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Coach Alteration Instruction No. RCF/ED/CAI/025

Coach Alteration Instruction for provision of 4.5 KW Under-slung Constant Voltage, Regulated Cum Emergency Battery charger in LHB AC variants manufactured prior to year 2018

This coach alteration is being issued for replacement of Constant Voltage Regulated Battery Charger (RDSO Spec. No. RDSO/PE/SPEC/AC/0129-2009, Rev. '1') and Emergency Battery Charger (EDTS-163, Rev. 'C') equipped in coaches, manufactured prior to year 2018, with 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger (without On-board Display Panel) as per RDSO specification. No. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1').

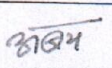
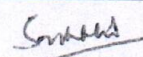
It has been reported that Railways are facing difficulties during periodic overhauling and breakdown maintenance of Regulated Battery Charger/ Emergency Battery Charger provided in LHB coaches.

LHB EOG AC Coaches manufactured prior to year 2018 are equipped with the followings items.

Sr. Nos.	Description of item	Drawing / Specification No.
1	Switch Board Cabinet	EDTS-073, Rev. 'D', AM-6 (issued on 19.10.2006). RDSO/PE/SPEC/AC/0184-2015 (Rev. '0') (issued on 31.12.2015)
2	Constant Voltage Regulated Battery Charger	EDTS-074, Rev. 'C', Corrigendum-1 (issued on 24.08.2005). RDSO/PE/SPEC/AC/0129-2009 (Rev. '0') (issued on January 2010) RDSO/PE/SPEC/AC/0129-2009 (Rev. '1') (issued on January 2013)
3	Emergency Battery Charger	EDTS-163, Rev. 'C' (issued on 28.12.2005).

Presently, LHB EOG AC Coaches manufactured after year 2018 are equipped with the followings items.

Sr. Nos.	Description of item	Drawing / Specification No.
1	Switch Board Cabinet	RDSO/PE/SPEC/AC/0184-2015 (Rev. '0') (issued on 31.12.2015) RDSO/PE/SPEC/AC/0184-2015 (Rev. '1') (issued on 02.09.2019) RDSO/PE/SPEC/AC/0200-2020 (Rev. '0') (issued on 25.09.2020) with Under-slung HV Panel.
2	4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger	RDSO/PE/SPEC/AC/0183-2018 (Rev. '0') (issued on 15.02.2016) with On-board Display panel. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1') (issued on 04.06.2018) without On-board Display panel.

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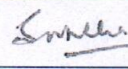
Coach Alteration Instruction for provision of 4.5 KW Under-slung Constant Voltage, Regulated Cum Emergency Battery charger in LHB AC variants manufactured prior to year 2018

Following modifications shall be carried out in LHB EOG AC coaches.

1. Constant Voltage Regulated Battery Charger (RDSO Spec. No. RDSO/PE/SPEC/AC/0129-2009, Rev. '1') provided inside Switch Board Cabinet shall be removed. Input and Output cables wiring shall also be removed.
2. Emergency Battery Charger (EDTS-163, Rev. 'C') along with interlocking contactor, provided inside Switch Board Cabinet shall be removed. Input and Output cables wiring shall also be removed.
3. 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger (without On-board Display Panel) as per RDSO specification. No. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1') shall be provided on coach Under-frame as per location indicated in drawing no. **1 10113.0.03.095.001, Alt. 'Nil' (copy enclosed)**. Mounting Bracket for RBC as per item no. 142, 143 & 146 shall be provided. Grounding Flap as per item no. 71 shall also be provided.
4. Coach wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger shall be done as per **RDSO drawing No. RDSO/PE/SK/AC/0206-2019 (Rev.0) (Sheet-08 of 48, Sheet-09 of 48 & Sheet-23 of 48)** applicable to RDSO Specification no. RDSO/PE/SPEC/AC/0200-2020 (Rev.'0') for "Set of Electrical Panels for LHB EOG/HOG Garib Rath Type AC coaches of Indian Railways".
5. 3-Pole MCB for RBC, 25A (S1F160) & 2-Pole MCB for EBC, 20A (S1F170) as per **BOM (Annexure-D), (copy enclosed)** (item no. 17 & 18) of RDSO spec. No. RDSO/PE/SPEC/AC/0200-2020 (Rev.0) for "Set of Electrical Panels for LHB EOG/HOG Garib Rath Type AC coaches of Indian Railways" shall be provided at suitable location in SBC, if these MCB's are not already provided in SBC.
6. Modifications in cable harness for 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger in various LHB AC variants is as per details in Annexure-A, Annexure-B, Annexure-C & Annexure-D enclosed.

Enclosures:

Sr. No.	Drawing No.	Description
1.	1 10113.0.03.095.001, alt. 'Nil' (in 10 Sheets)	Welding Parts Complete on Under frame for LHB EOG coaches
2.	LG11302, alt. 'Nil'	Reinforcement Complete
3.	LG11303, alt. 'Nil'	Member Complete
4.	LG11305, alt. 'Nil'	Member Complete

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Sr. No.	Drawing No.	Description
5.	LG11324, alt. 'Nil'	Reinforcement Complete
6.	4 10113.0.03.095.178	Grounding Flap
7.	RDSO drawing No. RDSO/PE/SK/AC/0206-2019 (Rev.0) (Sheet-08 of 48)	General wiring Diagram for Power & Control Circuits (For SBC S1 for LHB AC EOG / HOG and Garib Rath Coaches) Battery Distribution
8.	RDSO drawing No. RDSO/PE/SK/AC/0206-2019 (Rev.0) (Sheet-09 of 48)	General wiring Diagram for Power & Control Circuits (For SBC S1 for LHB AC EOG / HOG and Garib Rath Coaches) Battery Distribution
9.	RDSO drawing No. RDSO/PE/SK/AC/0206-2019 (Rev.0) (Sheet-23 of 48)	General wiring Diagram for Power & Control Circuits (For SBC S1 for LHB AC EOG / HOG and Garib Rath Coaches) Diagnosis
10.	Annexure-D of RDSO spec. No. RDSO/PE/SPEC/AC/0200-2020 (Rev.0) for	Bill of material (BOM) for Set of Panels (On Board Cubicle and Under Slung Cubicle)
11.	Annexure-A	Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC 3-Tier coaches, LHB EOG AC 2-Tier coaches & LHB EOG FAC coaches.
12.	Annexure-B	Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC Chair Car coaches.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/025

Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC 3-Tier Coaches, LHB
EOG AC 2-Tier Coaches & LHB EOG FAC Coaches

• DC Circuit cables:

Har. No.	Harness	Existing Flexible conduit	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
6	Bat. fuse box +ve to Bat. Box	NW-17, L=1M	2x1.5 mm ² upto 750 V	Ch, Ch	2500	32 02 04 02, 32.01.05.02	35	To be removed.
6A	Bat. Charger to Bat.fuse box +ve	NW-23, L=9M	1x25 mm ² upto 750 V	Ch	12000	32 01 10.01	36	Re-routed. Cable to be removed from SBC and laid in U/Frame. Suitable cable and polyamide conduit length to be cut for termination in Under slung Battery Charger.
6B	Bat. fuse box +ve to Bat. Box	NW-23, L=1M	1x50 mm ² upto 750 V	Ch	2500	32 01 09	38	No change.
6C	Bat. fuse box +ve to SBC	NW-23, L=9M	4x1.5mm ² upto 750 V	Ch, Ch	12000	32 02 01.01, 32 02 03.01, 32 01 04.01, 32 01 05.01	37	Wire no 32 01 04.01, 32 01 05.01 for the Battery temperature sensor not required, may be removed.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/025

Har. No.	Harness	Existing Flexible conduit	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
6D	Bat. Charger to Bat. fuse box -ve	NW-23, L=13M	1x25 mm ² upto 750 V	W	15000	32 01 11.01	40	Re-routed. Cable to be removed from SBC and laid in U/Frame.
	Bat. Fuse box -ve to SBC		1x10 mm ² upto 750 V	W	15000	32 02 06		Suitable cable and polyamide conduit length to be cut for termination in Under slung Battery Charger.
6E	Bat. fuse box -ve to Bat. Box	NW-29, L=1M	1x50 mm ² upto 750 V	W	2500	32 01 08	39	To be clubbed with harness no 6F in flexible conduit NW-17.
6F	Bat. fuse box -ve to SBC	NW-17, L=13M	2x1.5 mm ² upto 750 V	W	16000	32 02 02.01, 32 02 04.01	42	No change.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/025

- Additional cables required for REGULATED BATTERY CHARGER and EMERGENCY BATTERY CHARGER (Ref Drg RDSO/PE/SK/AC/0206 – 2019, Rev-0, sheet 8/48)

Har. No.	Harness	Conduit length required	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
14	Switch Board Cabinet MCB (S1F170) to Emergency Battery Charger (Input)	NW-23, L=12M	2x6 mm ² upto 750 V	R BLK	15500	33 01 28.01C 33 01 25.22C	100	Input supply to the Regulated Battery Charger and the Emergency Battery Charger. Cable shall be approved make to RDSO specification no. ELSR/SPEC/ELC/0019, Rev-4, or latest.
14B	Switch Board Cabinet MCB (S1F160) to Regulated Battery Charger (Input)		4x6 mm ² upto 750 V	R Y B GNYE	15500	33 01 25.21A 33 01 26.22A 33 01 27.17A 32 01 13.02		Flexible polyamide conduit, lock nut and end fittings shall be to RDSO specification no RDSO/PE/SPEC/AC/0138-2009 Rev-1, or latest. NW-23 End fitting to be provided in Through Box holes spared by Harness Nos. 6A & 6D due to re-routing.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/025

Har. No.	Harness	Conduit length required	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
14A	Switch Board Cabinet	NW-23, L=12M	1x10 mm ² upto 750 V	Ch	15500	32 02 10.02	101	Output supply of the Regulated Battery Charger and the Emergency Battery Charger.
14C	(Terminals, S1-X3) to Regulated Battery Charger (Output)		4X1.5 mm ² , Multi core E-Beam cable 600/1000V	Wh, Br	15500	32 04 05.21 42 02 04.03 (RBC OK)		Cable shall be approved make to RDSO specification no. ELSR/SPEC/ELC/0019, Rev-4, or latest.
				Blk, GNYE		32 04 05.22 42 02 10.03 (Battery not healthy)		Multi core E-Beam cable shall be as per RCF specification no. EDTS-132, Rev. C, Am-3, Corr-1, (DS-3).
								Flexible polyamide conduit, lock nut and end fittings shall be to RDSO specification no RDSO/PE/SPEC/AC/0138-2009 Rev-1, or latest.
								NW-23 End fitting to be provided in Through Box holes spared by Harness Nos. 6A & 6D due to re-routing.

