	4800	BUNCHING
67	MCS-4	MCS-3	MCS-3	1.5	BLK	4800	
68	MCS-4	MCS-3	MCS-3	1.5	GNYE	4800	
66A	MCS-3	LOOP	LOOP	1.5	R	1000	LOOSE
67A	MCS-3	LOOP	LOOP	1.5	BLK	1000	

Harness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	From Location	To Location	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
68A	MCS-3	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-3 TO MCS-2)							
69	MCS-3	MCS-2	MCS-2	1.5	R	4800	BUNCHING
70	MCS-3	MCS-2	MCS-2	1.5	BLK	4800	
71	MCS-3	MCS-2	MCS-2	1.5	GNYE	4800	
69A	MCS-2	LOOP	LOOP	1.5	R	1000	LOOSE
70A	MCS-2	LOOP	LOOP	1.5	BLK	1000	
71A	MCS-2	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-2 TO MCS-1)							
72	MCS-2	MCS-1	MCS-1	1.5	R	4800	BUNCHING
73	MCS-2	MCS-1	MCS-1	1.5	BLK	4800	
74	MCS-2	MCS-1	MCS-1	1.5	GNYE	4800	
72A	MCS-1	LOOP	LOOP	1.5	R	1000	LOOSE
73A	MCS-1	LOOP	LOOP	1.5	BLK	1000	
74A	MCS-1	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (SBC TO MCS-18)							
75	SBC	MCS-18	MCS-18	1.5	Y	9000	LOOSE
76	SBC	MCS-18	MCS-18	1.5	BLK	9000	
77	SBC	MCS-18	MCS-18	1.5	GNYE	9000	
75A	MCS-18	LOOP	LOOP	1.5	Y	1000	
76A	MCS-18	LOOP	LOOP	1.5	BLK	1000	
77A	MCS-18	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-18 TO MCS-17)							
78	MCS-18	MCS-17	MCS-17	1.5	Y	4800	BUNCHING
79	MCS-18	MCS-17	MCS-17	1.5	BLK	4800	
80	MCS-18	MCS-17	MCS-17	1.5	GNYE	4800	
78A	MCS-17	LOOP	LOOP	1.5	Y	1000	LOOSE
79A	MCS-17	LOOP	LOOP	1.5	BLK	1000	
80A	MCS-17	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-17 TO MCS-16)							
81	MCS-17	MCS-16	MCS-16	1.5	Y	4800	BUNCHING
82	MCS-17	MCS-16	MCS-16	1.5	BLK	4800	
83	MCS-17	MCS-16	MCS-16	1.5	GNYE	4800	
81A	MCS-16	LOOP	LOOP	1.5	Y	1000	LOOSE
82A	MCS-16	LOOP	LOOP	1.5	BLK	1000	
83A	MCS-16	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-16 TO MCS-15)							
84	MCS-16	MCS-15	MCS-15	1.5	Y	4800	BUNCHING
85	MCS-16	MCS-15	MCS-15	1.5	BLK	4800	
86	MCS-16	MCS-15	MCS-15	1.5	GNYE	4800	
84A	MCS-15	LOOP	LOOP	1.5	Y	1000	LOOSE
85A	MCS-15	LOOP	LOOP	1.5	BLK	1000	
86A	MCS-15	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-15 TO MCS-14)							
87	MCS-15	MCS-14	MCS-14	1.5	Y	4800	BUNCHING
88	MCS-15	MCS-14	MCS-14	1.5	BLK	4800	
89	MCS-15	MCS-14	MCS-14	1.5	GNYE	4800	
87A	MCS-14	LOOP	LOOP	1.5	Y	1000	

Date; 03-03-2021

SSE/CAD

SEE/D&D

DY.CEE/D&D

JUMPER WIRING

Harness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	From Location	To Location	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
88A	MCS-14	LOOP	LOOP	1.5	BLK	1000	LOOSE
89A	MCS-14	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-14 TO MCS-13)							
90	MCS-14	MCS-13	MCS-13	1.5	Y	4800	BUNCHING
91	MCS-14	MCS-13	MCS-13	1.5	BLK	4800	
92	MCS-14	MCS-13	MCS-13	1.5	GNYE	4800	
90A	MCS-13	LOOP	LOOP	1.5	Y	1000	LOOSE
91A	MCS-13	LOOP	LOOP	1.5	BLK	1000	
92A	MCS-13	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-13 TO MCS-12)							
93	MCS-13	MCS-12	MCS-12	1.5	Y	4800	BUNCHING
94	MCS-13	MCS-12	MCS-12	1.5	BLK	4800	
95	MCS-13	MCS-12	MCS-12	1.5	GNYE	4800	
93A	MCS-12	LOOP	LOOP	1.5	Y	1000	LOOSE
94A	MCS-12	LOOP	LOOP	1.5	BLK	1000	
95A	MCS-12	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-12 TO MCS-11)							
96	MCS-12	MCS-11	MCS-11	1.5	Y	4800	BUNCHING
97	MCS-12	MCS-11	MCS-11	1.5	BLK	4800	
98	MCS-12	MCS-11	MCS-11	1.5	GNYE	4800	
96A	MCS-11	LOOP	LOOP	1.5	Y	1000	LOOSE
97A	MCS-11	LOOP	LOOP	1.5	BLK	1000	
98A	MCS-11	LOOP	LOOP	1.5	GNYE	1000	
MOBILE CHARGING SOCKET CIRCUIT (MCS-11 TO MCS-10)							
99	MCS-11	MCS-10	MCS-10	1.5	Y	4800	BUNCHING
100	MCS-11	MCS-10	MCS-10	1.5	BLK	4800	
101	MCS-11	MCS-10	MCS-10	1.5	GNYE	4800	
99A	MCS-10	LOOP	LOOP	1.5	Y	1000	LOOSE
100A	MCS-10	LOOP	LOOP	1.5	BLK	1000	
101A	MCS-10	LOOP	LOOP	1.5	GNYE	1000	
ACCIDENTAL EMERGENCY LIGHT (CUBICLE TO DOOEWAY AREA)							
102	CUBICLE	AEL-2	AEL-2	1.5	B	4000	LOOSE
103	CUBICLE	AEL-2	AEL-2	1.5	BLK	4000	
ACCIDENTAL EMERGENCY LIGHT (AEL-2 TO AEL-1)							
104	AEL-2	AEL-1	AEL-1	1.5	B	25000	LOOSE
105	AEL-2	AEL-1	AEL-1	1.5	BLK	25000	
PACIL CIRCUIT							
106	SBC	PACIL-1	PACIL-2	1.5	Y	4000	LOOSE
107	SBC	PACIL-1	PACIL-2	1.5	BLK	4000	
108	SBC	PACIL-1	PACIL-2	1.5	GNYE	4000	
109	SBC	PACIL-2	PACIL-1	1.5	Y	6000	
110	SBC	PACIL-2	PACIL-1	1.5	BLK	6000	
111	SBC	PACIL-2	PACIL-1	1.5	GNYE	6000	
112	PACIL-1	PACIL-2	PACIL-2	1.5	R	3500	
113	PACIL-1	PACIL-2	PACIL-2	1.5	BLK	3500	
114	SBC	EFT-I	SPM-I	4	R	27000	
115	SBC	EFT-II	SN-I	4	BLUE	29000	
116	SBC	EFT-III	SPM-II	4	R	7500	

