

## RAIL COACH FACTORY, KAPURTHALA

MD46111

Date: 18.04.2024

**Sub:** Corrigendum-1 to Addendum to MDTS\_214\_Rev\_12

**Ref:** Addendum issued vide MD46111 Dt 16.04.24 & signed by dated 17/04/2024

Their were typographical error to correct the same following corrigendum is issued

S NO of addendum	Earlier	Revised as
15	Drawing no. MI008226 for outside wash basin with dust bin below shall be applicable instead of LW63163.	Drawing no. MI008026 for outside wash basin with dust bin below shall be applicable instead of LW63163

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## RAIL COACH FACTORY, KAPURTHALA

MD46111

Date: 16.04.2024

**Sub:** Addendum to Specification no. MDTS\_214 Rev-12 for Pre-assembled FRP modular toilet for LHB type Indian Railway Coaches.

**Ref:** Addendum vide even letter dt 18.03.2024

Addendum issued vide letter in reference has been revised, this addendum will supersede the earlier issued addendum dated 18/03/2024

1. Trough Floor of oriental style Lavatory Module to be modified by raising its height by approximately 70 mm at Oriental Pan Location. For this reference Drawing no. MI007942 to be referred.
2. Door width shall be 570 mm. For this reference Drawing no. MI008004 to be referred.
3. Grab Rail as per Drg ED63048 and ED63051 for Oriental Style Lavatory and Euro Style Lavatory respectively shall be provided on side wall panel below window.
4. Tissue Paper Holder to Model no. SKU-27273111031 of M/s Somany or other brands as approved by CDE
5. Nylon Braided drain Hoses (fitted with coupling) below Wash basin shall be provided for inside as well as for outside wash basin.
6. Inside Wash basin to drawing no. MI007948 instead of MI004544 in Oriental style - 1/ Euro style -1 to be provided.
7. Inside Wash basin to drawing no. MI007955 instead of MI004545 in Oriental style -2/Euro style -2 to be provided.
8. Waste bin arngt above with Fire Extinguisher below to drawing no. MI008029 instead of LE63100 shall be outside of Lavatory.
9. Remarks given in S.No. 'C' of Annexure 'A' for ACCN (Turnkey) will not be applicable.
10. It shall be ensured that SS Back pieces for every amenity are provided (even if it is not mentioned in concerned drawing).
11. Design of All type of FRP Modules will be in 03 pieces similar to Non AC Coaches
12. For 03(Three) piece design of Lavatory Module, FRP cladding shall be provided as per Drawing no. MI007939.

13. All items of Pipe laying for water in Lavatory of drawing no. LE63157, LE63160, LS63100 LG63128, LG63267, LG63268 and LH63186 shall supplied loose.
14. Fixed attachment wall (outside the Lavatory) with inspection covers (to attend electrical, plumbing and pneumatic fittings) shall be provided to drawing no. MI008007(LH) and MI008028(RH).
15. Drawing no. MI008226 for outside wash basin with dust bin below shall be applicable instead of LW63163.
16. Refence drawing for above changes will be MI008004.

**Note: Design/Drawings in 3D and 2D Format with above additions/modifications shall be approved from RCF/Design before prototype approval. Prototype approval is necessary.**

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## रेल कोच फैक्ट्री, कपूरथला

पत्र संख्या- MD46111

जारी करने की तिथि - 18/12/2023

विषय: विशिष्टता प्रकाशन संख्या MDTS-214 Rev 12.

आपको सूचित किया जाता है विनिर्देश दस्तावेज़ आधिकारिक तौर पर जारी कर दिया गया है। कृपया जानकारी और अन्य आवश्यक कार्रवाई के लिए निम्नलिखित विशिष्टताओं की संलग्न प्रति प्राप्त करें

S. No	Description	Specification No.
1.	SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES	MDTS-214 Rev 12

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स्थापित : 1986



RCF

KAPURTHALA

Government of India  
Ministry of Railways  
Rail Coach Factory  
Kapurthala  
Punjab 144602  
ESTT : 1986

## एफआरपी मॉड्यूलर शौचालय

## FRP MODULAR TOILET



Specification Number	MDTS-214		
Revision Number	12	Date of Issue	23 November 2023

## FOREWORD

This technical requirements laid down general / technical , testing requirements of FRP modular toilet of passenger coaches of Indian Railways.

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<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 1 of 24</b>
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**DOCUMENT CONTROL**

Name	Designation	Signature	Level
T.P.SINGH	SSE/FUR-2	 Digitally signed by TIJENDER PAL SINGH Date: 2023.11.23 17:00:24 +05'30'	Prepared
JUGAL KISHORE	Dy CME/D-2	 Digitally signed by JUGAL KISHOR Date: 2023.11.29 09:05:35 +05'30'	Agreed/Reviewed
AKHILESH MISRA	CDE	 AKHILESH MISRA 2023.11.29 19:24:19 +05'30'	Approved

