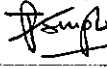

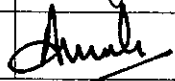
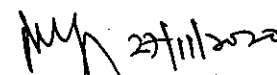


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Name	Designation	Signature	Date	Level
T.P.SINGH	SSE/FUR-2		27.11.20	Prepared
ABHEY PRIYA DOGRA	Dy. CME/D-2		27.11.2020	Agreed and Reviewed
AKHILESH MISRA	CDE		27/11/2020	Approved

Rev. No	Details of Changes	Date
07	<ol style="list-style-type: none"> 1. Specification revised for addition of salient features of modular toilet for 1st AC, Executive CC, and other AC coaches. 2. Specification revised to add modular toilet system for Non AC coaches. 	30.09.19
08	<ol style="list-style-type: none"> 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. 	25.09.20
09	<ol style="list-style-type: none"> 1. B2 is added to rectify Table-1 as the same was omitted by misprinting. 2. Sanitary Facilities to LZ63104 edited to Sanitary Facilities for ref. only in S.no. 'A' of Table-1. 	27.11.2020


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1) **Scope:** This specification covers the general and technical requirements of Pre-assembled drop down (which can be lowered in pre-assembled condition, fitted with selected amenity fittings, from the top of coach) FRP composite modular toilet for all LHB AC coaches and LHB 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.

2) **Material & other relevant specification :**

- a) Material specification should be as given in concerned component /assembly drg.
- b) FRP (hand lay-up) components shall be as per RCF's technical specification for hand lay-up FRP components for all passenger coaches MDTS-133 except painting of the components.
- c) List of applicable drawings/spec are mentioned in Table-3 (Annexure B).

3) **Scope of Supply:**

- a) Following scope of Supply for FRP lavatory module and amenity fittings shall be applicable for different types of coaches:

Table-1

S.no.	Description	Drg. no.	QPC	Type of coach	
A.	A1.	Lavatory module Orient-1	1 10113.0.30.000.013	01	AC/chair car & AC/Exe Chair car <i>(Sanitary Facility to LZ63104 for ref. only)</i>
	A2.	Lavatory module Euro- 1	1 10112.0.30.000.014	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	
B.	B1.	Lavatory module orient- 1	1 10113.0.30.000.013	01	
	B2.	Lavatory module Euro-2	1 10113.0.30.000.015	02	

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	B3.	Shower Room Arrgt (corresponding to Lavatory Module 10112.0.30.000.014)	MI004371	01	First class AC <i>(Sanitary Facility to LA63003 for ref. only)</i>
	B4.	Attachment wall	LW64143	02	
	B5.	Attachment wall	LW64144	02	
	B6.	Waste bin Arrangement	LE63100	01	
C.	C1.	Lavatory module orient- 1	1 10113.0.30.000.013	02	AC 2-Tier, AC 3- Tier & Composite (1stAC+2A) <i>(Sanitary Facility to LE63001 for ref. only)</i>
	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	
	C6.	Outside Wash Basin with Dust Bin below	LW63163	02	
D.	D1.	Lavatory module orient-1	1 10113.0.30.000.013	01	Hot Buffet <i>(Sanitary Facility to LH63001 for ref. only)</i>
	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	
E.	E1.	Lavatory module orient-1	1 10113.0.30.000.013	01	Hot Buffet with Plug Door <i>(Sanitary Facility to LH63001 for ref. only)</i>
	E2.	Lavatory module Euro- 2	1 10113.0.30.000.015	01	
	E3.	Attachment wall	LZ64104	01	


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	E4.	Attachment wall	LZ64105	01	
	E5.	Waste bin Arrangement	LH63102	01	
F.	F1.	Lavatory module orient- 1	LD63274	02	Double Decker <i>(Sanitary Facility to LD63004 for ref. only)</i>
	F2.	Lavatory module Euro-2	LD63273	02	
	F3.	Attachment wall	LD63294	02	
	F4.	Attachment wall	LD63295	02	
	F5.	Waste bin Arrangement	LE63100	01	
	F6.	Out Side Wash Basin with Dust bin arrgt below.	LW63163	02	
G.	G1.	Lavatory module Euro-2	LD63273	01	Double Decker UDAY Rake <i>(Sanitary Facility to LD63296 for ref. only)</i>
	G2.	Lavatory module orient-2	LD63275	01	
	G3.	Attachment wall	LD63295	02	
	G4.	Out Side Wash Basin with Dust bin arrgt below.	LW63163	02	
H.	H1.	Lavatory module orient-1	1 10113.0.30.000.013	01	AC/Chair car for TEJAS Rake with Plug door & AC/Exe Chair car for Tejas Rake <i>(Sanitary Facility to LZ63104 for ref. only)</i>
	H2.	Lavatory module Euro- 1	1 10112.0.30.000.014	01	
	H3.	Lavatory module Euro- 2	1 10113.0.30.000.015	01	
	H4.	Attachment wall	LZ64104	02	
	H5.	Attachment wall	LZ64105	01	
	H6.	Waste bin Arrangement	LE63100	01	
I.	I1.	Lavatory module orient- 1	1 10113.0.30.000.013	02	3-Tier For Humsafar Coach with Plug Door <i>(Sanitary Facility to LE63001 for ref. only)</i>
	I2.	Lavatory module Euro-2	1 10113.0.30.000.015	02	
	I3.	Attachment wall.	LZ64104	02	