Harness for Jumper wiring for roof of Non AC Chair Car (LWSCZ) coach

Har. No.	From Location	To Location	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
117	SBC	EFT-IV	SN-II	4	BLUE	10000	
118	EFT-I	EFT-II	SPM-I	4	R	6500	
119	EFT-II	EFT-I	SN-I	4	BLUE	6500	
120	EFT-III	EFT-IV	SPM-II	4	R	6500	
121	EFT-IV	EFT-III	SN-II	4	BLUE	6500	

Date: 03-03-2021

SSE/CAD

SEE/D&D

DY.CEE/D&D

JUMPER WIRING

Harnness for Branch wiring for roof of Non AC Chair Car (LWSCZ) coach

Harness for Branch Wiring for 1000 or Non AC Chain Car (LWSE) Coach										
Har. No.	From	To	Ferrule no.	Ferrule marking	Cable size (in mm ²)	Color code	Length in mm	Remarks		
	Location	Location								
+VE BRANCH WIRING										
122	A	FDB-1	LED-1	LII+	LED-1	1.5	Y	1000	LOOSE	
	B	FDB-1	FSW-1	F+	FSW-1	1.5	R	3700	BUNCHING	
	C	FSW-1	F-1	F+	F-1	1.5	R	3700		
	D	FDB-1	FSW-3	F+	FSW-3	1.5	R	3700		
	E	FSW-3	F-3	F+	F-3	1.5	R	4200		
	F	FDB-1	FSW-2	F+	FSW-2	1.5	R	3700		
	G	FSW-2	F-2	F+	F-2	1.5	R	3700		
	H	FDB-1	FSW-4	F+	FSW-4	1.5	R	3700		
	I	FSW-4	F-4	F+	F-4	1.5	R	4200		
123	A	FDB-2	LED-2	LI+	LED-2	1.5	Y	1000	LOOSE	
	B	FDB-2	FSW-5	F+	FSW-5	1.5	R	3700	BUNCHING	
	C	FSW-5	F-5	F+	F-5	1.5	R	3700		
	D	FDB-2	FSW-7	F+	FSW-7	1.5	R	3700		
	E	FSW-7	F-7	F+	F-7	1.5	R	3700		
	F	FDB-2	FSW-6	F+	FSW-6	1.5	R	3700		
	G	FSW-6	F-6	F+	F-6	1.5	R	3700		
	H	FDB-2	FSW-8	F+	FSW-8	1.5	R	3300		
	I	FSW-8	F-8	F+	F-8	1.5	R	4200		
124	A	FDB-3	LED-3	LII+	LED-3	1.5	Y	1000	LOOSE	
	B	FDB-3	FSW-9	F+	FSW-9	1.5	R	3900	BUNCHING	
	C	FSW-9	F-9	F+	F-9	1.5	R	3700		
	D	FDB-3	FSW-11	F+	FSW-11	1.5	R	4000		
	E	FSW-11	F-11	F+	F-11	1.5	R	4700		
	F	FDB-3	FSW-10	F+	FSW-10	1.5	R	3500		
	G	FSW-10	F-10	F+	F-10	1.5	R	3500		
	H	FDB-3	FSW-12	F+	FSW-12	1.5	R	3600		
	I	FSW-12	F-12	F+	F-12	1.5	R	4000		
125	A	FDB-4	LED-4	LI+	LED-4	1.5	Y	1000	LOOSE	
	B	FDB-4	LED-5	LII+	LED-5	1.5	Y	1000	BUNCHING	
	C	FDB-4	FSW-13	F+	FSW-13	1.5	R	3700		
	D	FSW-13	F-13	F+	F-13	1.5	R	3700		
	E	FDB-4	FSW-15	F+	FSW-15	1.5	R	3900		
	F	FSW-15	F-15	F+	F-15	1.5	R	4700		
	G	FDB-4	FSW-14	F+	FSW-14	1.5	R	3700		
	H	FSW-14	F-14	F+	F-14	1.5	R	3700		
	I	FDB-4	FSW-16	F+	FSW-16	1.5	R	3700		
126	J	FSW-16	F-16	F+	F-16	1.5	R	4400	BUNCHING	
	A	FDB-5	LED-6	LI+	LED-6	1.5	Y	1000		LOOSE
	B	FDB-5	FSW-17	F+	FSW-17	1.5	R	4500		
	C	FSW-17	F-17	F+	F-17	1.5	R	3500		
	D	FDB-5	FSW-19	F+	FSW-19	1.5	R	4500		
	E	FSW-19	F-19	F+	F-19	1.5	R	3700		
	F	FDB-5	FSW-18	F+	FSW-18	1.5	R	4500		
	G	FSW-18	F-18	F+	F-18	1.5	R	3500		
	H	FDB-5	FSW-20	F+	FSW-20	1.5	R	4500		
127	I	FSW-20	F-20	F+	F-20	1.5	R	3700	BUNCHING	
	A	FDB-6	LED-7	LII+	LED-7	1.5	Y	1000		LOOSE
	B	FDB-6	FSW-21	F+	FSW-21	1.5	R	4100		
	C	FSW-21	F-21	F+	F-21	1.5	R	4000		
	D	FDB-6	FSW-23	F+	FSW-23	1.5	R	3900		
	E	FSW-23	F-23	F+	F-23	1.5	R	3700		
	F	FDB-6	FSW-22	F+	FSW-22	1.5	R	4400		
	G	FSW-22	F-22	F+	F-22	1.5	R	4400		
	H	FDB-6	FSW-24	F+	FSW-24	1.5	R	3700		
I	FSW-24	F-24	F+	F-24	1.5	R	4300			

