

1.0 SCOPE

- 1.1 This Technical Delivery Conditions specify the requirements in addition to IS:3589 for electrically welded (EFW / SAW) steel pipes.
- 1.2 The pipes are intended for water services (under Non-IBR piping system only).
- 1.3 The pipes shall conform to the size, grade and quantity as specified in the purchase order.

2.0 MATERIAL

- 2.1 The plates / coils used for pipe shall meet the requirements as per IS: 3589 Grade Fe 410 MPa including mechanical test requirements.

3.0 DIMENSIONAL TOLERANCES

- 3.1 The tolerances limits are:
 OD:- Upto NB 1600 mm: ± 4 mm; Above NB 1600 mm: ± 6 mm
 Thickness:- Upto 14mm : $+1.3$ mm / -0.8 mm; Above 14 mm : $+1.4$ mm / -0.8 mm.
 Length:- for OD upto 1300 mm : $+10$ mm/ -0 mm;
 for OD above 1300 mm : ± 50 mm
 Ovality (Difference between major and minor inside diameter) : 0.5% maximum
- 3.2 Other tolerances shall be as per IS: 3589

4.0 MANUFACTURING

- 4.1 The pipe shall be of longitudinally welded or spirally welded as indicated in the P.O.
- 4.2 The ends shall be edge prepared as indicated in the purchase order.
- 4.3 Circumferential seams shall be 1500 mm apart from each other and from ends.
- 4.4 All pipes shall be clearly finished and free from surface, sub surface defects such as pits, cracks, weld spatters & laminations etc..

5.0 NDE

- 5.1 The spiral welds/butt welds of length 100 mm from both the ends of the pipe shall be radiographically tested.

6.0 HYDROSTATIC PRESSURE TEST

- 6.1 Each pipe shall be subjected to a hydraulic test pressure as per IS: 3589 .
 (i.e., using the formula $P = 2ST / D$)

7.0 INSPECTION

- 7.1 All pipes shall be inspected by the vendor prior to BHEL / Customers' Inspection. BHEL or BHEL authorized inspector / Customer will select the pipes at random and carryout the inspection. The necessary Material Despatch Clearance Certificate is to be obtained by the vendor prior to the despatch of material.

P.Elangovan, QA
 K.Ganeshan, MM

Approved by

C. Karunakaran, Engg
 B. Prakash Rao, Q & MS

8.0 PAINTING AND PACKING

- 8.1 Unless otherwise specified in the Purchase Order, all the pipes shall be coated with resin type translucent dry type rust preventive on the outside; pipes of diameter above NB 450 mm, shall be coated inside also.
- 8.2 Spiders are to be provided on both ends of the pipes as per the drawing - if indicated in the enquiry / Purchase Order.

9.0 MARKING

- 9.1 All pipes shall be paint stencilled, hard punched with the following details.

Paint Stencil

- Specification
- Heat number
- Pipe number
- Manufacturer's identification
- Material Code
- Size

Hard punch

- Specification
- Heat number
- Pipe number
- Manufacturer's identification

- 9.2 In addition to the above, for the pipes directly despatched to project site, the following details (furnished in the P.O. or separately) shall be **paint stencilled & hard punched** on both ends of the pipes

- Work order No
- DU No
- Project name
- Quantity
- Weight

10.0 CERTIFICATES

- 10.1 Three original test certificates typed in English shall be submitted along with the Inspection report.
- 10.2 The test certificate shall furnish the following details.

- a. Purchase Order references.
- b. Test Certificate number.
- c. Specification, grade, size, quantity
- d. Heat number of plate (or pipe number with traceability to heat number)
- e. Chemical composition and mechanical properties
- f. Hydrostatic pressure test report
- g. RT Report.