N.B.:-

- Harness Nos. 6, 6A, 6B, 6C, 6D, 6E, 6F, 14, 14A, 14B & 14C mentioned above refers to RCF specification No. EDTS-253, Rev. 'J', Corrigendum-1, 2, 3, 4, 5 & 6 for LHB EOG AC 3-Tier Coaches, Spec. No. EDTS-252, Rev. 'J', Corrigendum-1, 2, 3, 4, 5 & 6 for LHB EOG AC 2-Tier Coaches & Spec. No. EDTS-254, Rev. 'J', Corrigendum-1, 2, 3, 4, 5 & 6 for LHB EOG FAC Coaches.
- Braided copper cable supplied with RBC for earthing shall be connected to grounding flap, provided in coach under-frame, located adjacent to Regulated Battery Charger.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/025

Material required for provision of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC 3-Tier Coaches, LHB EOG AC 2-Tier Coaches & LHB EOG FAC Coaches

• **Additional Switchgear required:**

Sr. No.	Gr	Item Code	Description	QPC	Drawing / Catalogue No.	Make	Place of Installation	Remarks / Location
1.	32	01	MCB for RBC, Rated Current : 25A, Curve: C, Rated Voltage : 415V AC, Pole: 3P Breaking Capacity: 10kA	1	5SL43257RC S203MT-C25 BB30250C FAZ-C25/3 A9N3P25C	Siemens ABB L & T Eaton Schneider	S1F160	(Refer item no. 17 & 18) of Annexure-D of RDSO spec. No. RDSO/PE/SPEC/AC/0200-2020 (Rev.0). MCB's are to be placed suitably in SBC.
2.	-	-	MCB for EBC, Rated Current : 20A, Curve: C, Rated Voltage : 415V AC, Pole: 2P Breaking Capacity: 10kA	1	* * * * *	Siemens ABB L & T Eaton Schneider	S1F170	

• **Additional Cables required:**

Sr. No.	Description	Specification No.	Cable Size (in mm ²)	QPC	Remarks / Location
1.	Thin walled flexible elastomeric cables with copper conductors Color, 'Red' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	31 Mtrs.	Harness No. 14 & 14B. (RBC Input).
2.	Thin walled flexible elastomeric cables with copper conductors Color, 'Yellow' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	15.5 Mtrs.	Harness No. 14B. (RBC Input).

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3.	Thin walled flexible elastomeric cables with copper conductors Color, 'Blue' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	15.5 Mtrs.	Harness No. 14B. (RBC Input).
4.	Thin walled flexible elastomeric cables with copper conductors Color, 'Black' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	15.5 Mtrs.	Harness No. 14B. (RBC Input).
5.	Thin walled flexible elastomeric cables with copper conductors Color, 'GNYE' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	15.5 Mtrs.	Harness No. 14B. (RBC Input).
6.	Thin walled flexible elastomeric cables with copper conductors Color, 'Chocolate' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	10	15.5 Mtrs.	Harness No. 14A. (RBC Output)
7.	4X1.5 mm ² , Multi core E-Beam cable 600/1000V color Wh, Br, Blk, GNYE	EDTS-132, Rev. C, Am-3, Corr-1, (DS-3) or latest revision	4x1.5	15.5 Mtrs.	Harness No. 14C. (RBC / Battery Indication).

• Additional Conduit system for cable management & accessories required:

Sr. No.	Description	Specification No.	Table	S. No.	QPC	Remarks / Location
1.	Polyamide flexible corrugated conduit, NW-23	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-1	4	24 Mtrs.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
2.	Straight PG metal thread end fitting PG-21	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-2	5	4 Nos.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
3.	Hex lock nut with PG thread brass PG-21	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-10	5	4 Nos.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
4.	Tube Clamp NW-23	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-8	4	10 Nos.	For clamping of Polyamide Conduit, NW-23.

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• Additional Mechanical Items required:

Sr. No.	Description	Drawing / Specification No.	QPC	Remarks / Location
1.	Member Complete	LG11303, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
2.	Member Complete	LG11305, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
3.	Reinforcement Complete	LG11324, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
4.	Grounding Flap	4 10113.0.03.095.178	2 Nos.	For mounting RBC for on coach underframe.

• Additional Hardware required:

Sr. No.	Description	Drawing / Specification No.	QPC	Remarks / Location
1.	Cheese Head Screw M5x20, Galvd.	IS:1366-2002, 4.8, T-1&2	10 Nos.	For fixing of Tube clamp NW-23.
2.	Hexagonal Nut M5, Galvd.	IS:1363-2002, PT-3, 5	10 Nos.	For fixing of Tube clamp NW-23.
3.	Spring Washer, M5	IS:3063-94, T-1A, TY-B	10 Nos.	For fixing of Tube clamp NW-23.
4.	Plain Washer, 5.5	IS:2016-67, T-2, TY-B	10 Nos.	For fixing of Tube clamp NW-23.
5.	Hex Head Screw M12x40, Galvd.	IS:1364 Pt.2-92, 8.8 CE (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
6.	Spring Washer B12, Galvd.	IS:3063-1994 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
7.	Hexagonal Nut M12, Galvd.	IS:1364 (PT-3)-92, 8 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
8.	Lock Nut M12, Galvd.	IS:1364 (PT-4)-92, 8 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
9.	Split Pin 3.2x32, Galvd.	IS:549-1974	4 Nos.	For mounting RBC on coach underframe.

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Annexure-B to Coach Alteration Instruction No. RCF/ED/CAI/025

Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC Chair Car Coaches

- DC Circuit cables:

Har. No.	Harness	Existing Flexible conduit	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
6	Bat. fuse box +ve to Bat. Box	NW-17, L=1M	2x1.5 mm ² upto 750 V	Ch, Ch	2500	32 02 04 02, 32.01.05.02	35	To be removed.
6A	Bat. Charger to Bat.fuse box +ve	NW-23, L=11.5M	1x25 mm ² upto 750 V	Ch	14500	32 01 10.01	36	Re-routed. Cable to be removed from SBC and laid in U/Frame. Suitable cable and polyamide conduit length to be cut for termination in Under slung Battery Charger.
6B	Bat. fuse box +ve to Bat. Box	NW-23, L=1M	1x50 mm ² upto 750 V	Ch	2500	32 01 09	38	No change.
6C	Bat. fuse box +ve to SBC	NW-23, L=11.5M	4x1.5mm ² upto 750 V	Ch, Ch	14500	32 02 01.01, 32 02 03.01, 32 01 04.01, 32 01 05.01	37	Wire no 32 01 04.01, 32 01 05.01 for the Battery temperature sensor not required, may be removed.

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Har. No.	Harness	Existing Flexible conduit	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
6D	Bat. Charger to Bat. fuse box -ve	NW-23, L=15.5M	1x25 mm ² upto 750 V	W	17500	32 01 11.01	40	Re-routed. Cable to be removed from SBC and laid in U/Frame.
	Bat. Fuse box -ve to SBC		1x10 mm ² upto 750 V	W	17500	32 02 06		Suitable cable and polyamide conduit length to be cut for termination in Under slung Battery Charger.
6E	Bat. fuse box -ve to Bat. Box	NW-29, L=1M	1x50 mm ² upto 750 V	W	2500	32 01 08	39	To be clubbed with harness no 6F in flexible conduit NW-17.
6F	Bat. fuse box -ve to SBC	NW-17, L=15M	2x1.5 mm ² upto 750 V	W	18000	32 02 02.01, 32 02 04.01	42	No change.

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- Additional cables required for REGULATED BATTERY CHARGER and EMERGENCY BATTERY CHARGER (Ref Drg RDSO/PE/SK/AC/0206 – 2019, Rev-0, sheet 8/48)

Har. No.	Harness	Conduit length required	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
14	Switch Board Cabinet MCB (S1F170) to Emergency Battery Charger (Input)	NW-23, L=14.5M	2x6 mm ² upto 750 V	R BLK	17500	33 01 28.01C 33 01 25.22C	100	Input supply to the Regulated Battery Charger and the Emergency Battery Charger. Cable shall be approved make to RDSO specification no. ELRS/SPEC/ELC/0019, Rev-4, or latest.
14B	Switch Board Cabinet MCB (S1F160) to Regulated Battery Charger (Input)		4x6 mm ² upto 750 V	R Y B GNYE	17500	33 01 25.21A 33 01 26.22A 33 01 27.17A 32 01 13.02		Flexible polyamide conduit, lock nut and end fittings shall be to RDSO specification no RDSO/PE/SPEC/AC/0138-2009 Rev-1, or latest. NW-23 End fitting to be provided in Through Box holes spared by Harness Nos. 6A & 6D due to re-routing.

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Har. No.	Harness	Conduit length required	Nos. & size of cable	Color code	Length in mm	Ferrules marking	Route	Remarks
14A	Switch Board Cabinet	NW-23, L=14.5 M	1x10 mm ² upto 750 V	Ch	17500	32 02 10.02	101	Output supply of the Regulated Battery Charger and the Emergency Battery Charger.
14C	(Terminals, S1-X3) to Regulated Battery Charger (Output)		4X1.5 mm ² , Multi core E-Beam cable 600/1000V	Wh, Br	17500	32 04 05.21 42 02 04.03 (RBC Ok)		Cable shall be approved make to RDSO specification no. ELRS/SPEC/ELC/0019, Rev-4, or latest.
				Blk, GNYE		32 04 05.22 42 02 10.03 (Battery not healthy)		Multi core E-Beam cable shall be as per RCF specification no. EDTS-132, Rev. C, Am-3, Corr-1, (DS-3).
								Flexible polyamide conduit, lock nut and end fittings shall be to RDSO specification no RDSO/PE/SPEC/AC/0138-2009 Rev-1, or latest.
								NW-23 End fitting to be provided in Through Box holes spared by Harness Nos. 6A & 6D due to re-routing.

N.B.:-

1. Harness Nos. 6, 6A, 6B, 6C, 6D, 6E, 6F, 14, 14A, 14B & 14C mentioned above refers to RCF specification No. EDTS-255, Rev. 'J', Corrigendum-1, 2, 3, 4, 5 & 6.
2. Braided copper cable supplied with RBC for earthing shall be connected to grounding flap, provided in coach under-frame, located adjacent to Regulated Battery Charger.

RCF/ED/CAI/025	Nil	April 26, 2023	27/04	—	4 of 7
Document No.	Rev.	Date	SSE/CAD	SEE/D	Page
				Dy.CEE/D&D	

DRAFT

Material required for provision of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG AC Chair Car Coaches

• Additional Switchgear required:

Sr. No.	Gr	Item Code	Description	QPC	Drawing / Catalogue No.	Make	Place of Installation	Remarks / Location
1.	32	01	MCB for RBC, Rated Current : 25A, Curve: C, Rated Voltage : 415V AC, Pole: 3P Breaking Capacity: 10kA	1	5SL43257RC S203MT-C25 BB30250C FAZ-C25/3 A9N3P25C	Siemens ABB L & T Eaton Schneider	S1F160	(Refer item no. 17 & 18) of Annexure-D of RDSO spec. No. RDSO/PE/SPEC/AC/0200-2020 (Rev.0). MCB's are to be placed suitably in SBC.
2.	-	-	MCB for EBC, Rated Current : 20A, Curve: C, Rated Voltage : 415V AC, Pole: 2P Breaking Capacity: 10kA	1	* * * * *	Siemens ABB L & T Eaton Schneider	S1F170	

• Additional Cables required:

Sr. No.	Description	Specification No.	Cable Size (in mm ²)	QPC	Remarks / Location
1.	Thin walled flexible elastomeric cables with copper conductors Color, 'Red' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	35 Mtrs.	Harness No. 14 & 14B. (RBC Input).
2.	Thin walled flexible elastomeric cables with copper conductors Color, 'Yellow' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	17.5 Mtrs.	Harness No. 14B. (RBC Input).