Harrness for Branch wiring for roof of Non AC Chair Car (LWSCZ) coach

128	A	FDB-7	LED-8	LI+	LED-8	1.5	Y	1000	LOOSE
	B	FDB-7	FSW-25	F+	FSW-25	1.5	R	3900	BUNCHING
	C	FSW-25	F-25	F+	F-25	1.5	R	4300	
	D	FDB-7	FSW-27	F+	FSW-27	1.5	R	3900	
	E	FSW-27	F-27	F+	F-27	1.5	R	3900	
	F	FDB-7	FSW-26	F+	FSW-26	1.5	R	3900	
	G	FSW-26	F-26	F+	F-26	1.5	R	3900	
	H	FDB-7	FSW-28	F+	FSW-28	1.5	R	3900	
	I	FSW-28	F-28	F+	F-28	1.5	R	3900	
129	A	FDB-8	LED-9	LII+	LED-9	1.5	Y	1000	LOOSE
	B	FDB-8	FSW-29	F+	FSW-29	1.5	R	3700	BUNCHING
	C	FSW-29	F-29	F+	F-29	1.5	R	3700	
	D	FDB-8	FSW-31	F+	FSW-31	1.5	R	3700	
	E	FSW-31	F-31	F+	F-31	1.5	R	3700	
	F	FDB-8	FSW-30	F+	FSW-30	1.5	R	3700	
	G	FSW-30	F-30	F+	F-30	1.5	R	3700	
	H	FDB-8	FSW-32	F+	FSW-32	1.5	R	3700	
	I	FSW-32	F-32	F+	F-32	1.5	R	3700	
130	A	FDB-9	LED-10	LI+	LED-10	1.5	Y	1000	LOOSE
	B	FDB-9	FSW-33	F+	FSW-33	1.5	R	3700	BUNCHING
	C	FSW-33	F-33	F+	F-33	1.5	R	3700	
	D	FDB-9	FSW-34	F+	FSW-34	1.5	R	3700	
	E	FSW-34	F-34	F+	F-34	1.5	R	3700	
	F	FDB-9	FSW-35	F+	FSW-35	1.5	R	3700	
	G	FSW-35	F-35	F+	F-35	1.5	R	3700	
	H	FDB-9	FSW-36	F+	FSW-36	1.5	R	3700	
	I	FSW-36	F-36	F+	F-36	1.5	R	3700	
-VE BRANCH WIRING									
131	A	FDB-11	LED-1	L-	LED-1	1.5	BLK	1000	LOOSE
	B	FDB-11	F-1	F-	F-1	1.5	B	1500	
	C	FDB-11	F-3	F-	F-3	1.5	B	1500	
	D	FDB-11	F-2	F-	F-2	1.5	B	1000	
	E	FDB-11	F-4	F-	F-4	1.5	B	1000	
132	A	FDB-12	LED-2	L-	LED-2	1.5	BLK	1000	LOOSE
	B	FDB-12	F-5	F-	F-5	1.5	B	1500	
	C	FDB-12	F-6	F-	F-6	1.5	B	1000	
	D	FDB-12	F-7	F-	F-7	1.5	B	1500	
	E	FDB-12	F-8	F-	F-8	1.5	B	1000	
133	A	FDB-13	LED-3	L-	LED-3	1.5	BLK	1000	LOOSE
	B	FDB-13	F-9	F-	F-9	1.5	B	1500	
	C	FDB-13	F-10	F-	F-10	1.5	B	1000	
	D	FDB-13	F-11	F-	F-11	1.5	B	1500	
	E	FDB-13	F-12	F-	F-12	1.5	B	1000	
134	A	FDB-14	LED-4	L-	LED-4	1.5	BLK	1000	LOOSE
	B	FDB-14	LED-5	L-	LED-5	1.5	BLK	1000	
	C	FDB-14	F-13	F-	F-13	1.5	B	1500	
	D	FDB-14	F-14	F-	F-14	1.5	B	1000	
	E	FDB-14	F-15	F-	F-15	1.5	B	1500	
	F	FDB-14	F-16	F-	F-16	1.5	B	1000	
135	A	FDB-15	LED-6	L-	LED-6	1.5	BLK	1000	LOOSE
	B	FDB-15	F-17	F-	F-17	1.5	B	1500	
	C	FDB-15	F-18	F-	F-18	1.5	B	2500	
	D	FDB-15	F-19	F-	F-19	1.5	B	1500	
	E	FDB-15	F-20	F-	F-20	1.5	B	2500	
136	A	FDB-16	LED-7	L-	LED-7	1.5	BLK	1000	LOOSE
	B	FDB-16	F-21	F-	F-21	1.5	B	1000	
	C	FDB-16	F-22	F-	F-22	1.5	B	1500	
	D	FDB-16	F-23	F-	F-23	1.5	B	1000	

Harness for Branch wiring for roof of Non AC Chair Car (LWSCZ) coach

137	E	FDB-16	F-24	F-	F-24	1.5	B	1500	LOOSE
	A	FDB-17	LED-8	L-	LED-8	1.5	BLK	1000	
	B	FDB-17	F-25	F-	F-25	1.5	B	1000	
	C	FDB-17	F-26	F-	F-26	1.5	B	1500	
	D	FDB-17	F-27	F-	F-27	1.5	B	1000	
	E	FDB-17	F-28	F-	F-28	1.5	B	1500	
138	A	FDB-18	LED-9	L-	LED-9	1.5	BLK	1000	LOOSE
	B	FDB-18	F-29	F-	F-29	1.5	B	1000	
	C	FDB-18	F-30	F-	F-30	1.5	B	1500	
	D	FDB-18	F-31	F-	F-31	1.5	B	1000	
	E	FDB-18	F-32	F-	F-32	1.5	B	1500	
139	A	FDB-19	LED-10	L-	LED-10	1.5	BLK	1000	LOOSE
	B	FDB-19	F-33	F-	F-33	1.5	B	1000	
	C	FDB-19	F-34	F-	F-34	1.5	B	1500	
	D	FDB-19	F-35	F-	F-35	1.5	B	1000	
	E	FDB-19	F-36	F-	F-36	1.5	B	1500	
ELECTRO-PNEUMATIC PRESSURE SWITCHES (+VE) - PP & NPP END									
140	A	FDB-21	PS-1	PS+	PS-1	1.5	Y	3000	LOOSE
	B	FDB-21	PS-2	PS+	PS-2	1.5	Y	3000	
	C	FDB-23	PS-1	PS+	PS-1	1.5	Y	5000	
	D	FDB-23	PS-2	PS+	PS-2	1.5	Y	5500	
ELECTRO-PNEUMATIC PRESSURE SWITCHES (-VE) - PP & NPP END									
141	A	FDB-22	PS-3	PS-	PS-3	1.5	BLUE	5000	LOOSE
	B	FDB-22	PS-4	PS-	PS-4	1.5	BLUE	5000	
	C	FDB-24	PS-3	PS-	PS-3	1.5	BLUE	3000	
	D	FDB-24	PS-4	PS-	PS-4	1.5	BLUE	4000	
DOORWAY/GANGWAY LIGHT (+VE) NPP SIDE									
142	A	FDB-21	DL-1	LI+	DL-1	1.5	Y	1500	LOOSE
	B	FDB-21	DL-2	LI+	DL-2	1.5	Y	4000	
	C	FDB-21	GL-1	LI+	GL-1	1.5	Y	5000	

