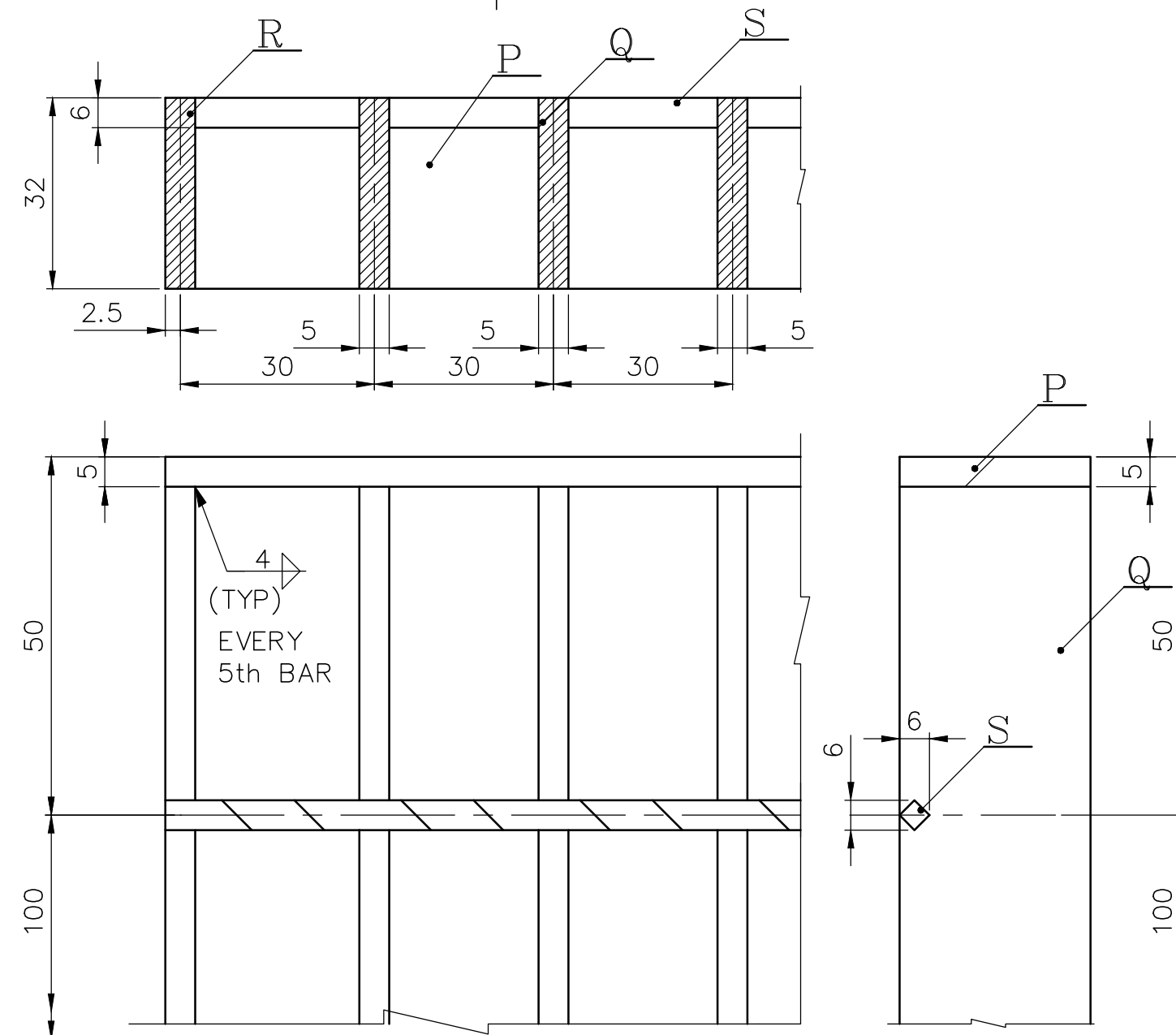