RCF/ED/CAI/025	Nil	April 26, 2023	8/3/24	-	5 of 7
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Annexure-B to Coach Alteration Instruction No. RCF/ED/CAI/025

3.	Thin walled flexible elastomeric cables with copper conductors Color, 'Blue' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	17.5 Mtrs.	Harness No. 14B. (RBC Input).
4.	Thin walled flexible elastomeric cables with copper conductors Color, 'Black' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	17.5 Mtrs.	Harness No. 14B. (RBC Input).
5.	Thin walled flexible elastomeric cables with copper conductors Color, 'GNYE' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	6	17.5 Mtrs.	Harness No. 14B. (RBC Input).
6.	Thin walled flexible elastomeric cables with copper conductors Color, 'Chocolate' upto 750V	ELRS/SPEC/ ELC/ 0019, Rev.4 or latest revision	10	17.5 Mtrs.	Harness No. 14A. (RBC Output)
7.	4X1.5 mm ² , Multi core E-Beam cable 600/1000V color Wh, Br, Bk, GNYE	EDTS-132, Rev. C, Am-3, Corr-1, (DS-3) or latest revision	4x1.5	17.5 Mtrs.	Harness No. 14C. (RBC / Battery Indication).

• **Additional Conduit system for cable management & accessories required:**

Sr. No.	Description	Specification No.	Table	S. No.	QPC	Remarks / Location
1.	Polyamide flexible corrugated conduit, NW-23	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-1	4	29 Mtrs.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
2.	Straight PG metal thread end fitting PG-21	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-2	5	4 Nos.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
3.	Hex lock nut with PG thread brass PG-21	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-10	5	4 Nos.	Harness No. 14 & 14B. (RBC Input). Harness No. 14A & 14C. (RBC Output & RBC / Battery Indication).
4.	Tube Clamp NW-23	RDSO/PE/SPEC/AC/0138-2009, Rev.1 (Annexure-A) or (Latest)	A-8	4	12 Nos.	For clamping of Polyamide Conduit, NW-23.

RCF/ED/CAI/025	Nil	April 26, 2023	27/04	-	6 of 7
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• Additional Mechanical Items required:

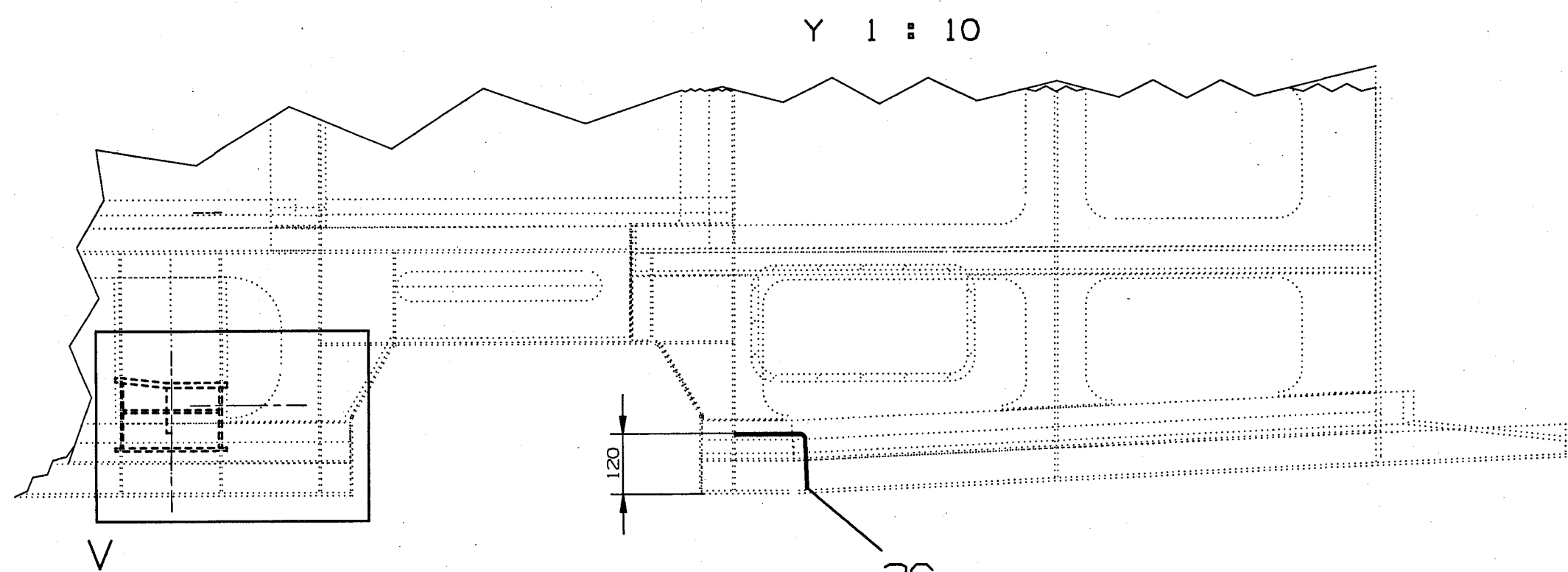
Sr. No.	Description	Drawing / Specification No.	QPC	Remarks / Location
1.	Member Complete	LG11303, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
2.	Member Complete	LG11305, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
3.	Reinforcement Complete	LG11324, alt. 'Nil'	1 No.	For mounting RBC for on coach underframe.
4.	Grounding Flap	4 10113.0.03.095.178	2 Nos.	For mounting RBC for on coach underframe.

• Additional Hardware required:

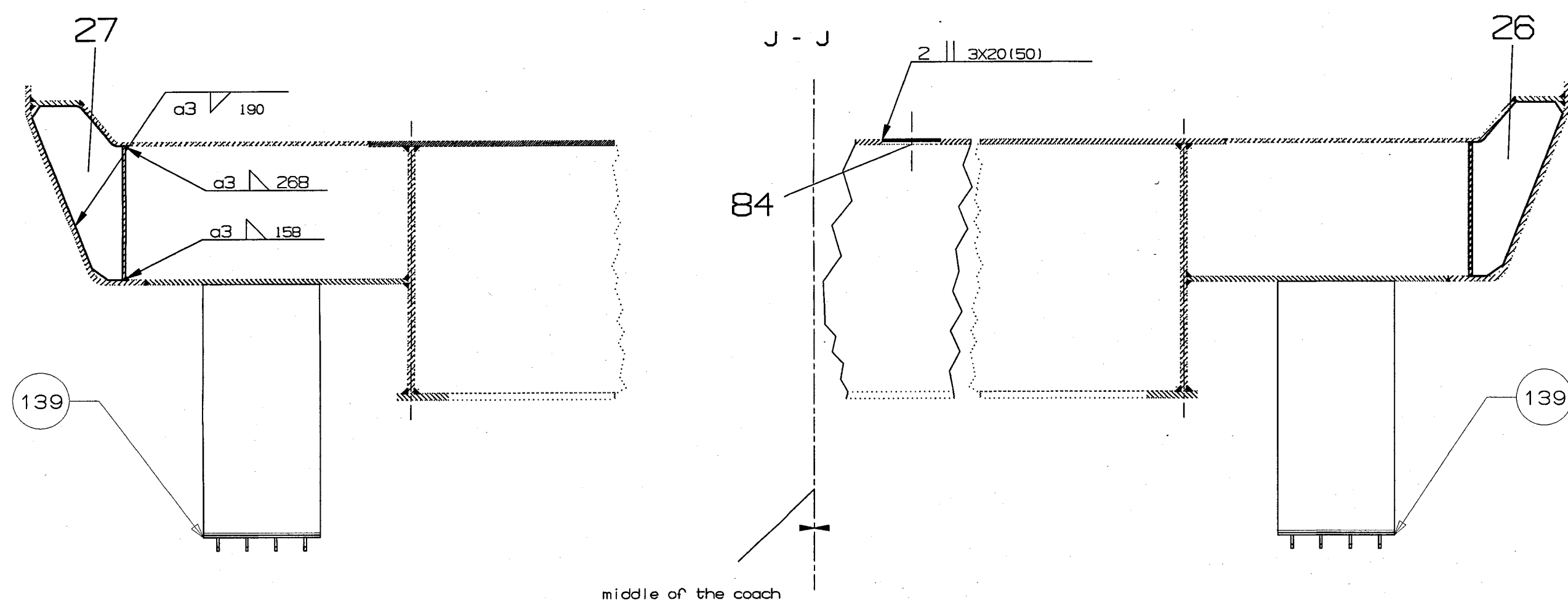
Sr. No.	Description	Drawing / Specification No.	QPC	Remarks / Location
1.	Cheese Head Screw M5x20, Galvd.	IS:1366-2002, 4.8, T-1&2	12 Nos.	For fixing of Tube clamp NW-23.
2.	Hexagonal Nut M5, Galvd.	IS:1363-2002, PT-3, 5	12 Nos.	For fixing of Tube clamp NW-23.
3.	Spring Washer, M5	IS:3063-94, T-1A, TY-B	12 Nos.	For fixing of Tube clamp NW-23.
4.	Plain Washer, 5.5	IS:2016-67, T-2, TY-B	12 Nos.	For fixing of Tube clamp NW-23.
5.	Hex Head Screw M12x40, Galvd.	IS:1364 Pt.2-92, 8.8 CE (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
6.	Spring Washer B12, Galvd.	IS:3063-1994 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
7.	Hexagonal Nut M12, Galvd.	IS:1364 (PT-3)-92, 8 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
8.	Lock Nut M12, Galvd.	IS:1364 (PT-4)-92, 8 (of reputed make only)	4 Nos.	For mounting RBC on coach underframe.
9.	Split Pin 3.2x32, Galvd.	IS:549-1974	4 Nos.	For mounting RBC on coach underframe.

RCF/ED/CAI/025	Nil	April 26, 2023	21/04	—	7 of 7
Document No.	Rev.	Date	SSE/CAD	SEE/D	Page
				Dy.CEE/D&D	