Harnness for Branch wiring for roof of Non AC Chair Car (LWSCZ) coach

DOORWAY/GANGWAY LIGHT (+VE) PP SIDE

143	A	FDB-23	DL-3	LI+	DL-3	1.5	Y	1500	LOOSE
	B	FDB-23	DL-4	LI+	DL-4	1.5	Y	4000	
	C	FDB-23	GL-2	LI+	GL-2	1.5	Y	5000	

DOORWAY/GANGWAY LIGHT (-VE) NPP SIDE

144	A	FDB-22	DL-1	L-	DL-1	1.5	BLUE	4000	LOOSE
	B	FDB-22	DL-2	L-	DL-2	1.5	BLUE	1500	
	C	FDB-22	GL-1	L-	GL-1	1.5	BLUE	5000	

DOORWAY/GANGWAY LIGHT (-VE) PP SIDE

145	A	FDB-24	DL-3	L-	DL-3	1.5	BLUE	4000	LOOSE
	B	FDB-24	DL-4	L-	DL-4	1.5	BLUE	1500	
	C	FDB-24	GL-2	L-	GL-2	1.5	BLUE	5000	

LAVATORY LIGHT (+VE) NPP SIDE

146	A	FDB-21	LL-1	LI+	LL-1	1.5	Y	3500	LOOSE
	B	FDB-21	LL-2	LI+	LL-2	1.5	Y	6500	

LAVATORY LIGHT (-VE) NPP SIDE

147	A	FDB-22	LL-1	L-	LL-1	1.5	BLUE	6500	LOOSE
	B	FDB-22	LL-2	L-	LL-2	1.5	BLUE	3500	

LAVATORY LIGHT (+VE) PP SIDE

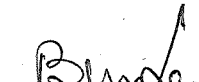
148	A	FDB-23	LL-3	LI+	LL-3	1.5	Y	3500	LOOSE
	B	FDB-23	LL-4	LI+	LL-4	1.5	Y	6500	

LAVATORY LIGHT (-VE) PP SIDE

149	A	FDB-24	LL-3	L-	LL-3	1.5	BLUE	6500	LOOSE
	B	FDB-24	LL-4	L-	LL-4	1.5	BLUE	3500	

Date; 10-03-2021


 SSE/CAD


 SEE/D&D


 DY.CEE/D&D

BRANCH WIRING

Corrigendum – 1 to Specification no. - EDTS 413, Rev-Nil

This corrigendum is issued to Specification no. EDTS 413, Rev. - Nil for 'Harness of Under frame and Roof arrangement for LHB EOG Non AC Chair Car Coaches' to change the Scope of Supply as follows:

Clause 2.0 (a) shall be read as:

2.0 Scope of supply:

- a) Procurement of the item specified in BOM of the specification shall be from RDSO/RCF/ICF approved vendors mentioned in the latest version of the vendor directory issued by RCF/ICF/RDSO respectively, however the procurement of **e-beam Cables & Cable Management System** shall be done from 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:

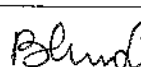
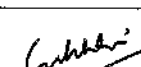
- **Category-A:** Cable Harness with Approved Source of e-beam Cables & Cable Management System (80% min.)
- **Category-B:** Cables Harness with Developmental source of e-beam Cables & Cable Management System (20% min.)

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. 2.0 (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 & NW70 (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.

EDTS-413, Rev-Nil	1	2.7.21				1 of 1
Spec. No.	Corr.	Date	SSE/CAD	SEE/D&D	Dy.CEE/D&D	Page No.



Document No.	EDF 0001
Version.	2.0
Issue Date.	02.07.2021
Page No.	1 of 1

To be maintained by the cables harness manufacturer at his premises and to be signed by
the Inspecting official during inspection against each Purchase Order

Name of Firm :

P.O. No. :

Description :

Specification :

[illegible]

Sr. No.	Date of Inspection	Total ordered quantity	Lot offered	Category-A Qty. (With Cables from Approved sources 80% Min	Category-B Qty. (With Cables from developmental sources (Up to 20%)	Sign of Inspecting Engineer.



Amendment No.-1 to Specification No. EDTS-413, Rev-Nil, Cor-1

This Amendment is issued to specification for 'Harness of Under-Frame and Roof Arrangement' for LHB EOG Non AC Chair Car Coaches' to spec. no. EDTS-413, Rev 'Nil', Cor-1 in order to modify "Bill of Material" of under-frame to modify clause regarding PG-48 cable management system in the specification.

1. Clause No.- 2.1 (a) BILL OF MATERIAL FOR UNDERFRAME WIRING:

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

Following Item is **UPDATED** as under:-

Sr. No.	Description	Working voltage		Cable size (in mm ²)	Cable color	Detail drg./ Spec.	QPC	Remarks
		Existing	Revised					
6.	Thin walled flexible elastomeric cables with copper conductors	Above 750 volts upto 1.8KV/ 3.0KV	Upto 750 volts	50	GNYE	ELRS/SPEC/ ELC/0019, Rev-4	0.5 Mtr	For Earthing

Following Item's QPC is **REVISED** as under:-

Sr. No.	Description	Working voltage	Cable size (in mm ²)	Cable color	Detail drg./ Spec.	QPC		Remarks
						Existing	Revised	
28.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	6	GNYE	ELRS/SPEC/ ELC/0019, Rev-4	8 Mtr	29 Mtr	RBC Input & HV to LV Panel

2. Clause No. 2.1 (a):-

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

Following Items are **REVISED** as under:

S.N.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC	
					Existing	Revised
5.	Polyamide flexible corrugated conduit, NW-48	RDSO/PE/SPEC/ AC/0138-2009, Rev-1 (Annexure-A)	A-1	7	16.5 Mtr **	16.5 Mtr **
10.	Straight PG metal thread End fitting PG-48		A-2	8	02 nos. **	02 nos.

Amendment-1 to EDTS-413	Nil	06.05.2024				1 of 3
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. मु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.

	रेल कोच फैक्टरी, कपूरथला Rail Coach Factory, Kapurthala	दस्तावेज सं.: सुधार सं.-1 Document no.: Amendment-1
--	--	--

15.	Hex. lock nut with PG thread brass PG-48		A-10	8	02 nos. **	02 nos.
20.	Tube clamp NW-48		A-8	8	10 nos.**	10 nos.

Note "*** Marked items shall not be procured as these items are available in RCF depots"

3. Clause No.-2.1(b): PREPARATION / BUNCHING OF HARNESS:-

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

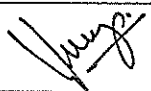
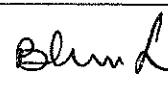
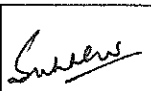
The Cable Harnesses are **MODIFIED** as under:

a) Remarks of Harness No. 4B modified as follows:-

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
4B	1 No. 10 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Upto 750V	Ch.	21000	36	36	RBC (+ve) to LV Panel (S1A) (NW-17, L=19 mtrs)	DC Circuit Cables

a) Number of Cables of Harness No. 10 modified as follows:-

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
	Existing	Revised								
10	4 nos., 6 mm ²	5 nos., 6 mm ²	ELRS/SPEC/ELC/0019, Rev-4	Upto 750 volts	R,Y,B, Blk, GNYE	21000	55	55	HV Panel (S1) to On board LV Panel (S1A) (NW-23, L=19 Mtrs)	110 V AC SUPPLY TO ON BOARD

Amendment-1 to EDTS-413	Nil	06.05.2024				2 of 3
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. सु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.

