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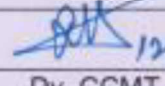
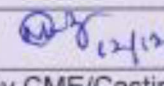
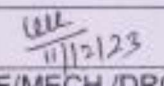
GOVERNMENT OF INDIA
(Ministry of Railways)

SPECIFICATION FOR
CLAY GRAPHITE STOPPER
(PL No. 84902220)

Issued by

MECHANICAL DRAWING OFFICE
RAIL WHEEL PLANT
BELA, SARAN-841221,
BIHAR
I N D I A

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SPECIFICATION FOR CLAY GRAPHITE STOPPER**1.0 SCOPE**

- 1.1 The specification covers the design, manufacture and supply of Clay Graphite Stopper to Rail Wheel Plant, Bela, Saran-841221, Bihar, India as per instructions and conditions of Contract and tender papers.

2.0 GENERAL DESCRIPTION

- 2.1 Clay Graphite Stopper as per enclosed Drg. No. C/MO-16/13, Alt.'h'.

3.0 JOB REQUIREMENT

- 3.1 The Clay Graphite Stopper is required to be fixed at the machined end of the Stopper Pipe, suiting exactly to the Stopper bore dimension so that there is no gap in between the stopper and stopper pipe, fitting snugly and rigidly to one another after assembling. The tolerances of the Stopper bore is to be adjusted so that the stopper pipe properly fits inside the stopper bore.
- 3.2 The assembly is set with cope on the required height and used for the manufacture of cast steel wheels. Molten metal rises through the gap available between the stopper and mould box by means of pressure pouring technique. Once the metal rises to the required height of risers the Clay Graphite Stopper is pressed down for closing the molten metal incoming port by Pneumatic cylinders.

4.0 MANUFACTURING

- 4.1 The manufacturer of Clay Graphite Stopper shall be an ISO 9001 certified company. The manufacturer shall have all the equipments and facilities required for production and testing of raw materials & clay graphite stopper. The extrusion and pressing device shall be capable of producing the clay graphite stopper to close tolerance, weight and dimension as per the drawing C/MO-16/13. The stopper shall be fired in controlled atmosphere. The kilns shall have control mechanism to achieve uniform heating at a controlled rate established by the manufacturer's firing schedule. The stoppers have to be encased in a suitable medium like graphite, calcined petroleum coke or similar during firing so as to avoid oxidation.

5.0 MATERIAL PROPERTIES

- 5.1 Moisture Content : 1.5 % max.
- 5.2 Moisture content after heating : NIL
40 minutes at 120°C.
- 5.3 Ash content : 47.5 to 60 %

			
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5.4 Carbon Percentage: 40 to 50 %

Note: For clause Nos. 5.1, 5.2, 5.3, & 5.4, IS 14852:2000 to be followed as test method.

5.5 Crushing load : 50 to 100 KN (direct load on top surface of stopper sample as positioned in Drawing)

5.6 The Stopper should have a smooth surface and should be free from cracks, fins, sharp edges, folds, cavities, laminations, patches and other flaws on the surface.

6.0 THERMAL SHOCK RESISTANCE

6.1 The Stopper should pass the thermal shock resistance test, which will be carried out as follows:-

The stopper will be mounted on a stopper pipe and attached to a 10 ft. long rod. The stopper will be plunged in to a ladle of Molten Steel at 1620 - 1610°C for 10 seconds. The stopper will then be withdrawn, tapped on the floor and allowed to air cool. There should be no turbulence in the ladle and the stopper on cooling shall show no cracks.

This test will be carried out at RWP/Bela by Consignee. In case material is got failed it will be treated as failed.

7.0 MANUFACTURER'S TEST CERTIFICATE (MTC)

7.1 The supplier shall carry out all the tests as mentioned in the specification prior to despatch to RWP and MTC containing test details, batch identification, date of manufacturing and date of expiry shall accompany the supply.

