INDIAN RAILWAYS

PARTICULAR SPECIFICATION

FOR

BOGIE COVERED WAGON

TYPE ‘BCNAHSM1’

BROAD GAUGE

(1676 MM)

ISSUED BY

RESEARCH DESIGNS AND STANDARDS ORGANISATION
MINISTRY OF RAILWAYS
LUCKNOW - 226 011

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## ANNEXURE

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INDIAN RAILWAYS
PARTICULAR SPECIFICATION FOR
BROAD GAUGE BOGIE COVERED WAGON TYPE 'BCNAHSM1'

1. SCOPE

1.1 This Specification covers the particular requirements for the manufacture and supply of Broad Gauge Bogie Covered Wagon Type 'BCNAHSM1' strictly to the relevant drawings of relevant wagon outlined in RDSO Index Drg.No.WD-09056-S-01 and General Standard Specification No. G-72 (Latest Revision) which can be had from Director General, R.D.S.O., Lucknow-226011. These wagons shall be supplied complete in all respects.

1.2 Cast Steel bogie complete together with bogie brake rigging, wheels and axle sets with roller bearing mounted axle boxes along with Elastomeric pads thereon, top centre pivots, pivot pins and side bearer referred to in Clause 7.2, high tensile centre buffer couplers (non-transition) together with high capacity draft gears, striker casting, yokes, yoke pins, yoke pin support plates, as referred to in Clause 7.3 and complete Air Brake equipment along with pipes and pipe joints as referred to in Clause 7.4, shall be fitted with these wagons.

1.3 The Contractor shall prepare his own working drawings based on the aforesaid key design drawings and submit them to the `Engineers' for approval before undertaking production. The Contractor shall ensure that working drawings submitted for approval of the 'Engineers' are fully in accordance with key design drawings and deviations, if any, are specially pointed out. Approval of the 'Engineers' will only pertain to the design features, important controlling dimensions and the deviations from the design drawings specially pointed out by the Contractor. Corrections of the details in drawings will not be checked by the 'Engineers' and the responsibility for the same will be that of Contractor.

2. DEFINITIONS

2.1 `Purchaser' means the President of the Republic of India.


2.3 `Inspecting Officer' means the person, firm or Department nominated by the Purchaser to inspect the work on his behalf and the deputies of the Inspecting Officer so nominated.

2.4 `Contractor' means the person, firm or company with whom the order for the supply is placed and shall be deemed to include the Contractor's successors (approved by the Purchaser), representatives, heirs, executors and administrators as the case may be unless excluded by the terms of the Contract.

2.5 `Sub-Contractor' means the person, firm or company from whom the contractor may obtain any material or fittings to be used in the manufacture of the above parts.
WD-02-BCNAHSM1-2017  
(Supersedes WD-01-BCNAHSM1-2009)

3. **WELDING**

3.1 General requirements and comprehensive guidance with regard to edge preparation, fit up for welding, welding procedure and inspection of welded joints are contained in relevant Clause of General Standard Specification No.G-72 (Latest Revision) which can be had from Director General, RDSO, Lucknow-226 011. This should be strictly followed.

3.2 Wherever welding is specified or adopted in the manufacture of the wagons or in the fabrication of sub-assemblies and components, the manufacturer shall obtain the approval of his proposed welding procedure and sequence from the Inspecting Officer/Engineer. This, however, will not, in any way, reduce the Contractor's responsibility for satisfactory execution of the contract in all respects as stipulated in relevant Clause of General Standard Specification No.G-72 (Latest Revision).

4. **TESTING**

4.1 The `Pattern Wagon' shall be tested under load as detailed in relevant clause of General Standard Specification No.G-72 (Latest Revision). Clearances found between the various members of under frames and bogies shall be measured under tare, fully loaded, over-loaded and unloaded conditions and submitted to the Engineers through the Inspecting Officers.

4.2 One `Pattern wagon’ shall be manufactured by the supplier, manufacturing this wagon first time, for carrying different tests. This wagon will be squeeze load tested as per the relevant drawing of the relevant wagon outlined in the RDSO Index drawing no WD-09056-S-01 (latest Alteration) at the premises of the manufacturer in consultation with engineers, to establish design and manufacturing quality. Required test rig for squeeze load test shall be provided by the manufacturer. Any modification arising out of squeeze load test shall have to be carried out by the manufacturers. It is only after approval of the prototype, that the series production of wagon shall be taken in hand.

