


	<b>Title: Conformity Assessment Scheme for Rolling Stock</b>	<b>DOC No: RITES/QA/CAS/RS/01</b>  <b>Issue No.03</b>
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**Conformity Assessment Scheme  
of Rolling Stocks as per ISO/IEC  
17065:2012 requirements**

**Prepared By:-**

**QA Division,  
RITES Limited**

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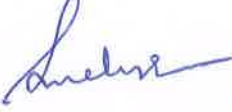
1. **Purpose** : To define the Certification process as per ISO/IEC 17065: 2012 for Railway Rolling Stocks that are complying to the new designs incorporating technological advancements in Indian Railways for more Efficient and Cost-Effective transportation.
2. **Scope** : Certification of Rolling Stocks such as wagons, Coaches, trainsets, locomotives etc. as per the agreement with the client and which may include design review of a new/modified product, process assessment, and product inspections.

3. **Scheme** :

**3.1 General Requirements of Scheme:**

**3.1.1** This Scheme has been developed by QA Division of RITES for Conformity Assessment of Rolling Stock. RITES Ltd., is a Govt. of India enterprise under Ministry of Railways and is a Legal entity duly registered as a company under Company Act 1956. RITES offer multidisciplinary services for consultancy, engineering and project management in infrastructure and transport-related areas. QA Division is an integral part of RITES. The scheme developed is based on the prevalent Indian Railway Guidelines, Indian Railway Standards, IS Specification, International Standards. This Scheme covers Conformity Assessment of identified stages of process & product characteristics. The Client shall carry out the production in line with the approved Design, QAP & other Indian Railway specifications, Standards, International Standards as applicable.

**3.1.2 RITES QA Division as a scheme owner shall take full responsibility for the objectives, the content and the integrity, validity and robustness of the scheme** The Scheme developed by RITES Limited, QA Division shall be reviewed for its robustness and improvement as per the learnings during the course of implementation. The risks/liabilities arising from implementation of the scheme have been identified and necessary mitigation plan have been prepared to safeguard the objectives of the conformity assessment. RITES, QA Division is covered under Professional Indemnity Insurance Policy having adequate provisions commensurate with the level & nature of liabilities.

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### 3.2 Development of Conformity Assessment Scheme

**3.2.1** *Conformity Assessment Services of RITES are provided through its QA Division, having Head Quarters at Gurgaon and supported through 5 Regional Offices and Sub-Regional Offices under their control. Organization Structure for RITES QA Division, bringing out the lines of control, is depicted by Annexure 1A & IB of CAS Manual.*

*The organization set up is well structured and managed to safeguard the impartiality and independence. In addition, the Conformity Assessment activities are totally independent of other activities of RITES through its operation and reporting structure. The operations of corporate QA and Regional/Sub-Regional **Inspection** offices are controlled through an independent **Divisional Head** who reports to Director (Technical). All Conformity Assessment services are rendered by the Regional Inspection Offices as per their jurisdiction. An adequate number of qualified and trained personnel are maintained to ensure its capability towards satisfactory performance of Conformity Assessment activities within the scope of accreditation. The structure for operation and management of the scheme had been defined. The team assigned for development, operation and management of the scheme are experienced in technical and conformity assessment aspects of certification, inspection, validation /verification.*

*The team nominated for development of scheme consists of officers with Railways background and having experience in management systems implementation of the level of DGM and above headed by **Head Coordination- Certification** at CO.*

**3.2.2 RITES QA Division as the owner and developer of the scheme** *understands the assumptions, influences and consequences involved in establishing, operating and maintaining a scheme on an ongoing basis. The scheme has been developed to build confidence to user Railways for ensuring Quality Assurance in supply of rolling stocks by the manufacturers as per laid down Railway, National and International Standards. The related influence and consequences of the scheme have been analysed. The scheme will be influenced by the forthcoming demand of rolling stocks from Railways. The consequences of the scheme may be non profitability in the beginning and the liabilities on account of the failure of rolling stock in operation. The liabilities have covered under professional liability insurance policy taken by RITES. In development of the conformity assessment scheme a balance of*

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interest of stakeholders (Railways, client, RITES, CB etc) has been kept in view while establishing, maintaining and operating the scheme.