8.0 INSPECTION NORM8.1 Visual Inspection & Dimensional check:

Sampling Norm : GIL II, IS:2500 (Pt.1) latest revision

Acceptance criteria : AQL 0.65, IS:2500 (Pt.1) latest revision

8.2 DESTRUCTIVE TEST SAMPLING NORMS AND ACCEPTANCE CRITERIA

For conformity of clauses 5.1, 5.2, 5.3, 5.4, 5.5 & 6.1 one sample per 1000 numbers picked up at random from the lot. If the lot size is less than 5000 numbers, 5 samples at random shall be picked up for destructive test. Should any of the sample fails, double the number of samples will be picked from the lot and tested and If any of the sample fails to meet the requirement under clause 5.1, 5.2, 5.3, 5.4, 5.5 & 6.1 the entire lot stands rejected.

			
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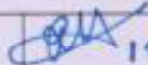
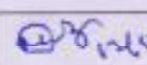
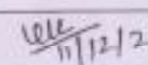
9.0 QUALITY ASSURANCE PLAN (QAP)

The manufacturer shall submit their Quality Assurance Plan (QAP) along with their bid for approval by RWP. Which will be followed in the manufacturing of Clay Graphite Stopper to satisfy the technical requirement as required under this specification. Manufacturer shall get their QAP approved from RWP in advance, unless a waiver is given to this effect.

10. PACKING

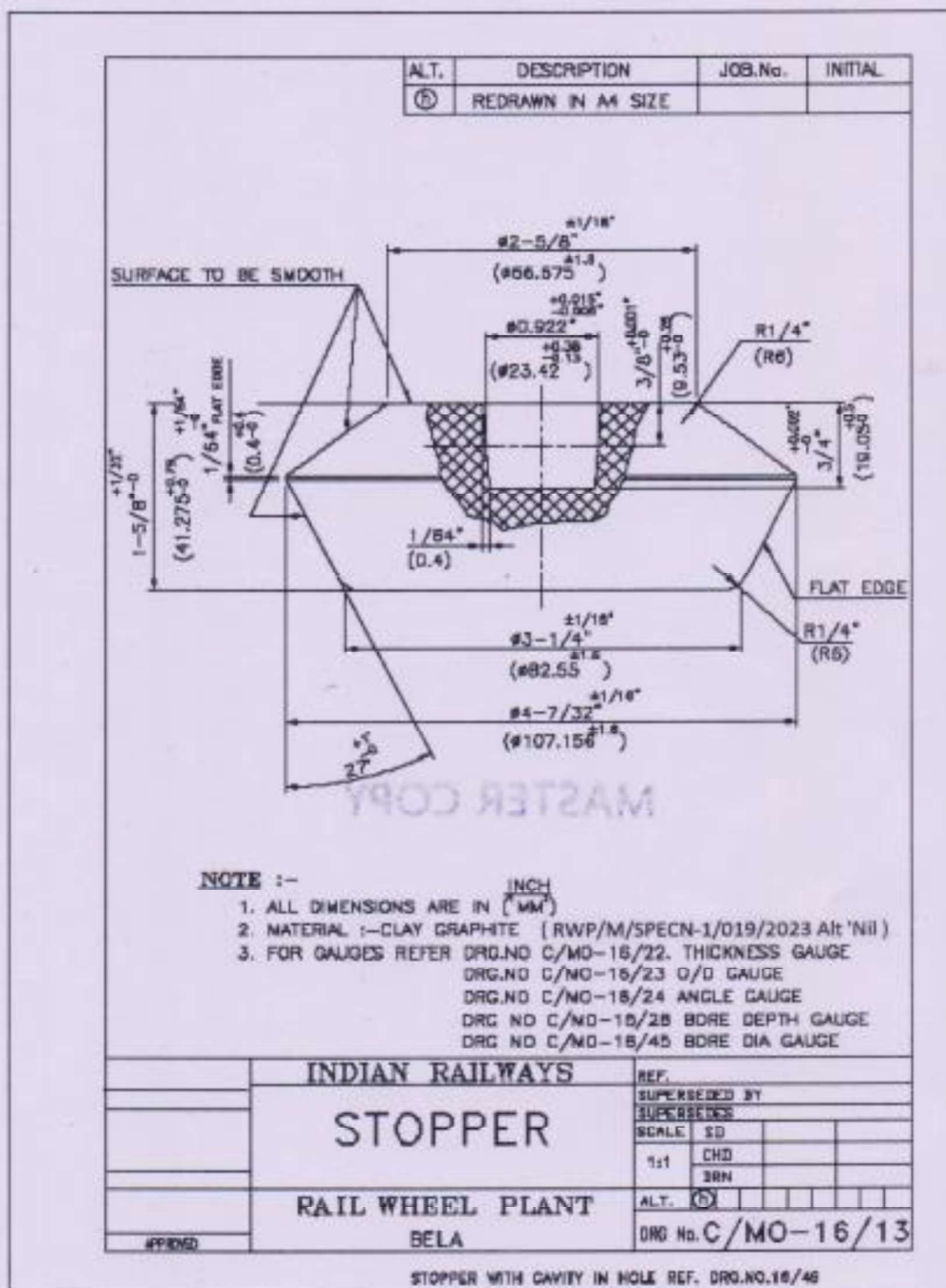
Clay Graphite Stoppers shall be supplied in Card board boxes with suitable partitions to avoid damages during handling, transit and stocking at RWP.