4. Clause No.- 2.1 (a) BILL OF MATERIAL FOR ROOF WIRING:

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

Following Item is **Added** as under:-

Sr. No.	Description	Working voltage	Cable size (in mm ²)	Cable color	Detail drg./ Spec.	QPC	Remarks
39.	Flexible Flame Retardant High performance polyolefin heat shrinkable tubing	-	-	-	EDML-176 (Latest)	1 Set	Loose Supply

5. Clause No. 4.9, Table for Tests:

Following test is hereby added:

Test for Harnesses at firm's premises:

S.No.	Tests	Type Test	Routine Test	Acceptance Test
15.	Test for Rigid PVC Conduits to IS:9537 (Part-3)	YES	YES	YES

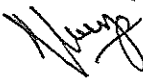
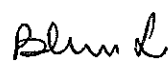
6. Clause No. 4.10 (a) Details of Testing:

Following Acceptance Test for PVC Conduit to IS: 9537 (Part-3) is hereby added.

7.	Acceptance test for PVC conduit to IS:9537	
S.No.	Details of Testing	Remarks of Rites Inspecting official
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.	

7. Clause No. 6.0: Packing and Traceability

Reference Clause No. 6.0 (i) for Packing Instructions stands deleted.

Amendment-1 to EDTS-413	Nil	06.05.2024				3 of 3
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. मु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



This amendment is issued to specification for 'Harness of Under-Frame and Roof Arrangement' for LHB EOG Non AC Chair Car Coaches to spec. no. EDTS-413, Rev 'Nil', Corr-1, AM-1 for redistribution of load in mobile charging circuit, Change in Exhaust fan harness from under-frame to roof harness and modification in "-VE" side circuit of limit switch/AEL. Accordingly, the relevant clauses where ever mentioned in the specification have been modified. The Amendment in the specification is as under:-

1. Clause No.- 2.1 (a) BILL OF MATERIAL FOR UNDERFRAME WIRING:

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

Following Item are **DELETED** from BOM:

Sr. No.	Description	Working voltage	Cable size (in mm ²)	Cable color	Detail drg./ Spec.	QPC	Remarks
32.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Red	ELRS/SPEC/ ELC/0019, Rev-4	44 Mtr	Exhaust Fan
33.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	Black	ELRS/SPEC/ ELC/0019, Rev-4	44 Mtr	Exhaust Fan
34.	Thin walled flexible elastomeric cables with copper conductors	Upto 750 volts	1.5	GNYE	ELRS/SPEC/ ELC/0019, Rev-4	44 Mtr	Exhaust Fan

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

Following Item is **REVISED** as under:

S.No.	DESCRIPTION	SPEC. NO.	TABLE	ITEM	QPC	
					Existing	Revised
5.	Polyamide flexible corrugated conduit, NW-17	RDSO/PE/SPEC/AC/0138-2009, Rev-1 (Annexure-A)	A-1	3	186 Mtr	149 Mtr

2. Clause No.-2.1(b): PREPARATION / BUNCHING OF HARNESS:-

Harness No. 17, 18 stands **DELETED**.

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
17	3 no., 1.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750V	R, Blk, GNYE	25000	Ex. Fan-1		Exhaust Fan-1 (NW-17, L=22 mtrs)	Exhaust Fan

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				1 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. सु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



रेल कोच फैक्टरी, कपूरथला
Rail Coach Factory, Kapurthala

दस्तावेज सं.: सुधार सं.-2
Document no.: Amendment-2

18	3 no., 1.5 mm ²	ELRS/SPEC/ ELC/0019, Rev-4	Upto 750V	R, Blk, GNYE	19000	Ex. Fan-2	Exhaust Fan-2 (NW-17, L=15 mtrs)
----	-------------------------------	----------------------------------	--------------	-----------------	-------	-----------	--

3. Clause No. - 2.2 (a): BILL OF MATERIAL FOR ROOF WIRING:

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

Following Item's **QPC REVISED** as under:

Sr No	Description	Working voltage	Cable size (in mm ²)	Cable color	Detail drg./ Spec.	Existing QPC	Revised QPC	Remarks
1.	Thin walled flexible elast. cables with copper conductors	Upto 750 volts	1.5	Red	ELRS/SPEC/ ELC/0019, Rev-4	335.8 Mtr	407.2 Mtr	Inside coach
2.	Thin walled flexible elast. cables with copper conductors	Upto 750 volts	1.5	Yellow	ELRS/SPEC/ ELC/0019, Rev-4	191.9 Mtr	260.8 Mtr	Inside coach
3.	Thin walled flexible elast. cables with copper conductors	Upto 750 volts	1.5	Blue	ELRS/SPEC/ ELC/0019, Rev-4	135 Mtr	260.3 Mtr	Inside coach
4.	Thin walled flexible elast. cables with copper conductors	Upto 750 volts	1.5	Black	ELRS/SPEC/ ELC/0019, Rev-4	191.8 Mtr	183.8 Mtr	Inside coach
5.	Thin walled flexible elast. cables with copper conductors	Upto 750 volts	1.5	GNYE	ELRS/SPEC/ ELC/0019, Rev-4	120.3 Mtr	135.3 Mtr	Inside coach

4. Clause No. - 7.0: ENCLOSURES : Drg. No. modified as under:-

S.N.	Description	Drawing no.	
		Existing	Modified
8.	Drawing of Jumper & Branch Wiring of roof for LWSCZ coach	SKED-789, alt 'b'	SKED-789, alt 'c'

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				2 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. मु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



Annexure-B to EDTS-413, Rev-Nil, Corr-1, AM-2

Annexure-B i.e. "Preparation/Bunching of Harness for Jumper/Branch wiring for roof of Non AC Chair Car (LWSCZ) coach" has been modified with respect to phase segregation of 110V DC +VE & -VE circuit and Distribution of load in MCS Circuit. Exhaust Fan circuit harness length has been added for Exhaust Fan-1 & 2.