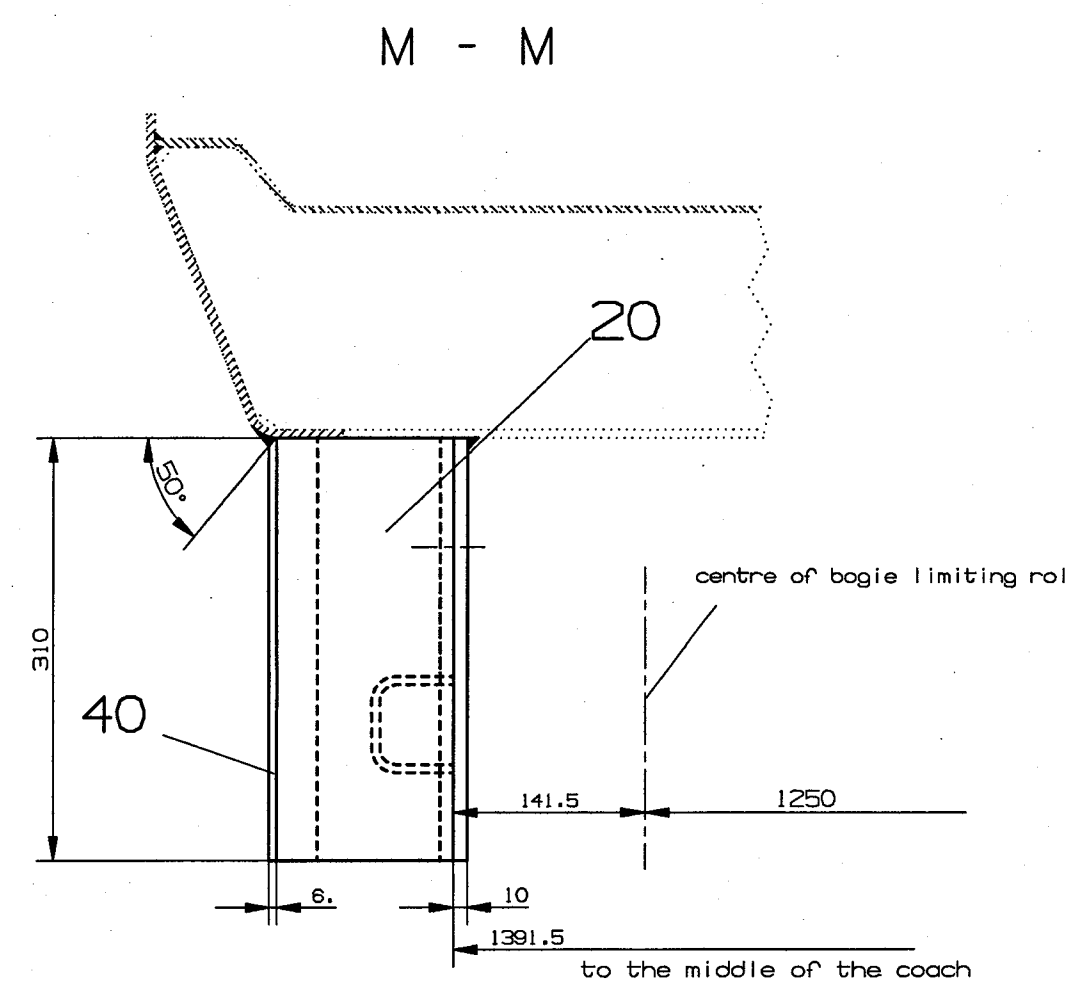
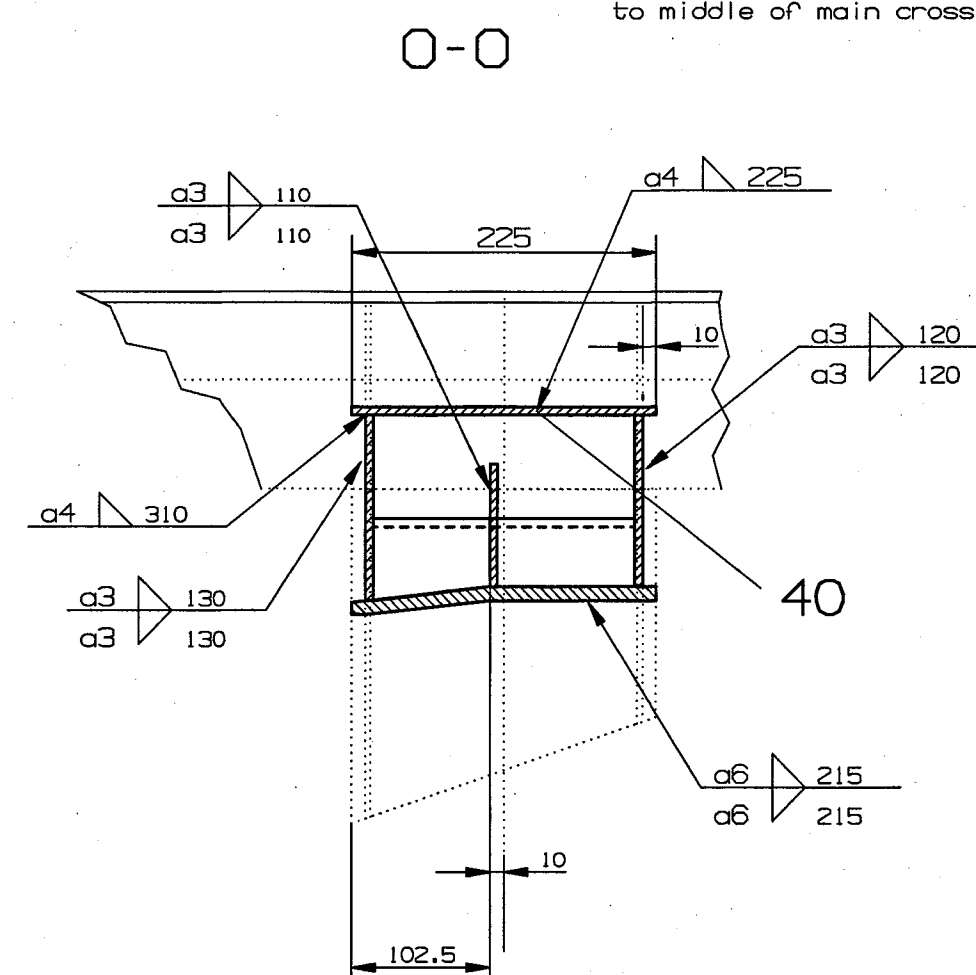
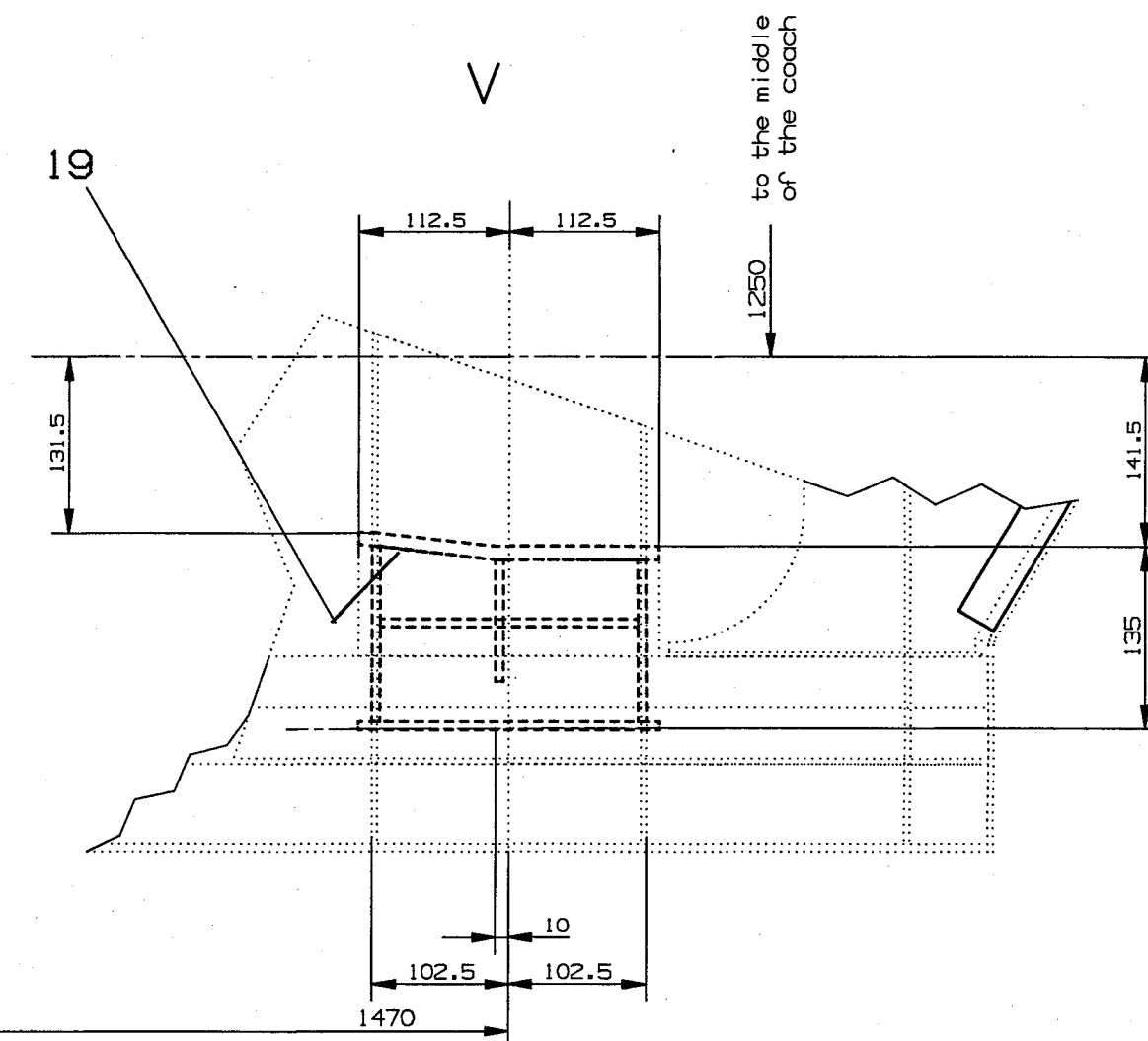
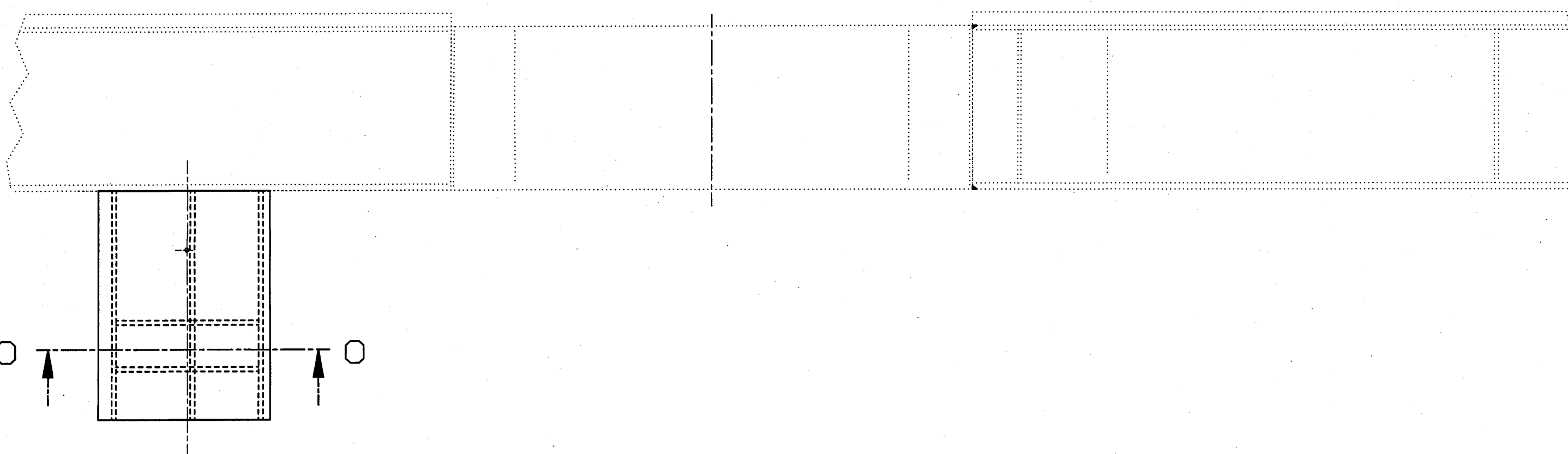
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VIEW-X



VIEW FROM-X



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WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	GROUP	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	M	UNDERFRAME				
WEIGHT	FILE	Z:\1 10113.0.03.095.001s2LR8.prt (2D)				
362.00 KG						
S.AREA						
NIL	M ²					
LENGTH/Ø1A						
NIL	M					
WIDTH/TH+ØK						
NIL	M					
HEIGHT						
NIL	M					