**LIST OF AMENDMENTS**

SN	Amendment Date	Revision	Details
1.	15. 02.2011	01	1. S.No. 03 (b) of the table of Clause '3' revised for QPC from 01 to 02. 2. S.No. 06 of the table of Clause '3' deleted to eliminate the applicability of pre assembled toilet in Power car as it is not feasible to fit pre-assembled toilet in Power Car. 3. Drawing no. LE63159 for piping arrgt of Exe. C/Car added in clause '4'. 4. Stainless wash basin inside Lavatory for Exe C/Car to Drg. No.1 10112.0.30.000.014 instead of FRP wash basin added at S.No. 03 of table -H of Clause '3'
2.	25. 05.2011	02	1. Table of Clause '3 (I) modified to rectify the QPC of Euro-2 Toilet as per drawing no. 1 10113.0.30.000.015 from 02 to 01 for AC /Chair Car. 2. Outside FRP Dust bin & Out side wash basin added in the table of clause 3(1) to clarify the QPC of the same for different coaches. 3. Scraper matting on Lavatory Floor Added as item '6' of Annexure 'A'.
3.	19/03/13	03	1. Table of Clause '3 (I) modified to incorporate the requirements of Drop Down pre assembled FRP lavatory module with amenities for Double Decker Coach. 2. Table -4 and Table-5 of annexure 'B' and annexure 'C' updated. 3. Specifications for bib cock, scraper matting and soap dispenser updated.

2438205/2023/O/O SSE-39/FUR-2/DESIGN/RCF/KXH

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SN	Amendment Date	Revision	Details
4.	02/05/13	04	1. S. no. 06 of Table 01 of Clause '3' modified to change the drawing no. of attachment wall LW6143 and LW64144 to LD63294 and LD63295 respectively for Double Decker Coach.
5.	22/05/15	05	1. Item no. 7,8 and 9 are deleted from Table-3 (Annexure 'A') as these items are not to be supplied by Supplier. 2. Note 2., below Table-3 (Annexure 'A') added for the fittment of the loose items by RCF.
6.	29.05.18	06	1. Tejas and Humsafar Coach added in scope of supply in Table No. 1. 2. Different drawing no of attachment wall for Tejas and Humsafar coach added. 3. Additional special features added for Tejas and Humsafar Rake. 4. S.No 9 of additional feature of Tejas rake for LED light is deleted.
7.	30.09.19	07	1. Specification revised for addition of salient features of modular toilet for 1 <sup>st</sup> AC, Executive CC, and other AC coaches. 2. Specification revised to add modular toilet system for Non AC coaches.
8.	25.09.20	08	1. As per Railway Board's instructions vide letter 2001/M (C)/137/ 1 vol dated 15/03/2019 , 02 nos of western toilet should be in all reserved coaches and 01 western toilet in unreserved coaches, table-1 updated accordingly. 2. Interior gel coated finish panels with granite granular finish/pattern for AC coaches and only gel coated surface finish for panels of Non AC coaches in clause 5 (a). 3. Painting has been deleted. 4. Semi cylindrical shape for outside washbasin is added in clause 5(g). 5. Semi cylindrical shape for inside waste bin to suit the profile of inside washbasin is added clause 5(f). 6. Automatic Hygiene & Odour Control System deleted from Clause 5 (i)-II 7. Razor socket is deleted from Clause 8 (ii) 8. Jaquar make Faucet deleted in Clause 4(d) & 5 (d) 9. Baby diaper change stand deleted. 10. First Article Inspection and warranty clause added. 11. Title for clause 10 and 11 changed and renumbered as 9 & 10. 12. Scrapper mat made applicable for all coaches.



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SN	Amendment Date	Revision	Details
9.	27.11.20	09	<ol style="list-style-type: none"> <li>1. B2 is added to rectify Table-1 as the same was omitted by misprinting.</li> <li>2. Sanitary Facilities to LZ63104 edited to Sanitary Facilities for <u>ref.</u> only in S.no. 'A' of Table-1.</li> </ol>
10.	11.01.21	10	<ol style="list-style-type: none"> <li>1. K9 is added in Table-1 for Fire Extinguisher FRP stand cum Drain pipe arrgt for Water Purification system.</li> <li>2. S.No. 'N' from N1-N10 is added in Table-1 for scope of supply for HOG compliant SLRD.</li> <li>3. Clause 5(l) added for Lavatory Window panel for HOG compliant SLRD added.</li> </ol>
11.	12.04.2023	11	<ol style="list-style-type: none"> <li>1. Format changed and clauses re-arranged.</li> <li>2. Scope, loose items and applicable/referred drawings attached as Annexure 'A' 'B' and 'C'</li> <li>3. Water purifier deleted from Antyodaya Deendayalu GS coaches.</li> <li>4. Sub Clause 'h' in Clause '6' for Fire Barrier coating application on inside of walls of Enclosure of Waste Bin to prevent fire.</li> <li>5. Clause '7' for Electrical Requirements updated.</li> <li>6. Scope of supply for GS AC Coach, 1<sup>st</sup> AC with Flat Roof, Double Decker Cargoliner (with 02 Lavatories) and Double Decker AC Chair Car with 04 Lavatories added in Annexure 'C'.</li> <li>7. Scope of supply for Hot Buffet, AC2T, AC3T and 1<sup>st</sup> AC for USBRL Coach is also added in Annexure 'C' at 'E', 'I' and 'T'.</li> </ol>
12.	23.11.2023	12	<ol style="list-style-type: none"> <li>1. In Annexure 'A':               <ol style="list-style-type: none"> <li>a) (Drawing no at S.No. L4 &amp; L 10 changed to LS43153 from LG43165 and LE63157 from LE64157 respectively in SCN Coach.</li> <li>b) Drawing nos at N6 changed to instead of (for SCN Coach) and LR64146 instead of LR63146 (for SLR HOG Coach.</li> <li>c) Qpc for S.N. Q6 (Outside wash basin with dust bin below) for 1<sup>st</sup> AC Coach with Flat roof changed to 02 from 01.</li> </ol> </li> <li>2. Remark for "Geyser will be procured and fitted by RCF/Electrical" for USBRL Coaches added.</li> <li>3. <b>Clause '6 (f) for Inside Waste Bin Arrangement below Wash Basin changed to "as per drawing mentioned in the drawing of BOM of Assembly drg of Lavatory Module for all AC/Non AC Coaches" instead of "Semi-cylindrical stainless steel waste bin of suitable capacity with brushed finish to match the profile of wash basin" for all AC/Non AC Coaches".</b></li> <li>4. <b># For ACCN (Turnkey) Coach Drawing for Outside Wash Basin and Dust Bin arrgt shall be LE63100 with LW63163 or alternatively MI007920.</b></li> </ol>