Hence, Relevant Har. No. of Annexure-B shall be **READ** as under:

Har. No.	Location	Location	Ferrule no.		Ferrule Marking	Cable size (in mm²)	Color code	Length in mm	Remarks
	From	To	From	To					
LIMIT SWITCH FOR ALARM CHAIN PULLING									
44	CUBICLE	LS-2	LSN	LSN	LSN	1.5	BLK	8000	Loose
47	LS-2	LS-1	LSN	LSN	LSN	1.5	BLK	26000	Loose

Mobile Charging Socket Circuit is **MODIFIED** as follows:

Har No.	From	To	Ferrule no.		Cable size (in mm²)	Color code	Length in mm	Remarks
	Location	Location	From	To				
MOBILE CHARGING SOCKET CIRCUIT (CUBICLE TO MCS-25,26,27) : LV PANEL SIDE								
48	CUBICLE	MCS-25	MCS-25 (R)	CUBICLE (R)	1.5	R	6500	LOOSE
	CUBICLE	MCS-25	MCS-25 (N)	CUBICLE (N)	1.5	BLK	6500	
	CUBICLE	MCS-25	MCS-25 (PE)	CUBICLE (PE)	1.5	GNYE	6500	
49	CUBICLE	MCS-26	MCS-26 (Y)	CUBICLE (Y)	1.5	Y	6500	
50	CUBICLE	MCS-27	MCS-27 (B)	CUBICLE (B)	1.5	B	6500	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-25 TO MCS-26 TO MCS-27								
MOBILE CHARGING SOCKET CIRCUIT (MCS-25,26,27 TO MCS-22,23,24) : LV PANEL SIDE								
51	MCS-25	MCS-22	MCS-22 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-27	MCS-22	MCS-22 (N)	MCS (N)	1.5	BLK	4800	
	MCS-27	MCS-22	MCS-22 (PE)	MCS (PE)	1.5	GNYE	4800	
52	MCS-26	MCS-23	MCS-23 (Y)	MCS (Y)	1.5	Y	4800	
53	MCS-27	MCS-24	MCS-24 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-22 TO MCS-23 TO MCS-24								
MOBILE CHARGING SOCKET CIRCUIT (MCS-22,23,24 TO MCS-19,20,21) : LV PANEL SIDE								
54	MCS-22	MCS-19	MCS-19 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-24	MCS-19	MCS-19 (N)	MCS (N)	1.5	BLK	4800	
	MCS-24	MCS-19	MCS-19 (PE)	MCS (PE)	1.5	GNYE	4800	
55	MCS-23	MCS-20	MCS-20 (Y)	MCS (Y)	1.5	Y	4800	
56	MCS-24	MCS-21	MCS-21 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-19 TO MCS-20 TO MCS-21								
MOBILE CHARGING SOCKET CIRCUIT (MCS-19,20,21 TO MCS-16,17,18) : LV PANEL SIDE								
57	MCS-19	MCS-16	MCS-16 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-21	MCS-16	MCS-16 (N)	MCS (N)	1.5	BLK	4800	
	MCS-21	MCS-16	MCS-16 (PE)	MCS (PE)	1.5	GNYE	4800	
58	MCS-20	MCS-17	MCS-17 (Y)	MCS (Y)	1.5	Y	4800	
59	MCS-21	MCS-18	MCS-18 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-16 TO MCS-17 TO MCS-18								

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				3 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. मु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



रेल कोच फैक्टरी, कपूरथला
Rail Coach Factory, Kapurthala

दस्तावेज सं.: सुधार सं.-2
Document no.: Amendment-2

3/7

MOBILE CHARGING SOCKET CIRCUIT (MCS-16,17,18 TO MCS-13,14,15) : LV PANEL SIDE								
60	MCS-16	MCS-13	MCS-13 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-18	MCS-13	MCS-13 (N)	MCS (N)	1.5	BLK	4800	
	MCS-18	MCS-13	MCS-13 (PE)	MCS (PE)	1.5	GNYE	4800	
61	MCS-17	MCS-14	MCS-14 (Y)	MCS (Y)	1.5	Y	4800	
62	MCS-18	MCS-15	MCS-15 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-13 TO MCS-14 TO MCS-15								
MOBILE CHARGING SOCKET CIRCUIT (MCS-13,14,15 TO MCS-10,11,12) : LV PANEL SIDE								
63	MCS-13	MCS-10	MCS-10 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-15	MCS-10	MCS-10 (N)	MCS (N)	1.5	BLK	4800	
	MCS-15	MCS-10	MCS-10 (PE)	MCS (PE)	1.5	GNYE	4800	
64	MCS-14	MCS-11	MCS-11 (Y)	MCS (Y)	1.5	Y	4800	
65	MCS-15	MCS-12	MCS-12 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-10 TO MCS-11 TO MCS-12								
MOBILE CHARGING SOCKET CIRCUIT (MCS-10,11,12 TO MCS-7,8,9) : LV PANEL SIDE								
66	MCS-10	MCS-7	MCS-7 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-12	MCS-7	MCS-7 (N)	MCS (N)	1.5	BLK	4800	
	MCS-12	MCS-7	MCS-7 (PE)	MCS (PE)	1.5	GNYE	4800	
67	MCS-11	MCS-8	MCS-8 (Y)	MCS (Y)	1.5	Y	4800	
68	MCS-12	MCS-9	MCS-9 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-7 TO MCS-8 TO MCS-9								
MOBILE CHARGING SOCKET CIRCUIT (MCS-7,8,9 TO MCS-4,5,6) : LV PANEL SIDE								
69	MCS-7	MCS-4	MCS-4 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-9	MCS-4	MCS-4 (N)	MCS (N)	1.5	BLK	4800	
	MCS-9	MCS-4	MCS-4 (PE)	MCS (PE)	1.5	GNYE	4800	
70	MCS-8	MCS-5	MCS-5 (Y)	MCS (Y)	1.5	Y	4800	
71	MCS-9	MCS-6	MCS-6 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-4 TO MCS-5 TO MCS-6								
MOBILE CHARGING SOCKET CIRCUIT (MCS-4,5,6 TO MCS-1,2,3) : LV PANEL SIDE								
72	MCS-4	MCS-1	MCS-1 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-6	MCS-1	MCS-1 (N)	MCS (N)	1.5	BLK	4800	
	MCS-6	MCS-1	MCS-1 (PE)	MCS (PE)	1.5	GNYE	4800	
73	MCS-5	MCS-2	MCS-2 (Y)	MCS (Y)	1.5	Y	4800	
74	MCS-6	MCS-3	MCS-3 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-1 TO MCS-2 TO MCS-3								
MOBILE CHARGING SOCKET CIRCUIT (CUBICLE TO MCS-52,53,54) : NON - LV PANEL SIDE								
75	CUBICLE	MCS-52	MCS-52 (R)	CUBICLE (R)	1.5	R	9000	LOOSE
	CUBICLE	MCS-52	MCS-52 (N)	CUBICLE (N)	1.5	BLK	9000	
	CUBICLE	MCS-52	MCS-52 (PE)	CUBICLE (PE)	1.5	GNYE	9000	
76	CUBICLE	MCS-53	MCS-53 (Y)	CUBICLE (Y)	1.5	Y	9000	
77	CUBICLE	MCS-54	MCS-54 (B)	CUBICLE (B)	1.5	B	9000	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-52 TO MCS-53 TO MCS-54								

