



**Government of India  
Ministry of Railways**

**DOCUMENT NO. TDG 0038, Rev. '0'**

**ITEM SPECIFIC GUIDELINES FOR  
~~FABRICATED~~ THICK WEB ~~CURVED~~ SWITCHES**

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**ITEM SPECIFIC GUIDELINES FOR INITIAL APPROVAL/ QUALITY AUDIT OF  
FIRMS FOR MANUFACTURING 1:8.5, 1:12 & 1:16 ~~FABRICATED~~  
THICK WEB ~~CURVED~~ SWITCHES**

- A.** In addition to the "ISO Apex Documents of RDSO", the following specific guidelines shall also be applicable for Initial approval / Quality Audit of vendors for manufacturing of 1:8½, 1:12 & 1:16 ~~Fabricated~~ Thick Web ~~Curved~~ Switches:
- i)** List of vendors shall be maintained ~~as and when approval is granted to the firm~~ for various designs/ drawings of ~~Fabricated~~ Thick Web ~~Curved~~ Switches i.e., for **variants** 1: 8½, 1:12 & 1:16 by adding respective drawing numbers as per approval granted.
  - ii)** For the purpose of approval of vendor for manufacturing of Thick Web Switches, the vendor shall be required to manufacture prototype of **Thick Web Switch** for **any of the design/ drawing (variant) for which the firm has to be approved** comprising of two sets - one set of left hand and one set of right hand Thick Web Switch complete. One set of switch shall consist of two thick web tongue rails, two stock rails and all components as per Part List of the respective drawing/design. **Prototype approval for the other variants shall be carried out subsequently as and when offered by the firm.**
  - iii)** For the purpose of Quality Audit of the vendor for thick web ~~curved~~ switches, one sample set of switch (either left hand or right hand switch) of the designs for which the firm is approved shall be required to be offered for inspection.
  - iv)** The firm shall submit inspection gauge drawing for thick web ~~curved~~ switches (TWS) for the design offered for approval to RDSO. In case, ~~Fabricated~~ thick web ~~curved~~ switches are to be manufactured by vendors using thick web asymmetric rails arranged by thick web switch manufacturers, the firm shall submit drawings for End forged thick web asymmetrical (TWA) rail to be used for manufacturing of TWS, inspection gauge drawing for End forged TWA rail also along with application.
  - v)** Two sets of inspection gauges each for End forged TWA rail, Thick web switches for the design offered for approval, shall be approved/ revalidated at the time of inspection/ verification of infrastructural facilities during initial approval / quality audit of the firm.
  - vi)** The inspection gauges and prototype shall be required to be **got** approved by RDSO for each design of ~~fabricated~~ thick web ~~curved~~ switches before approval of firm for "List of vendors for development orders". The firm shall be upgraded to list of "Approved vendors" after fulfillment of criteria given in apex ISO documents of RDSO & **Para C. below.**

vii) One set layout on PSC sleepers for switch portion for the design offered for approval to RDSO i.e. 1 :8.5, 1:12 & 1:16 turnout along with electrical motor operated Point Machine of 220mm stroke (Capable for checking/inspection of SSD with TWS of 160mm throw at ATS) required for checking/ inspection of TWS as per site conditions.

B. In case, **Fabricated** Thick Web **curved** Switches are to be manufactured by vendors using **their own** thick web asymmetric rails ~~arranged by thick web switch manufacturers~~, the thick web end forged rails shall be ~~procured~~ **sourced** by them as per “Qualifying requirements of tenderers for manufacturing and supply of Thick Web Switches with firms own Asymmetrical End Forged Rails” (Annexure-I).

First stage inspection of End forged Thick web asymmetrical rails procured by switch manufacturer shall be carried out by inspecting official of RDSO/ nominated inspecting agency at the works of vendors as per inspection regime for end forged thick web Asymmetrical TWA Rails of ZU-1-60/60E1A1 rail profile (Grade 880/**R260**). After satisfactory inspection of 60kg(UIC) End forged TWA Rails of ZU-1-60/60E1A1 rail profile (Grade 880/**R260**), thick web switches shall be required to be manufactured using passed rails and offered for final inspection of RDSO/ nominated inspecting agency as per extant norms.

C. The firm shall be considered for upgradation from “Vendors for Developmental order” to “Approved vendors” subject to the condition that it has supplied at least 500 Thick Web **Curved** Switches **of any one variant or collectively for more than one variants, of that particular design** and fulfills the criteria as mentioned in **extant** apex ISO documents.

