

FF-1119

ANNEXURE - D

TECHNICAL SPECIFICATION

FOR

LT SHACKLE HARDWARE (STRAP)

(SPECIFICATION NO.MM/I/SHACKLE HARDWARE/2007)

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO.LTD.

MUMBAI

(12.06.2007)

ANNEXURE - D
TECHNICAL SPECIFICATION FOR
LT SHACKLE HARDWARE (STRAP)
(SPECIFICATION NO.MM/I/LT SHACKLE HARDWARE/2007)

1. SCOPE:

The specification given hereunder covers the manufacture, testing, supply and delivery of L.T. Shackle Hardware (Strap) to various consignees in the State of Maharashtra. The strap shall conform to IS-7935 or its latest version.

2. GENERAL:

This Shackle Straps required comprises of galvanized straps, bolts and nuts, washers etc. The dimensions of the components shall be as per drawings No 62.74. One set of LT Shackle hardware comprises (1) Two Bolts , (2) Two Straps (Patties) , (3) Two Washers and (4) either four nuts or two nuts with two split pins.

In case of four nuts - 2 nuts will be main nuts and 2 nuts will be lock nuts

In case of two nuts with two split pins – Two nuts will be main nuts.

3. CLIMATIC CONDITION :

The materials used in the construction of L.T. straps shall be suitable for outdoor use under following weather condition:

- i) Temp. range - 10 degree to 55 degree C
- ii) Relative Humidity - 50 – 100%
- iii) Altitude - 0 to 1000 meter.

4. MATERIALS :

Steel employed for construction of strap shall be manufactured by the open hearth electric duplex or basic oxygen process or combination of these processes with a high yield point the tensile strength of which should not be less than 42 Kgs per sq. mm. The steel shall conform to IS – 2062 (modified upto date).

The Bolts / Nuts and the threading work or the Bolts / Nuts etc shall conforms to the following Indian Standard Specifications :

- a) IS- 1367 – 1961 : Technical supply conditions for the threading and fasteners.
- b) IS-1362 – 1962 : Dimensions for screw threads for general purpose.
- c) IS - 1330- 1958 : General plan for metric screw threads with ISI profile.
- d) IS - 1363- 1960 : Specification for Hexagonal Bolts and Nuts.

For galvanizing, zinc conforming to grade Zn – 99.95 of IS – 209 / 1966 specification for Zinc (Revised) shall be used.

5. INTERCHANGEABILITY :

Similar parts shall be uniform and interchangeable with each other.

6. WORKMANSHIP :

The materials are to be supplied as per the details given in the drawing No 62.74 and the workmanship and finish shall be good. The flat / plate etc before any work is done on them shall be carefully leveled, straightened and made true by methods which will not injure the materials. No rough edges shall be permitted anywhere throughout the work.

6.1 The plate / Flat used for strap shall be cut true and sharp gas cutting will not be acceptable.

6.2 Holes in the strap shall be drilled or machine punched. All burrs left by drilling or punch shall be completely removed.

6.3 The Bolts and Nuts shall be well forged and free from inequalities, flaws and other defects. The heads shall be solid in every respect and well formed. All nuts shall be hand tight on the threaded portion and shall not fit loose on them.

6.4 The washers shall be clearly cut off or punched and shall be entirely free from cracks, burrs etc. after punching.

6.5 All components such as straps, Bolts and Nuts, Washers etc. after fabrication shall be cleaned of rust, dirt and impurities and hot dipped galvanized. However, Nuts, Washers and split pins may be Electro-galvanized. The galvanizing work shall conform to IS – 2629 / 1966 in all respects. After galvanizing the surfaces shall be free from all sharp edges and nodules. The threading on the Nuts and Bolts shall be cut before galvanizing.

7. TESTING FACILITIES AND TESTS :

7.1 The tenderer must clearly indicate the testing facilities are available in the works of manufacturers for testing the straps and whether these facilities are adequate to carry out all routine, acceptance and type tests in accordance with IS-7935 / 1975. These facilities should be available to the Board's Engineers deputed to carry out or to witness the tests.

7.2 The details of the tests to be carried out as Type, acceptance and routine tests for the order quantity are as under and in accordance with IS: 7935 / 1975.

