STANDARD SPECIFICATION NO.TM/HM/6/270 OF BLADE GRADER FOR BALLAST REGULATING MACHINE (PROVISIONAL) - 2001.

1.0 This specification covers the technical requirements for manufacture of Blade Graders for use with Ballast regulating machine deployed on Indian Railways for final regulating and dressing of ballast. Blade Graders in Ballast Regulating Machine are used to do the ballast profiling of the track. They remain in continuous contact with ballast during operation of Ballast Regulating Machine.

2.0 The specification may be treated as provisional subject to modification based on service performance.

3.0 MATERIAL AND PHYSICAL PROPERTIES:

(a) Recommended Material : The material of Blade Grader is carbon steel alloy corresponds to AISI-SAE Designation 15B 37H (b). The heat treatment to imparted material is hardening followed by tempering.

(b) UTS : 1323 N/mm^2

(c) EL : 12.2% (By Universal Testing Machine)

(d) Hardness : 406, 406 (BHN).

(e) Heat Treatment : After suitable heat treatment the mechanical Properties conform the % of carbon & % of magnesium lays between 0.30 – 0.39 & 1.0 - 1.50. Requirements of steel reference: AISI – SAE Designation 15B 37H (b).

4.0 CHEMICAL COMPOSITION

C %	S %	P %	Mn%	Si %	B %
0.30	0.011	0.010	1.03	0.21	0.0013

5.0 MANUFACTURE

Manufacturer should have the essential facilities required for manufacture of the above components as appended below:

5.1 The items shall be procured from the reputed steel makers in the rolled condition and the following requirement shall be satisfied:

i) The steel shall be killed quality.

i) Minimum 10% top discard and 4% bottom discard.

ii) Ingot practice after material testing the material is carbon steel alloy.

iii) Two stage rolling with intermediate dressing to be required. All the materials procured, shall be covered with proper test certificates indicating the complete test results to ensure that they conform to the requirements of the relevant specifications.

5.2 Heat Treatment

i) Oil fired/electric furnace equipped with temperature indicating-cum-recording facilities.

ii) Quenching tank with suitable agitating system.

5.3 The supplier shall carry out the detailed cross check of the components, procured by him for which following facilities are required at his end:

i) Chemical analysis (Instrumental/Wet method)

ii) Hardness testing (Brinell/Rockwell).

iii) Tensile (Universal Test Machine).

iv) Bend (Universal Test Machine).

v) Izod/Charpy impact test (Impact / Izod Testing Machine)

vi) Macroscopic test (Microscopic for structure test).

vii) Microscopic test with magnification 100 x min. (Photography attachment
preferable) – (By magnifying glass).