*RITES QA Division shall maintain the scheme and provide guidance to stakeholders as and when required. The Scheme document shall be reviewed periodically for improvement based on the experience gained during implementation*



**3.2.3** The details of the scheme framed are as under. The scheme document shall be made available in the public domain once approved by CB.

### **3.3a Evaluation Process**

**3.3.1a** *The client shall submit the application towards certification of the products against the scheme along with details of the organization, the processes, quality checks, manpower, reference documents such as drawings, list of standards against which the product has been designed, manufactured and tested, a brief of the manufacturing process, tests conducted/ to be conducted, existing or proposed outsourced process, proposed controls to be exercised at different stages, QAP, applicable fee, etc. **Guidelines given in the document G105 (Standards of infrastructure, manufacturing, testing and Quality Assurance system to qualify as Railway wagon Builder) shall be used to verify the processes, availability of required machinery & test equipment etc. In case of Rolling stock, the list of standards against which the products are to be evaluated is given in the QAP approved by IR. The QAP is developed by the manufacturer against the drawings which have been approved by RDSO. The application along with reference documents shall be reviewed by RITES nominated person, ensuring the impartiality of the process. Once the entire information is received and found in order, it will be taken up for evaluation as per the identified stages which may include:***

- Design Review*
- Prototype approval*
- Type testing*
- Process evaluation*
- In process checks*
- Final Inspection*
- Certification decision*

**For the purpose of certification, the client shall submit a request through application in the prescribed form (available on web site) along**

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**with relevant information and evidenced documents. The application shall be submitted along with applicable fee.**

**The design review shall be carried out in case of new design and if so stipulated in the requirements listed out by IR. The design once reviewed shall be submitted by the manufactures to Railway board for approval. The manufacturer shall take up production of a prototype for approval of design by the Railways Board. The prototype shall be duly inspected by ISA as per approved QAP and then taken up for type testing. However, in case of an existing approved design of the rolling stock, the action initiates from process evaluation. Various stages associated with the evaluation for a new design review and evaluations of stages for an existing approved design are given in Annexure A. The tests are conducted in the manufacturer premises through witness, verification or review of documents against the requirements listed in the approved QAP. On acceptance of the application, a visit may be paid to the manufacturer's location to ascertain facility of different processes etc. and estimate the man-days required including the need for any specialist during the assessment.**




*RITES shall submit a quote to the client with all details of man-days charges, other arrangements/access to be provided by the client, and advice will be sent for submission of the design for review by RITES. The client shall clearly bring out the specifications against which the design has been evaluated.*

### **3.4 Conformity Assessment of offered lot**

After the prototype approval and issue of Final Speed Certificate, the client shall offer a lot of Rolling Stock manufactured under similar conditions & having the same design, production etc. This lot of homogenous products shall be tested for the purpose of Conformity Assessment. For conformity assessment of lot offered the sample size shall be as under:

S.No.	Type of rolling stock	Sampling
1	Trainset (eg.Vande Bharat)	100%
2	Coaches	As per IS 2500:2000 Part-1, AQL1.5 GIL III
3	Wagons	
4	Locomotives	

### **3.5 Certification decision and Scheme**

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*On approval of the product in line with the specifications after verification as per the prescribed method of testing, the client shall be granted a certificate of license for the product applied. The scheme type 1b shall apply and the client shall ensure compliance to the Terms & conditions for use of Licence mark.*

***Upon grant of certification licence, the client shall be issued a letter indicating the scope of licence, product covered, standard against which the licence has been granted etc. A final inspection report (when requested) shall be issued to the client.***

**3.6 Use of Certification Mark:**

Upon grant of the certification licence, the client shall be permitted to use the RITES Certification mark on the product certified, in line with the stipulated instructions. The name of the client along with the products for which it has been certified shall be published on the website.

