

6



# BHARAT HEAVY ELECTRICALS LIMITED

## TRANSMISSION PROJECTS ENGINEERING MANAGEMENT

DOCUMENT No.	<del>TB-235-509-039</del> TB-235-509-039	REV 02	Prepared	Checked	Approved
TYPE OF DOC.	EQUIPMENT SPECIFICATION	NAME	D.K.Mandal	Manoj Kumar	Satish Nayar
TITLE  STANDARD SPECIFICATION FOR M.S.ROD	SIGN	Sd/-	Sd/-	Sd/-	Sd/-
	DATE	14.07.04	15.07.04	15.07.04	15.07.04
	GROUP	TBEM	W.O. No		
CUSTOMER					
PROJECT					
LOA No.					

**CONFIDENTIAL & COPYRIGHT**  
The Information in this document is the property of BHARAT HEAVY ELECTRICALS LIMITED  
This must not be used directly or indirectly in anyway detrimental to the interest of the Company.

### CONTENTS

DETAILS	Sheets
Check list for information to be submitted with offer	1
SECTION 1 Scope, Specific technical requirements and quantities	1
SECTION 2 Equipment Specification	2
SECTION 3 Project details & General Specification	1
SECTION 4 Guaranteed technical particulars	1
CHECK LIST	1
STANDARD QUALITY PLAN	1

02	26.11.12	<i>M</i>	<i>[Signature]</i>	<i>[Signature]</i>	Standard Quality plan included
01	31.10.12	Sd/-	Sd/-	Sd/- <i>Rajeev</i>	ASTM A576 has been included and cut length requirement revised.
Rev No.	Date	Altered	Checked	Approved	<b>REVISION DETAILS</b>
Distribution				To	
				Copies	

5

Doc No : TB 235 509 039  
Rev No : 02

## **SECTION - 1**

### **SCOPE SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES**

#### **1.0 SCOPE**

This technical specification covers the design, manufacture, testing at works and despatch (As applicable) of M.S. ROD, required for the under ground earthing system.

- 1.1** The M.S. Rod shall be of length 6 m to 12 m.
- 1.2** The rod shall comply with the technical requirements brought out in Section-2 of the specification.
- 1.3** The enclosed standard quality plan has to be followed.

**It may be noted that no deviations from specification shall be acceptable and length of MS Rod must be in the range as specified above.**

4

Doc No : TB 235 509 039  
Rev No : 01

## **SECTION - 2**

### **EQUIPMENT SPECIFICATION**

#### **2.1 GENERAL**

This section covers the general technical requirements of MS Rod. In case of any discrepancies between the requirements mentioned in this section and those specified in other sections of this specification, the latter shall prevail and shall be treated as binding requirement.

#### **2.2 APPLICABLE STANDARDS**

The conductor to be supplied shall conform to the following Indian Standards :

Specification for Rolling : IS: 1852:1985  
And cutting tolerance for  
Hot Rolled Steel Products

Steel for General Structural : IS: 2062-2011  
Purposes

Round & Square Bars for : IS: 1732-1989  
General Engg. Purposes

Standard Specification for  
Steel bars, carbon hot wrought  
Special Quality : ASTM A576-90b

Note: Latest revisions of all the mentioned standards have to be followed.

#### **2.3 TECHNICAL REQUIREMENTS**

- 2.3.1 The material to be supplied shall comply with the requirements specified for Grade-A designation Fe410WA of IS 2062-2011 or grade SAE1018 as per ASTM A576-90b.

The material shall be in sound condition of recent manufacture. The finished product shall be adeptly and cleanly rolled to the dimension and sections specified. The finished material shall be free from defects, loose mill scale, slag, fillings, rust etc. The rod shall be manufactured by hot rolled process.

#### **2.4 TESTS**

The material shall be subject to all the routine tests as per IS: 2062-2011/ASTM A576-90b. Enclosed Quality plan shall be followed for witnessing/conducting of tests.

3

Doc No : TB 235 509 039  
Rev No : 01

## **SECTION 3**

### **PROJECT DETAILS AND GENERAL SPECIFICATION**

As applicable for various projects

2

Doc No : TB 235 509 039  
Rev No : 01

## **SECTION 4**

### **GUARANTEED TECHNICAL PARTICULARS**

1. Nominal Diameter :
2. Material grade :
3. Finish :
4. Tolerance :



# QUALITY PLAN

<b>ITEM</b>	MS RODS	<b>OP NO.</b>	TBOM-STD-MSR		<b>PROJECT</b>					
		<b>REV:02</b>	DATE: 23.11.2012		<b>PACKAGE / CONTRACT</b>					
		<b>Page 1 of 1</b>			<b>CONTRACTOR : BHEL</b>					
<b>S.NO</b>	<b>COMPONENT / OPERATION</b>	<b>CHARACTERISTIC CHECKED</b>	<b>CATEGORY</b>	<b>TYPE OF CHECK</b>	<b>EXTENT OF CHECK</b>	<b>REFERENCE DOCUMENT</b>	<b>ACCEPTANCE NORM</b>	<b>FORMAT OF RECORD</b>	<b>AGENCY</b>	<b>REMARKS</b>
									P W V	
1	2	3	4	5	6	7	8	9	D 10 11 12	13

1.0	<b>MS RODS</b>										
A)	Visual defects, straightness & dimensional conformity	Visual & dimensional	Major	Visual and Measurement	Random samples	As per tech. specification and relevant standard mentioned therein.	As per tech. specification and relevant standard mentioned therein.	Inspection report	M	C/N	MS rods to be sourced from prime manufacturers like SAIL / TISCO / RINL
B)	Chemical properties as per relevant standard	Chemical composition	-do-	Chemical	As per tech. specification and relevant standard mentioned therein.	-do-	-do-	Test report	V	M	Sampling shall be done as per relevant standard mentioned in the technical specification.
C)	Mechanical properties (as applicable) as per relevant standard	Mechanical properties	-do-	Physical	-do-	-do-	-do-	-do-	V	M	

**Note:** 1. Supplier shall arrange for witness of testing for Chemical & mechanical tests at their works / NASL approved lab.

<b>LEGEND:</b>		
M - SUPPLIER / SUB SUPPLIER	P - PERFORMED BY	
C - BHEL / NOMINATED INSPECTION AGENCY	W - WITNESSED BY	
N - CUSTOMER / CUSTOMER NOMINATED AGENCY	V - VERIFICATION BY	
CHP - CUSTOMER HOLD POINT	TC - TEST CERTIFICATE	IR - INSPECTION REPORT
JIR - JOINT INSPECTION REPORT		

**APPROVED BY:** AJAY KUMAR CHOWDHARY  
Director, Quality Assurance Group  
**BHARAT HEAVY ELECTRICALS LIMITED**  
Integrated Office Complex  
 L-20/21 Road, New Delhi-110003

①