SCALE	SSE/REC	CHD	HARB
1: 20			
DRN	KRIS		

REF.DRG.No.	1 10113.0.03.095.001
PL NO.	NIL
DRG.NO.	1 10113.0.03.095.001
ALT.	LR8
SIZE	A1
SHEET	2/10

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DATE OF FIRST ISSUE

16/10/1995

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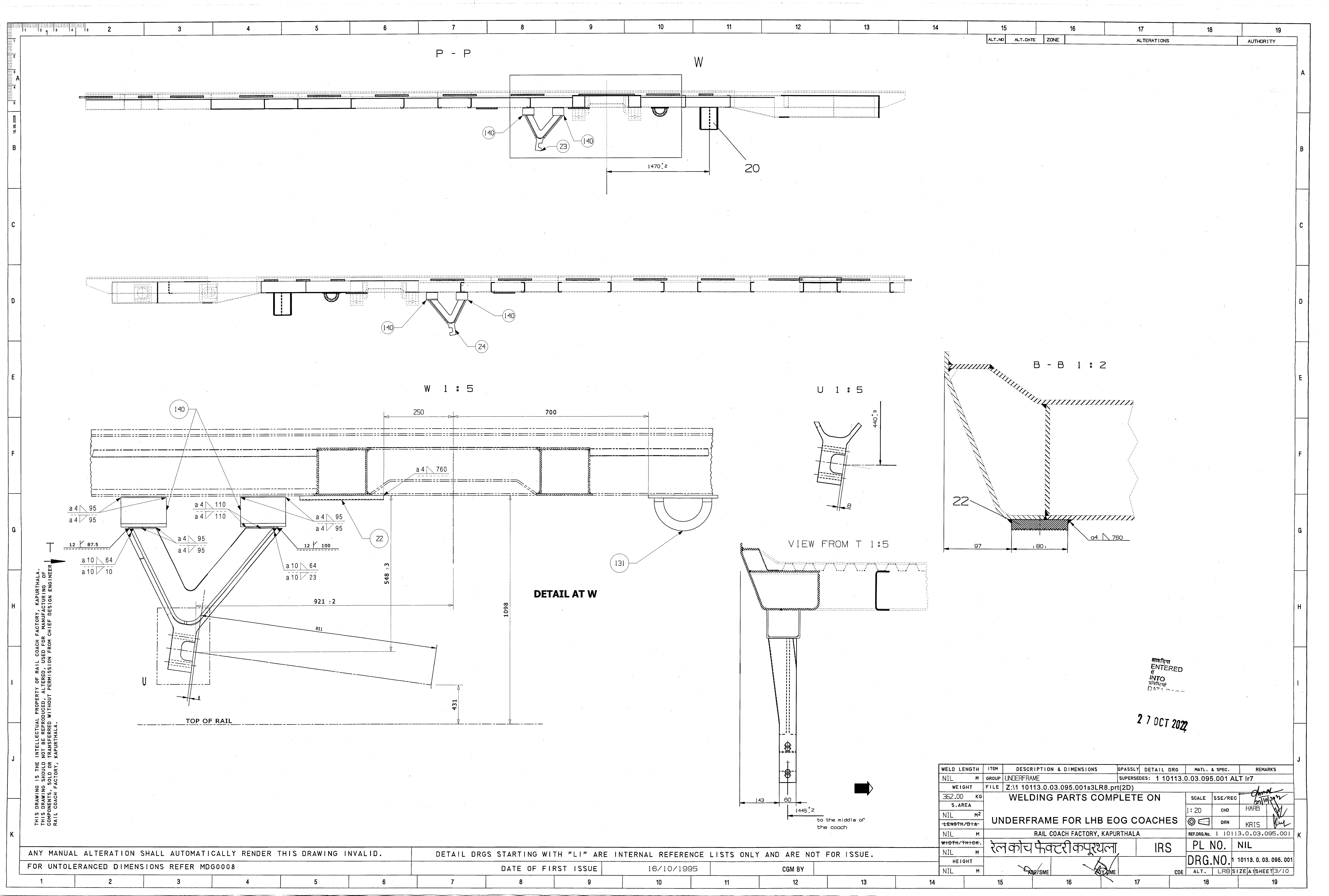
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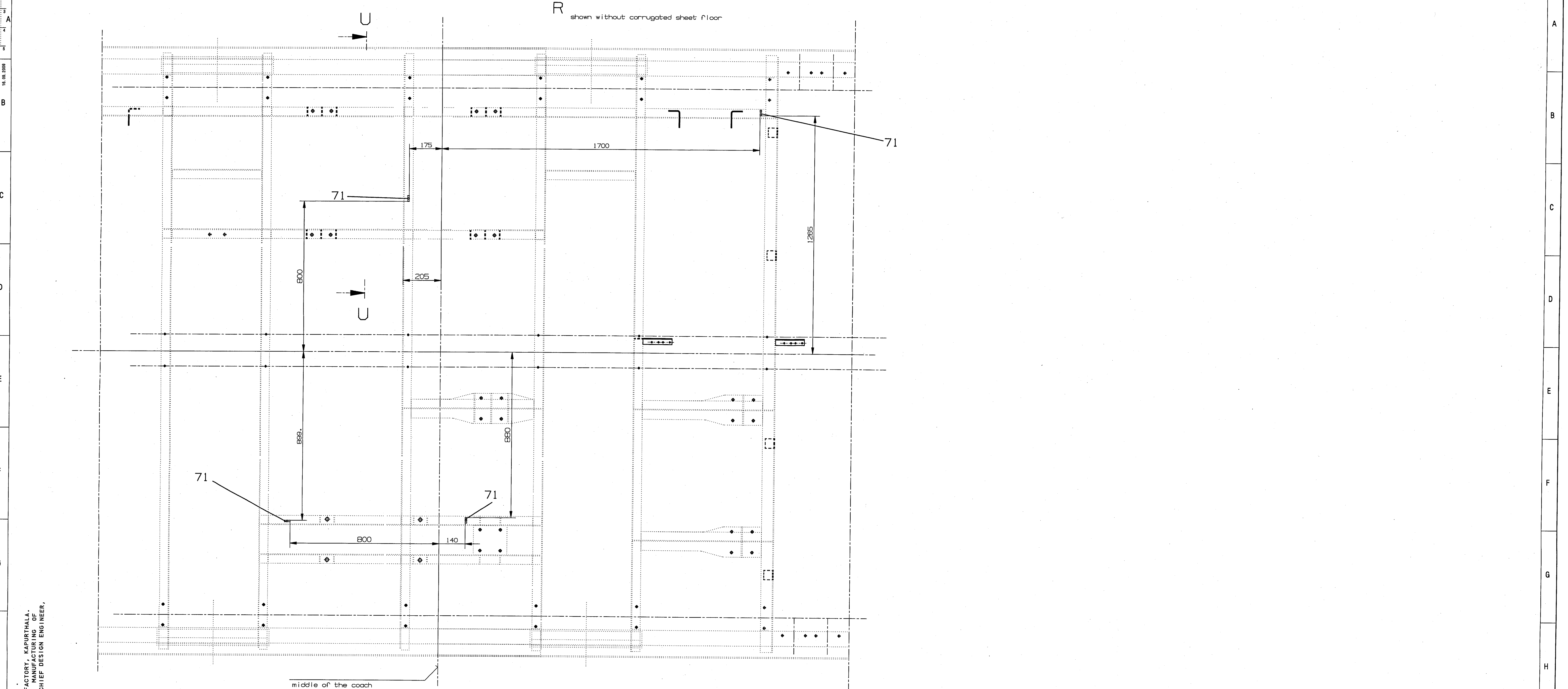
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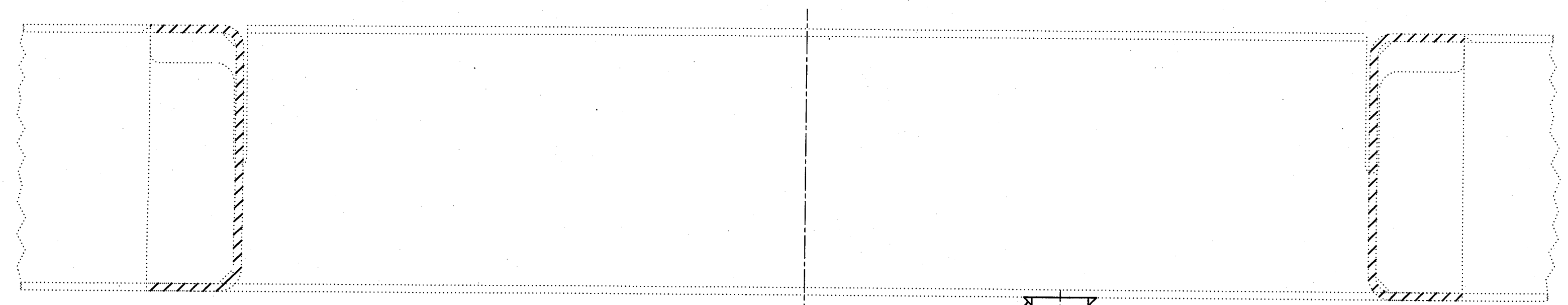
16/10/1995

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362.00	KG	WELDING PARTS COMPLETE ON				SCALE	SSE/REG
S.AREA						1: 20	CHD HARB
NIL	M ²	UNDERFRAME FOR LHB EOG COACHES					DRN KRIS
LENGTH/DIA							
NIL	M	RAIL COACH FACTORY, KAPURTHALA				REF.DRG.No.	1 10113.0.03.095.001
WIDTH/THICK.		रेल कोच फैक्टरी कपूरथला		IRS		PL NO.	NIL
NIL	M					DRG.NO.	1 10113.0.03.095.001
HEIGHT							
NIL	M	DATE/SME		REV/SME		CDE	ALT. LRB SIZE A1 SHEET 3/10