**3.7 Termination, suspension or withdrawal of Certification:**

A Certification licence may be terminated, suspended pending remedial action or withdrawn by RITES based on non compliance to the conditions of grant of licence or upon request from the client (for withdrawal)



**3.8 Complaints & Appeals:**

A documented procedure exists to receive, evaluate and take decision on complaints and appeals. The client can track the status of the same through the SBU head –Region. The information from the client shall be kept confidential.

**3.9 Operation and Maintenance of the scheme.**

RITES QA Division, has established a procedure for regularly reviewing, the scheme to ensure that objective of the scheme is met keeping in view of participation of stake holders on continued basis.

**3.10 Requirements wrt Conformity Assessment Scheme.**

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Requirements of CAS wrt evaluation of CAS, Conformity assessment activities, alignment with other standards requirements have been detailed above in 3.4 and procedure for Development, Operation and Management of the Scheme.

*The Conformity Assessment Schemes does not prescribe any additional requirements for RITES as CAB. The requirements for CAB involved in the conformity assessment process, shall generally not be in contradiction to the requirements of the applicable standards for CABs (ISO/IEC 17021-1, ISO/IEC 17065, ISO/IEC 17020 etc). They may be additional or stricter than those specified in the relevant standards*

### 3.11 **Evaluation of Scheme**

*The scheme offered by QA Division RITES Limited can be evaluated as per the requirements of ISO 17065:2012 and the details provided in the various stage of the Scheme.*

### 3.12 *The scheme shall be operated in line with the*

- Documented CAS Manual (CAS-M-17065)
- Documented Procedures (RITES/QA/P-1 to 14)
- Applicable Formats as given in Procedures
- Applicable documents of the internal and external origin etc.



### 3.13 **Responsibilities:**

*Application Review : Nominated Controlling Manager-**Certification***  
*Design Review : Nominated Design Engineer*  
*Client Review : Nominated Engineer as approved by **SBU Head***  
*Evaluation :Nominated Controlling Manger-**Certification***  
*Recommendation : **SBU Head** based on the review of Nominated Controlling Manager*

*Certification decision: **Head Coordination- Certification at CO***

*Issue of Certification: **SBU Head***

*Encl: 1. **Annexure-A (Various stages for new design review and evaluations)***

	<b>Title: Various stages for new design review and evaluations- Annexure- A</b>	<b>DOC No: RITES/QA/CAS/RS/01 (A)</b>  <b>Issue No.03</b>  <b>Page 1 of 8</b>
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## 1.0 Stages of Rolling Stock Design Review

1.1 These guidelines are laid down as part of this doc for "Approval of new Rolling Stock Design".

Evaluation of various types of Rolling Stock Designs shall be done broadly as per guidelines issued by IR/RDSO and national & International standards applicable to Rolling Stock i.e EN, UIC, AAR, IEEE, BS, ICF/RCF specifications, IS etc.

Equivalent IS standards of various standards, if applicable shall also be acceptable.

1.2 Various stages *generally* involved in approval of Rolling stock design are as under (Ref: Railway Board New Wagon Design Policy letter no. 2007/ M(N)204/3-Part (2) dated 24.12.2021:

- Stage I - Concept Design Approval for the proposed Rolling Stock
- Stage II - Detailed Design Approval (drawings and FEA)
- Stage III - Prototype Manufacturing, Static Testing and Design Validation
- Stage IV - Dynamic testing (Oscillation Trial) and speed certificate
- Stage V - Introduction of new Rolling stock in Open Line


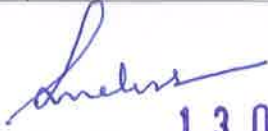
### 1.2.1 Stage I- Concept Design

Design proposer (DP) will prepare and submit the proposal of New Design of Rolling Stock to Committee on Design and in principle clearance will be given by the committee. The proposed design will be given RITES with the following details:

- a) Proposed design shall conform to requirements of IR SOD-2004 or latest, issued by Railway Board. Basic design parameters of proposed rolling stock design to be submitted for concept design approval are as under:

#### PARAMETERS

*(As per Annexure-B Guideline for New Wagon Design (NWD) Policy of Railway Board and the conditions applicable to New Wagon Design policy are given in Annexure-A of Guidelines for NWD Policy)*

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<b>A. General</b>
1. Axle Load (in tonnes)
2. TLD (in tonnes/meter)
3. Tare weight of complete Rolling Stock (in tonnes)
4. Payload of a Rolling Stock (in tonnes)
5. Payload to tare weight ratio

<b>B. Overall Dimensions (in millimeters)</b>
1. Length over coupler faces
2. Inside Length
3. Length between bogie centers
4. Length over head stock
5. Coupler height over level Track from rail level
6. Overall width
7. Inside width
8. Floor height from rail level
9. Inside height

b) Technical data of the proposed rolling stock design (*Annexure-C of Guideline of NWD Policy*)

Following technical data of proposed Rolling Stock design shall be submitted:

1. Weight & center of gravity of each component and CG of the equipment installed on the Rolling Stock body
  2. Calculation of un-sprung mass
  3. Vogel's layout
  4. Throw-over at headstock/Rolling Stock
  5. Stress analysis of all major stress bearing parts of the under frame under static & dynamic conditions
- c) General arrangement diagram - Necessary drawing showing dimensions of the Rolling stock w.r.t IR SOD-2004 or latest
- d) Design considerations like factor of safety, dynamic augment, fatigue allowance criteria (general or component specific)
- e) Fatigue life of components (other than IRS components) in Kms or in number of Years. Fatigue life of the Rolling stock body design shall be assessed subject to the availability of details/information with IR. (*Annexure-F, . Clause 5.3.2.7 e) of guideline for NWD policy*).

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- f) Type of Material used in Rolling stock Construction
- g) Type of Rolling Stock (*Annexure-I of guideline for NWD policy*).
- h) List of IRS components being used in the proposed Rolling Stock design
- i) List of non-IRS components being used in the proposed Rolling Stock design

RITES will check the suitability of the concept design with respect to IR standards i.e. IR SOD-2004 or latest and other relevant standard as applicable to the design.

### 1.2.2 Stage II- Detailed Design Approval of the proposed Rolling Stock

Rolling Stock designer shall approach to RITES and submit the concept Information submitted to Committee for scrutiny and comments and accordingly proceed with the detail of Rolling Stock.

Following information relating to Rolling Stock body & assemblies shall be provided by the designer to RITES:

#### a) Rolling stock body

- i) Product structure plan: Key elements such as components, sub-assemblies & assemblies form the final product.
- ii) Design drawings of key elements: Main principle of design accompanied by a short description & as far as necessary for understanding of the design.
- iii) Criteria for the selection of materials & methods for their evaluation.
- iv) Details of various structural joints.


#### b) Bogie, including its components e.g. axle bearing, wheel & axle, etc.


The selected bogie shall be IRS standard bogie as per RDSO specification. (*Annexure-I S.no.1 of guideline for NWD policy*)

#### c) Brake system



The Rolling Stock shall be fitted with brake system (*Annexure-I S.no.2 of guideline for NWD policy*) depending on the type of Brake System used as per the latest RDSO specifications and designer will share the following information:

- Air brake system overview, components, and operation
- Brake schematic diagram
- Brake rigging diagram
- Brake power diagram
- EBD Calculations for both dry and wet conditions

