RAIL COACH FACTORY, KAPURTHALA

Office of the
Principal Chief Elect. Engineer

No.RCF/HSQ/ED/LHB/2008 **Dated: 03.10.2024**

A). Principal Chief Mechanical Engineer

1. Central Railway, CST, Mumbai-400 001
2. Eastern Railway, Fairly Place , Kolkata-700 001
3. East Central Railway, Dighi, Disst- Vaishali, Hajipur-844 101
4. East Coast Rly., Chandra Shekharpur, Bhubneshwer-751 016
5. Northern Railway, Baroda House, New Delhi-110 001
6. North Central Railway, Hastings Road, Prayagraj – 211 001
7. North Eastern Railway, Gorakhpur-273 001
8. North East Frontier Rly., Maligaon, Guwahati-781 001
9. Northern Western Rly., Jaipur-302 006
10. Southern Railway, Park Town, Chennai-800 003
11. Southern central Rly., Rail Nilayam Secundrabad-500 371
12. South Coast Railway, Visakhapatnam-530004.
13. South Eastern Rly., Gardern Reach, Kolkata-700 043
14. South East Central Rly., Bilaspur-495 004
15. South Western Rly., 4th Floor, DRM Office, Sh. Laxmi Narayan Complex, Station Road Hubli-580 020
16. Western Railway , Church gate, Mumbai-400 020
17. West Central Rly., Jabalpur-482 001

B).

1. Chief Electrical Design Engineer Integral Coach Factory Chennai.
2. Chief Electrical Design Engineer Modern Coach Factory Raebareli.

Sub: Coach Alteration Instruction Sheets for segregation of 110V DC +VE & –VE cables for enhanced fire safety in LHB EOG First AC , AC Chair Car and Executive AC Chair Car Coaches.

Reference above, Coach Alteration Instruction Sheets for segregation of 110V DC +VE & –VE cables for enhanced fire safety in LHB EOG First AC , AC Chair Car and Executive AC Chair Car Coaches have been prepared as per undergiven details:

Sr. No.	Document No.	Description
1.	ED/CAI/037, Rev.'0', Dated: 24.09.2024	Coach Alteration Instruction Sheet for segregation of 110V DC +VE & –VE cables for enhanced fire safety in LHB EOG **First AC Coaches**.
2.	ED/CAI/039, Rev.'0', Dated: 03.10.2024	Coach Alteration Instruction Sheet for segregation of 110V DC +VE & –VE cables for enhanced fire safety in LHB EOG **AC Chair Car and Executive AC Chair Car** Coaches.

It is also mentioned that the procurement of 4-Way Socketed type PVC Coupler for ø20mm rigid PVC conduit shall be made as per revised drawing No. **SKED-947 Alt. a**

This is for your kind information and necessary action please.

DA:

1. ED/CAI/037, Rev. '0', dated: 24.09.2024.
2. ED/CAI/039, Rev. '0', dated: 03.10.2024.
3. SKED-947 Alt. a

(Sukhbir Singh)
Dy.CEE/DP
For Principal Chief Electrical Engineer

RAIL COACH FACTORY, KAPURTHALA

CAI NO.: ED/CAI/039 Dated: 03.10.2024

COACH ALTERATION INSTRUCTION SHEET FOR SEGREGATION OF 110V DC (+VE & –VE) FOR ENHANCED FIRE SAFETY IN LHB EOG AC CHAIR CAR AND EXECUTIVE AC CHAIR CAR COACHES

RAIL COACH FACTORY, KAPURTHALA

CAI No. :- ED/CAI/039, Dated :- 03.10.2024

This Coach Alteration Instruction Sheet has been issued for segregation of 110V DC +VE & –VE cables for enhanced fire safety in LHB EOG AC Chair Car and Executive AC Chair Car Coaches wherein following steps are to be taken for modifications in the coach:

1. Removal/Dismantle of Accessories from Coach Body:

1.1 For Modifications in the Roof Area of the Coach (Passenger Area)

a) Disconnect all the wiring circuits on 110V DC i.e. circuits for Light's, Night Light's, Reading Lights, AEL's, Alarm Circuit and Lavatory Bunch Cables from WAGO terminals provided in Switch Board Cabinet.

b) Disconnect all the wiring circuits i.e. circuits for Light's, Night light's from the WAGO type connectors provided in each Light.

c) Remove all the lights in the aisle area (roof) in the Passenger Area as well as lights in Doorway/Gangway area.

d) Removal of 110V DC wiring from the PVC conduits installed in the Centre Aisle (Passenger Area)

e) Removal of 3 Nos. Dia. 20 mm PVC Rigid conduits from Centre Aisle (Passenger Area) by removing the conduit clamps.

f) Remove ACP Cover being provided in the Partition frame on FRP Panel in Passenger Area (PP End as well as NPP End).

1.2 For modifications in the Side wall Area of the Coach (Passenger Area)

a) Removal of all Reading Lights after disconnecting cable connections from Lights.

b) Removal of Luggage Racks from the Passenger Area.

c) Removal of Roof Ceiling in the Passenger Area on sidewall.

d) Removal of Switch Plate Assemblies after disconnecting all connections.

e) Removal of 110V DC wiring from the PVC conduits installed in the Sidewall area (Passenger Area) for Reading Lights and Mobile Charging Sockets.

f) Removal of 02 Nos. dia. 20 mm PVC Rigid conduits laid in the sidewall area for Reading Lights and Mobile Charging Sockets.