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## 1 Introduction

This specification covers the general and technical requirements of Pre-assembled FRP composite modular toilet which can be lowered in pre-assembled condition

## 2 Forward and Scope:

This specification covers the general and technical requirements of Pre-assembled FRP composite modular toilet which can be lowered in pre-assembled condition, fitted with selected amenity fittings from the top of coach or body side door or vestibule door for all LHB AC coaches and Non AC coaches (which will be supplied in three walls and to be assembled inside the coach). The tenderer should offer clause-wise comments in its offer against this specification and shall also submit deviation statement, if any. RCF reserves the right to summarily reject the offer submitted without clause wise comments.

## 3 List of standards Referred:

SN	Standard	Title
1	IS:11551 -1996	Glass fibre chopped strand mat for the reinforcement of epoxy, phenolic and polyester resin systems.
2	IS :11273-1992	Woven roving fabrics of 'E' glass fibre
3	IS:2500-2000	Sampling procedures for inspection
4	ASTM-D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
5	IS: 1998-1962	Methods of test for thermosetting synthetic resin bonded laminated sheets
6	BS:4994	Specification for Design and Construction of Vessels and Tanks in Reinforced Plastics
7	ASTM-D-2583-81	BARCO Hardness
8	EN 62262	Resistance or impact strength
9	IS: 13411	Glass reinforced polyester dough moulding compounds
10	ASTM D-570-2018	Test Method for Water Absorption of Plastics
12	ASTM -D-2863	Measuring the Minimum Oxygen Concentration to

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		Support Candle-Like Combustion of Plastics
15	MDTS-092	Granular corundum particles
16	MDTS-118	Painting system for FRP components
17	MDTS-115	3D Glass Fabric
18	MDTS-094	Painting System
19	IS:101	Methods of sampling and test for paints
20	EN 10204	Inspection documents for steel (and other) product

**Table 1: List of referred standards****4 Abbreviation/Terminology:**

S.N.	Abbreviation /Terminology	Expansion/Explanation
1	FRP	Fibre Reinforced Plastic
2	FAI	First Article Inspection
3	QAP	Quality Assurance Plan
4	RCF	Rail Coach Factory
5	KXH	Indian Railways station code for Kapurthala
6	LHB	Linke-Hofmann-Busch the transfer of technology partner for RCF/KXH.

**Table 2: Abbreviations & Terminology****5 Material & other relevant specification:**

- Material specification shall be as given in concerned component /assembly drg.
- FRP (hand lay-up) components shall be as per RCF's technical specification for hand lay-up FRP components for all passenger coaches to MDTS-133 except painting of the components.
- Scope of supply, supply of loose items and applicable/referred drawings shall be as per Annexure 'A', B and C respectively.

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## 6 Salient features for AC and Non AC Coaches :

- a) For improved aesthetic and longer performance of interior surface, gel coated surface finish panels with granite granular effect finish or other suitable pattern/finish shall be provided for AC Coaches.
- b) For Non AC Coaches gel coated surface finish panels shall be provided.
- c) All interior surface finish should be good of blending with interior fittings to provide a pleasant look and shall have ease of cleaning and maintenance.
- d) Interior panels should be coated with anti graffiti as per RDSO specification no. M&C/PCN/127-2009. Anti graffiti coating activity shall be done by the firm at their premises itself, not after installation of modular toilet inside the coach at workshop.
- e) **Wash Basin:** Wash basin sink, Top and Front surface shall be of Bright Finish: AISI 304 for all AC/Non AC Coaches.
- f) **Inside Waste Bin Arrangement below Wash Basin** shall be as per drawings mentioned in the BOM of Assembly drawing of Lavatory Modules for all AC/Non AC Coaches.
- g) **Outside Waste Bin Arrangement below Wash Basin:** Semi-cylindrical stainless steel (AISI 304) waste bin of suitable capacity with brushed finish to match the profile of wash basin.
- h) **Fire Barrier coating:** Fire Barrier coating of DFT 2 mm (Approx) of DECICOAT™ P-60 of M/s Pyrotek or Firetex FX5120 of Sherwin Williams make or Hempafire Optima 500 Hempal make to be applied on inside of walls of FRP Pillar ( Enclosure of Waste Bin) to drawing no LE63100. Product shall be made in India.
- i) Lavatory wall panel should have double side finish i.e. there is no HPL pasted outside.

## 7 Electrical Requirements:

Following Electrical items should be procured only from the sources as per RCF's approved vendor directory:

- a) Light to drg. no. LW76092 with latest Alteration, of quantity 01 per toilet to be provided on top of mirror inside the toilet. The supplier shall provide indelible marking of its own in addition to OEM's identification at a location which is normally not visible but can be viewed for identification in fitted condition.
- b) Terminal connector to EDML-037 Rev 'a' of quantity 01 per toilet to be provided.