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- Parking brake
  - Types of Brake block
- d) Centre Buffer Coupler**  
 The proposed Rolling Stock designs shall be with RDSO approved standard coupler to RDSO specification. *(Annexure-I S.no.3 of guideline for NWD policy)*
- e) Information about design methods and calculations**
- Spec/ Standards used in proposed design for Rolling Stock
  - Results of analysis & input data.
  - Results of FEM analysis for the Rolling Stock body for different load conditions, duly verified shall have to be submitted by designer.
  - Details of computer program used for FEM analysis, boundary conditions, load conditions, etc. considered in the FEM analysis
  - Validation report of the FEM analysis results, after prototype testing.
- f) Technical data for the Rolling Stock regarding C.G., Weight distribution, curve negotiability, throw over at head stock, etc. to be submitted.**
- g) Information about maintenance and examination of proposed Rolling stock Design: -**
- i. Reliability, Availability, Maintainability and Safety confirming to EN 50126/IEC62278
  - ii. Reliability of electronic components shall conform to IEC 61709.
  - iii. Maintenance standards including clearances and tolerances at various locations & permissible limits of wear for train examination in open line, periodic overhaul (POH), routine overhaul (ROH) etc.
  - iv. Inspection procedure and periodicity of various inspection schedules in detail including the gauging practices to be followed for train examination in open line, periodic overhaul (POH), routine overhaul (ROH) etc.
  - v. Maintenance procedures in detail
  - vi. Machinery and equipment required for maintenance
  - vii. Gauges, jigs & fixtures required for maintenance
  - viii. Space requirement for maintenance activity
- h) Information about testing: -**
- i. Test standard: The proposed Test Scheme for the proposed Rolling stock design shall conform to the 'Service Worthiness Tests and Analyses', as recommended by RDSO/IR.

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ii. However, where this is not being followed, the details/information shall be furnished by the designer.

- a) Complete test schedule for Rolling Stock & components
- b) The test schedule should reflect material, components, sub – assemblies, assemblies & the finished product and will distinguish between:
  - Type acceptance tests, Production Tests & Quality Check Tests
  - Test on first article or on further Rolling Stock with test sequence
  - Location of test site i.e. contractors works, etc
  - Tests description, procedures and documentation of tests
  - Details of Test equipment required
  - Format of recording various test results




i) **RITES will scrutinize the information submitted and indicate changes, if needed. Clarification/modifications, if asked for by RITES.**

### 1.2.3 Stage III - Prototype Manufacturing, Testing and design Validation

The approved design shall then be taken up for prototype manufacturing by the client under intimation to RITES Inspection of the prototype of Rolling Stock during its manufacturing shall be conducted by RITES

For facilitating this, the designer shall provide:

- (i) Drawings for sub-assemblies, assemblies and the final product. These will be accompanied by quality requirements, test and inspection requirements.
- (ii) Information about quality Control which includes Quality Assurance Plan (QAP), Welding Procedure System (WPS) and related test plan.
  - The various tests to examine correctness of design & evaluate the safety requirements will be conducted.
  - Subject to the successful completion of testing and design validation\*, oscillation trial will be conducted.
  - Manufacturer facilities will be used for testing of Rolling Stock's parts at various stages.
- (iii) Following speed certificates for conducting oscillation trial:
  - Provisional speed certificate for movement of Rolling Stock at restricted speed.
  - Speed certificate for conducting oscillation trials.

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Note: \*Prototype is the first product which will be made as per the approved drawings, and this is part of design validation. Although design validation will be completed when proto testing, static load testing and dynamic testing will be completed.

#### 1.2.4 Stage IV- Oscillation Trial and issue of Final Speed Certificate

- a) The designer shall make the prototype Rolling stock available at the place nominated for conducting Oscillation trials after the issue of Speed Certificate.
- b) Oscillation trials of the prototype Rolling Stock shall be conducted to confirm that the design will exhibit running characteristics as per the limits specified.
- c) After successful completion of Oscillation trials, RDSO will issue final speed certificate.
- d) RDSO/IR facilities will be used while conducting the Oscillation trials on IR

#### 1.2.5 Stage V - Introduction of new Rolling stock in Open Line

- After issue of Final Speed Certificate, provisional approval will be given by the Railway Board for a mutually agreed number of Rolling Stock to be manufactured along with required number of brake vans.