**D. MINIMUM FACILITIES & MACHINERIES REQUIRED FOR  
MANUFACTURING OF FABRICATED THICK WEB CURVED SWITCHES  
(Schedule of Technical Requirements)**

SN	Description of requirements	Minimum Capacity	Min. Quantity
1	Gantry Crane facilities	4 T	1 No
2	Circular saw / Circular band saw	900 mm dia.	1 No
3	Hydraulic horizontal bending/ straightening machines	350-500T	1 No
4	Radial drill	32 mm dia.	1 No
5	Shapers	600mm stroke	3 No
6	a) Planing machines	i) 13.0 m stroke ii) 8.5 m stroke. iii) 5.0 m stroke	1 No. 1 No 1 No
	b) CNC Plano Milling Machine*	13.0 m stroke	1 No
7	Compressor with riveting arrangement (Optional)	-	One complete set including furnace & riveting gun etc.
8	CO2 / Mig welding equipment	-	One complete set with approved brand of welding wires.
9	Jigs & fixtures for drilling of stock & tongue rails for Thick web switches	-	At least one set for each design separately
10	Chemical lab OR Spectrometer	For Chemical Analysis of MS, Medium & Low alloy steel  OR One spectrometer having vacuum emission CCD/PMT with printing facilities should be available for carrying out chemical analysis	1 Unit installed in house for wet chemical analysis  OR  1 No. Spectrometer
11	i) Universal Testing Machine	40 T (minimum)	1 No.
	ii) Charpy impact testing machine	-	1 No.
12	Hardness testers a) BHN/Rockwell	BHN hardness tester with ball size 2.5 to 10 mm dia.	1 No.
	b) Poldi	-	1 No.
13	Non-destructive testing facilities i) USFD Machine	Digital type	1 No.
	ii) D.P. test Kit	-	1 No.
	iii) Magnaflux (M.P. test Kit)	-	1 No.

	iv) Metallurgical Microscope	500X with digital recording & printing facilities	1 No.
	v) Polishing Machine	-	1 No.
14	Surface Roughness Tester	3 - 7 micron	1 No.
15	Assembly & Inspection bay	A separate area to be dedicated with proper leveled flooring.	500 sq. meter
16	Dedicated covered area with all above machineries installed in house properly	-	2000 sq. meter

\* The CNC Plano milling machine shall be installed and shall be in working order at the firm's premises in India to handle thick web and stock rails in the required length (minimum table length of 13m) in one setup for milling operation along all x, y & z axes without handling/ re-handling of rails involved in fabrication of tongue and stock rails. The firm shall furnish complete details of this machine such as performance characteristics, machining length, number of milling heads, make & photographs etc.

**E. PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT OF FIRMS FOR  
MANUFACTURE AND SUPPLY OF THICK WEB SWITCHES**

(To be filled in by the firm in triplicate. Attach extra sheets wherever necessary)

**SECTION – I : GENERAL INFORMATION** (For record purpose only)

1. Name of the Firm
2. Postal Address of
  - (a) Head Office
  - (b) Works
3. Telephone No.  
(with STD code)
  - (a) Head Office
  - (b) Works
4. e-mail address
  - (a) Head Office
  - (b) Works
5. Description of works
  - 5.1 Total Land Area (in sqm)
  - 5.2 Total covered area (in sqm)
  - 5.3 Different sub-units
  - 5.4 A fully dimensioned plan of the works showing covered area and different shed shall be enclosed
  - 5.5 Special features, if any.
6. Number of personnel employed (category wise)
  - 6.1 Managerial
  - 6.2 Supervisory  
(Enclose list of Managers / technical supervisors )
  - 6.3 Skilled/ Artisan
  - 6.4 Un-skilled
7. Hours of Working
8. Weekly off day
9. State whether the firm is already in approved list with RDSO for supply of Over-riding Curved Switches. If so please give details of last approval.

- 9.1 Letter date and issued by
- 9.2 Date of expiry of validity of approval
10. Details of important orders executed in the past, in reference to the supplies made:
  - 10.1 To other important firms/companies/undertakings
  - 10.2 Directly to the Railways

## **SECTION-II:**

### TECHNICAL INFORMATION.

1. Production capacity
  - i) Per month
  - ii) Per year
2. Type of stores / items/ which the firm is capable of manufacturing
3. Crane facilities      No. Of cranes      Make of crane      Capacity
  - 3.1 EOT Crane
  - 3.2 Chain-pully block
  - 3.3 Mobile crane
  - 3.4 Jib Crane
4. Total Power Availability (in KVA/KW)
  - (a) From the State Electricity Board or other regular source  
(Enclose a copy of **latest** electricity bill)
  - (b) From own stand by generating sets  
(Also give make, capacity, and other details of each generating set)
5. Machines; As per **Standard Schedule of** Technical Requirement (STR) given at page 4 & 5 in this document (For manufacturing of Thick web switches and related components).
6. Handling facilities:  
It should be mentioned whether there is proper facilities for handling for finished Thick Web Switches.
7. A fully dimensioned plan of the works showing locations of various equipments and facilities for manufacture of thick web **curved** switches, flow line indicating locations of various operations during manufacture in proper sequence and storage facilities for finished products and dispatch may please be enclosed.