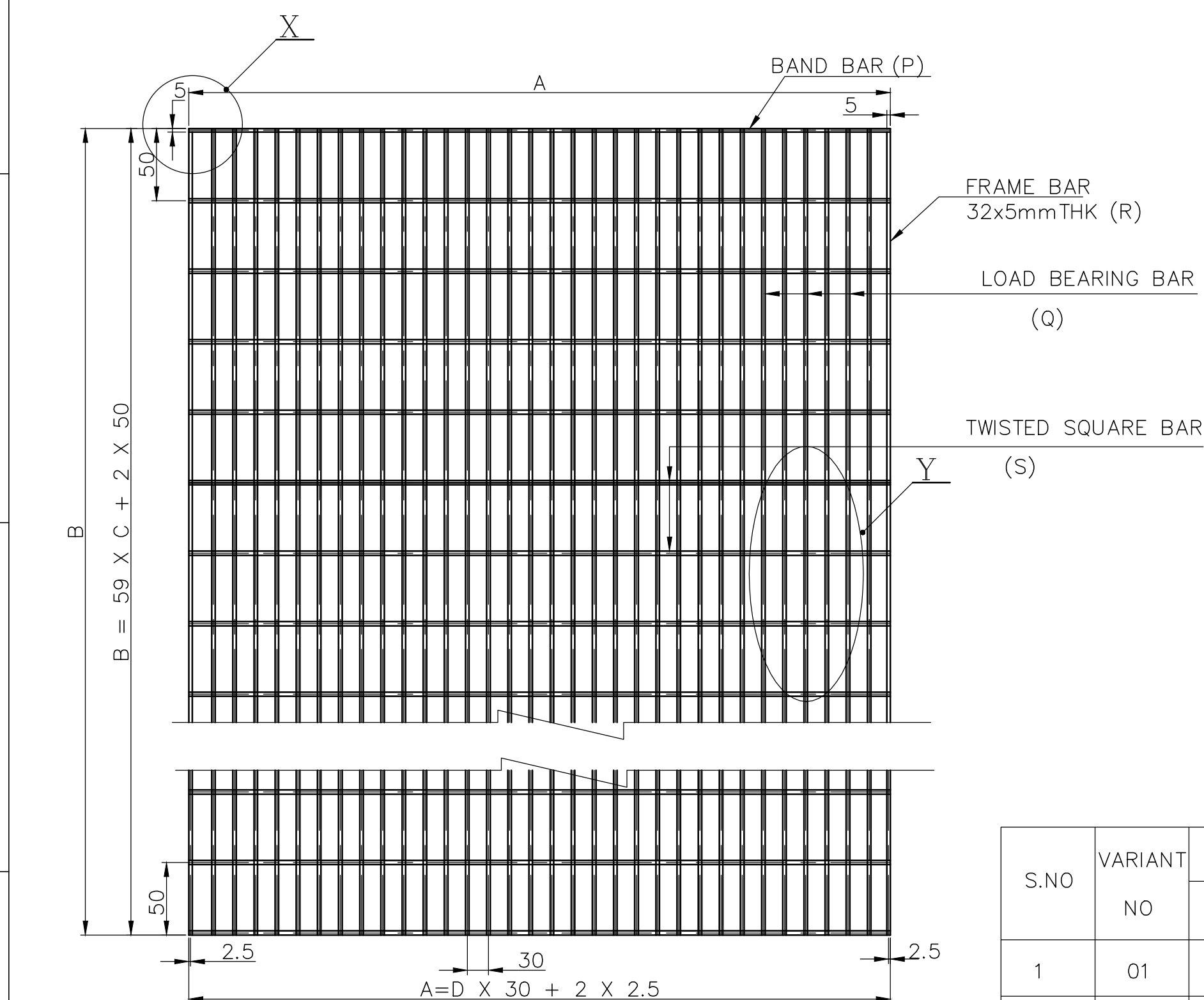