P.Elangovan, QA
K.Ganeshan, MM

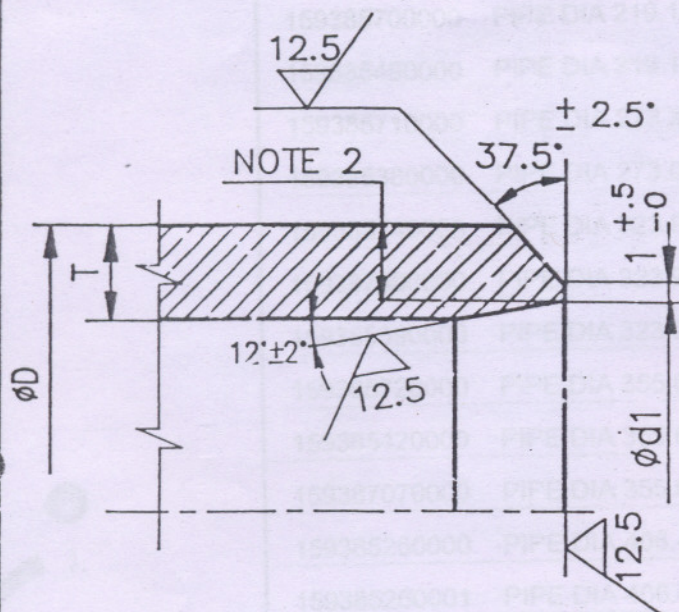
Approved by

C. Karunakaran, Engg

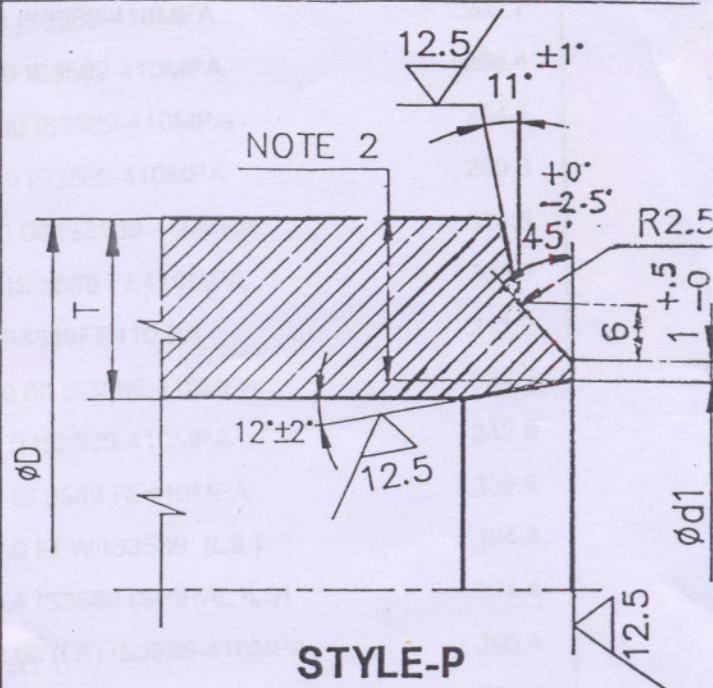
B. Prakash Rao, Q & MS

REV	DATE	ALTERED
		APPROVED

ALL DIMENSIONS ARE IN MILLIMETER

**STYLE-D**

(FOR Tnom. < 14.2mm.)

**STYLE-P**

(FOR Tnom. > 14.2mm.)

NOTES:1. WELD END DIAMETER $\phi d1$ SHALL BE AS INDICATED BELOW UNLESS OTHERWISE SPECIFIED DIFFERENTLY IN P.O.

a) FOR OD BASED PIPES:

$$\phi d1 = D - 2T_{nom} \quad \text{for } T_{nom} \leq 12.5\text{mm} ; \quad \phi d1 = 0.995D - 1.7T_{nom} \quad \text{for } T_{nom} > 12.5\text{mm}.$$

TOLERANCE ON $\phi d1$: +0.5, -1.0.

b) FOR ID CONTROLLED PIPES:

$$\phi d1 = ID. \quad \text{TOLERANCE ON } \phi d1: +0, -1.6.$$

2. MINIMUM THICKNESS AT WELD END SHALL BE AS FOLLOWS:

a) $0.875 \times T_{nom}$ FOR OD BASED PIPES.

b) T MINIMUM FOR ID CONTROLLED PIPES.