**QUALITY ASSURANCE:**

1. Does the factory have any established quality assurance programme as per ISO: 9000 Series. If yes, please enclose a copy of the relevant ISO certificate.
2. Details of Quality Assurance organization. Name of key personnel, their qualification, designations and positions in overall management structure (enclose organizational chart for quality control).
3. Testing facilities and laboratory equipments available to be listed along with the make, year of procurement and commissioning.
4. Calibration of laboratory/ test equipment/ gauges, ~~indicated in Para 3 above.~~ (Enclose a copy of calibration certificates).
5. Frequency of calibration (Yearly/Half yearly).
6. Source of procurement of raw materials/bought out components and steps taken to ensure their quality.
7. Brief details of manufacturing process as relevant to the items/ thick web switch for which registration is sought.
8. Details of inspection/checks done on material during various stages of the above manufacturing process (enclose a copy of QAP).
9. Has the acceptable the value of the parameters inspected during above stage checks been laid down? If yes, the action taken if value of the parameters inspected does not meet the desire laid down value.
10. System for documentations of the results of the above stage checks.
11. Whether one sample set of thick web switch is ready for inspection during reassessment/ quality audit (Report to be submitted by concerned inspecting officials).
12. Whether the firm is possessing officially issued prints of relevant drawings and specifications.



**SECTION – III : DECLARATION**

1. We do hereby declare that the above particulars are correct and no discrepancy shall be found during actual investigation before and during execution of order on our firm.
2. Any change in the plant and machinery and change of place of office and of Works site shall be brought to the notice of RDSO for clearance and approval.
3. We also declare that our concern has not been black listed by a Zonal Railway or Railway Board or RDSO for business with the Railways.
4. We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working order at all time.

Signature of Inspecting Engineer

Signature of Firm's Rep. with stamp

**Annexure-1****QUALIFYING REQUIREMENTS OF TENDERERS FOR MANUFACTURING AND SUPPLY OF THICK WEB SWITCHES WITH FIRM'S OWN ASYMMETRICAL END FORGED RAILS**

~~1.0 The tenderer must be RDSO approved firm for following types/drawings of over riding switches on the date of opening of tender:~~

<del>Type &amp; Drawing No. of Thick Web Switch</del>	<del>Firm needs to be approved in vendor list of RDSO for following type/drawing of over riding switch</del>
<del>60Kg 1 in 12 (RDSO/T-6155)</del>	<del>60Kg 1 in 12 (RDSO/T-4219)</del>
<del>60Kg 1 in 16 (RDSO/T-7076)</del>	<del>60Kg 1 in 12 (RDSO/T-4219) &amp; 60Kg 1 in 16 (RDSO/T-5692)</del>
<del>60Kg 1 in 8.5 (RDSO/T-6280)</del>	<del>60Kg 1 in 8.5 (RDSO/T-4966)</del>

~~Eligibility of tenderer for participating in the tender will be considered only for that particular category (type/drawing) in which he is approved in Vendor List of RDSO.~~

~~2.0 The tenderer must have at least one CNC Plano milling machine installed and in working order at its premises in India to handle thick web and stock rails in the required length (minimum table length of 13m) in one setup for milling operation along all x, y & z axes without handling/re-handling of rails involved in fabrication of tongue and stock rails. Tenderer should furnish complete details of this machine such as performance characteristics, machining length, number of milling heads, make & photographs etc., along with his offer.~~

**1.0** Asymmetrical rail of ZU-1-60/60E1A1 Rail profile shall be sourced from rail manufacturer(s):

- (a) Who have supplied asymmetrical rails as per IRS-T-12 / 2009 as amended from time to time, during last 7 (seven) years and current year ~~i.e. from 01.01.2011~~ upto the date of tender opening for use in thick web switches on Indian Railways or KRCL or RVNL or any state/Central Government owned Metro Railways in India. Certificate from user Railways Network about satisfactory performance of asymmetrical rails supplied in this regards should be submitted by the tenderer.

**OR**

(b) If manufacturing facilities of Asymmetrical Rails are not located in India, then Rail manufacturer should have supplied 60 kg rails in India as per IRS-T-12 / 2009 (as amended from time to time) during last 7 (seven) years and current year ~~i.e. from 01.01.2011~~ up to the date of tender opening and these rails should have been used on Indian Railways or KRCL or RVNL or any State/Central Government owned Metro Railways in India; AND should have supplied asymmetrical rails, during last 7 (seven) years and current year ~~i.e. from 01.01.2011~~ up to the date of tender opening, for fabrication of thick web switches to/ for passenger/ mixed traffic carrying Railway networks in minimum 3 (Three) countries and which should have been used on such railway networks. Certificates from the user Railway networks of these countries about satisfactory performance of Thick Web Switches manufactured from these rails should be submitted by the tenderer.

**2.0** The tenderer should have facilities with them or Memorandum of understanding (MoU) valid on date of tender opening, with the agency having facilities for end forging of asymmetrical rail of ZU-1-60/60E1A1 profile into 60kg UIC/60E1 rail section conforming to Indian Railways specification for supply of end forged Asymmetrical rail of ZU-1-60/60E1A1 rail profile for manufacturing tongue rail. The tenderer shall submit a certificate of having facilities of End Forging of Asymmetrical Rails of ZU-1-60/60E1A1 profile in to 60kg/60E1 Rails or shall submit a MoU mentioned above with supporting documents.

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