**ITEM: ELECTRO FORGED FLOOR GRILL 32X515X6000 MM AS PER
DRG:1-35-811-02525/09 for SAGARDIGHI PROJECT**

REMARKS:

1. THE VENDOR SHALL FOLLOW THE STANDARD QUALITY PLAN CQP:4731/REV 00 DATED 21.06.2012.
2. THE VENDOR SHALL SUBMIT ALL THE CREDENTIALS AS PER PQR REQUIREMENT.
3. THE VENDOR SHALL SUBMIT THE TEST CERTIFICATE AND GUARANTEE CERTIFICATE.
4. THE VENDOR OFFER SHALL BE CONSIDERED SUBJECT TO CUSTOMER APPROVAL.
5. THE VENDOR SHALL PROVIDE ALL THE DOCUMENTS AS PER ATTACHED FORMAT FOR TAKING UP WITH CUSTOMER FOR APPROVAL.



DETAIL-X

S.NO	VARIANT NO	SIZE OF FLOOR GRILL				ITEM NO/NO.OFF								WT. PER FLOOR GRILL BEFORE GALVANISING IN KG	WT. PER FLOOR GRILL AFTER GALVANISING IN KG
		WIDTH A	LENGTH B	C	D	P		Q		R		S			
1	01	305	6000	100	10	01	2	02	9	03	2	04	60	86.099	89.288
2	02	515	6000	100	17	05	2	06	16	07	2	08	60	141.088	146.319
3	03	995	6000	100	33	09	2	10	32	11	2	12	60	266.742	276.639

NOTES: —

1. FLOOR GRATINGS ARE TO BE GALVANISED BY HOT DIP PROCESS AFTER CLEANING BY PICKLING PROCESS.
MINIMUM AVERAGE WEIGHT OF ZINC COATING SHALL BE 610 GRAMS PER SQ. METRE.
2. STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 E250A ONLY ARE TO BE USED
3. GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
4. ALL SCRATCHED SURFACES AND AREAS DAMAGED BY SITE WELDING SHALL RECEIVE ATLEAST TWO COATS OF COLD GALVANISING USING ZINC RICH PRIMER /PAINTS. THE TOTAL DRY FILM THICKNESS OF SUCH TOUCH UP COLD GALVANISING SHALL NOT BE LESS THAN 150 MICRONS.
5. DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M
6. ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
7. WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
8. FLOOR GRILLS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRILLS TAKE LIVE LOAD AS PER NOTE NO. 05 AND MAXIMUM DEFLECTION IS LIMITED TO $L/250$ OR 6MM WHICHEVER IS MINIMUM WHERE THE SPAN OF SUPPORTS (L) WILL BE 1.5M MAXIMUM.
9. FRAME AND LOAD BEARING BAR WELDING : ALL FOUR CORNERS TO BE FULL WELDED TO BAND BARS AND EVERY FIFTH LOAD BEARING BAR TO BE WELDED TO BAND BAR BY MANUAL WELDING FULL DEPTH, AT BOTH ENDS FROM ONE SIDE.
10. GRATINGS (32mm THICK) ARE FOR OUT DOOR APPLICATION
11. TOLERANCE FOR LENGTH AND WIDTH OF GRATINGS SHALL BE ± 5 mm

REV	DATE	ALTD.	CHD	APPD	REV	DATE	ALTD.	CHD	APPD	REV	DATE	ALTD.	CHD	APPD
	03-01-08	KESAVAN	PENCHAII	RJK		10-06-05	KARTHIK	PENCHAII	RJK		20-05-05	KARTHIK	PENCHAII	RJK
06	NO.OF BARS INCREASED BASED ON MANUFACTURERS FEED BACK				05	TOLERANCE FOR LENGTH AND WIDTH ADDED				04	TITLE BLOCK REMOVED			

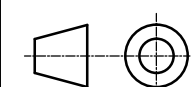
REV	DATE 12.02.2013	ALTD. PRAKASH	CHD MPR	APPD MPR	REV	DATE 22.02.12	ALTD. PRAKASH	CHD MPR	APPD RRS	REV	DATE 04-05-08	ALTD. kesavan	CHD PENCHAL	APPD RJK
09	ITEM No.04,08 & 12 MATERIAL SPECIFICATION REVISED.				08	DRAWING UPDATED BASED ON QC/QA FEED BACK. PLATE IS REVISED AS FLAT IN BOM				07	DRAWING UPDATED			
REV	DATE 10.09.'03	ALTD.	CHD SKR	APPD RRS	REV	DATE 21.08.03	ALTD.	CHD SKR	APPD RRS	REV	DATE	ALTD.	CHD SKR	APPD RRS
03	DRG. REVISED AS AGREED BY NTPC AS PER CLAUSE 9.0 OF M.O.M OF 4th TCM BETN. BHEL & NTPC dated .10 th &11.09.'03				02	DRAWING UPDATED AS PER NTPC TRANSMITTAL FOR DOCUMENTS REF.No. CC:PEV: 2240:108: TR: 02 Dt.05.08.03				01	DRAWING TITLE BLOCK UPDATED			

