

1. Electrically Operated Travelling (E.O.T) Crane

1.0 General

This specification covers the general design, materials, construction features, manufacture, shop inspection and testing at the manufacturer's works, delivery at site, handling at site, erection, testing, commissioning, performance testing and handing over of Double girder Electrically Operated Travelling Crane (Overhead).

1.1 Codes and Standard

The design, materials, construction, manufacture, inspection, testing and performance of the crane shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment is to be installed. The equipment shall also conform to the latest applicable Indian or equivalent standards. Other international standards are also acceptable, if these are established to be equal or superior to the listed standards. Nothing in this specification shall be construed to relieve the Contractor of his responsibility.

The following are some of the codes and standards relevant to this specification.

IS 807 Design, Manufacture, Erection and Testing (Structural Portion) of Cranes and Hoists

IS 3177 Electric Overhead Travelling Cranes and Gantry Cranes other than Steel Works Cranes

IS 3938 Electric Wire Rope Hoists

IS 13834 Cranes- Classification

1.2 Construction features

The crane shall be a complete unit with bridge girder, end carriages for long travel, travelling trolley for cross travel, rope drums, wire ropes, sheaves, drive units, brakes, rails and fixtures, rail clamps, end stops, buffers, conductors, all electrical etc. to make the equipment complete in all respects. All materials used shall be of recent manufacture, free from defects, mill scales, laminations, pitting, flakes, rust etc. All welds shall be free from defects like blow holes, Jack of penetration, slag intrusions etc. Impact factor for structural design shall be considered as per Table 1 of IS 3177.

1.3 Bridge Girder

The crane bridge shall consist of double girder as specified. The bridge girder shall have enough strength to carry the rated load without causing undue stress or deflection.

1.4 End Carriages

- a. End carriages connected with bridge girder at the two (2) ends shall be made from structural steel.
- b. End carriage design shall be such that it facilitates easy removal of the wheels for maintenance. Suitable jacking pads shall be provided for maintenance and easy removal of crane wheels.
- c. The wheels shall be double flanged for overhead crane. The wheels shall be machined on their treads to match the runway rail section for overhead.
- d. Wheel base and structural frame of the end carriages shall be designed and connected with bridge girder in such a way that the crane remains square and scenes is prevented. The ratio between wheel base and crane span shall be as stipulated in IS 807.

1.5 Travelling Trolley

- a. Trolley frames shall be fabricated from rolled structural steel sections.
- b. For double girder crane, the trolley shall be provided with chequered plate platforms with openings for ropes, sheaves etc. Hand railings shall be provided all around the platform.
- c. Suitable jacking pads shall be provided for maintenance and easy removal of wheels.

1.6 Operator's Cabin

- a. The operator's cabin shall be open or closed type with ample space for mounting of all control panels and adequate clearance for the safety of operator and maintenance personnel. The main control panel and associated resistors may be located outside the cabin on the trolley or bridge platform with adequate clearance for the safety of operator and maintenance personnel.
- b. The platform shall be of a non-slip surface and cabin size shall not be less than 2.5 M x 1.85 M x 2.0 M clear heights.
- c. The cabin shall be provided with a swing way operator's seat and a protected ladder to access the crane walkway. It shall be adequately illuminated. The cabin and its access ladder shall be so arranged as to prevent personnel from making accidental contact with runway conductors. A permanent frame indicating complete instructions covering the crane operation, maintenance and lubrication shall be mounted in the cabin for convenient reference. A non-oscillating ventilation fan of 240 V AC, single phase and with suitable guard shall be provided in the cabin. The fan shall have 300 mm sweep and equipped with toggle switch and an independent regulator.
- d. In addition to this an electrical horn shall be provided and mounted on under side of the cabin, operated by footswitches as and when required by the driver. Horn shall be heavy duty howler to produce 95 dB at 3.5 M, double bell projector suitable for 240 V AC operations.
- e. A 3 Kg CO₂ type fire extinguisher conforming to IS 2878 shall be provided in the cabin. A sand bucket with sand shall also be provided in the cabin for minor fires.

1.7 Rope Drums

Rope drums shall be as per IS 3177. Rope drums shall be made of seamless pipe or cast or welded to sustain concentrated loads resulting from rope pull. In case of welded drum, same shall