TYPE TEST :-

1. Visual Examination test
2. Verification of Dimensions
3. Checking of threads
4. Galvanizing

ACCEPTANCE TEST :

1. Verification of Dimensions
2. Checking of threads
3. Galvanizing

ROUTINE TEST :

1. Visual Examination Test:-
 - a. Visual examination test : All fittings shall be checked visually for good workmanship and finish.
 - b. Verification of dimensions :

The dimensions of the components / parts shall be checked against drawing No. 62.74. The tolerance of the dimensions shall be same as given in the relevant IS. Specification for the respective materials (strap) parts, Bolts and Nuts.

However, the general tolerance that shall be allowed in the thickness of straps and other dimensions of the straps shall be plus minus 0.2mm (in thickness) and plus minus 5% (on other dimensions) respectively.
 - c. Checking of threads:- The dimensions of the threads shall be checked by means of gauge.
 - d. Tests for Galvanizing :

The uniformity of Zinc Coating on all components of the fittings shall satisfy the requirement given in IS: 2633/ 1964 (Method of testing) weight, thickness, and uniformity of coating on hot dip galvanizing articles.

7.3 SAMPLING PROCEDURE :

The sample for the purpose of the above tests shall be selected by the Engineer of the M.S.E.D.C.L. The sampling procedure shall be in accordance with IS : 7935 / 1975.

7.4 TEST CERTIFICATE :

The tenderer shall furnish detailed type test reports of the offered LT Shackle Hardware for the tests as per clause 7.2 of this specification. All the above Type Tests shall be carried out as per the procedure given in IS-7935/1975 or latest version thereof at approved laboratories to prove that the L.T .Shackle Hardware offered meet the requirements of the specification. These tests should have been carried out within five years prior to the date of opening of this tender. However, the tenderers who have supplied the L.T .Shackle Hardware to this Company against order from Central Purchase Agency of M.S.E.D.C.L. shall be exempted from submission of type test reports against this tender provided...

- (i) their offered L.T. Shackle Hardware are already fully type tested at approved Laboratory within five prior to the date of opening of the tender.
- (ii) There is no change in the design of type tested L.T. Shackle Hardware and those offered against this tender.
- (iii) Such tenderers complying (i) and (ii) above shall furnish an undertaking in the format scheduled "F" enclosed herewith.

The detailed type test reports along with the relevant certified drawings etc or undertaking seeking the exemption from submission in the format schedule 'F' are to be submitted along with the offer.

The purchaser reserves the right to demand repetition of some or all the Type Tests in presence of purchaser's representative at purchaser's cost. For this purpose, the tenderer shall quote unit rates for carrying out each Type Test. However, such unit rates will not be considered for evaluation of the offer. In case the unit fails in the type tests, the complete supply shall be rejected.

The successful tenderer shall take approval/ waiver of type tests from C.E. (Dist.) M.S.E.D.C.L., "Prakashgad", Bandra, Mumbai prior to commencement of supply.

The tenderer shall submit separate test certificate for every consignment or part thereof. The test certificate shall shown very clearly the results of each of the aforementioned tests and the name of the laboratory in which the tests were carried out with details of tests etc.

8. MARKING:-

The fittings shall be marked with manufacturers name or trademark.

9. PACKING:-

For packing the fittings, double gunny bags (or wooden cases if deemed necessary) shall be employed. The gross mass of the packing shall not normally exceed 60 Kg. All nuts shall be hand tightened over the bolts and the screwed up to the farthest points. Different fittings shall be packed in different bags or cases and shall be complete with their minor accessories fitted in place. The heads and threaded portions of fittings shall be properly protected against damages.

10 SCHEDULES:

The tenderer shall fill in the following schedule which is part and parcel of the tender specification and offer.

Schedule `C' - Tenderer's Experience.

The tenderer shall submit the list of orders for similar type of equipments, executed or under execution during the last three years, with full details in the schedule of Tenderer's experience (Schedule `C') to enable the purchaser to evaluate the tender.

SCHEDULE - C

SCHEDULE OF TENDERER'S EXPERIENCE

Tenderer shall furnish here a list of similar orders executed/under execution by him to whom a reference may be made by purchaser in case he considers such a reference necessary.