03	12	TWISTED SQ. BAR 6mm (DIAGONAL)X 995									0.141	
						IS1786 Fe500					60	-
03	11	FLAT 5 X 32 X 5990					IS2062 E250A				7.523	
											2	
03	10	FLAT 5 X 32 X 5990						IS2062 E250A			7.523	
											32	
03	09	FLAT 5 X 32 X 995						IS2062 E250A			1.250	
											2	
02	08	TWISTED SQ. BAR 6mm (DIAGONAL)X 515									0.073	
						IS1786 Fe500					60	
02	07	FLAT 5 X 32 X 5990						IS2062 E250A			7.523	
											2	
02	06	FLAT 5 X 32 X 5990									7.523	
							IS2062 E250A				16	
02	05	FLAT 5 X 32 X 515									0.647	
							IS2062 E250A				2	
01	04	TWISTED SQ. BAR 6mm (DIAGONAL)X 305									0.043	
						IS1786 Fe500					60	
01	03	FLAT 5 X 32 X 5990									7.523	
								IS2062 E250A			2	
01	02	FLAT 5 X 32 X 5990									7.523	
								IS2062 E250A			9	
01	01	FLAT 5 X 32 X 305									0.383	
							IS2062 E250A				2	
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPECN	A/C/B DI	UNIT	UNIT WEIGHT QUANTITY	% 		

AGREEMENT WITH	 BHARAT HEAVY ELECTRICALS LTD UNIT:HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI-620 014	DEPT	NAME	SIGN	DATE
		CODE	DRN	S.MANIVANNAN	31/05/03
		S1122	DESN	S.K.RAMAN	31/05/03
			CHD	S.K.RAMAN	31/05/03
			APPD	R.RAMASAMY	31/05/03

LONG SPAN FLOOR GRILL - 32MM
(6 TWISTED SQUARE - GALVANISED)

BHEL DRG NO.



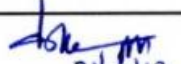
1-35-811-02525

REV 00

	MANUFACTURER'S NAME & ADDRESS BHEL: TIRUCHIRAPPALLI		STANDARD QUALITY PLAN					QP NO.: CQP 4731 REV.NO.00 DATE: 21/06/2012 PAGE: 1 OF 1					
	APPROVED SUB-CONTRACTOR										ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS		
			SUB-SYSTEM :Steam Generator and Auxiliaries,										
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
1	2	3	4	5	6	7	8	9	D*	M	C	N	10

1.0 RAW MATERIAL:													
1.1	Bearing Bar. Square Twisted Bar Chequered Plate & other Support plates	Chemical Properties Mechanical Properties Physical Properties	B	Verification of Record	100%	As per BHEL Purchase order(PO)/ BHEL drawing/Material Specification//Laboratory test report./ Test certificate..	MTC	√	P	V	V	Witness of raw material for BHEL Purchase order requirement by BHEL/BHEL AIA. Refer Note-1	
			B	Lab analysis	1 No per / PO		MTC	√	P	W	W		
			B	Visual, Dimensions Straightness Surface finish	At random		IR	√	P	W	W		
2.0 IN PROCESS CONTROL:													
2.1	Checks on EF weld machines	Weld parameters, Weld quality Straightness of bars Mesh size and other Dimensions of grating	B	Machine setting Measurement & Visual checks. (Projection & Fusion of weld)	6 times per Shift	WPS / PQR(ASME Sec-I) / BHEL Drawing	IR./ Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.	
		Weld Strength	B	Load test	Once ** per Shift	By applying 20Kg Pull load on weld joint.	Log book	√	P	W	V	** Random	
2.2	Pull out test on EF Weld. And Macro Etch test	Strength test	B	Lab test	1 No per / PO	Manufacturers practice	LTC	√	P	W	W	Shall be carried out in a NABL appd.lab./ Manufacturers .own lab.	
2.3	Manual welds in Step treads	Weld parameters, Weld Size & quality	B	Visual inspection for weld defects	100%	WPS / PQR(ASME Sec-I) / AWS D 1.1/ BHEL Drawing /Free from defects	Log book	√	P	W	V		
2.4	Dimensions	Physical	B	Measurement	100%	As per BHEL Purchase order & BHEL drawing	DR	√	P	W	V#	#Witness by BHEL AIA - 2%/ Per size/ PO.	
3.0 TESTS													
3.1	Deflection Load test (Before galvanizing)	Physical / Dial gauge	B	Measurement	1No./ Per size/ PO.	BHEL Purchase order/ BHELAppd Drawing.	IR	√	P	W	W	Refer Note: 2	
3.2	Galvanizing	1.Visual 2.Mass of zinc 3.Adhesion 4.Preece Test 5.Coating Thickness	B	Visual, Lab test Measurement	As per Standard IS2629, IS 4759, IS2633	As per BHEL Purchase order, BHEL drawing.	Log Book, IR	√	P	W	V*	* Witness of testing on One sample per PO identified by BHEL / BHEL AIA.	
4.0	PACKING, CRATING AND IDENTIFICATION	Bundling / Identification /Protection	B	Visual	100%	Shall be tied with steel strip/Compact packing BHEL PO.No & Item No shall be stenciled.	IR		P	V	V		