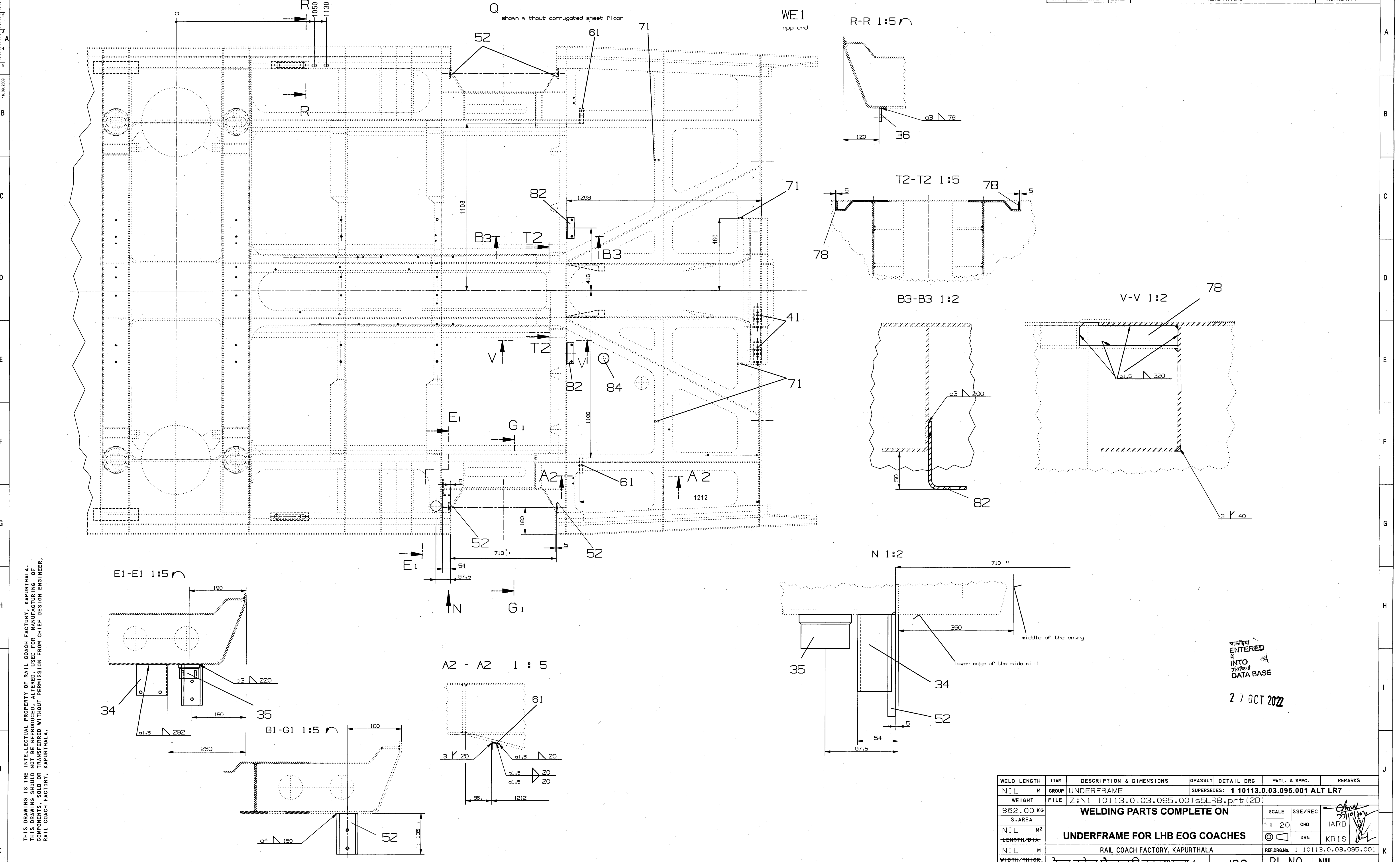


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27 OCT 2022

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WEIGHT	362.00	WELDING PARTS COMPLETE ON				
S.AREA	NIL	UNDERFRAME FOR LHB EOG COACHES				
LENGTH/B+A	NIL	RAIL COACH FACTORY, KAPURTHALA				
WIDTH/THICK.	NIL	रेलकोच फैक्टरी कपूरथला				
HEIGHT	NIL	IRS				
		PL NO. NIL				
		DRG.NO. 1 10113.0.03.095.001				
		ADE/SME				
		CDE				
		ALT. LRB SIZE A1 SHEET 4/10				



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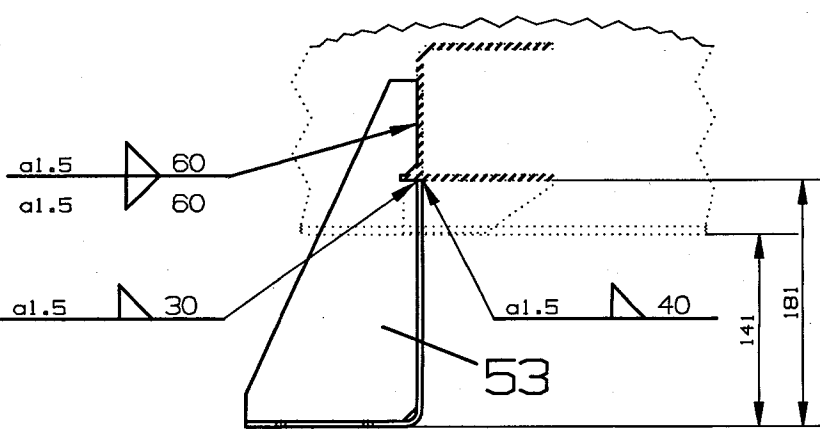
DATE OF FIRST ISSUE 16/10/1995 CGM BY

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362.00 KG	WELDING PARTS COMPLETE ON					SCALE	SSE/REC	CHN Dilip
S.AREA	UNDERFRAME FOR LHB EOG COACHES					1: 20	CHD	HARB
NIL						M ²	⊗	DRN
LENGTH/DIA	RAIL COACH FACTORY, KAPURTHALA					REF.DRG.NO. 1 10113.0.03.095.001		
NIL	M	रेल कोच फैक्टरी कपूरथला		IRS	PL NO.	NIL		
WIDTH/THICK.					DRG.NO.	1 10113.0.03.095.001		
NIL	M				ALT.	LR8	SIZE A1 SHEET 5/10	
HEIGHT	ADE/SME		OK CME	CDE				
NIL	M							