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	I4.	Attachment wall	LZ64105	02	
	I5.	Waste bin Arrangement	LE63100	01	
	I6.	Out Side Wash basin with bin arrgt below	LW63163	02	
J.	J1.	Lavatory module orient- 1	LG63124	01	Non AC Chair(EOG) Car (Sanitary facility to LJ63004 & LJ63153 for ref. only)
	J2.	Lavatory module orient- 1	LG63227	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.	Out Side Wash Basin with Dust bin below	LW63163	02	
K.	K1.	Lavatory module orient- 1	LG63227	01	Antyodaya Deendayalu GS coaches with (Sanitary Facility to LG63225 for ref. only)
	K2.	Lavatory module orient-1	LG63124	01	
	K3.	Lavatory module orient -2	LG63125	01	
	K4.	Lavatory module euro -2 With	LJ63107	01	
	K5.	FRP Covering	LG43165	01	
	K6.	Attachment wall.	LP64257	01	
	K7.	Attachment wall	LP64258	02	
	K8.	Water Purification system	RDSO/2015/CG-04	02	
	K9.	Out Side Wash Basin with Dust bin below.	LW63163	02	
L.	L1.	Lavatory module orient- 1	LS63137	02	


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	L2.	Lavatory module Euro -2	LS63143	01	SCN with Wider Window (Sanitary Facility to LS63006 & LS63142 for ref. only)
	L3.	Lavatory module Euro-2	LS63139	01	
	L4.	FRP Covering	LS43153	01	
	L5.	Attachment wall.	LP64257	02	
	L6.	Attachment wall.	LP64258	01	
	L7.	Waste bin Arrangement	LE63100	01	
	L8.	Out Side Wash Basin with Dust bin below	LW63163	02	
	M.	M1.	Lavatory module orient -2	LS63141	
M2.		Lavatory module Euro -2	LS63143	01	
M3.		Attachment wall.	LP64258	02	
M4.		Waste bin Arrangement	LE63100	01	

5) **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.
However for Non AC Coaches gel coated surface finish panels shall be provided .
- b) 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.
- c) 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:**
- i) Wash basin sink shall be of Bright Finish: AISI 304, Top and Front surface shall be FRP solid surface gel coated with **granite granular effect finish for AC Coaches.**
- ii) For Non AC Coaches sink shall be bright finish: AISI 304, **Top and Front surface shall be FRP solid surface with gel coated finish.**



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- f) **Inside Waste Bin Arrangement below Wash Basin:** Semi-cylindrical stainless waste bin of suitable capacity with brushed finish to match the profile of wash basin.
- g) **Outside Waste Bin Arrangement below Wash Basin:** Semi-cylindrical stainless wash basin with SS bin of suitable capacity with brushed finish to match the profile of wash basin.
- h) **Water purification system** to specification RDSO/2015/CG-04 will be fitted only in Antyodaya / Deendayalu GS Coaches.
- i) **Scrapper Mating:** Scrapper matting as per MDTS-229 shall be provided on complete lavatory floor area except pan/commode in all LHB coaches.
- j) **Lavatory Window panel:** Lavatory Window panel to drg. No. 1 10113.0.30.400.057 with 01 no. Qty per toilet is to be provided.
- k) **Out flow mounting arrgt:** Out flow mounting arrgt. drg no. to 2 10113.0.30.095.172 with 01 no. Qty per toilet.
- l) **Soap dispenser:** Soap dispenser with cage shall conform to RCF specification MDTS-209 in AC coaches.
- 6) **Other features and requirements :**
- a) Lavatory wall panel should have double side finish i.e. there is no HPL pasted outside.
- b) Lavatory door aluminum powder coated with matching colour for AC coaches only.
- 7) **Electrical Requirements:**
- a) Following Electrical items should be procured only from the sources as per RCF's approved vendor directory. **Reference: Electrical Design's letter no. ED-2008 dated 29.06.2009.**
- b) Light to drg. no. LW76033 'Alt.-'c' 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.
- c) Terminal connector to EDML-037 Rev 'a' of quantity 01 per toilet to be provided.
- d) Polyamide flexible conduits PG-16 (in meters) to spec. EDTS-291 Table-1, Item-5 to be provided for wiring of lavatory light, razor socket and limit switch etc.
- e) Clamping arrangement of for double conduits to be provided over the lavatory area to drg. no. LP76001 Item-8.