4.3 The performance of air brake equipment’s of each wagon shall be tested with single wagon test rig as per Performa prescribed by the Engineers.

4.4 The wagons shall be subjected to shower test as per the relevant drawing of the relevant wagon outlined in RDSO Index drawing no. WD-09056-S-01 (latest Alteration)

5. **STANDARD SPECIFICATIONS**

All materials required for the manufacture of these wagons shall confirm to the latest issue of relevant specifications as adopted by RDSO unless otherwise specified herein.
6. **USE OF ALTERNATIVES**

In Clause 7 of this specification, certain alternatives showing different methods of manufacture or use of alternative material which are technically permissible have been indicated. Wherever such alternative use has been permitted, the Tenderer must quote separately for the alternatives.

7 **PARTICULAR REQUIREMENTS**

Construction drawings for wagon indicated in RDSO Index Drawing No. WD-09056-S-01 (with latest alteration) may include Cold Rolled Formed (CRF) sections of different members of underframe and Body structure. The cold rolled formed (CRF) sections shall be procured by Railways/wagon builders only from RDSO approved sources.

The following are the particular requirements in respect of the work involved under this specification:-

7.1 **Material of Construction**

7.1.1 Underframe members including crossbar, centre sill, sole bar, Body side stanchions, End stanchions, Corner Stanchions and Roof carlines.

7.1.2 Body side panels, end panel, Roof sheet, Door Plate & Floor plate.

7.1.3 Head Stock

Details are provided in relevant construction drawings of relevant wagon mentioned in RDSO Index drawing No. WD-09056-S-01 (with latest alteration).

7.2 **Bogie & Wheels**

7.2.1 The wagon shall be equipped with Cast Steel Bogie to relevant drawings of relevant wagon outlined in RDSO Index Drg.No.WD-09056-S-01.

7.2.2 Bogie shall be fitted with wheel set to relevant drawings of relevant wagon outlined in RDSO Index Drg.No.WD-09056-S-01.

7.3 **Coupler and Draft Gear**

7.3.1 Wagon shall be equipped with:

7.3.1.1 High tensile Centre Buffer Coupler (Non-Transition) to **RDSO STR** with latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.3.1.2 High capacity Draft Gear to **RDSO STR** with latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).
7.3.2 The fitment of coupler, high capacity draft gear, striker casting, yoke pin support, yoke and back stop etc. shall conform to relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.3.3 Coupler operating mechanism shall be positioned as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.4 **Air Brake**

7.4.1 The wagon shall be equipped with single/Twin pipe graduated release air brake equipment to RDSO Specification with latest revision/ amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration). The layout of the complete air brake equipment shall be in accordance with the arrangement shown in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.4.2 The pipes and joints consisting of brake pipe, branch pipes & pipe joint shown in the relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.4.3 The complete air brake equipment including the pipes and joints shall be fitted on pattern wagon in accordance with RDSO General arrangement drawing of the relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration) and offered to the Engineers for approval. The Contractor shall be obliged to carry out any modifications on the layout of the air brake equipment if found necessary by the Engineers.

7.4.4 Brake block force shall be checked at the time of prototype testing, with the necessary facilities, equipments, etc. being provided by the manufacturer. The manufacturer shall carry out any modification required after testing.

7.4.5 Contractor shall proceed with the bulk production of the pipes and joints only after the final approval of the layout of complete air brake equipment, on the pattern wagon.

7.4.6 During the bulk production of wagons, the Contractor shall ensure that the complete air brake equipment is fitted on the wagon correctly as per the dimensions shown in the layout drawing. Special care must be taken with regard to the clamping arrangement of pipes to under frames besides securing of clamps with pipe and tack welding of nuts with bolts.

7.5 **Door**

The wagons shall be provided with Door and its anti-bleeding features to the latest revision/ amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).
7.6 **Body and Underframe**

7.6.1 The door check springs will not be shot-peened.

7.6.2 Tail lamp bracket to Drg.No.C/BF-1113 shall be fitted on both the ends on stanchion locations as shown in the latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.7 **Painting and Markings**

7.7.1 The surface preparation and schedule of painting of the wagons shall be as indicated in relevant Clause of General Standard Specification No.G-72 (Latest Revision).