3. EDGE PREPARATION SHALL BE AS PER STYLE-D OR STYLE-P AS INDICATED ABOVE UNLESS OTHERWISE SPECIFIED DIFFERENTLY IN P.O.

STANDARD

**BHARAT HEAVY ELECTRICALS LTD.**PIPING CENTRE
MADRAS 600 017

	NAME	SIGN	DATE
DRN	R. ANANTH	<i>R. Ananth</i>	11-04-94
CHD	S. JAYAKUMAR	<i>S. Jayakumar</i>	12-04-94
APPD	G. ROBERT	<i>G. Robert</i>	13-04-94

TITLE

**BW EDGE PREPARATION
(FOR PIPES & FITTINGS)**CARD
CODE

U 01

DRAWING NO.

4-80-999-99650

REV

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Annexure to Dng 680599 99650/00

MATERIAL	DESCRIPTION	D1
159385700000	PIPE DIA 219.1 X 10 IS3589-410MPA	202.7
159385490000	PIPE DIA 219.1 X 6.0 IS3589-410MPA	206.4
159385710000	PIPE DIA 273 X 10.00 IS3589-410MPA	254.5
159385380000	PIPE DIA 273.0 X 6.0 IS3589-410MPA	260.3
159385740000	PIPE DIA 323.9 X 10.00 IS3589-410MPA	304.8
159387060000	PIPE DIA 323.9 X 8 IS 3589 FE410MPA	308.0
159385390000	PIPE DIA 323.9X6 IS3589FE410 PA	311.2
159385720000	PIPE DIA 355.6 X 10.00 IS3589-410MPA	336.5
159385420000	PIPE DIA 355.6 X 6.0 IS3589-410MPA	342.8
159387070000	PIPE DIA 355.6 X 8 IS 3589 FE410MPA	339.6
159385260000	PIPE DIA 406.4 X 6.0 EFW IS3589 (LS)	394.4
159385260001	PIPE DIA 406.4 X 6.4 IS3589 (SPIRAL /LS)	394.4
159385890000	PIPE DIA 406.4X10.00 (LS) IS3589-410MPA	386.4
159385750000	PIPE DIA 406.4X10.0SPIRAL/LS) IS3589-410MPA	386.4
159385890952	PIPE DIA 406.4X9.52 (LS) IS3589-410MPA	386.4
159385760000	PIPE DIA 457 X 10.00 IS3589-410MPA	437.0
159385270000	PIPE DIA 457.0 X 6.0 EFW IS3589-410MPA	445.0
159385280000	PIPE DIA 508.0 X 6.0 EFW IS3589-410MPA	496.0
159385280100	PIPE DIA 508.0 X 8.0 EFW IS3589-410MPA	492.0
159385770000	PIPE DIA 508X10(SPIRAL/LS) IS3589-410MPA	488.0
159385900000	PIPE DIA 508X10.00 (LS) IS3589-410MPA	488.0
159385300000	PIPE DIA 610.0X8.0 EFW LS IS3589-410MPA	594.0
159385780000	PIPE DIA 610X10(SPIRAL/LS) IS3589-410MPA	590.0
159385910000	PIPE DIA 610X10.00 (LS) IS3589-410MPA	590.0
159385300001	PIPE DIA 610X8EFW(SPIRAL/LS) IS3589-410MPA	594.0
159385310000	PIPE DIA 660.0 X 8.0 EFW IS3589-410MPA	644.0
159385790000	PIPE DIA 711.2X10(SPIRAL/LS) IS3589-410MPA	691.2
159385920000	PIPE DIA 711.2X10.00 (LS) IS3589-410MPA	691.2
159385800000	PIPE DIA 813 X 10.00 IS3589-410MPA	793.0
159385350000	PIPE DIA 813.0 X 10.0 (LS) IS3589-410MPA	793.0
159385370000	PIPE DIA 813.0X8.0 EFW LS IS3589-410MPA	797.0
159385820000	PIPE DIA 914X10 (LS) IS3589-410MPA	894.0
159385830000	PIPE DIA 914X10(SPIRAL/LS) IS3589-410MPA	894.0

A. RAMANUJAM
Dy. Manager / Purchase

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