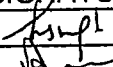
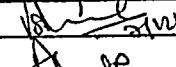
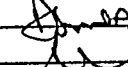
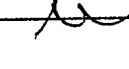
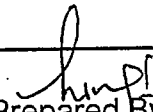


SCHEDULE	SCHEDULE OF INFRASTRUCTURAL REQUIREMENTS FOR MANUFACTURING & TESTING FOR ROOF VENTILATOR ARRANGEMENT (TRA TYPE) TO DRAWING. NO. CC73001	MDST: 27 Rev: NIL PAGE 1 OF 4
		Dated 07.12.2005

SCHEDULE OF INFRASTRUCTURAL REQUIREMENTS FOR MANUFACTURING & TESTING FOR ROOF VENTILATOR ARRANGEMENT (TRA TYPE)

NAME	DESIGNATION	SIGNATURE	DATE	LEVEL
Harish Kumar	SSE/VD		7/12/05	Prepared
Joginder Singh	ADE/VD			Agreed
Amitabh Sinha	Dy CME/TOT		9/12/05	Reviewed
S K Aggarwal	CDE		12/12/05	Approved

Issue/Rev	Details of Changes	Date


Prepared By

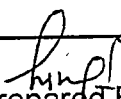

Agreed By


SCHEDULE	SCHEDULE OF INFRASTRUCTURAL REQUIREMENTS FOR MANUFACTURING & TESTING FOR ROOF VENTILATOR ARRANGEMENT (TRA TYPE) TO DRAWING. NO. CC73001	MDST: 27 Rev: NIL PAGE 2 OF 4
		Dated 07.12.2005

1.0 REQUIREMENTS: This schedule is applicable for roof ventilator arrangement (TRA type) to drawing. no. CC73001. The vendors seeking approval shall comply with all the requirements mentioned below:

2.0 GENERAL & MANUFACTURING FACILITIES

- 2.1 Covered area with adequate space underneath for storage of raw materials e.g. billets, round corner squares, rounds etc. The covered area should have display board showing different colour shades nominated to different grades of steel to avoid mix up of materials. Arrangement of painting the billets, RCS rounds etc with particular paint shade previously nominated according to the grade of steel should be available.
- 2.2 Minimum 1 No of shearing machine of suitable capacity and of standard makes should be available.
- 2.3 Adequate machining facilities comprising of radial drilling, etc. of suitable capacities and standard makes should be available.
- 2.4 At least one no. of profile cutting machine with suitable facilities shall be available.
- 2.5 Atleast one number of MIG/MAW welding machine of suitable capacity and standard make shall be available.
- 2.6 Adequate Nos. of hand grinders for removal of fins & burrs shall be available.
- 2.7 The firm shall have atleast one power press of suitable capacity along-with punch and dies for component forming.
- 2.8 The raw material should be procured from authorized distributor of original manufacturer of steel and firm should procure material with test certificate from primary manufacturer
- 2.9 The firm shall comply with IS:822 regarding selection of weld wire, storage of consumables, calibration of welding equipment , training of welder, testing of welding and remedies for welding defects.
- 2.10 The welder shall have a minimum of 2 years experience of the same type of welding.
- 2.11 The fabricator shall have adequate fabrication and process capability to obtain all the tolerances and geometrical tolerances and shall have arrangement of jig/fixture/clamping device for main assembly & sub-assembly work.
- 2.12 The firm shall have separate paint booth for doing priming of the component.
- 2.13 The firm shall have suitable facility of grit/shot blasting in-house.


Prepared By


Agreed By

SCHEDULE	SCHEDULE OF INFRASTRUCTURAL REQUIREMENTS FOR MANUFACTURING & TESTING FOR ROOF VENTILATOR ARRANGEMENT (TRA TYPE) TO DRAWING. NO. CC73001	MDST: 27 Rev: NIL PAGE 3 OF 4
		Dated 07.12.2005

3.0 TESTING FACILITIES

3.1 **Chemical Lab:** The firm should have permanent arrangement with NABL certified Lab or a reputed steel making company for arranging the spectro analysis of the material.

3.2 **Physical Testing Lab:** The firm must possess a well-equipped physical lab with following facilities:

- Universal testing machine of 40t capacity with load/ deflection plotting arrangement to conduct UTS, Yield strength.

3.3 **Other Testing Facilities:** The firm shall possess the following:

- The firm shall have adequate facilities for preparation of test sample. Facilities like machining, grinding, polishing etc. should be available in house.
- Adequate number of fine punches for stamping marking particulars on finished components.
- Adequate numbers of measuring instruments such as:
 - Digital Vernier Calipers - 0 mm to 300 mm
 - Measuring scales – 1 meter
 - Inside & outside Micrometers - Ranging from 0 to 150 mm
 - GO & NO-GO gauges.
 - Profile gauges
 - Set of radius gauge.

4.0. QUALITY CONTROL REQUIREMENTS

4.1 There should be a system to ensure the traceability of the product from raw material stage to finished product stage. This system should also facilitate to identify the raw material composition from the finish product stage.