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- c) Polyamide flexible conduits PG-16 (in meters) to spec. no. RDSO/PE/SPEC/0138-2009(Rev-01) Table-A-1, Item-3 to be provided for wiring of lavatory light, razor socket and limit switch etc.
- d) Clamping arrangement of for double conduits to be provided over the lavatory area to drg. no. LP76001 Item-8.
- e) Cable jacket system, item-8 to EDTS138 to be provided.
- f) Cable duct A45, Standard Slot Grey to Cat. No. CDA4545SG to be provided.
- g) Cable duct cover A45, standard slot gray to cat. No. CCA45SG.
- h) Cable binder 3.6 x 200 to drawing no.CC 76129 shall be provided.
- i) E-beam copper cable of size 1.5 sq mm to be used for wiring from approved sources to RDSO Spec- ELRS/SPEC/ELC/0019, Rev-04
- j) Mounting arrangement for WAGO connector to be provided on wall of Module.
- k) Limit switch in the lavatory door frame & its wiring to be provided.
- l) The route of Electrical wiring shall be as per Sked no. 598.

## 8 Key infrastructure requirements:

The tenderer shall have plant, machinery, infrastructure requirements, testing facilities for FRP components and quality control requirements as per MDST-139.

## 9 Approval of prototype sample:

- 9.1 All new firms supplying the material for first time shall have to submit the pilot sample for approval of CDE/RCF
- 9.2 The supplier shall submit WTC (along with supply) from OEM for different constituents used for manufacture of FRP panels of lavatory module.
- 9.3 The supplier shall submit details about warranty, purchase bills for fittings purchased from OEM and supplied with the lavatory modules.
- 9.4 The supplier shall submit WTC for anti graffiti paint.
- 9.5 Testing of the prototypes shall be done in the same condition as fixed in the coaches.
- 9.6 The following test shall be applied to prototype samples:
  - a) Dimensional checking.
  - b) Fitment interface of window cowl and lavatory window
  - c) Fitment interface of lavatory pan and S- trap of Bio Retention Tank.
  - d) Fitment interface of Attachment wall with door post.
  - e) Fitment of plumbing items and Exhaust pipe arrgt.
  - f) Back pieces for the fitment of mirror, Inner Attachment wall, SS Euro bowl and other amenities, shall be insured.

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- g) Fitment interface of FRP module with end wall sliding door for graze check.
- h) Fitment interface of Lavatory door to checked.
- i) Material testing by RCF CMT lab.

## 10 First Article Inspection :

- 10.1** First article inspection will be carried out by RCF as per ISO/TS 22163:2017 requirement prior to submission of pilot sample to RCF, Kapurthala.
- 10.2** Validation of special processes (including outsourced processes) will preferably be carried out as per ISO/TS 22163:2017 requirement.
- 10.3** The tenderer must submit quality assurance plan (QAP), work instructions and audit report of special processes along with pilot sample.
- 10.4** The sample shall undergo following tests to assurance:
  - a) Dimensional checking.
  - b) Tests to be conducted on FRP components as per MDTS-133

## 11 Information to be provided by bidder / supplier:

The following information shall be provided by the bidder / supplier.

### 11.1 Information to be provided at the time of the bid:

The following information shall be included with the bid. These documents shall be used to determine suitability for placement of purchase orders.

S. No.	Information to be provided	Important Note
1.	The document indicating details of registration of the company on the MCA portal.	The document shall be verifiable from the MCA Portal.
2.	Previous supply credentials / testimonials containing the list of supplies made in the last 4 (four) years of FRP Components to MCF/ICF/RCF.	The document shall contain the contact details (phone number / email-ID) of the purchasers. These may be contacted by RCF for performance feedback.
3.	All the test certificates conducted by NABL accredited Lab for that particular test.	The documents shall be not older than the last 3 years from the date of opening of tender.
4.	ISO9001 / IRIS Certification as available.	

**Table 3: Information to be provided with the bid**

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### 11.2 Information to be supplied upon release of letter of acceptance / purchase order:

The following information shall be supplied prior to the supply of the ordered material:

<b>S. No.</b>	<b>Information to be provided</b>	<b>Important Note</b>
1.	Copy of the detailed QAP for the FRP modular toilet ordered.	The document must contain the details as specified in the clause on quality assurance in this specification.
2.	Test Certificates for all tests (as detailed in the QAP) conducted by the manufacturer or third-party agencies.	The test certificates shall be traceable and verifiable.

**Table 4: Information to be provided upon release of letter of acceptance / purchase order**

### 11.3 Information to be supplied with the material consignment:

<b>S. No.</b>	<b>Information to be provided</b>	<b>Important Note</b>
1.	Copy of the detailed QAP for the FRP modular toilet ordered.	The document must contain the details as specified in the clause on quality assurance in this specification.
2.	Test Certificates for routine tests (as detailed in the QAP) conducted by the manufacturer or third-party agencies.	The test certificated shall be traceable and verifiable.
3.	Test Certificates for acceptance tests (as detailed in the QAP) conducted by the manufacturer or third-party agencies.	
4.	Certificates / documents establishing compliance and traceability of raw material used for the consignment.	
5.	Complete packing list for the consignment.	