1.3 For modifications in the Doorway/Gangway Area & Pantry Area of the Coach

a) Disconnect all the wiring circuits from the Switch Board Cabinet to Lavatories terminal strip and from one Lavatory to another Lavatory.

b) Opening of Roof Ceiling in Doorway/Gangway & Pantry area.

c) Removal of AC/DC wiring from Lavatory to Lavatory from the 40 mm PVC Rigid conduits provided in the roof area of the Passenger Area.

d) Removal of DC wiring for lights in the Doorway/Gangway and Pantry area of the coach which includes Accidental Emergency Lights.

2 Modifications required in Under-frame/Roof/Sidewall Arrangement of LHB EOG AC Chair Car and Executive AC Chair Car Coaches:

2.1 Modifications in Under frame Area:-

a) Segregation of 110V DC +VE & -VE Cables is already being done in existing LHB Coaches as the output cables from 4.5 KW RBC i.e. 110V DC +VE, +VE & -VE are routed to SBC, Battery Fuse Box (+VE) and Battery Fuse Box (-VE) respectively via. different polyamide conduits, hence no change is required in under-frame wiring.

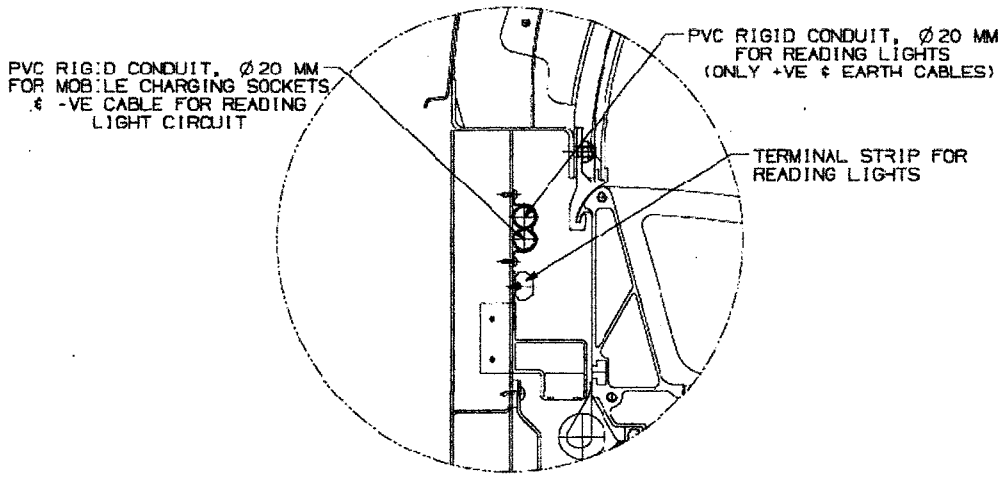
2.2 Modification in Side Wall Area (SBC and Non SBC Side) :-

a) After Removal of Roof Ceiling and Luggage Racks, 02 nos. Dia. 20 mm PVC Rigid Conduits provided for Reading Light wiring and Mobile Charging Circuit Wiring on side wall shall be removed after removal of cables.

b) Cables shall be laid in these 02 nos. Dia. 20 mm PVC Rigid Conduits as per the following details:

1. **Upper Conduit:-** Reading Light Cables (110V DC +VE Cable & Earthing Cable)

2. **Lower Conduit:-** All Mobile Charging Cables along with 110V DC –VE Cable for Reading Light Circuit



c) Provision of 4-way socketed couplers as per **Drawing No. SKED-947** shall be made at locations in between the two windows in both the conduits for cable exit as per the **Drawing No. SKED-971, Sheet No. - 3 & 4.** Additional sleeve shall be used for routing of cables separately from conduit to Mobile Charging Socket as well as to terminal strip for Reading Light.

Note:- No Manual cutout for cable exit shall be made in PVC Conduit. Only 4-way socketed coupler shall be provided for cable exit during wiring wherever required.

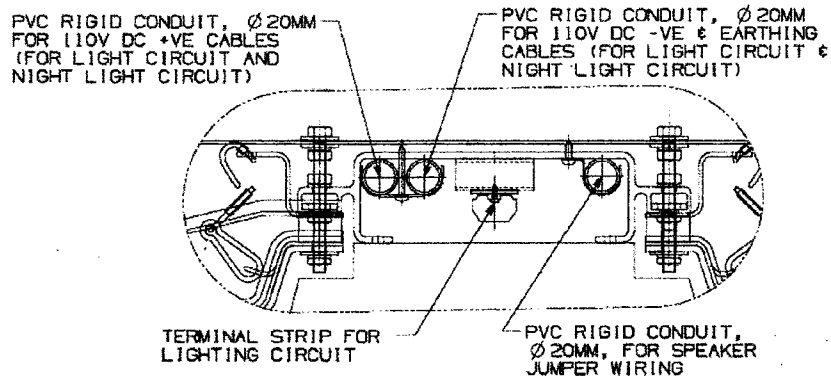
d) 2 Nos. PVC Rigid conduits then shall be clamped with the help of Double Conduit clamps again at the sidewall (both side).