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				4 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. सु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



रेल कोच फैक्टरी, कपूरथला
Rail Coach Factory, Kapurthala

दस्तावेज सं.: सुधार सं.-2
Document no.: Amendment-2

34

MOBILE CHARGING SOCKET CIRCUIT (MCS-52,53,54 TO MCS-49,50,51) : NON - LV PANEL SIDE								
78	MCS-52	MCS-49	MCS-49 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-54	MCS-49	MCS-49 (N)	MCS (N)	1.5	BLK	4800	
	MCS-54	MCS-49	MCS-49 (PE)	MCS (PE)	1.5	GNYE	4800	
79	MCS-53	MCS-50	MCS-50 (Y)	MCS (Y)	1.5	Y	4800	
80	MCS-54	MCS-51	MCS-51 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-49 TO MCS-50 TO MCS-51								
MOBILE CHARGING SOCKET CIRCUIT (MCS-49,50,51 TO MCS-46,47,48) : NON - LV PANEL SIDE								
81	MCS-49	MCS-46	MCS-46 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-51	MCS-46	MCS-46 (N)	MCS (N)	1.5	BLK	4800	
	MCS-51	MCS-46	MCS-46 (PE)	MCS (PE)	1.5	GNYE	4800	
82	MCS-50	MCS-47	MCS-47 (Y)	MCS (Y)	1.5	Y	4800	
83	MCS-51	MCS-48	MCS-48 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-46 TO MCS-47 TO MCS-48								
MOBILE CHARGING SOCKET CIRCUIT (MCS-46,47,48 TO MCS-43,44,45) : NON - LV PANEL SIDE								
84	MCS-46	MCS-43	MCS-43 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-48	MCS-43	MCS-43 (N)	MCS (N)	1.5	BLK	4800	
	MCS-48	MCS-43	MCS-43 (PE)	MCS (PE)	1.5	GNYE	4800	
85	MCS-47	MCS-44	MCS-44 (Y)	MCS (Y)	1.5	Y	4800	
86	MCS-48	MCS-45	MCS-45 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-43 TO MCS-44 TO MCS-45								
MOBILE CHARGING SOCKET CIRCUIT (MCS-43,44,45 TO MCS-40,41,42) : NON - LV PANEL SIDE								
87	MCS-43	MCS-40	MCS-40 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-45	MCS-40	MCS-40 (N)	MCS (N)	1.5	BLK	4800	
	MCS-45	MCS-40	MCS-40 (PE)	MCS (PE)	1.5	GNYE	4800	
88	MCS-44	MCS-41	MCS-41 (Y)	MCS (Y)	1.5	Y	4800	
89	MCS-45	MCS-42	MCS-42 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-40 TO MCS-41 TO MCS-42								
MOBILE CHARGING SOCKET CIRCUIT (MCS-40,41,42 TO MCS-37,38,39) : NON - LV PANEL SIDE								
90	MCS-40	MCS-37	MCS-37 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-42	MCS-37	MCS-37 (N)	MCS (N)	1.5	BLK	4800	
	MCS-42	MCS-37	MCS-37 (PE)	MCS (PE)	1.5	GNYE	4800	
91	MCS-41	MCS-38	MCS-38 (Y)	MCS (Y)	1.5	Y	4800	
92	MCS-42	MCS-39	MCS-39 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-37 TO MCS-38 TO MCS-39								
MOBILE CHARGING SOCKET CIRCUIT (MCS-37,38,39 TO MCS-34,35,36) : NON - LV PANEL SIDE								
93	MCS-37	MCS-34	MCS-34 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-39	MCS-34	MCS-34 (N)	MCS (N)	1.5	BLK	4800	
	MCS-39	MCS-34	MCS-34 (PE)	MCS (PE)	1.5	GNYE	4800	
94	MCS-38	MCS-35	MCS-35 (Y)	MCS (Y)	1.5	Y	4800	
95	MCS-39	MCS-36	MCS-35 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-34 TO MCS-35 TO MCS-36								

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				5 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. मु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.



रेल कोच फैक्टरी, कपूरथला
Rail Coach Factory, Kapurthala

दस्तावेज सं.: सुधार सं.-2
Document no.: Amendment-2

318

MOBILE CHARGING SOCKET CIRCUIT (MCS-34,35,36 TO MCS-31,32,33) : NON - LV PANEL SIDE								
96	MCS-34	MCS-31	MCS-31 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-36	MCS-31	MCS-31 (N)	MCS (N)	1.5	BLK	4800	
	MCS-36	MCS-31	MCS-31 (PE)	MCS (PE)	1.5	GNYE	4800	
97	MCS-35	MCS-32	MCS-32 (Y)	MCS (Y)	1.5	Y	4800	
98	MCS-36	MCS-33	MCS-33 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-31 TO MCS-32 TO MCS-33								
MOBILE CHARGING SOCKET CIRCUIT (MCS-31,32,33 TO MCS-28,29,30) : NON - LV PANEL SIDE								
99	MCS-31	MCS-28	MCS-28 (R)	MCS (R)	1.5	R	4800	BUNCHING
	MCS-33	MCS-28	MCS-28 (N)	MCS (N)	1.5	BLK	4800	
	MCS-33	MCS-28	MCS-28 (PE)	MCS (PE)	1.5	GNYE	4800	
100	MCS-32	MCS-29	MCS-29 (Y)	MCS (Y)	1.5	Y	4800	
101	MCS-33	MCS-30	MCS-30 (B)	MCS (B)	1.5	B	4800	
MCS-N & MCS-PE TO BE LOOPED FROM MCS-28 TO MCS-29 TO MCS-30								

Accidental Emergency Light Circuit is **MODIFIED** as follows:

Har No.	From Location	To Location	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
ACCIDENTAL EMERGENCY LIGHT (CUBICLE TO DOORWAY AREA)							
103	CUBICLE	AEL-2	AEL-2 (-VE)	1.5	BLK	6500	LOOSE
ACCIDENTAL EMERGENCY LIGHT (AEL-2 TO AEL-1)							
105	AEL-2	AEL-1	AEL-1 (-VE)	1.5	BLK	27500	LOOSE

Exhaust Fan Circuit is **ADDED** as follows:

HarNo.		From	To	Ferrule no.	Cable size (in mm ²)	Color code	Length in mm	Remarks
		Location	Location	To				
EXHAUST FAN CIRCUIT								
150	A	CUBICLE	EX.FAN-1	EX.FAN1-R	1.5	R	27000	LOOSE SUPPLY
	B	CUBICLE	EX.FAN-1	EX.FAN1-Y	1.5	Y	27000	
	C	CUBICLE	EX.FAN-1	EX.FAN1-B	1.5	B	27000	
	D	CUBICLE	EX.FAN-1	EX.FAN1-PE	1.5	GNYE	27000	
151	A	CUBICLE	EX.FAN-1	EX.FAN2-R	1.5	R	6000	LOOSE SUPPLY
	B	CUBICLE	EX.FAN-1	EX.FAN2-Y	1.5	Y	6000	
	C	CUBICLE	EX.FAN-1	EX.FAN2-B	1.5	B	6000	
	D	CUBICLE	EX.FAN-1	EX.FAN2-PE	1.5	GNYE	6000	

Amendment-2 to EDTS-413, Corr-1, AM-1	Nil	28.08.2024				6 of 6
Document No.	Revision	Date	SSE/CAD	SEE/D&D	DY.CEE/DP	Page No.
दस्तावेज सं.	संशोधन	दिनांक	वरि. अनु. अभि./ अभिकल्प	वरि. विद्युत इंजीनियर/ अभि. एवं विकास	उप. सु. विद्युत इंजी./अभि. एवं परियोजना	पृष्ठ सं.

ANNEXURE-B (EDTS-413)

(FAN CIRCUIT)

+VE SIDE JUMPERS

FDB-09		FDB-08 (H.NO.-25)
FDB-08		FDB-07 (H.NO.-26)
FDB-07		FDB-06 (H.NO.-27)
FDB-06		FDB-05 (H.NO.-28)
FDB-05		FDB-04 (H.NO.-29)
FDB-04		FDB-03 (H.NO.-30)
FDB-03		FDB-02 (H.NO.-31)
FDB-02		FDB-01 (H.NO.-32)

2000 MM

(FAN CIRCUIT)

-VE SIDE JUMPERS

FDB-19		FDB-18 (H.NO.-34)
FDB-18		FDB-17 (H.NO.-35)
FDB-17		FDB-16 (H.NO.-36)
FDB-16		FDB-15 (H.NO.-37)
FDB-15		FDB-14 (H.NO.-38)
FDB-14		FDB-13 (H.NO.-39)
FDB-13		FDB-12 (H.NO.-40)
FDB-12		FDB-11 (H.NO.-41)

2000 MM

MOBILE CHARGING SOCKET
(PHASE & NEUTRAL SIDE JUMPERS)

MCS-25,26,27		MCS-22,23,24	(H.NO.51-53)
MCS-22,23,24		MCS-19,20,21	(H.NO.54-56)
MCS-19,20,21		MCS-16,17,18	(H.NO.57-59)
MCS-16,17,18		MCS-13,14,15	(H.NO.60-62)
MCS-13,14,15		MCS-10,11,12	(H.NO.63-65)
MCS-10,11,12		MCS-7,8,9	(H.NO.66-68)
MCS-7,8,9		MCS-4,5,6	(H.NO.69-71)
MCS-4,5,6		MCS-1,2,3	(H.NO.72-74)
MCS-52,53,54		MCS-49,50,51	(H.NO.78-80)
MCS-49,50,51		MCS-46,47,48	(H.NO.81-83)
MCS-46,47,48		MCS-43,44,45	(H.NO.84-86)
MCS-43,44,45		MCS-40,41,42	(H.NO.87-89)
MCS-40,41,42		MCS-37,38,39	(H.NO.90-92)
MCS-37,38,39		MCS-34,35,36	(H.NO.93-95)
MCS-34,35,36		MCS-31,32,33	(H.NO.96-98)
MCS-31,32,33		MCS-28,29,30	(H.NO.99-101)

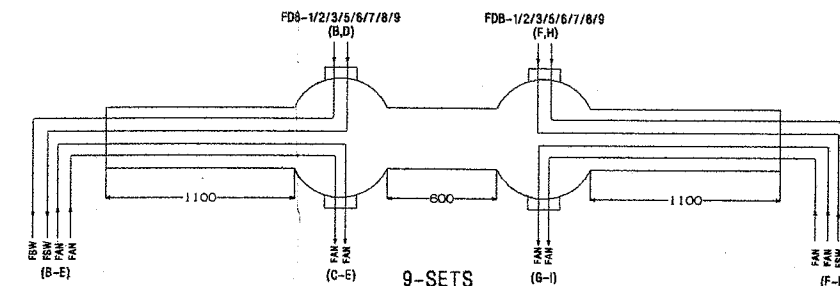
2100 MM

500 MM

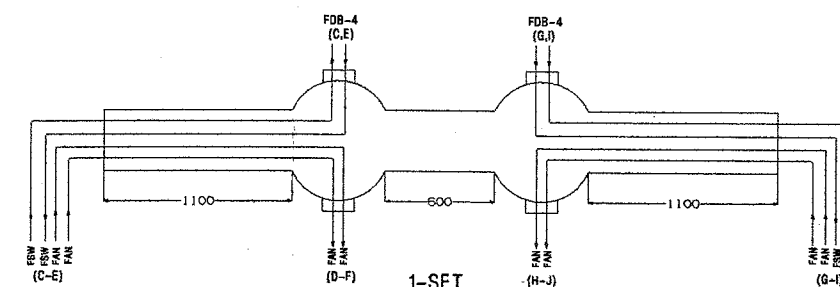
36 NO. FOR SWITCH DROPS
(BELL MOUTH AT ONE END)

ANNEXURE-B (EDTS-413)

BRANCH WIRING FOR FAN



(H.NO.122-124 & 126-130, B TO I)



(H.NO.125, C TO J)

NOTE:- 1. ALL DIMENSIONS IN MM.

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

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008 DATE OF FIRST ISSUE 03/03/2021

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	OPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	M	GROUP	ELECTRICAL	SUPERSEDES:		
WEIGHT	FILE	Z:\SKED-789C.prt (12D)				
NIL	KG					
S.AREA						
NIL	M ²					
LENGTH / DIA						
NIL	M					
WIDTH / THICK						
NIL	M					
HEIGHT						
NIL	M					

SCALE	SSE/ED	CHD	DRN	REF.DRG.No.	NIL
JUMPER & BRANCH WIRING OF ROOF FOR LHB EOG NON-AC CHAIR CAR (LWSCZ) COACH				PL NO.	NIL
RAIL COACH FACTORY, KAPURTHALA				DRG.NO.	SKED-789
रेल कोच फैक्टरी कपूरथला				PL NO.	NIL
SEE/D&D				ALT.	C
DY.CEE/DP				SIZE	A2 SHEET 1/1