**Table 5: Information to be provided upon release of letter of acceptance / purchase order**



<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 11 of 24</b>
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**Annexure 'A'**

**Scope of Supply:** Following scope of Supply for FRP lavatory module and amenity fittings shall be applicable for different types of coaches:

S.No.	Description	Drawing No.	QPC	Type Of Coach
A	A1 Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>AC/chair car &amp; AC/Exe Chair car</b> (Sanitary Facility to LZ63104 for ref. only )
	A2 Lavatory module Euro-1	1 10113.0.30.000.014	01	
	A3 Lavatory module Euro-2	1 10113.0.30.000.015	01	
	A4 Attachment wall	LW64143	02	
	A5 Attachment wall	LW64144	01	
	A6 Waste bin Arrangement	LE63100	01	
	A7 Lavatory Window panel	1 10113.0.30.400.057	03	
	A8 Pipe laying for water in Lavatory	LE63160	03	
	A9 Out flow mounting arrangement	2 10113.0.30.095.172	03	
	A10 Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	03	
B	B1 Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>First class AC</b> (Sanitary Facility to LA63003 for ref. only)
	B2 Lavatory module Euro-2	1 10113.0.30.000.015	02	
	B3 Shower Room Arrgt (corresponding to Lavatory Module 10112.0.30.000.014)	MI004371	01	
	B4 Attachment wall	LW64143	02	
	B5 Attachment wall	LW64144	02	
	B6 Waste bin Arrangement	LE63100	01	
	B7 Lavatory Window panel	1 10113.0.30.400.057	04	
	B8 Pipe laying for water in Lavatory	LE63160	04	
	B9 Western style lavatory with Flexible shower	MI004329	02	
	B10 Out flow mounting arrangement	2 10113.0.30.095.172	04	
	B11 Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
C	C1 Lavatory module Orient-1	1 10113.0.30.000.013	02	<b>2-Tier AC</b>
	C2 Lavatory module Euro-2	1 10113.0.30.000.015	02	
	C3 Attachment wall	LW64143	02	
	C4 Attachment wall	LW64144	02	
	# C5 Waste bin Arrangement	LE63100	01	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 12 of 24</b>
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	C6	# Outside Wash Basin with Dust Bin below	LW63163	02	<b>3-Tier AC &amp; Composite (1<sup>st</sup>AC+2A)</b> (Sanitary Facility to LE63001 for ref. only).  <b># For ACCN (Turnkey) Drawing no.LE63100 with LW63163 or alternatively MI007920 may be used for Outside Wash Basin and Dust Bin arrgt.</b>
	C7	Lavatory Window panel	1 10113.0.30.400.057	04	
	C8	Pipe laying for water in Lavatory (L.H)	LE63160	02	
	C9	Pipe laying for water in Lavatory(R.H)	LE63157	02	
	C10	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	C11	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
D	D1	Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>Hot Buffet</b> (Sanitary Facility to LH63001 for ref. only)
	D2	Lavatory module Euro-2	1 10113.0.30.000.015	01	
	D3	Attachment wall	LW64143	01	
	D4	Attachment wall	LW64144	01	
	D5	Waste bin Arrangement	LH63102	01	
	D6	Lavatory Window panel	1 10113.0.30.400.057	02	
	D7	Pipe laying for water in Lavatory	LE63160	02	
	D8	Out flow mounting arrangement	2 10113.0.30.095.172	02	
	D9	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	02	
E	E1	Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>Hot Buffet with Plug Door for Humsafar and USBRL Coach</b> (Layout of Modular Toilet to LH63005 for ref)
	E2	Lavatory module Euro-2	1 10113.0.30.000.015	01	
	E3	Attachment wall Mountings	LH64206	01	
	E4	Waste bin Arrangement	LH63102	01	
	E5	Lavatory Window panel	1 10113.0.30.400.057	02	
	E6	Pipe laying for water in	# LE63160	02	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 13 of 24</b>
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		Lavatory			# For USBRL Coaches, to supply hot water in wash basins and Lota filler in each Lavatory as one instant geyser per two lavatories will be fitted, minor changes in the piping layout to be done by supplier at site. <b>Geyser will be procured and fitted by RCF/Electrical.</b>
	E7	Out flow mounting arrangement	2 10113.0.30.095.172	02	
	E8	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	02	
	E9	Location of Additional Back piece to mount one instant geyser per two lavatories on each coach end.	MI007873	01	
F	F1	Lavatory module Orient-1	LD63274	02	<b>Double Decker</b> (Sanitary Facility to LD63004 for ref. only)
	F2	Lavatory module Euro-2	LD63273	02	
	F3	Attachment wall	LD63294	02	
	F4	Attachment wall	LD63295	02	
	F5	Waste bin Arrangement	LE63100	01	
	F6	Outside Wash Basin with Dust Bin below	LW63163	02	
	F7	Lavatory Window panel	1 10113.0.30.400.057	04	
	F8	Pipe laying for water in Lavatory R.H	LE63157	02	
	F9	Pipe laying for water in Lavatory LH	LE63160	02	
	F10	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	F11	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
G	G1	Lavatory module Orient-1	LD63273	01	<b>Double Decker</b> <b>UDAY Rake</b> (Sanitary Facility
	G2	Lavatory module Euro-2	LD63275	01	
	G3	Attachment wall	LD63295	02	
	G4	Outside Wash Basin with Dust Bin below	LW63163	02	
	G5	Lavatory Window panel	1 10113.0.30.400.057	02	
	G6	Pipe laying for water in Lavatory R.H	LE63157	02	
	G7	Out flow mounting	2 10113.0.30.095.172	02	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 14 of 24</b>
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		arrangement			to LD63296 for ref. only)
	G8	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	02	
H	H1	Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>AC/chair car &amp; AC/Exe Chair car for TEJAS Rake with Plug door</b> (Sanitary Facility to LZ63104 for ref. only )
	H2	Lavatory module Euro-1	1 10113.0.30.000.014	01	
	H3	Lavatory module Euro-2	1 10113.0.30.000.015	01	
	H4	Attachment wall	LZ63104	02	
	H5	Attachment wall	LZ63105	01	
	H6	Waste bin Arrangement	LE63100	01	
	H7	Lavatory Window panel	1 10113.0.30.400.057	03	
	H8	Pipe laying for water in Lavatory	LE63160	03	
	H9	Out flow mounting arrangement	2 10113.0.30.095.172	03	
	H10	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	03	
	I1	Lavatory module Orient-1	1 10113.0.30.000.013	02	<b>AC2T &amp; AC3T (USBRL) and 3- Tier AC Hums afar Coach</b> (Layout of Modular Toilet to LE63008 for ref)  # For USBRL Coaches to supply hot water in wash basins and Lota filler in each Lavatory as one instant geyser per two lavatories on each coach end will be fitted, minor changes in the piping layout to be done by supplier at site. <b>Geyser will be procured and fitted by</b>
	I2	Lavatory module Euro-2	1 10113.0.30.000.015	02	
	I3	Attachment wall Mountings	LE64182	01	
	I4	Waste bin Arrangement	LE63100	01	
	I5	Outside Wash Basin with Dust Bin below	LW63163	02	
	I6	Lavatory Window panel	1 10113.0.30.400.057	04	
	I7	Pipe laying for water in Lavatory (L.H)	# LE63160	02	
	I8	Pipe laying for water in Lavatory(R.H)	# LE63157	02	
	I9	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	I10	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
	I11	Location of Additional Back piece to mount one instant geyser per two lavatories on each coach end.	MI007873	02	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 15 of 24</b>
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					<b>RCF/Electrical.</b>
<b>J</b>	J1	Lavatory module Orient-1	LG63227	01	<b>Non AC Chair Car (Sanitary facility to LJ63004 &amp; LJ63153 for ref. only)</b>
	J2	Lavatory module Orient-1	LG63124	01	
	J3	Lavatory module Euro-2	LJ63107	02	
	J4	Covering	LG43165	01	
	J5	Attachment wall	LP64257	01	
	J6	Attachment wall	LP64258	02	
	J7	Waste bin Arrangement	LE63100	01	
	J8	Outside Wash Basin with Dust Bin below	LW63163	02	
	J9	Lavatory Window panel	1 10113.0.30.400.057	04	
	J10	Pipe laying for water in Lavatory	LS63100	02	
	J11	Pipe laying for water in Lavatory (Euro 2)	LG63128	02	
	J12	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	J13	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
<b>K</b>	K1	Lavatory module Orient-1	LG63227	01	<b>Antyodaya Deendayalu GS coaches with (Sanitary Facility to LG63225 for ref. only)</b>
	K2	Lavatory module Orient-1	LG63124	01	
	K3	Lavatory module Orient-2	LG63125	01	
	K4	Lavatory module Euro-2	LJ63107	01	
	K5	Covering	LG43165	01	
	K6	Attachment wall	LP64257	01	
	K7	Attachment wall	LP64258	02	
	K8	Waste bin Arrangement	LE63100	01	
	K9	Outside Wash Basin with Dust Bin below	LW63163	02	
	K10	Lavatory Window panel	1 10113.0.30.400.057	04	
	K11	Pipe laying for water in Lavatory	LS63100	02	
	K12	Pipe laying for water in Lavatory	LG63128	02	
	K13	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	K14	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
<b>L</b>	L1	Lavatory module Orient-1	LS63137	02	
	L2	Lavatory module Euro-2	LS63143	01	
	L3	Lavatory module Euro-2	LS63139	01	