4.2 The firm shall ensure that there is a QAP for the product detailing various aspects: -

- QA Organisational Chart
- Flow Process Chart
- Stage inspection details
- Various parameters and to ensure control over them

4.3 There should be at least one full time technologist having a minimum bachelor's degree in relevant field & 5 years experience or a person with diploma in relevant field with 12 years experience.

4.4 The firm should have acquired ISO: 9000 series certification and the product for which an approval is sought should be broadly covered in the scope of the certification for manufacture

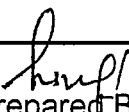

Prepared By


Agreed By

SCHEDULE	SCHEDULE OF INFRASTRUCTURAL REQUIREMENTS FOR MANUFACTURING & TESTING FOR ROOF VENTILATOR ARRANGEMENT (TRA TYPE) TO DRAWING. NO. CC73001	MDST: 27 Rev: NIL PAGE 4 OF 4
		Dated 07.12.2005

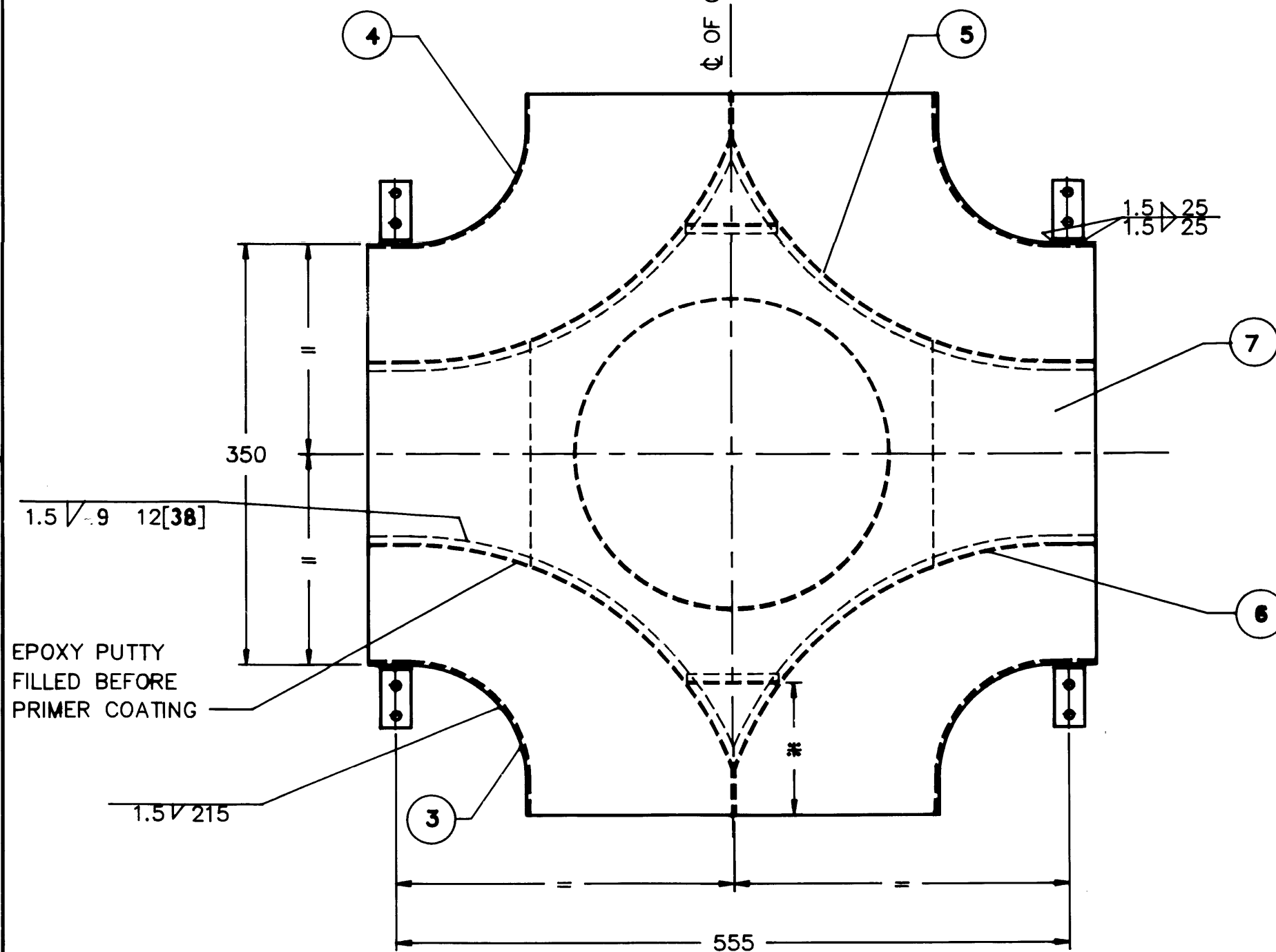
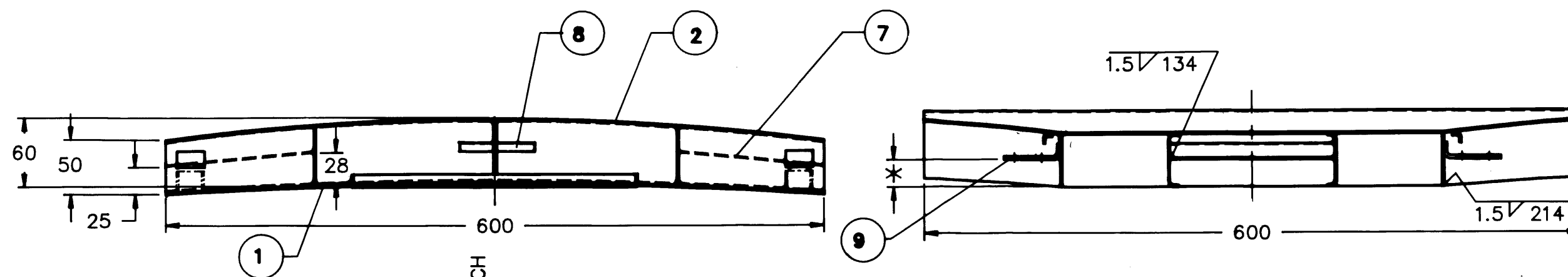
and supply.