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- f) Cable jacket system, item-8 to EDTS138 to be provided.
- g) Cable duct A45, Standard Slot Grey to Cat. No. CDA4545SG to be provided.
- h) Cable duct cover A45, standard slot gray to cat. No. CCA45SG.
- i) Cable binder 3.6 x 200 cat. No. HOD etc. to be provided.
- j) E-beam copper cable of size 1.5 sq mm to be used for wiring from RCF approved sources.
- k) Mounting arrangement for WAGO connector to be provided on wall of Module.
- l) Limit switch in the lavatory door frame & its wiring to be provided.
- m) The route of Electrical wiring shall be as per Sked no. 598.

8) **Plumbing:** Supply and Fitment of Plumbing Pipes and Pipe fittings shall be in the scope of RCF.

9) **Key infrastructure requirements:**

- a) The tenderer shall have plant, machinery, infrastructure requirements, testing facilities for FRP components and quality control requirements as per Section-B of MDTS-133.

10) **Approval of prototype sample:**

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


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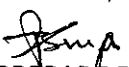
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11). First Article Inspection

- a) 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.
- b) Validation of special processes (including outsourced processes) will preferably be carried out as per ISO/TS 22163:2017 requirement.
- c) The tenderer must submit quality assurance plan (QAP), work instructions and audit report of special processes along with pilot sample.
- d) The sample shall undergo following tests to assurance:
 - i) Dimensional checking.
 - ii) Tests to be conducted on FRP components as per MDTS-133..

12) Warranty :

The supplier shall give warranty for the complete FRP Lavatory Module including individual parts against failing or proving unsatisfactory in service due to defective design, material or workmanship within 84 months from the date of supply or 72 months from the date of commissioning of coach, whichever is earlier and shall replace the same at his own cost and risk. Name of manufacturer with month & year of manufacture along with manufacturing details on metallic plate should be displayed at some suitable location not visible to passengers, ordinarily.


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Table-2

Annexure-‘ A’

List of items to be supplied loose by the supplier

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

Note:

1. Necessary clearance should be provided between the toilet floor (with covering of 3-M Scrapper 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 approved from CDE/RCF.**
4. The design and drawings of any item other than RCF/LHB design shall be got approved from CDE/RCF.


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Table-3

Annexure-B

List of enclosed drawings

S. No	Drawing no/spec.	S. No	Drawing no/spec.	S. No	Drawing no/spec.
1.	1 10113.0.30.000.003	26.	LW76033.	51.	LW63198
2.	1 10113.0.30.000.005	27.	EDTS138	52.	LE63158
3.	LE63101	28.	LP76001	53.	LP64257
4.	1 10112.0.30.000.004	29.	EDML-037	54.	LP64257
5.	1 10113.0.30.000.013	30.	EDTS-291	55.	LZ63104
6.	1 10112.0.30.000.014	31.	EDML-047	56.	LA63003
7.	1 10113.0.30.000.015	32.	Sked no. 598	57.	LE63001
8.	MI004371	33.	RDSO/2015/CG-04	58.	LH63001
9.	LW64143	34.	LD63273	59.	LD63004
10.	LW64144	35.	LD63274	60.	LD63296
11.	LE63100	36.	LD63275	61.	LJ63004
12.	LH63102	37.	MDTS-133	62.	LJ63153
13.	MI004544	38.	MDTS-229	63.	LG63225
14.	MI004545	39.	LD63294	64.	LS63006
15.	LW63163	40.	LD63295	65.	LS63142
16.	MI004725	41.	LZ64104	66.	ET63147
17.	LW56424	42.	LZ64105	67.	LG43165
18.	LW56475	43.	LS63124	68.	LS43153
19.	1 10113.0.30.095.083	44.	2 10113.0.30.095.172	69.	MDTS-209
20.	1 10113.0.30.095.002	45.	LG63124		
21.	CC64254	46.	LG63227		
22.	CC63933	47.	LS63137		
23.	2 10113.0.30.400.006	48.	LS63141		
24.	1 10113.0.30.400.057	49.	LS63138		
25.	LW63182	50.	LE63157		


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