2.3 Modifications in Roof Area:

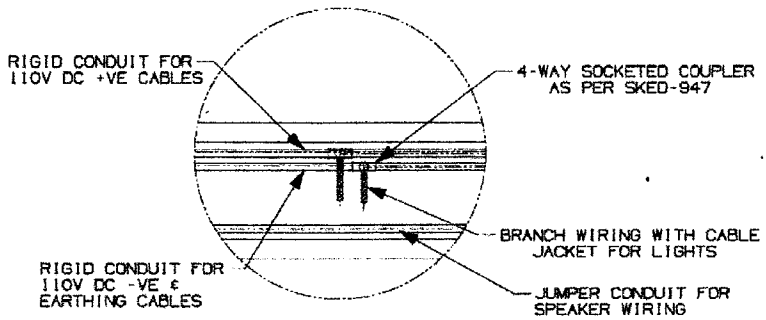
a) At present, 03 nos. PVC Rigid Conduit of Ø20 mm is laid in the existing Center aisle area behind the lights in the Passenger Area for Jumper and Branch wiring. Clamping of the same is done with the help of 1 no. double conduit clamp and 01 No. single conduit clamp. Terminal Strips for the Lights is provided on the bracket being provided behind the lights.

b) Wiring shall be routed from Switch Board Cabinet to terminals via. these 03 nos. PVC Rigid Conduits as per following details:-

1. **Conduit-1:-** All DC +VE Jumper and +VE Branch Cables
2. **Conduit-2:-** All DC –VE, Earthing Cables as Jumper along with –VE and Earthing branch cables
3. **Conduit-3:-** Speaker Cables



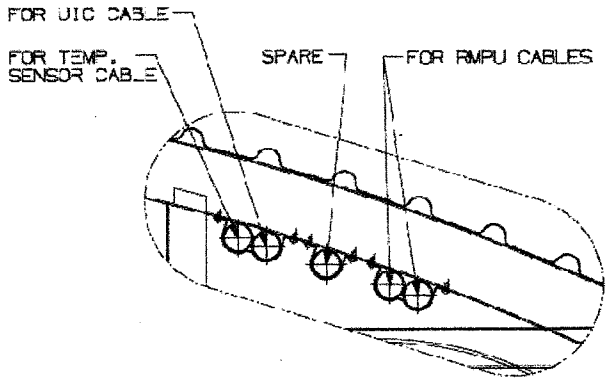
c) 4-Way socketed couplers on the PVC conduits as per Drawing no. ***SKED-947*** shall be provided for branch wiring exit at each location shown in Drawing No.- ***SKED-971, Sheet No.-2, Detail-A.*** Additional sleeve shall be used for routing of cables separately from conduit to Lights.

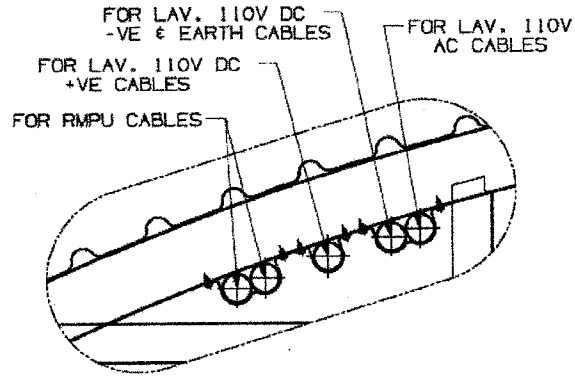


d) Lavatory wiring from PP end to NPP end shall also contemplated in dia. 40 mm PVC Rigid Conduits. These cables shall be segregated as per the details given in **Drg. No. SKED-971, Sheet – 1 and 2.** The cables as provided in conduits dia. 40 mm in Roof is as under:

- 02 conduits for RMPU wiring
- One no. conduits with all DC +VE cables
- One no. conduits with all DC -VE cables
- One no. conduit with AC cables (including pantry wiring)

Details for 05 Nos. Conduits:-	Details for 05 Nos. Conduits:-
02 Nos. for RMPU Cables	02 Nos. for RMPU Cables
01 No. for UIC Cable	01 No. for 110V AC (if req.))
01 No. for Temperature Sensor Cables	01 No. for Lav. Wiring (110V DC +VE)
01 No. spare	01 No. for Lav. Wiring (110V DC –VE)





2.4 Modifications in Wiring for Doorway/Gangway Area and Pantry Area :

a) Jumper Cables for Lavatory Wiring shall be segregated into 3nos. Polyamide flexible conduit of adequate size as per the details mentioned in the ***Drg. No. SKED-971, Sheet - 2 of 2.***

b) Branch Cables from Lavatory WAGO's to Lights in Doorway/Gangway Area and WC Light shall be segregated into 02 nos. separate polyamide flexible conduit of size NW-12.

c) 110V DC +VE & -VE branch cables in Lavatory Area shall also be segregated with the provision of cable jackets wherever required.

d) Cables for Limit Switch from Switch Board Cabinet (PP End) and from Lavatory Terminal Strip (NPP End) shall also be segregated into 02 nos. separate polyamide flexible conduit of size NW-12.

e) Cables for Accidental Emergency Light from Switch Board Cabinet shall also be segregated into 02 nos. separate polyamide flexible conduit of size NW-12.

f) Cables for Light in Pantry Area from Switch Board Cabinet shall also be segregated into 02 nos. separate polyamide flexible conduit of size NW-12.

g) Cables for PACIL Circuit shall also be segregated into 02 nos. polyamide flexible conduits.