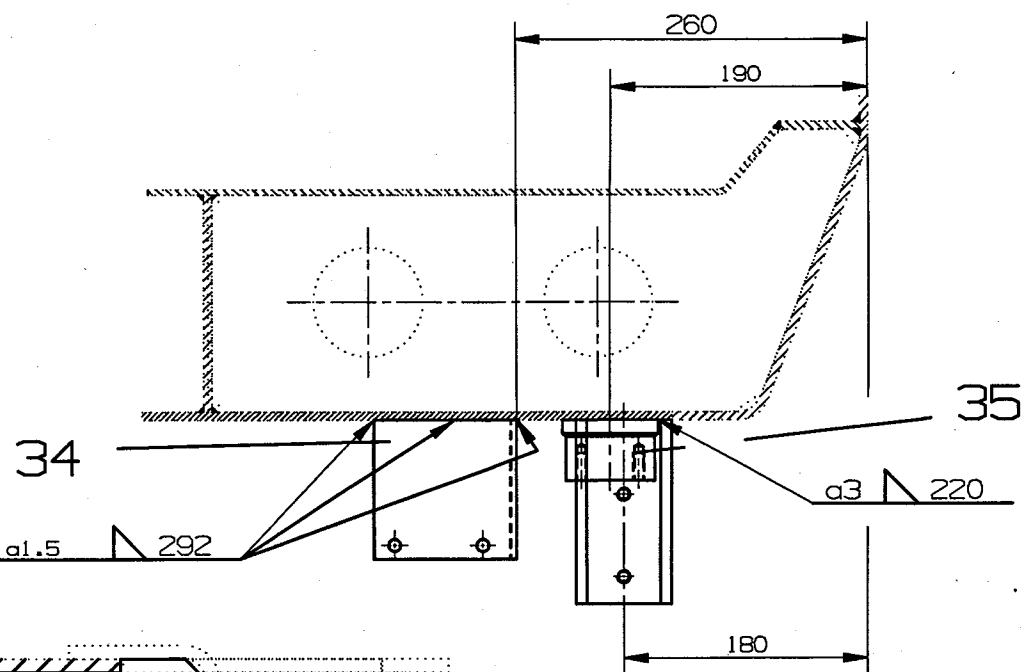
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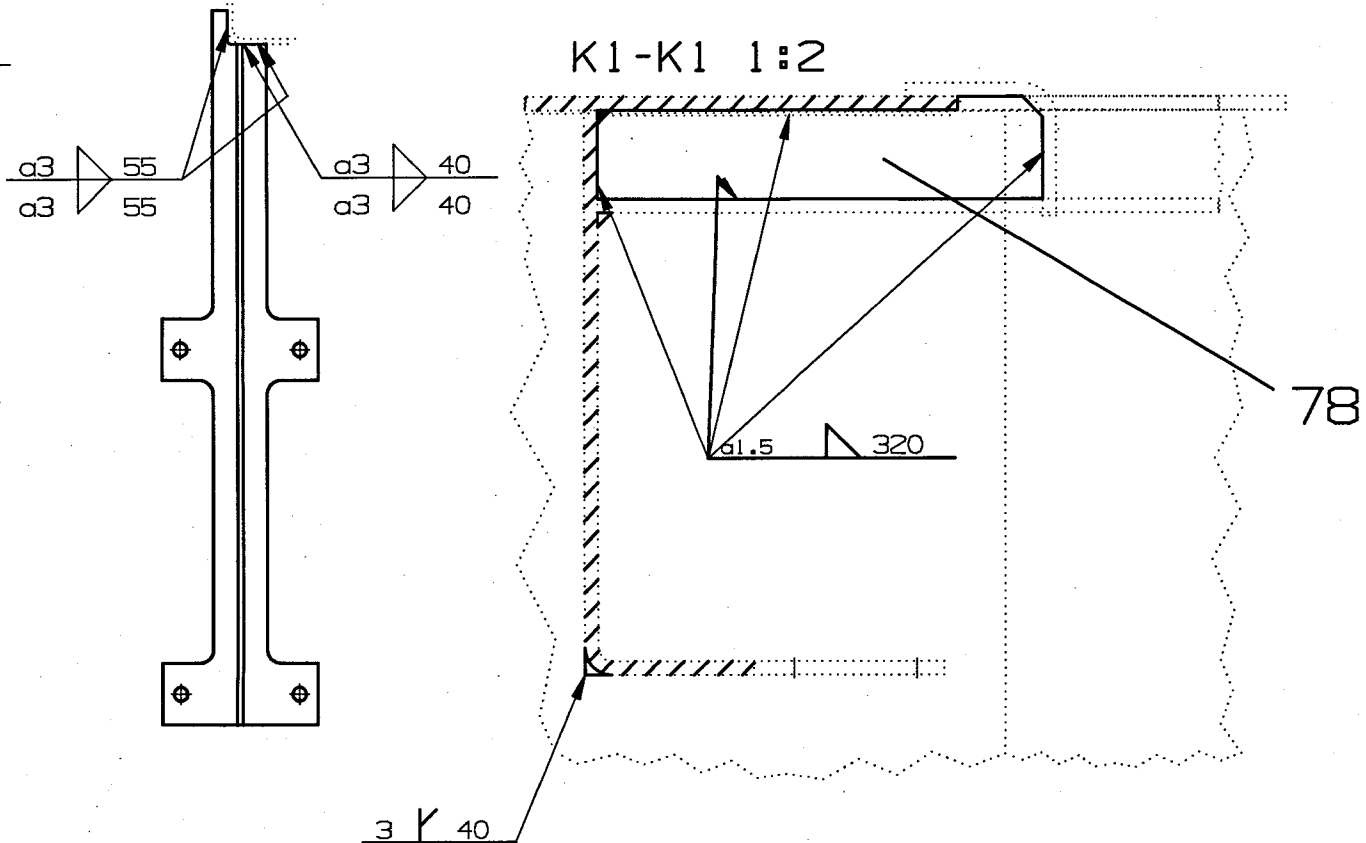
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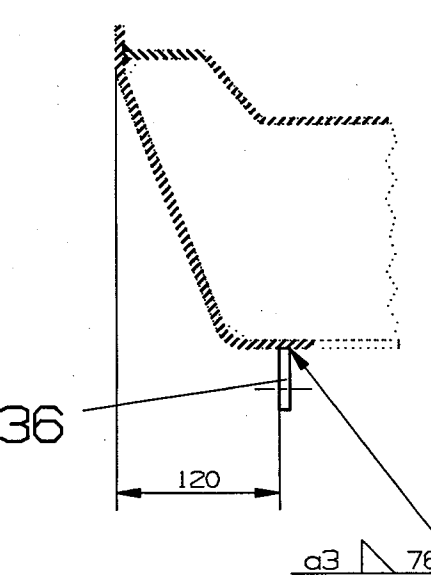
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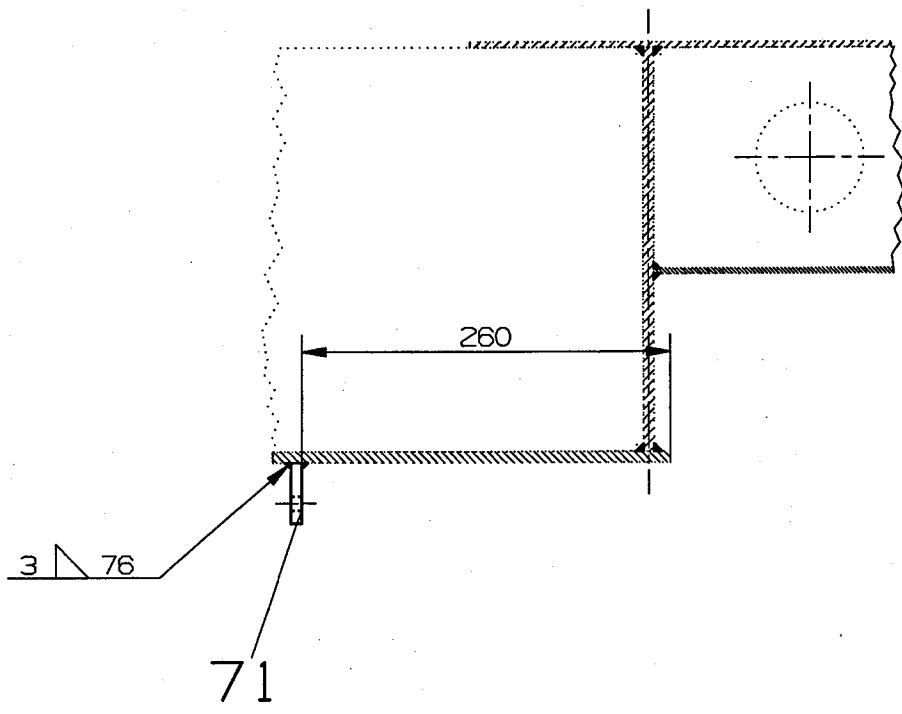
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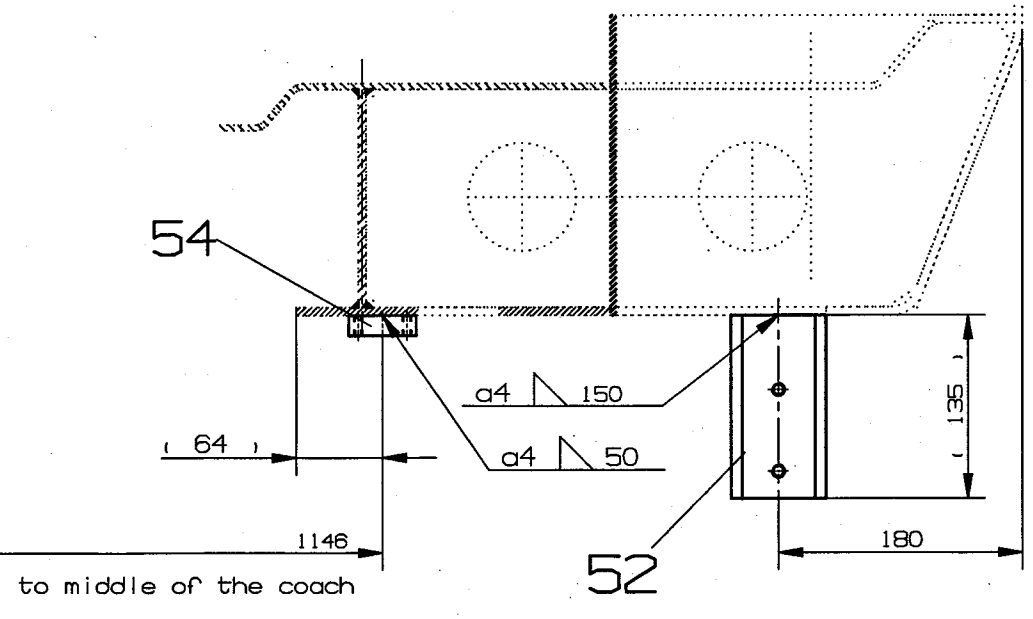
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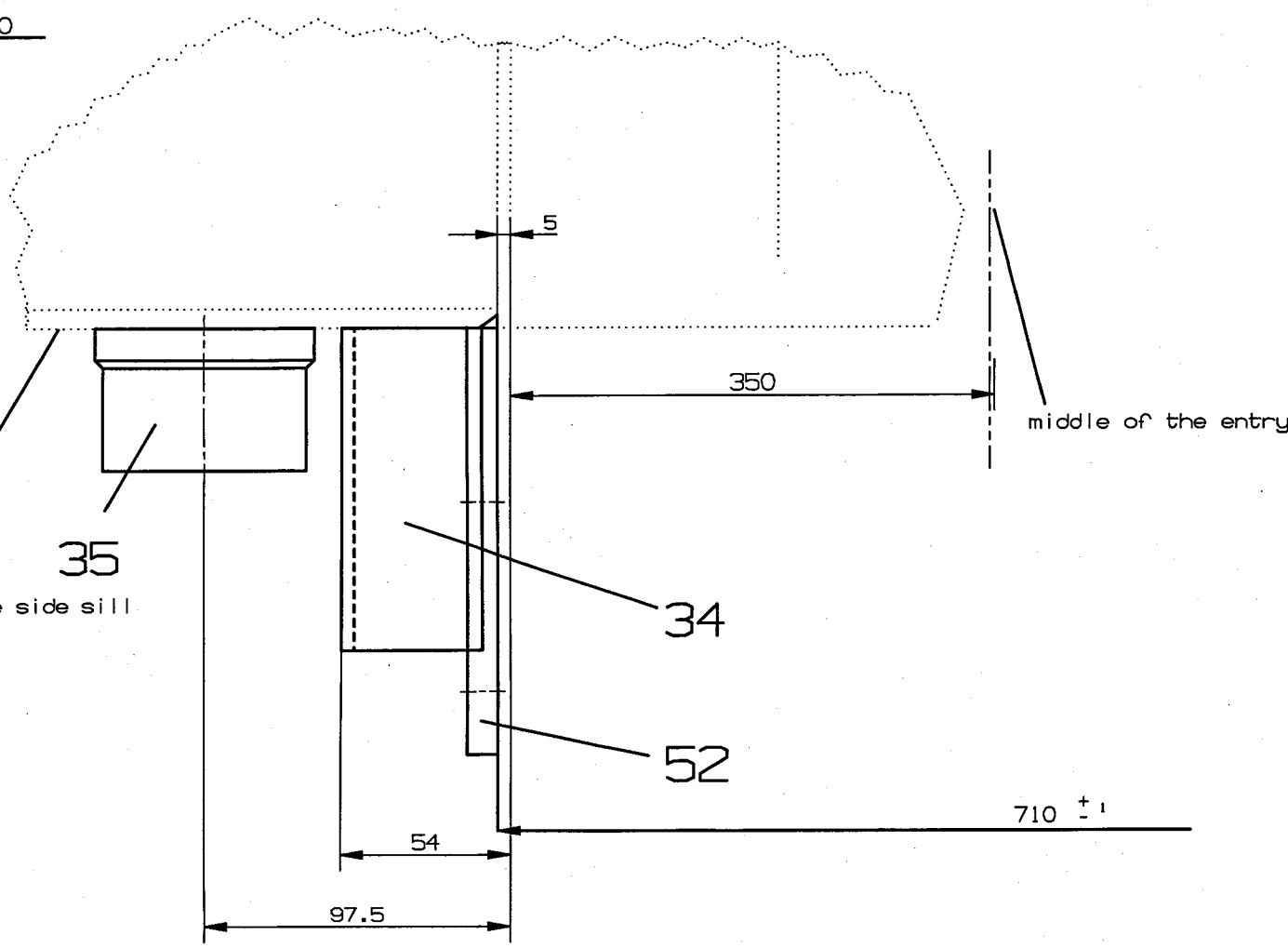
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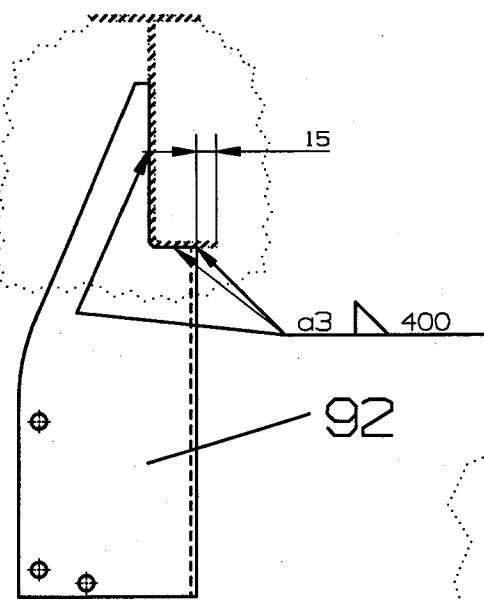
O1-O1 1:5



M 1:2



N3-N3 1:5



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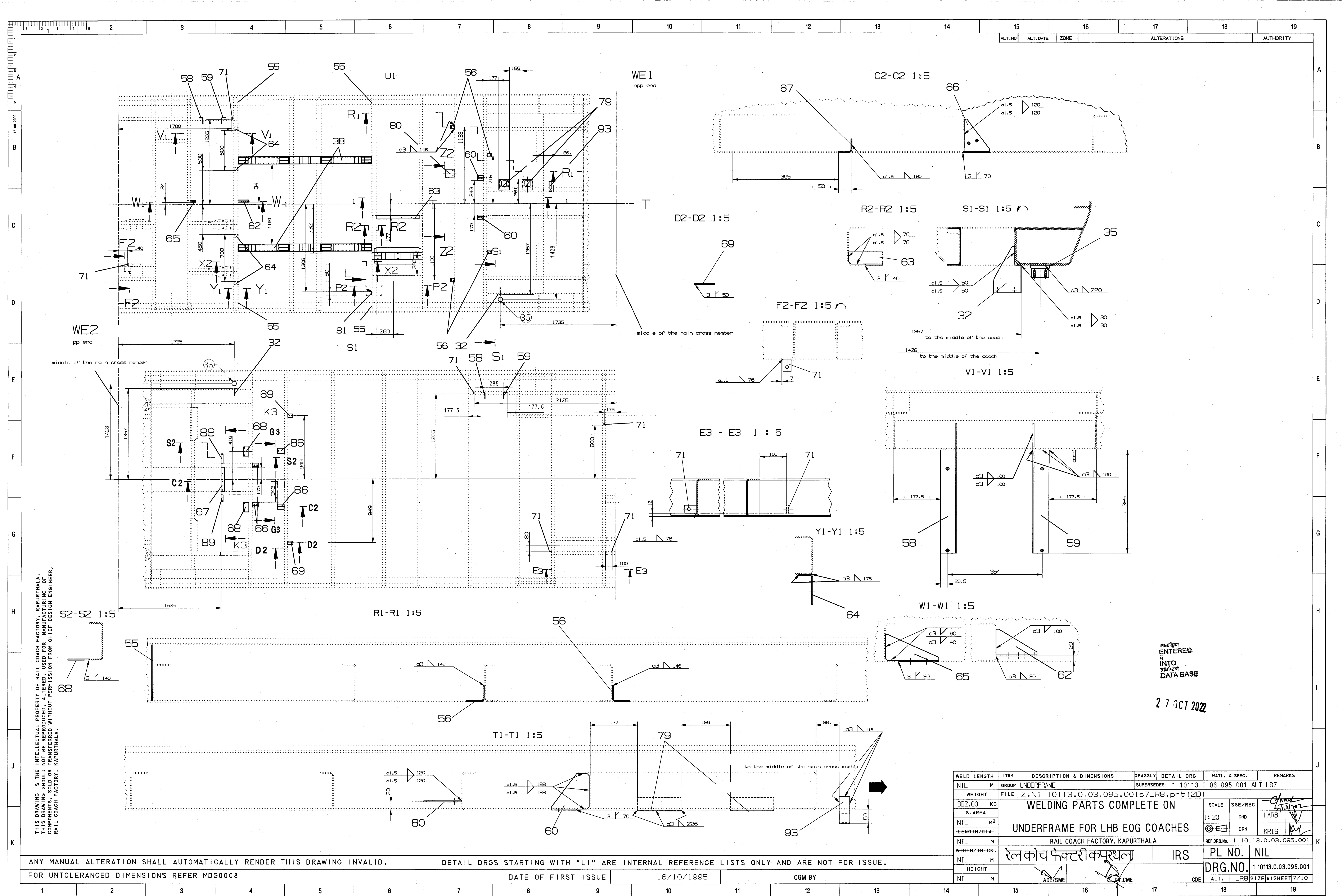
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WEIGHT	FILE	Z:\1 10113.0.03.095.001s6LR8.prt (2D)				
362.00 KG						
S.AREA						
NIL	M2					
LENGTH/DIA						
NIL	M					
WIDTH/THICK.						
NIL	M					
HEIGHT						
NIL	M					