#### 1.3 Production Process:- Stage, in process and Final inspection of Rolling Stock




*Stage, In process and Final Inspection will be carried out on the basis of approved QAP having reference to concerned product specification, sampling, type of check, responsibility etc. For testing of components/ sub-assemblies/assemblies during Stage, In process and Final Inspection of Rolling stocks, main specifications listed in QAP are generally followed. The typical stage of inspection include:*

##### a) Raw material/Bought out items:

Raw material and items procured will be inspected at manufacturing works as per the QAP.

##### b) Stage inspection of Rolling Stock will be conducted in following major production shops:

1. Sheet metal
2. Shell (fabrication of sub assembly, shell assembly)
3. Bogie fabrication and assembly including wheel assembly
4. Painting and Garnet
5. Furnishing (Electrical& Mechanical)

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**1.4 Evaluation Process:-**

The total quantity of the rolling stock offered for inspection shall be indicated by the client duly identified with its numbers.

The assessor shall undertake final inspection of the material as per approved QAP. Where specified, samples drawn shall be tested either in the client laboratory or in an external approved (ISO 17025) lab. The testing frequency shall be as per QAP.

**Encl: 1. Annexure-1 (Normative reference for Scheme of Rolling Stocks)**



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**ANNEXURE-I (Normative reference of standards use for Rolling stock and its key Components)**

S.No.	Title of Document	Document number	Source	Distribution	Remarks
<b>A Rolling Stock</b>					
<b>Wagons</b>					
1	1. WD-11-BOXN-2001 2. WD-01-BOXNCR-96 3. WD-03-BOXNHS-2003 4. WD-02-BOXNHA-05 5. WD-05-BOXNLW-2004 6. WD-01-BOXNAL-04 7. WD-02-BOXNHL-2011 8. WD-12-BOXN-(Rehab)-2006-Rev-01 9. WD-16-BOXNR-2010 10. WD-03-BOXN25-08 11. WD-01-BOXN-25M-09 12. WD-12-BOY-2004 13. WD-02-BOY-2017 14. WD-02-BOY25t.-2006 15. WD-02-BOSTHS-2011 16. WD-06-BRN-2011 17. WD-05-BRN-(Rehab)-2003 18. WD-01-BRN25-07 19. WD-02-BRHNEHS-09 20. WD-01- BRHNEHS-(MBS)-09 21. WD-02-BRSTN-2010 22. WD-01-BTRO-2010 23. WD-02-BCNAHS-08 24. WD-02-BCFC-2020 25. WD-02-BCNHL-11 26. WD-02-BCNAHSM1-2017 27. WD-01-BCLM-2006 28. WD-01-CRF-2012 29. WD-01-BFNSM22.9-2015 30. WD-05-BFNS-2017 31. WD-13-BOBRN-2011 32. WD-01-BOBRN25-2007 33. WD-03-BOBSN-11 34. WD-01-BOBSN25-08 35. WD-01-BOBSNS-2019	<b>Specifications for Railways Wagons</b>	Railways Board	QA Division	