3. For further reference, Drawing No. ***SKED-971*** has been prepared and is enclosed.

4. Bill of Material :

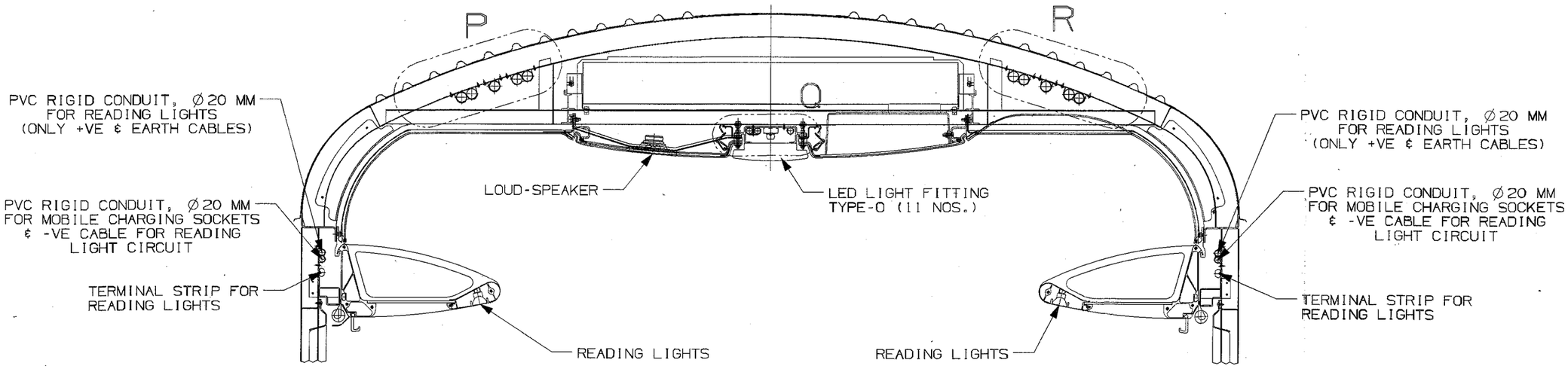
Material required for above referred modifications are as follows:-

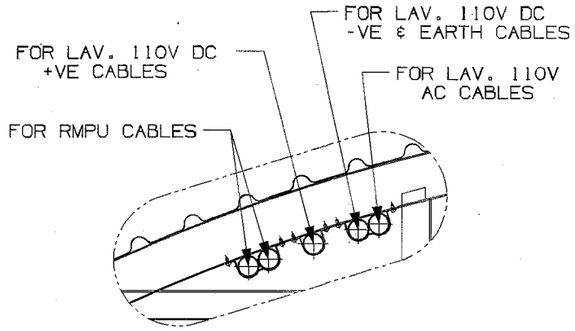
SN	Description	Spec./Drg. No.	QPC
1	Polyamide Flexible Conduit, NW-12	RDSO/PE/SPEC/AC/0138 (Latest)	50 Mtrs.
2	Tube Clamp, PG-12		30 Nos.
3	Cable Jacket System	EDTS-138, Corr-2, Item-5	25 Mtrs.
4	Cable Jacket System	EDTS-138, Corr-2, Item-8	25 Mtrs.
5	4-way socketed couplers	SKED-947 Alt 'a'	60 Nos.

Note:-

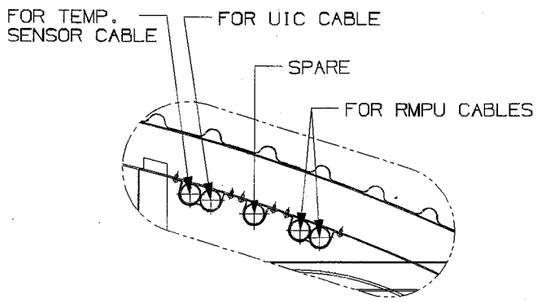
- Cable/PVC Rigid Conduit/Polyamide Conduit if any found damaged shall be replaced with the new.
- 4-way socketed coupler shall be provided wherever required. No manual cutouts in PVC Conduit shall be made during wiring at cable exit points.