SCALE	SSE/REC	CHD	HARB
1: 20			
DRN	KRIS		
REF.DRG.No	1	10113.0.03.095.001	
PL NO.	NIL		
DRG.NO.	1	10113.0.03.095.001	
ALT.	LR8	SIZE A	SHEET 6/10

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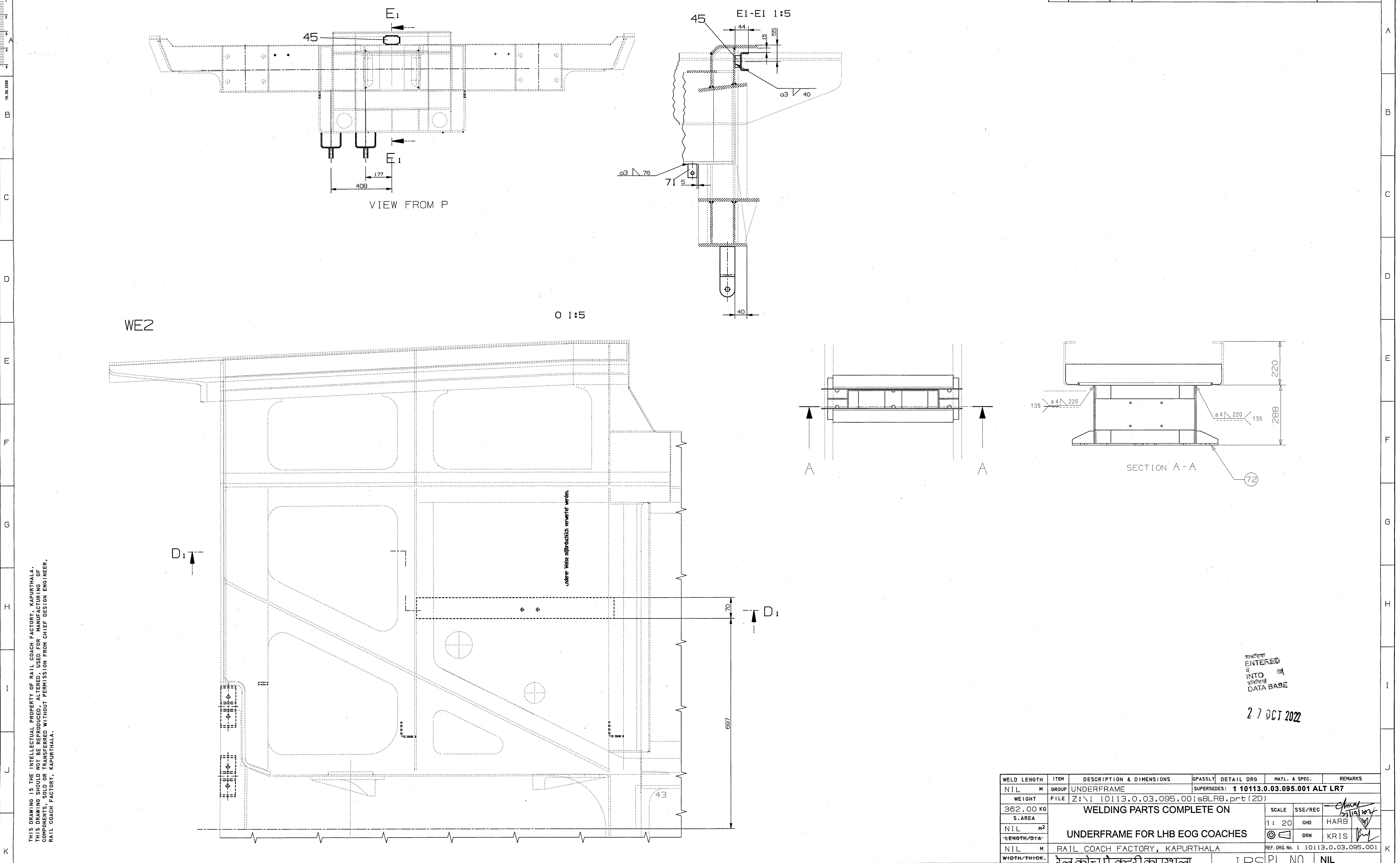
DATE OF FIRST ISSUE 16/10/1995 CGM BY

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WEIGHT	FILE	Z:\1 10113.0.03.095.001s7LR8.prt (2D)				
362.00	KG					
S.AREA						
NIL	M ²					
LENGTH/Ø+/-						
NIL	M					
WIDTH/THICK.						
NIL	M					
HEIGHT						
NIL	M					

SCALE	SSE/REC	CHD	HARB
1:20			
DRN	KRIS		
REF.DRG.No.	1 10113.0.03.095.001		
PL NO.	NIL		
DRG.NO.	1 10113.0.03.095.001		
ALT.	LR8	SIZE A1	SHEET 7/10

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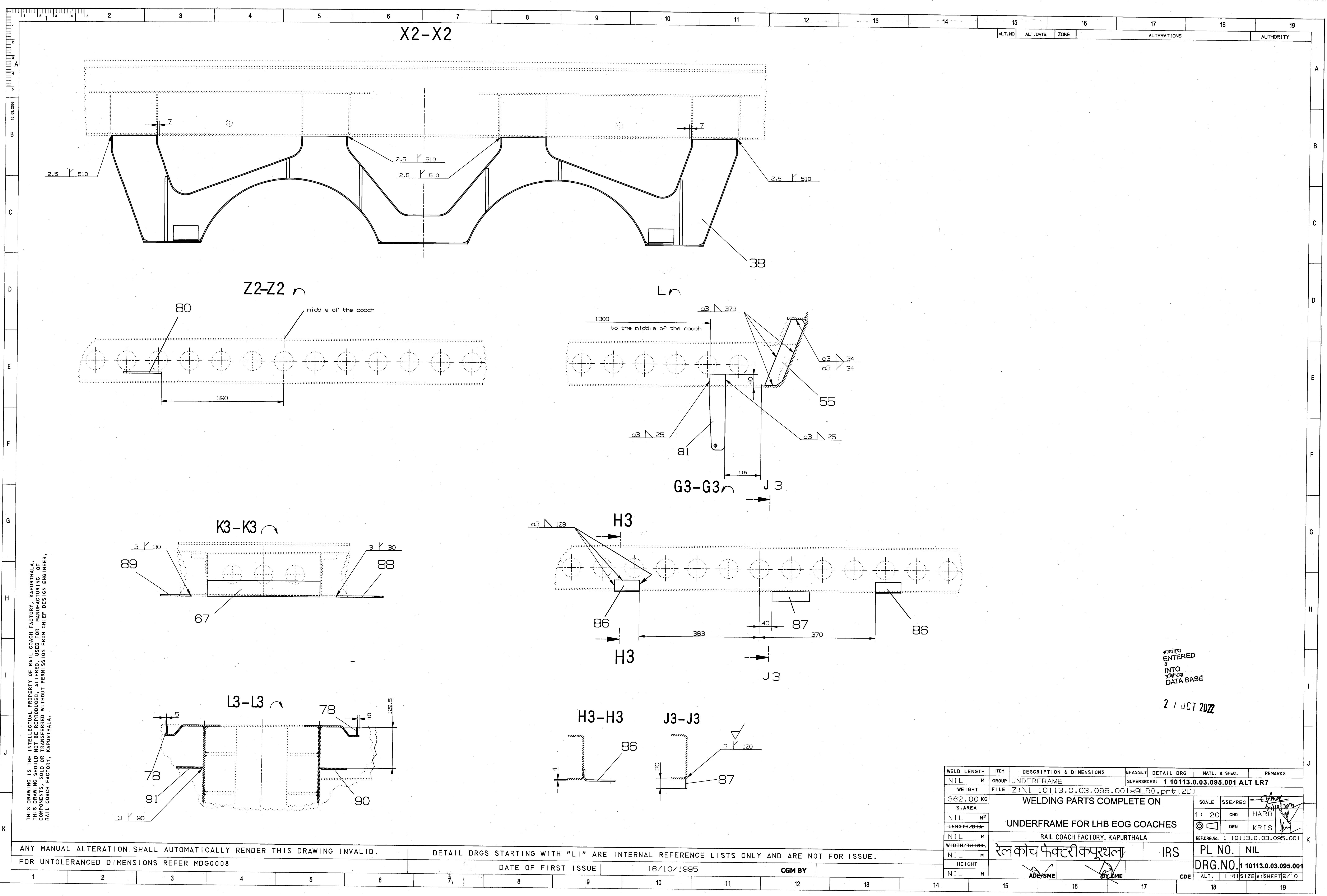
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WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS		QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	M	GROUP	UNDERFRAME	SUPERSEDES: 1 10113.0.03.095.001 ALT LR7			
WEIGHT	FILE	Z:\1 10113.0.03.095.001sBLR8.prt (2D)					
362.00 KG	WELDING PARTS COMPLETE ON					SCALE	SSE/REC
S.AREA	UNDERFRAME FOR LHB EOG COACHES					1 : 20	CHD HARB
NIL						M ²	
LENGTH/DIA						REF. DRG. No. 1 10113.0.03.095.001	
NIL	M	RAIL COACH FACTORY, KAPURTHALA				PL. NO.	NIL
WIDTH/THICK.	रेलकोच फैक्टरी कपूरथला		IRS		DRG. NO. 1 10113.0.03.095.001		
NIL	M	HEIGHT		CDE		ALT.	LRB SIZE
NIL	M	ADE/SME		DYCME		A1SHEETB/10	

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2 / OCT 2022

WELD LENGTH		ITEM	DESCRIPTION & DIMENSIONS		QPASSLY	DETAIL DRG	MATL. & SPEC.		REMARKS		
NIL		M	GROUP	UNDERFRAME		SUPERSEDES: 1 10113.0.03.095.001 ALT LR7					
WEIGHT		FILE	Z:\1 10113.0.03.095.001s9LR8.prt (2D)								
362.00 KG		WELDING PARTS COMPLETE ON							SCALE		
S.AREA									SSE/REC		
NIL		M ²	UNDERFRAME FOR LHB EOG COACHES							1: 20 CHD HARB	
LENGTH/DIA									DRN KRIS		
NIL		M	RAIL COACH FACTORY, KAPURTHALA							REF.DRG.No. 1 10113.0.03.095.001	
WIDTH/THICK.		रेलकोच फैक्टरी कपूरथला				IRS		PL NO. NIL			
NIL		M					DRG.NO. 1 10113.0.03.095.001				
HEIGHT								ALT. LRB SIZE A1 SHEET 9/10			
NIL		M	ADP/SME		BY SME		CDE				

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.
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DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

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