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	L4	Covering	LS43153	01	<b>SCN with Wider Window</b> ( Sanitary Facility to LS63006 & LS63142 for ref. only)
	L5	Attachment wall	LP64257	02	
	L6	Attachment wall	LP64258	01	
	L7	Waste bin Arrangement	LE63100	01	
	L8	Outside Wash Basin with Dust Bin below	LW63163	02	
	L9	Lavatory Window panel	1 10113.0.30.400.057	04	
	L10	Pipe laying for water in Lavatory	LE63157	02	
	L11	Pipe laying for water in Lavatory	LE63160	02	
	L12	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	L13	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
M	M1	Lavatory module Orient-2	LS63141	01	<b>LHB Type Hybrid MEMU/TC</b> (Sanitary Facility to ET63147 for ref. only)
	M2	Lavatory module Euro-2	LS63143	01	
	M3	Attachment wall	LP64258	02	
	M4	Waste bin Arrangement	LE63100	01	
	M5	Outside Wash Basin with Dust Bin below	LW63163	02	
	M6	Lavatory Window panel	1 10113.0.30.400.057	04	
	M7	Pipe laying for water in Lavatory	ET63144	02	
	M8	Out flow mounting arrangement	2 10113.0.30.095.172	02	
	M9	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	02	
N	N1	Lavatory module Euro-1	LP63210	01	<b>HOG compliant SLRD Layout no. LR90036 (Sanitary Facility to LR63008 for ref. only)</b>  **Cut out and inspection covers as per drawing no. MI007540.
	N2	Lavatory module Euro-2	**LP63210	01	
	N3	Lavatory module orient-2	**LG63125	01	
	N4	Attachment wall	LP64257	02	
	N5	Attachment wall	LP64258	01	
	N6	Waste bin Arrangement	LR64146	02	
	N7	Outside Wash Basin with Dust Bin below	LW63163	01	
	N8	Lavatory Window panel	1 10113.0.30.400.057	01	
	N9	Lavatory Window panel	1 11012.0.30.400.033	02	
	N10	Inspection covers	MI007540	02	
	N11	Pipe laying for water in Lavatory	LS63100	02	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 17 of 24</b>
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	N12	Pipe laying for water in Lavatory	LG63128	01	<b>** Pillow blocks/Back pieces on trough Floor as per Drawing no. MI007678</b>
	N13	Out flow mounting arrangement	2 10113.0.30.095.172	03	
	N14	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	03	
<b>O</b>	<b>O1</b>	Layout of Modular Lavatory	ED63001 without item no. 19 (Electro-pneumatic Pressuriser)	<b>01</b>	<b>AC-3T Economy Coach</b>
<b>P</b>	P1	Lavatory module Orient-1	<b>** LG63124</b>	<b>02</b>	<b>GS AC coaches</b> (Sanitary Facility to LG63004 for ref. only)  <b>** Back pieces for auxiliary water tank to provided on door way wall of Module as per drg. MI007732</b>
	P2	Lavatory module Euro-2	<b>** LJ63107</b>	<b>02</b>	
	P3	Attachment wall Mounting Arrgt	LE64226	01	
	P4	Waste bin Arrangement	LE63100	01	
	P5	Outside Wash Basin with Dust Bin below	LW63163	02	
	P6	Lavatory Window panel	1 10113.0.30.400.057	04	
	P7	Pipe laying for water in Lavatory without outside washbasin	LG63267	02	
	P8	Pipe laying for water in Lavatory with outside washbasin	LG63268	02	
	P9	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	P10	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
<b>Q</b>	Q1	Lavatory module Orient-1	LG63124**	01	<b>1<sup>st</sup> AC coaches with Flat Roof</b>  (Layot of Modular Toilet LA63010 )  <b>** Cut out and inspection covers as per drawing no. MI007540</b>
	Q2	Lavatory module Euro-2	LJ63107**	02	
	Q3	Bath Room Arrgt	LA63133**	01	
	Q4	Attachment wall Mounting	LE64226	01	
	Q5	Waste bin Arrangement	LE63100	01	
	Q6	Outside Wash Basin with Dust Bin below	LW63163	02	
	Q7	Lavatory Window panel	1 10113.0.30.400.057	03	
	Q8	Pipe laying for water in Lavatory without outside washbasin	LG63267	02	
	Q9	Pipe laying for water in	LG63268	02	