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY

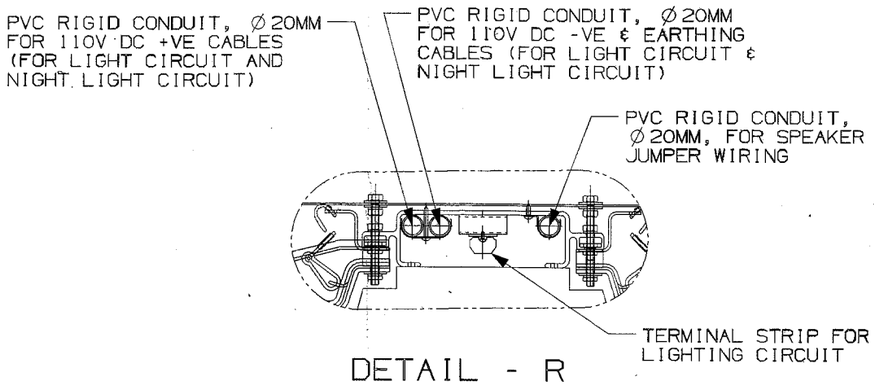




DETAIL - P
SCALE - 3:2



DETAIL - Q
SCALE - 3:2



DETAIL - R
SCALE - 5:2

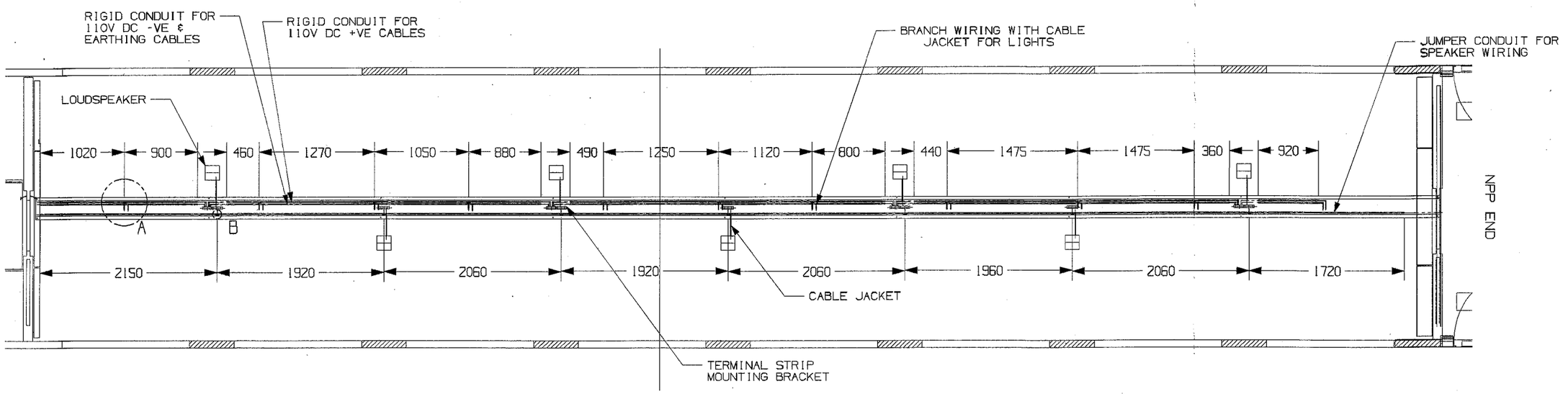
WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES:	NIL		
WEIGHT	FILE	Z:\CA1 - AC CHAIR CAR\SKED-971.prt				
NIL KG	MOD. REQ IN ROOF ARRANGEMENT FOR LHB EOG AC CHAIR CAR COACHES (FOR SEGREGATION OF 110V DC +VE/-VE CABLES)			SCALE	SSE/ED	
S.AREA					CHD	
NIL M2					DRN	Jasvinder Singh
~~LENGTH / DIA~~	RAIL COACH FACTORY, KAPURTHALA				REF.DRG.No.	NIL
NIL M						
~~WIDTH / THICK~~	रेल कोच फैक्टरी कपूरथला		IRS		PL NO.	NIL
NIL M					DRG.NO.	SKED-971
HEIGHT	SEE/VD		DY.CEE/DP		ALT. NIL	SIZE A2 SHEET 1/4
NIL M						

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 | 20/09/2024

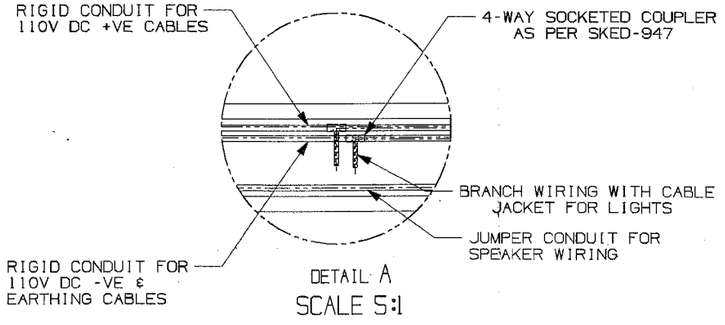
ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY



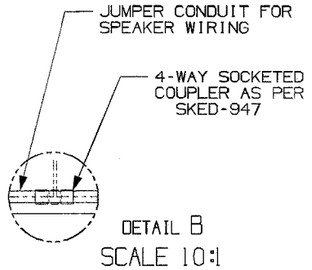
TOP VIEW FOR PVC RIGID CONDUIT ARRANGEMENT FOR LIGHTS AND SPEAKER IN PASSENGER AREA

SEGREGATION OF LAVATORY JUMPER CABLES INTO 110V DC +VE/-VE & 110V AC CIRCUIT

H.NO.	FROM	TO	REMARKS	BUNCH DETAILS (FERRULE NO.)
3	POWER PANEL	+S16X1	ALL DC +VE CABLES	320405.23,430102.05,320507.04,320508.04, 720104.01,720105.01,720106.03,720107.03, 520101.03,520401.03,320301.20,RES-1
			ALL DC-VE & EARTH CABLES	520103.03,520402.23,320302.20, 520106.01,4301PE.03,RES-2
			ALL AC CABLES	330607.02,330608.02
6	+S16X1	+S17X1	ALL DC +VE CABLES	320405.29,430102.02,320507.17,320508.29, 720104.02,720105.02,720106.04,720107.04, 520101.05,520401,320301.21,RES-3
			ALL DC-VE & EARTH CABLES	520103.05,520402,320302.21, 520106.04,4301PE.02,RES-4
			ALL AC CABLES	330607.02,330608.06
9	+S17X1	+S18X1	ALL DC +VE CABLES	320405.27,430102.10,320507.21,320508.33, 720104.03,720105.03,720106.05,720107.05, 520101.07,520401,320301.22,RES-7
			ALL DC-VE & EARTH CABLES	520103.07,520402,320302.22, 520106.07,4301PE.01,RES-8
			ALL AC CABLES	330607.05,330608.07