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Clause No.	Description	Clause No.	Description
4.0	MANUFACTURING and QUALITY ASSURANCE PLAN (QAP)	4.0	MANUFACTURING
4.1	The manufacturer of Clay Graphite Stopper shall be an ISO 9001 certified company. The manufacturer shall have an established and documented QAP covering the control of new material, process and product quality, suppliers shall submit their QAP along with the offer for RWP's verification. The manufacturer shall have all the equipments and facilities required for production and testing of raw materials & clay graphite stopper. The extrusion and pressing device shall be capable of producing the clay graphite stopper to close tolerance, weight and dimension as per the drawing C/MO-16/13. The stopper shall be fired in controlled atmosphere. The kilns shall have control mechanism to achieve uniform heating at a controlled rate established by the manufacturer's firing schedule. The stoppers have to be encased in a suitable medium like graphite, calcined petroleum coke or similar during firing so as to avoid oxidation	4.1	The manufacturer of Clay Graphite Stopper shall be an ISO 9001 certified company. The manufacturer shall have all the equipments and facilities required for production and testing of raw materials & clay graphite stopper. The extrusion and pressing device shall be capable of producing the clay graphite stopper to close tolerance, weight and dimension as per the drawing C/MO-16/13. The stopper shall be fired in controlled atmosphere. The kilns shall have control mechanism to achieve uniform heating at a controlled rate established by the manufacturer's firing schedule. The stoppers have to be encased in a suitable medium like graphite, calcined petroleum coke or similar during firing so as to avoid oxidation
5.3	Ash content: 47.5 to 55% (for guidance only)	5.3	Ash content: 47.5 to 60%
5.4	Carbon Percentage: 45 to 50% (for guidance only) Note: For clause Nos. 5.1, 5.3, & 5.4, IS 14852:2000 to be followed as test method.	5.4	Carbon Percentage: 40 to 50% Note: For clause Nos. 5.1, 5.2, 5.3, & 5.4, IS 14852:2000 to be followed as test method.
6.1	The Stopper should pass the thermal shock resistance test, which will be carried out as follows:- The stopper will be mounted on a stopper pipe and attached to a 10 ft. long rod. The stopper will be plunged in to a ladle of Molten Steel at 1620 - 1610°C for 10 seconds. The stopper will then be withdrawn, tapped on the floor and allowed to air cool. There should be no turbulence in the ladle and the stopper on cooling shall show no cracks. MASTER COPY	6.1	The Stopper should pass the thermal shock resistance test, which will be carried out as follows:- The stopper will be mounted on a stopper pipe and attached to a 10 ft. long rod. The stopper will be plunged in to a ladle of Molten Steel at 1620 - 1610°C for 10 seconds. The stopper will then be withdrawn, tapped on the floor and allowed to air cool. There should be no turbulence in the ladle and the stopper on cooling shall show no cracks. This test will be carried out at RWP/Bela by Consignee. In case material is got failed it will be treated as failed.

			
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