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 18 of 24</b>
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		Lavatory with outside washbasin			& Back pieces for auxiliary water tank to provided on door way wall of Module as per drg. MI007732. *** Paneling of exhaust fan fitted on side wall shall be made so that there is no suction of air from the gap between side wall sheet and Modular wall. Only air exhaust from inside of lavatory to be insured. <u>Exhaust fan shall be made of Sheet Steel only</u>
	Q10	Out flow mounting arrangement	2 10113.0.30.095.172	03	
	Q11	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
	Q12	Cut out and inspection covers for Exhaust fan	MI007540	04	
	Q13	Back pieces for Aux. water Tank on FRP module	MI007732	04	
	Q14	Exhaust Fan ***	ICF/SK-7-6-177	04	
	Q15	Flexible shower Arrgt in western Lavatories.	MI004329	02	
	Q16	Z-Bracket 3.2x70x483.5 with rib 5x36x48	LA63010 (Item 13)	04	
R	R1	Lavatory module Orie-2	LD63275	01	For Double Decker Coach AC C/Car (EOG) (Cargo liner) with 02 Lavatories <i>(Layout of Modular Toilet LD63006)</i>
	R2	Lavatory module Euro-2	LD63273	01	
	R3	Attachment wall Mounting	LD64160	01	
	R4	Outside Wash Basin with Dust Bin below	LW63163	02	
	R5	Lavatory Window panel	1 10113.0.30.400.057	02	
	R6	Out flow mounting arrangement	2 10113.0.30.095.172	02	
	R7	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	02	
S	S1	Lavatory module Orient-1	LD63274	02	<b>Double Decker AC Chair Car(EOG) with 04 Lavatories</b> <i>(Layout of Modular Toilet LD63007)</i>
	S2	Lavatory module Euro-2	LD63273	02	
	S3	Attachment wall Mounting	LD64141	01	
	S4	Outside Wash Basin with Dust Bin below	LW63163	02	
	S5	Waste Bin Arrangement	LE63100	01	
	S6	Lavatory Window panel	1 10113.0.30.400.057	04	
	S7	Out flow mounting	2 10113.0.30.095.172	04	