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<b>ANNEXURE-I (Normative reference of standards use for Rolling stock and its key Components)</b>					
<b>S.No.</b>	<b>Title of Document</b>	<b>Document number</b>	<b>Source</b>	<b>Distribution</b>	<b>Remarks</b>
	36. WD-01-BOBRNAL-05 37. WD-09-BOYN-94 38. WD-04-BOBYN-11 39. WD-09-BTPN-201 40. WD-01-BTOH-09 41. WD-04-BTCS-97 42. WD-02-BTAP-05 43. WD-07-BTPNS-02 44. WD-02-BTFLN-2017 45. WD-01-BRPN-2006 46. WD-01-BCCN-97 47. WD-01-BCACB-08-(Rev.-01) 48. WD-01-BLCS(A&B-Car-2018) 49. WD-02-BWTB-2009 50. WD-02-24 AXLE 51. WD-28-Axle-Spl. Wagon-09 etc.				
<b>2</b>	<b>Railway Board Doc No 2007/M(N)/204/3-Part(2) dated 24.12.2021</b>	New Wagon Design Policy	RB	QA Division	
<b>3</b>	<b>G-105</b>	Standard of infrastructure, manufacturing, testing and quality assurance systems to qualify as Railway wagon builder	RB	QA Division	
<b>4</b>	<b>G-72</b>	General standard specification for fabrication of wagon under frames & bodies	RB	QA Division	
<b>5</b>	<b>Locomotive</b> 1. MP-0.0800-115 2. MP-0-0800-108-Rev-02-Mar22 3. MP-0-0800-109-Rev-00-Oct22 4. MP-0-0800-20-Rev-00-Jul-93	Specification for railway locomotives	RB	QA Division	



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**ANNEXURE-I (Normative reference of standards use for Rolling stock and its key Components)**

S.No.	Title of Document	Document number	Source	Distribution	Remarks
	5. MP-0-0800-26-Rev-00-Sep-94 6. MP-0-0800-27-Rev-00-Feb-95 7. MP-0-0800-73-Rev-00-Nov22 8. MP-0-0800-74-Rev-02-Jan22 9. MP-0-0800-82-Rev-00-Dec22 10. MP-0-0800-83-Rev-00-Dec22 11. MP-0-0800-93-Rev-00-Dec22 12. MP-0-0800-96-Rev-00-Jul22 13. MP-0-0800-97-Rev-00-Jan22 14. MP-0-2402-23-Rev-01-Jun22 15. SRS/F 7341 etc.				
6	<b>Trainsets and Coaches</b> 1. ICF MD SPEC-398 (WTA-527) Rev 0, Issue 1 2. ICF MD SPEC-404 (WTA-529) 3. ICF MD SPEC-405 (WTA-532) 4. RDSO/2013/CG-10 (Harbour Line EMUs) 5. RDSO/CG-18002 (Aluminum passenger coach) 6. LHB Specification MMDTS 17006 Rev-00 7. QAP of Wheel Shop for MCF MCF/RBL/QAP/Wheel Shop 8. QAP of Manufacturing of Bogie Complete as Per MCF/RBL/QAP/Bogie Complete	Specification for railway Trainsets & Coaches	RB	QA Division	



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Page Rev. No. Nil

**ANNEXURE-I (Normative reference of standards use for Rolling stock and its key Components)**


S.No.	Title of Document	Document number	Source	Distribution	Remarks
	9. QAP of Manufacturing of Shell Assembly as per MCF/RBL/QAP/Shell Assembly dt. 01.06.2018 10. QAP of Furnishing Shop as per MCF/RBL/QAP/QMF 7018 dt. 16.11.2019 11. SRS/F 7340 12. SRS/F 7342 13. C(E):WJC(SS): 2012, Feb 2014 14. C(B): WJCC(SS): 2012, Feb 2014 15. C(B): WEC(SS): 2013, Feb 2014 16. C(B):WEC(PS)2013, Feb 2014 17. BR/Elec-W/WJC & WJCC/66/2014 dt. 10.04.2014 18. BR/Elec-W/WJPCR/64/2014 dt. 10.04.2014 19. BR/Elec-WEC/65/2014 dt. 10.04.2014 20. Welding Procedure & WD-WPS-BCNAHSM1 (design D)-2017 rev1				
<b>7</b>	<b>Rolling Stock Components</b>				
	IS: 1180 (Part-1):2014 with amendment 1 and 2	Distribution transformer	RB & private Party	QA Division	
	IRS R-19/93 Pt.III IRS R-19/93 Pt.II Rev.4 & Drg.No.LW02103	Wheels (Rough Turned) for FIAT IR Bogies (LHB)			
	CLW Spec. No.4TMS.095.002 REV.0	Polyimide cover Traction Motor			
	RDSO Spec no. RDSO/2006/CG-12 (Rev-1)	PVC flooring			