DETAIL A
SCALE 5:1



DETAIL B
SCALE 10:1

NOTE:-

1. FOR BRANCHING OF CABLES FROM PVC RIGID CONDUITS FROM TERMINALS TO LIGHTS, 4-WAY SOCKETED COUPLER AS PER SKED-947 SHALL BE PROVIDED.
2. CABLES IN CORRIDOR AREA I.E. FOR LIGHTS IN KITCHEN AREA, DOORWAY AREA, GANGWAY AREA, LIMIT SWITCH WIRING, PACIL WIRING, AEL WIRING SHALL ALSO BE SEGREGATED INTO 02 NOS. POLYAMIDE FLEXIBLE CONDUITS, SIZE NW-12 WITH ALL 110V DC +VE CABLES IN ONE CONDUIT AND ALL 110V DC -VE AND EARTHING CABLES IN ANOTHER CONDUIT.

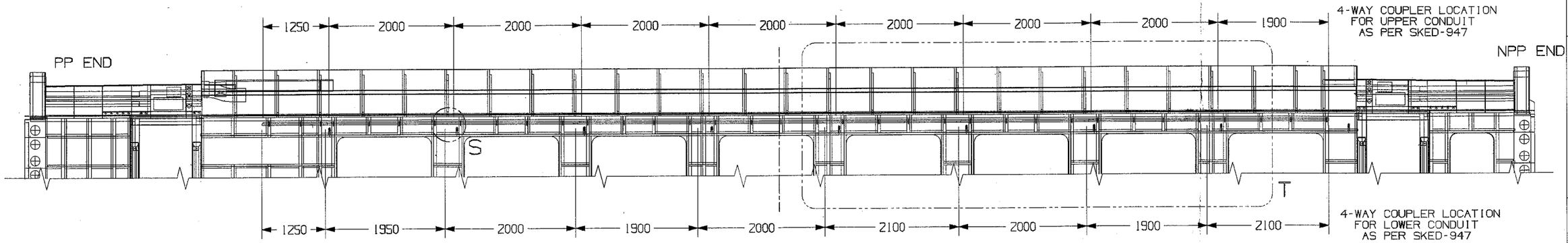
DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

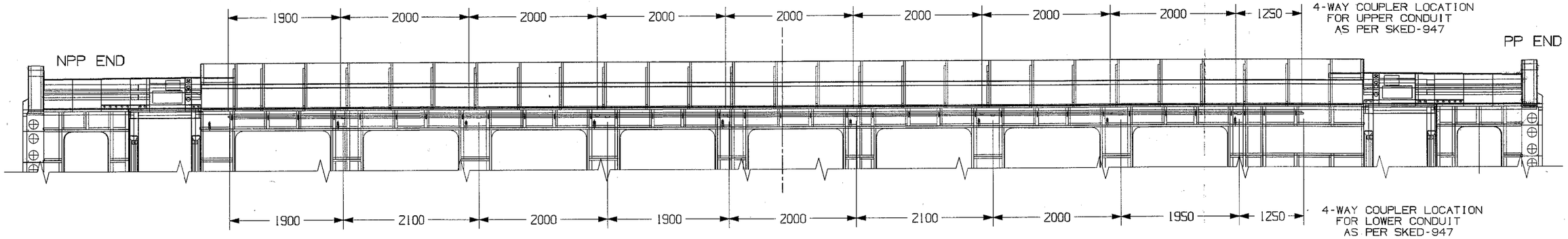
FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE 20/09/2024

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES:	NIL		
WEIGHT	FILE	Z:\CAI - AC CHAIR CAR\SKED-971s2.prt				
NIL KG	MOD. REQ IN ROOF ARRANGEMENT FOR LHB EOG AC CHAIR CAR COACHES (FOR SEGREGATION OF 110V DC +VE/-VE CABLES)			SCALE	SSE/ED	
S.AREA					CHD	
NIL M^2					DRN	Jaswinder Singh
~~LENGTH / DIA~~	RAIL COACH FACTORY, KAPURTHALA			REF.DRG.No.	NIL	
NIL M						
~~WIDTH / THICK~~	रेल कोच फैक्टरी कपूरथला		IRS	PL NO.	NIL	
NIL M				DRG.NO.	SKED-971	
HEIGHT	SEE/VD	DY.CEE/DP		ALT.	NIL	SIZE A2 SHEET 2/4
NIL M						

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY



VIEW FROM INSIDE
(SBC SIDE ROOF AND SIDEWALL)



VIEW FROM INSIDE
(NON-SBC SIDE ROOF AND SIDEWALL)

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES: NIL			
WEIGHT	FILE	Z:\CAI - AC CHAIR CAR\SKED-971.prt				
NIL KG						
S.AREA						
NIL M^2						
~~LENGTH / DIA~~						
NIL M						
~~WIDTH / THICK~~						
NIL M						
HEIGHT						
NIL M						

MOD. REQ IN ROOF ARRANGEMENT FOR LHB EOG AC CHAIR CAR COACHES
(FOR SEGREGATION OF 110V DC +VE/-VE CABLES)