LEGEND:

J. Nanthini 21/06/2012 J. NANTHINI	 V. KALYANARAMAN 21/6/12	Note: (1) Samples shall be selected by BHEL/BHEL AIA for the offered inspection lot. Testing shall be done in a NABL approved lab / Suppliers own lab in the presence of BHEL/BHEL AIA. (2) Deflection shall be measured with a dial gauge by applying a Uniformly Distributed Load-1000Kg.per Sq. meter. Floor Grill shall be placed on two vertical supports-1200mm. apart. Deflection=1200/325 = 3.69mm.
PREPARED	APPROVED	Legend: * Records, indentified with "Tick" (√) shall be essentially included by SUPPLIER in QA documentation. ** M: Manufacturer C: MANUFACTURERS ' QC N: BHEL / BHEL AIA P: PERFORM. W: witness. V: verification , CHP: customer shall identify in column N "N" AS ' W" CLASS : A - CRITICAL ; B - MAJOR ; C - MINOR . MTC: Mill test certificate. LTC: Lab test certificate. IR: Inspection Report. DR: Dimension Report.
SIGNATURE		

BHEL/TRICHY
MM/BOI/PURCHASE

Pre-Qualification requirements (PQR) for the procurement of Floor Grills as per specification through Open Tender

A: Organizational Capability & Technical Competence:

Sl. No.	Pre –Qualification Criteria	Bidder acceptance / Bidder remarks
1	Offers from bidders having basic in house manufacturing facilities for the enquired items are only eligible to participate. Offer from Traders, Distributors are not acceptable and will not be considered for evaluation. Vendor to indicate the nature of the Firm. (Trader/Distributor/Manufacturer). Product catalogue shall be submitted.	
2	Manufacturing plant address & available equipment's for manufacturing the tendered items shall be provided along with offer.	
3	Suppliers shall submit Quality Management System certificate or Written down procedure.	

B: Past Experience/ Performance:

Sl. No.	Pre –Qualification Criteria	Bidder acceptance / Bidder remarks
1.	The supplier shall have supplied same or similar items for 50% of the bid quantity (in terms of Metric Tonnes) for the respective Package. PO Copies with corresponding proof of supply shall be furnished.	

C. Financial Soundness:

Sl. No.	Pre –Qualification Criteria	Bidder acceptance / Bidder remarks
1.	Indigenous suppliers shall submit copies of annual reports (balance sheets), profit & Loss Statement for the last three years (or from date of incorporation whichever is less) and GST Certificate.	

Necessary supporting documents shall be submitted for meeting each of the above Pre-Qualification Criteria for technical evaluation of the offers.

BHEL reserves the right to consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. If required, BHEL also reserves the right to verify information submitted by vendor. In case the information is found false/incorrect, the offer shall be rejected. BHEL also reserves the right to carry out audit checks for confirming the material properties on the supplied material during material receipt at BHEL. Supplies found defective during check or subsequent processing at BHEL will be rejected.

	ANNEXURE A				
	Previous Experience Details				
SL NO	Project Name	Rating (MW)	Customer Name	Year of supply	WBPDCI Remarks
1					
2					
3					
4					
	Credentials to be provided				