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<b>Approved by</b>  <b>Effective date:</b>	 <b>13 OCT 2022</b>	<b>Page Rev. No. Nil</b>

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S.No.	Title of Document	Document number	Source	Distribution	Remarks
	Amd no-4 of Aug, 2018 As per MDTs 075 Rev 3 RDSO Spec- ELRS/Spec/ELC/0019 Rev-4 TI/SPC/OHE/SNS/0000 & GTP IRS R 16/95 Drawing No. 1903149 Ver "a" and Technical Specification No. 17.477.100.02 I0031534-SKE-1277 / 10245595-SKE-0722 /10245777-SKE-0724 / 10245789-SKE-0725 / 31PD-5428-A1/31PD5450A /31PD5416A-A1 / D99999 VA-A4 Dampers Spec. No. T.S.1756010003 Packing Instruction PI 144	Sound Insulating Wood Harness- Cables & Polyamide conducts Short Neutral Section Assembly Axle sets for BFNS Wagon PAD for secondary suspension Piston Ring			
	IS 8183:1993, IS :3144/1990, IS: 3346/1980 ICF/MD/SEC-167A Issue Status01, Rev 05 Amd. 1&2 RDSO/PE/SPEC/TL/0091-2016 Specification No. 17.248.100.05 along with design MD 2315 RDSO SPEC. NO. SPEC/E-14/01(PT.-I) REV-II, FEB 1993 WITH AMDT.4	Damper Rockwool Insulation Panel Assembly LED Light Primary & Secondary Springs Flexible elastomeric cables single core			

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	<b>Approved by</b>  <b>Effective date:</b> <i>Sudhakar</i> 3 OCT 2022	<b>Page Rev. No. Nil</b>

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<b>S.No.</b>	<b>Title of Document</b>	<b>Document number</b>	<b>Source</b>	<b>Distribution</b>	<b>Remarks</b>
	AS PER DRG. NO. 74115001 ALT C COL-I MATERIAL SPEC. RDSO SPEC-CK 201  IS: 14255:1995	End wall complete (for ISCN -LHB coaches)  Aerial bunched cable (for XLPE & PE-upto 1100V)			
<b>B Guideline &amp; Specification</b>					
<b>1.</b>	<b>BS EN 50126-1:1999</b> <b>Incorporating corrigendum no. 1</b>	Railway applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS) —	EN		
<b>2.</b>	<b>BS EN 50126-2:2017</b>	Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS)	EN		
<b>3.</b>	<b>PD CLC/TR 50126-3:2008</b>	Railway applications — The specification and demonstration of Reliability, Availability, Maintainability			
<b>C Referred Standards</b>					
<b>1</b>	Conformity Assessment - Requirements for bodies certifying products, processes and services (First Edition)	<b>ISO 17065:2012</b>	BIS	QA Division	

	<b>Title: Various stages for new design review and evaluations- Annexure- A</b>	<b>DOC No: RITES/QA/CAS/RS/01 (A)</b>  <b>Issue No.03</b>  <b>Page 14 of 14</b>  <b>Page Rev. No. Nil</b>
<b>Approved by</b>  <b>Effective date:</b> <i>Shelva</i> <b>13 OCT 2022</b>		

<b>ANNEXURE-I (Normative reference of standards use for Rolling stock and its key Components)</b>					
<b>S.No.</b>	<b>Title of Document</b>	<b>Document number</b>	<b>Source</b>	<b>Distribution</b>	<b>Remarks</b>
2	Conformity Assessment- Requirements for the operation of various types of bodies performing Inspection (First Revision)	<b>ISO 17020:2012</b>	BIS	QA Division	
3	General requirements for the competence of testing and calibration laboratories	<b>ISO 17025:2017</b>	BIS	QA Division	

Note: The above list of standards is indicative only and other products along with the standards will included based on design approvals by Railway Board.