RAIL COACH FACTORY, KAPURTHALA

रेल कोच फैक्टरी कपूरथला

IRS

SEE/VD

DY.CEE/DP

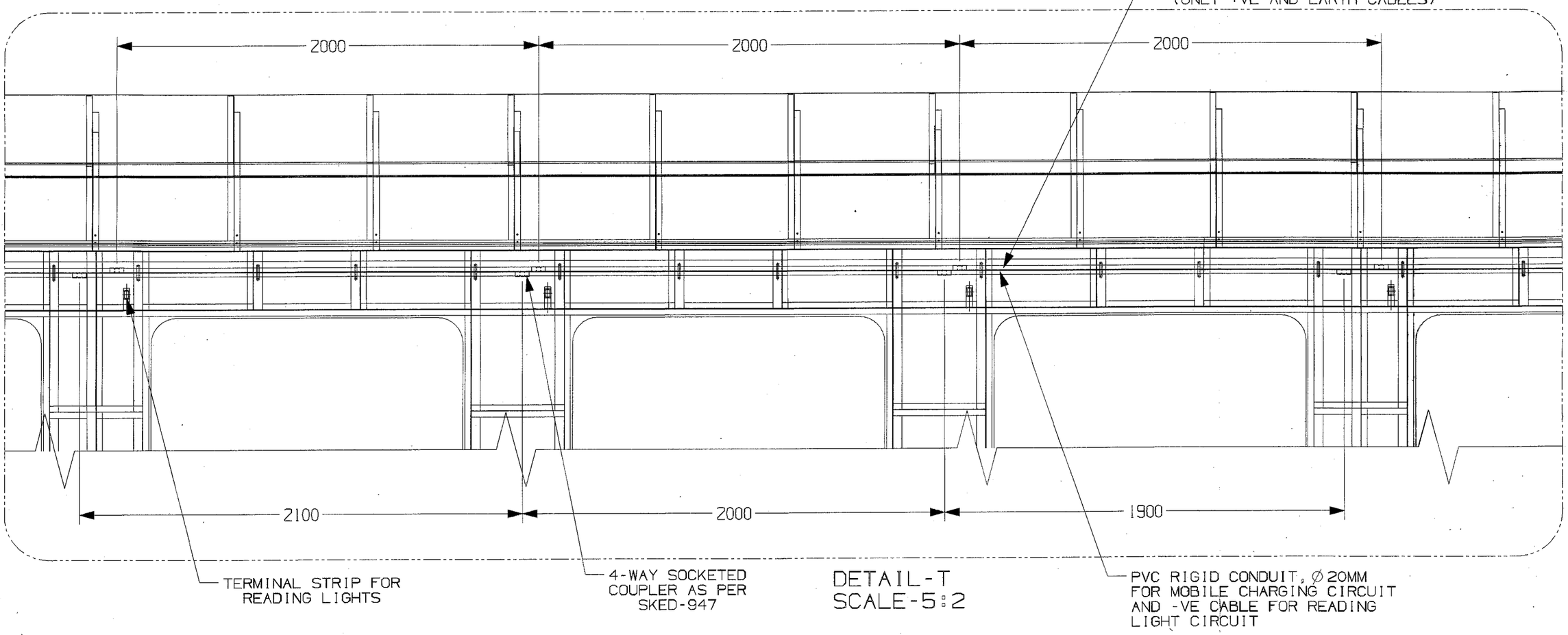
SCALE	SSE/ED	
	CHD	
	DRN	Jasvinder Singh
REF.DRG.No.	NIL	
PL NO.	NIL	
DRG.NO.	SKED-971	
ALT: NIL	SIZE A2	SHEET 3/4

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

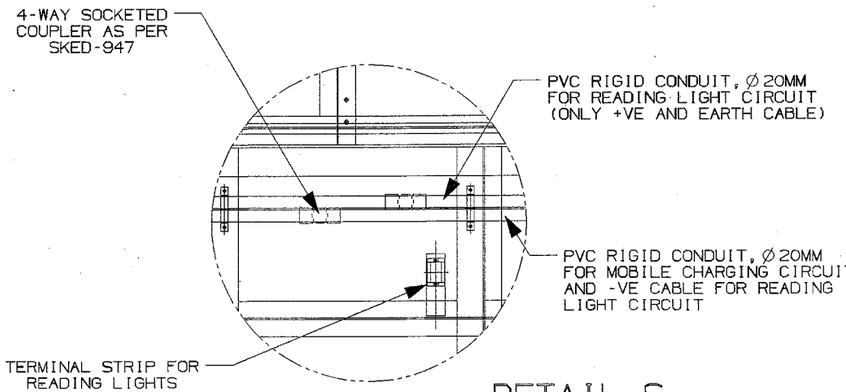
ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE | 20/09/2024

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY



DETAIL-T
SCALE-5:2



DETAIL-S
SCALE-5:1

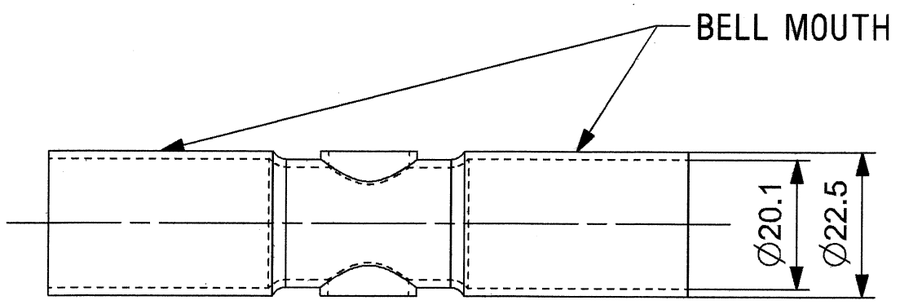
DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE

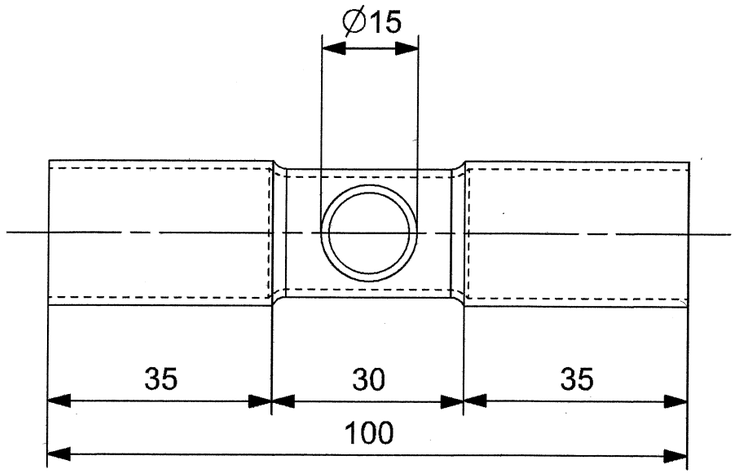
ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

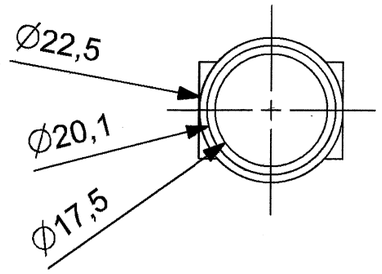
FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE | 20/09/2024

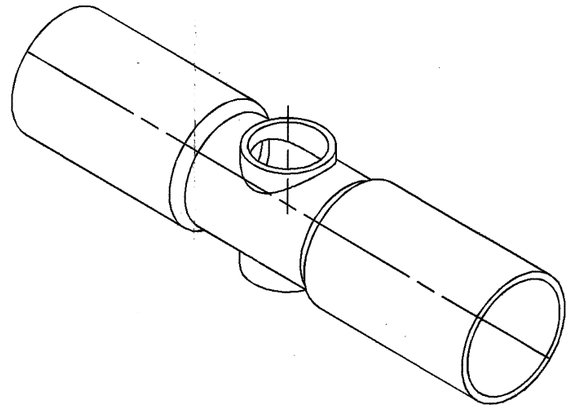
WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES: NIL			
WEIGHT	FILE	Z:\CAI - AC CHAIR CAR\SKED-971.prt				
NIL KG	MOD. REQ IN ROOF ARRANGEMENT FOR LHB EOG AC CHAIR CAR COACHES (FOR SEGREGATION OF 110V DC +VE/-VE CABLES)			SCALE	SSE/ED	
S.AREA					CHD	
NIL M^2					DRN	
~~LENGTH / DIA~~	RAIL COACH FACTORY, KAPURTHALA			REF.DRG.No.	NIL	
NIL M						
~~WIDTH / THICK~~	रेलकोच फैक्टरी कपूरथला	IRS		PL NO.	NIL	
NIL M				DRG.NO.	SKED-971	
HEIGHT	SEE/VD	DY.CEE/DP		ALT.	NIL	SIZE A2 SHEET 4/4
NIL M						

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
a	07/10/24	ALL	1. NOTE-2 UPDATED. DRAWING MODIFIED ACCORDINGLY.	CR NO.:- 2300240021









ISOMETRIC VIEW

2. THE 4-WAY SOCKETED PVC COUPLER SHALL BE SUITABLE TO PVC CONDUIT AS PER IS:9537, PART-III (LATEST). HOWEVER, THE TESTING SHALL GENERALLY BE CONFORMING TO THE CLAUSE NO. 18.1 OF IS:3419 (LATEST) AND FIRM MANUFACTURING THE SAME SHALL ALSO BE ISI CERTIFIED FOR PVC CONDUITS AS PER IS:9537 (PART-III) AND FOR PVC FITTINGS AS PER IS:3419 (LATEST).
1. ALL DIMENSIONS ARE IN MM.

NOTE:-

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

THIS IS A COMPUTER GENERATED DRAWING. ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER IT INVALID.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE 28/03/2024

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M		NIL	NIL	NIL	NIL	NIL
WEIGHT	GROUP	ELECTRICAL	SUPERSEDES: NIL			
NIL KG	FILE	Z:\SKED-947.prt				
S.AREA		4-WAY SOCKETED TYPE COUPLER FOR 20 MM DIA RIGID CONDUIT FOR LHB EOG AC COACHES				
NIL M²		RAIL COACH FACTORY, KAPURTHALA				
~~LENGTH / DIA~~						
NIL M						
~~WIDTH / THICK~~		रेल कोच फैक्टरी कपूरथला	IRS			
NIL M						
HEIGHT						
NIL M		SEE/VD	DY.CEE/DP			

SCALE	SSE/ED	
	CHD	
	DRN	Jaswinder Singh
REF.DRG.NO.	NIL	
PL NO.	NIL	
DRG.NO.	SKED-947	
ALT. a	SIZE A3	SHEET 1/1