Sr. No.	Name of client and description	Value of order	Period of supply and commissioning	Name and address to whom reference may be made
1	2	3	4	5

NAME OF FIRM

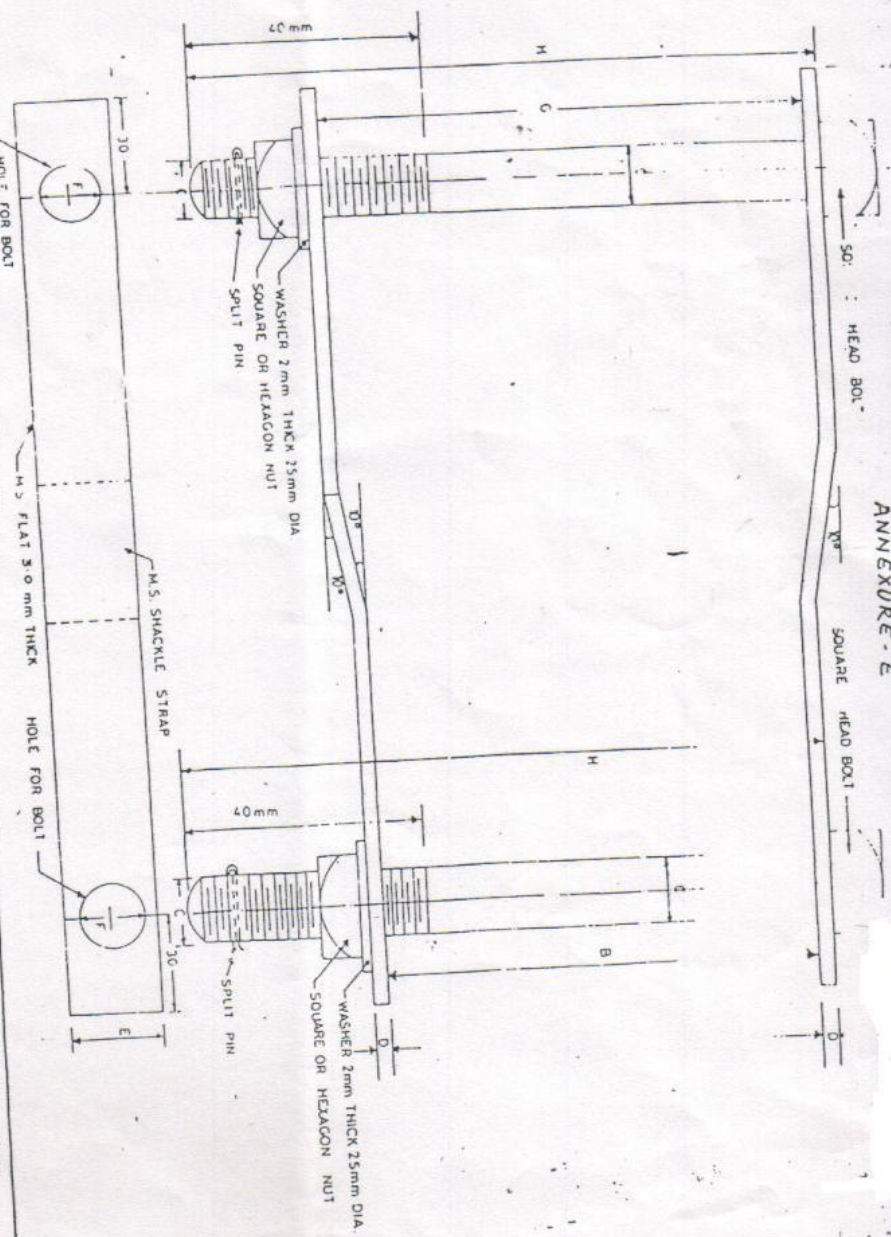
NAME & SIGNATURE OF TENDERER

DESIGNATION

DATE

ANNEXURE - E

SQUARE HEAD BOLT



SHACKLE TYPE	A	B	C	D	E	F	G	H
1	200	65	12	3.0	30	14	95	170

NOTES

- 1) ALL DIMENSIONS ARE IN MM
- 2) ALL PARTS NOT SHOWN GALVANISED HOWEVER
- 3) ALL PARTS NOT SHOWN SPLIT PINS MAY BE USED IN GALVANISED

MAHARASHTRA STATE ELECTRICITY BOARD	
RESEARCH SECTION	
DETAILS OF L.T. SHACKLE STRAPS	
DRAWN BY K. S. Trankle	CHECKED L. S. Trankle
SCALE N.T.S.	DATE 6.2.74
APPROVED S. S. Trankle	