- 4.5 The Quality manual of the firm for ISO: 9000 should clearly indicate at any stage the control over manufacturing and testing of the said railway product.
- 4.6 The firm shall ensure that proper analysis is being done on monthly basis to study the rejection at various internal stages and it is documented.
- 4.7 The firm shall ensure that all the relevant specifications, IS standards are available with them.


Prepared By


Agreed By

ALT.NO	ALTERATIONS	INITIAL
a	NOTE 6 ADDED.	<i>PSingh</i> 19/12/90
b	QTY. FOR ITEM-9 ALTERED FROM 2 TO 4, WELDING SYMBOL CHANGED FROM 1.5V/40 12 (12) TO 1.5V/9 12 (38)	<i>PSingh</i> 10/10/91



NOTE: -

- ITEM NO.9 TO BE SUPPLIED LOOSE & WELDED IN THE FINAL ASSEMBLY TO SUIT THE VARIATION IN ROOF HEIGHT MARKED THUS *.
- ALTERNATE MATERIAL TO IRS:M41-74 IS ALSO ACCEPTABLE.
- DIMENSIONS MARKED THUS * ARE TO BE KEPT TO SUIT THE CURVATURE TO PREVENT LEAKAGE OF AIR & WATER BETWEEN COMPARTMENTS.
- EPOXY PUTTY IS TO BE APPLIED WHERE STRIP WELDING IS SHOWN.
- EXCEPT EPOXY PUTTY NO OTHER FILLING MATERIAL TO BE USED.
- ASSLY. TO BE PAINTED WITH TWO COATS OF PRIMER PAINT OF RED OXIDE-ZINC CHROME TO IS: 2074-79.

9	FIXING ANGLE	4	CC73012		
8	ANGLE	2	CC73011		
7	STIFFENER	2	CC73010		
6	STIFFENER [L.H.]	2	CC73009		
5	STIFFENER [R.H.]	2	CC73008		
4	STIFFENER [R.H.]	2	CC73007		
3	STIFFENER [L.H.]	2	CC73006		
2	TOP COVER	1	CC73005		
1	BOTTOM COVER COMPLETE	1	CC73002		
ITEM	DESCRIPTION & DIMENSIONS	NO.OFF	REF.DRG.	MAT. & SPEC.	REMARKS
GROUP VENTILATOR, FANS ETC.				SUPERSEDED BY:	
ROOF VENTILATOR ARRGT. TRA TYPE				SUPERSEDES:	
				SCALE 1:4	SDO <i>PSingh</i> 17/12/90
INDIAN RAILWAY STANDARDS				TRD	
				DRN <i>H. Singh</i>	
CODE NO.				ALT. a b	
DRG.NO. CC73001				RAIL COACH FACTORY KAPURTHALA	
				SHEET 1 OF 1	

THE TOLERANCE ON DIMENSIONS FOR WHICH NO LIMITS ARE GIVEN SHALL BE AS SHOWN BELOW							
NOMINAL SIZE	OVER	0	6	30	120	400	1000
	TO	6	30	120	400	1000	2000
MACHINED	±0.2	±0.5	±0.8	±1.2	±2	±3	±4
FABRICATED	±1	±1	±1.5	±2	±3	±4	±6

NOMINAL SIZE	over	2000	4000	8000	12000	16000	20000
	to	4000	8000	12000	16000	20000	
MACHINED	±4	±5	±6	±7	±8	±9	±10
FABRICATED	±6	±8	±10	±12	±14	±16	±18

STORAGE DATA	CV
MD00202/MD00212	OMC

SURFACE ROUGHNESS VALUE TO IS:3073	GRADE	N1 N2 N3 N4 N5 N6 N7 N8 N9 N10 N11 N12												
		0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50	
	SYMBOL	▽▽▽	▽▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