<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 19 of 24</b>
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		arrangement			
	S8	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
T	T1	Lavatory module Orient-1	1 10113.0.30.000.013	01	<b>First class AC for USBRL Coach</b>  (Layout of Modular Toilets to LA63011 for ref)  # For USBRL Coaches, to supply hot water in wash basins and Lota filler in each Lavatory as one instant geyser per two lavatories on each coach end will be fitted, minor changes in the piping layout to be done by supplier at site.  <b>Geyser will be procured and fitted by RCF/Electrical.</b>
	T2	Lavatory module Euro-2	1 10113.0.30.000.015	02	
	T3	Shower Room Arrgt (corresponding to Lavatory Module 10112.0.30.000.014)	MI004371	01	
	T4	Attachment wall Mounting	LE64182	01	
	T5	Waste bin Arrangement	LE63100	01	
	T6	Lavatory Window panel	1 10113.0.30.400.057	04	
	T7	Pipe laying for water in Lavatory	# LE63160	04	
	T8	Western style lavatory with Flexible shower	MI004329	02	
	T9	Out flow mounting arrangement	2 10113.0.30.095.172	04	
	T10	Scraper Matting on complete lavatory floor area except pan/commode	MDTS-229	04	
	T11	Location of Additional Back piece to mount one instant geyser per two lavatories on each coach end.	MI007873	02	

Table 6: Scope of supply

*Annexure ' B '*

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 20 of 24</b>
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**List of items to be supplied loose by the supplier**

<b>S. NO.</b>	<b>Item Description</b>	<b>Drg. No.</b>
1.	<b>Inside Mirror</b>	Item-1 of LW63182
2.	<b>Outside mirror</b>	Item- 6 of MI004725
3.	<b>Inner attachment wall</b>	LE63154, LS63124
4.	<b>Lavatory Ceiling flap-1 mounting</b>	2 10113.0.21.450.002,
5.	<b>Lavatory Ceiling flap-2 mounting</b>	1 10113.0.21.450.004
6.	<b>Scraper Mating</b>	Scraper matting as per MDTS-229 shall be provided on complete lavatory floor area except pan
7.	<b>Soap Dispenser with Cage</b>	Soap dispenser with cage shall conform to RCF specification MDTS-209 in AC coaches.

**Table 7: List of items to be supplied loose by the supplier**

**Note:**

1. Necessary clearance should be provided between the toilet floor (with covering of 3-M Scraper mating) and lavatory door, so that door shall not infringe. Toilet Door should be replaceable by opening of mounting screws.
2. Loose items (To avoid breakage during transportation) are to be fitted by RCF at shop floor after dropping down of Modular Toilet in the coach.
3. The colour scheme for Lavatory Area shall be as per interior color scheme, issued for particular coach type.
4. The design and drawings of any item other than RCF/LHB design shall be got approved from CDE/RCF.

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## Annexure 'C'

## List of enclosed drawings

S. No	Drawing no/spec.	S. No	Drawing no/spec.	S. No	Drawing no/spec.
1.	LZ63104	16.	LE63157 with part drgs	31.	LG63100 with part drawings
2.	MDTS-43373	17.	LW63163 with part drgs	32.	LJ63106 with part drawings
3.	1 10113.0.30.000.003 with part drawings	18.	LH63001	33.	LG63101 with part drawings
4.	1 10113.0.30.000.005 with part drawings	19.	LH63102 with part drawings	34.	LS63100 with part drawings
5.	1 10112.0.30.000.004 with part drawings	20.	LZ64104	35.	LG63128 with part drawings
6.	1 10113.0.21.530.001 Alter with part drawings	21.	LZ64105	36.	LG64121 with part drgs
7.	LE63100 with part drawings	22.	LD63004	37.	LS63006
8.	MDTS-229	23.	LD63284 with part drawings	38.	LS63142
9.	LE63160 with part drawings	24.	LD63287 with part drawings	39.	LS63136 with part drags
10.	MDTS-209	25.	LD63288 with part drawings	40.	LS63138 with part drags
11.	LA63003	26.	LD64141 with part drawings	41.	LS63144 with part drags
12.	MI004329	27.	LW63138	42.	LS64130 with part drawings
13.	LE64152 with part drgs	28.	LJ63004	43.	ET63147
14.	MI004371	29.	LG63225	44.	LS63140 with part drags
15.	LE63001	30.	LG63228 with part drawings	45.	ET63144 with part drawings

<b>RAIL COACH FACTORY KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR FRP MODULAR TOILET FOR LHB COACHES</b>	<b>MDTS-214 REV-12 DATE : 23.11.2023 Page 22 of 24</b>
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<b>46.</b>	LR63008	66.	EDML-047		
<b>47.</b>	LP63209 with part drags	67.	Sked no. 598		
<b>48.</b>	LR63298 with part drags	68.	MDTS-43373		
<b>49.</b>	LR63299 with part drags	69.	MI007732		
<b>50.</b>	LR63146 with part drawings	70	LH63005		
<b>51.</b>	MI007540	71	LE63008		
<b>52.</b>	MI007678	72	LA63011		
<b>53.</b>	LD63296	73	LH64206		
<b>54.</b>	LE63007	74	LE64182		
<b>55.</b>	LD63005	75	MI007873		
<b>56.</b>	LG63004	76	MI007920		
<b>57.</b>	LG63267 with part drawings				
<b>58.</b>	LG63268 with part drawings				
<b>59.</b>	LW76092				
<b>60.</b>	EDTS138				
<b>61.</b>	LP76001				
<b>62.</b>	EDML-037				
<b>63.</b>	RDSO/PE/SPEC/0138- 2009(Rev-01)				
<b>64.</b>	CC 76129				
<b>65.</b>	LRS/SPEC/ELC/0019, Rev- 04				

Table 8: List of enclosed drawings