7.7.2 The tare weight of the wagons shall be marked in Tonnes upto one decimal place, as determined by the method detailed in Annexure - I.

7.7.3 The operating direction (`ON' and `OFF') of side/End operated hand brake shall be marked as indicated in latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.7.4 Of the two standard plates fitted on the sole bars at diagonally opposite corners as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration). One shall be in English to Drg. No. W/ML-7 and the other shall be in Hindi to Drg.No.W/ML-14. Mild steel drops stamped standard plates are acceptable as an alternative.

7.7.5 Railways initials to be marked will be intimated later. The Mechanical Code `XXXXX' to be stenciled and stamped at locations shown in the latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

7.7.6 The markings other than those indicated in relevant Clause of General Standard Specification No.G-72 (Latest Revision) shall be as indicated in the latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration).

8. **DRAWINGS**

The wagons shall be manufactured strictly to latest revision/amendment as mentioned in relevant drawing of relevant wagon outlined in RDSO Index drawing no.WD-09056-S-01 (with latest alteration). The Contractor shall comply with these amendments in manufacturing of components. Copies of such amended drawings will be supplied to the Contractor free of cost. The drawings listed are complete in all respects and any detailing necessary will be done by the Contractor.
9. 'AS MADE' DRAWINGS, PHOTOGRAPHS AND MODELS

9.1 Drawings

The Contractor shall supply two sets of 'As Made' polyester film tracing (50 micron thick matte) of drawings followed in the manufacture of the wagons for the record of Purchaser and Engineers. These tracings shall conform to the requirements as detailed in relevant Clause of General Standard Specification No.G-72 (Latest Revision). The Contractor shall incorporate in the above set of tracings, any deviations, modifications and relaxations granted in the course of manufacture.

The 'As Made' drawings detailed above shall contain full details of each component/sub-assembly/assembly, inclusive of the material specification, actual average weight and reference drawing. The general order of the drawings, title block etc. shall be strictly as indicated in Drg. No.Sk.67521 with space for IRS Drg. No. left blank. The size of the sheet shall be A1 (841 mm x 594 mm) and the Code of Practice for drawing shall conform to IS Specification No.696. The hard wood strips for binding the tracings shall conform to Drg.No.Sk.67520 along with 6 mm size brass set screws for binding strips to Drg.No. 67522.

9.2 Photographs

The Contractor shall furnish to Engineers free of cost suitably mounted colour photographs, 600 mm x 450 mm, bringing out the salient features as called for in relevant Clause of the General Standard Specification No.G-72 (Latest Revision).

9.3 Models

The Contractor shall furnish to Engineers, if and when required, free of cost, a 1/16 scale model out of steel or acrylic transparent sheet, as called for in relevant Clause of the General Standard Specification No. G-72 (latest Revision).
ANNEXURE – I

METHOD OF DETERMINING THE TARE WEIGHT OF WAGONS

All Contractors (whether equipped with weigh bridges or not in their works) will arrange to weigh each wagon of identical design and mark individual tare weight on them by actual weighment. The tare weight so arrived shall be deducted from the gross load to arrive at the correct carrying capacity that shall be marked on the wagons.

Tare weight of the wagons shall also be intimated to the Engineers duly certified by the Inspecting Officer.
NYLON BRAKE GEAR BUSHES IN THE BRAKE GEAR OF WAGONS

1. Brake gear bushes of Nylon-66 shall be procured as per Schedule of Technical Requirements STR No.WD-04-Nylon Bushes-2002

2. Nominal dimensions of Nylon-66 bushes to be used will be same as of steel bushes, inclusive of step sizes, outside diameter. However, the tolerances and the chamfering should be as per Fig.1 of the STR.

3. Undersized holes should be drilled initially in the fork type support brackets or fork-end of pull/push rods. These holes should be drilled together to the required size only after the assembly but before the Nylon bushes are fitted therein. This will ensure that the two holes are concentric and therefore, the pins passing through the bushes fitted therein will not tilt.

4. Steel pins used with Nylon-66 bushes shall be with fine finish machined on all contact surface with the bush.