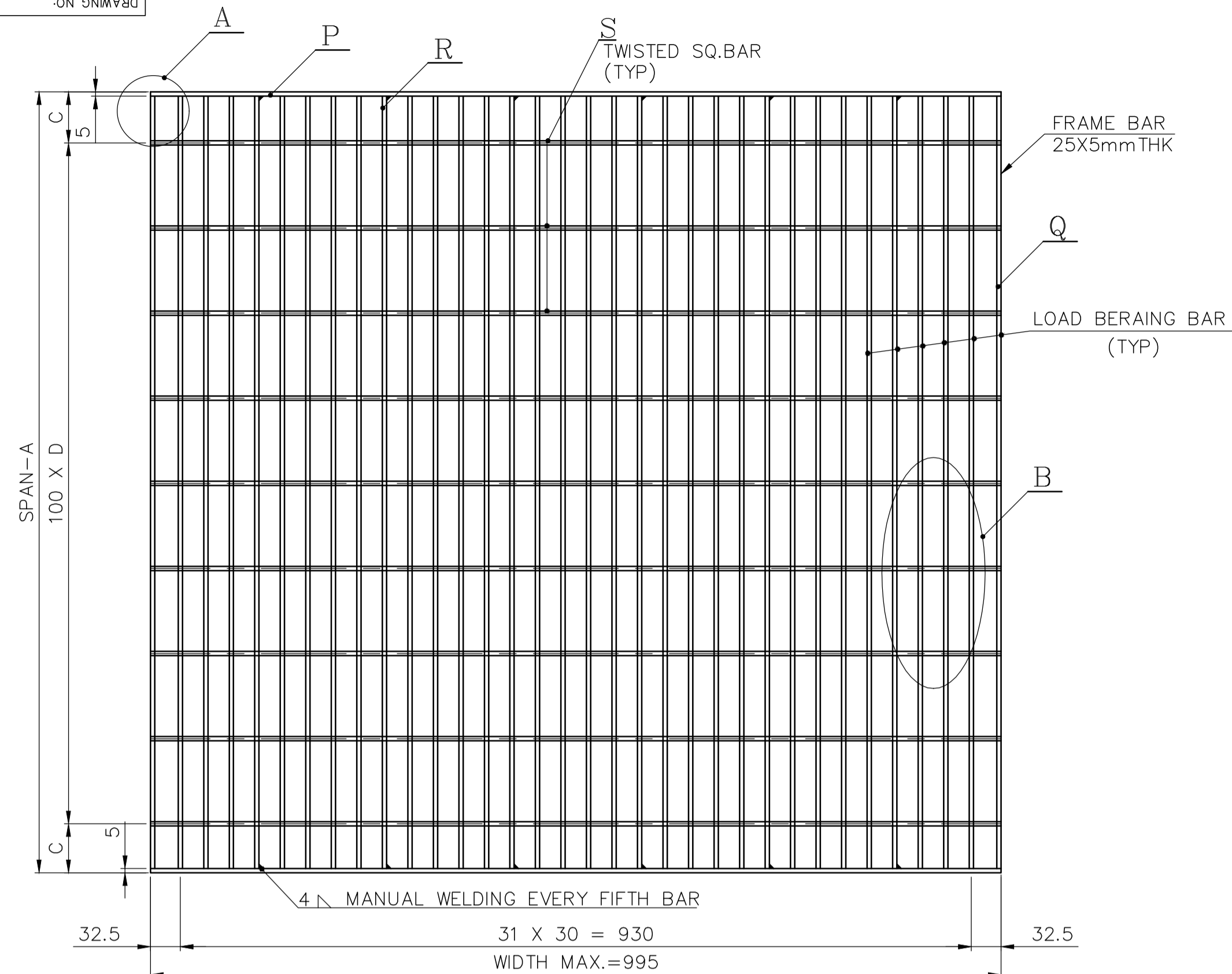


**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 900 X 995 AS PER  
DRG:1-35-811-10783 for MEJIA PROJECT**

**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.

88201-118-93-1

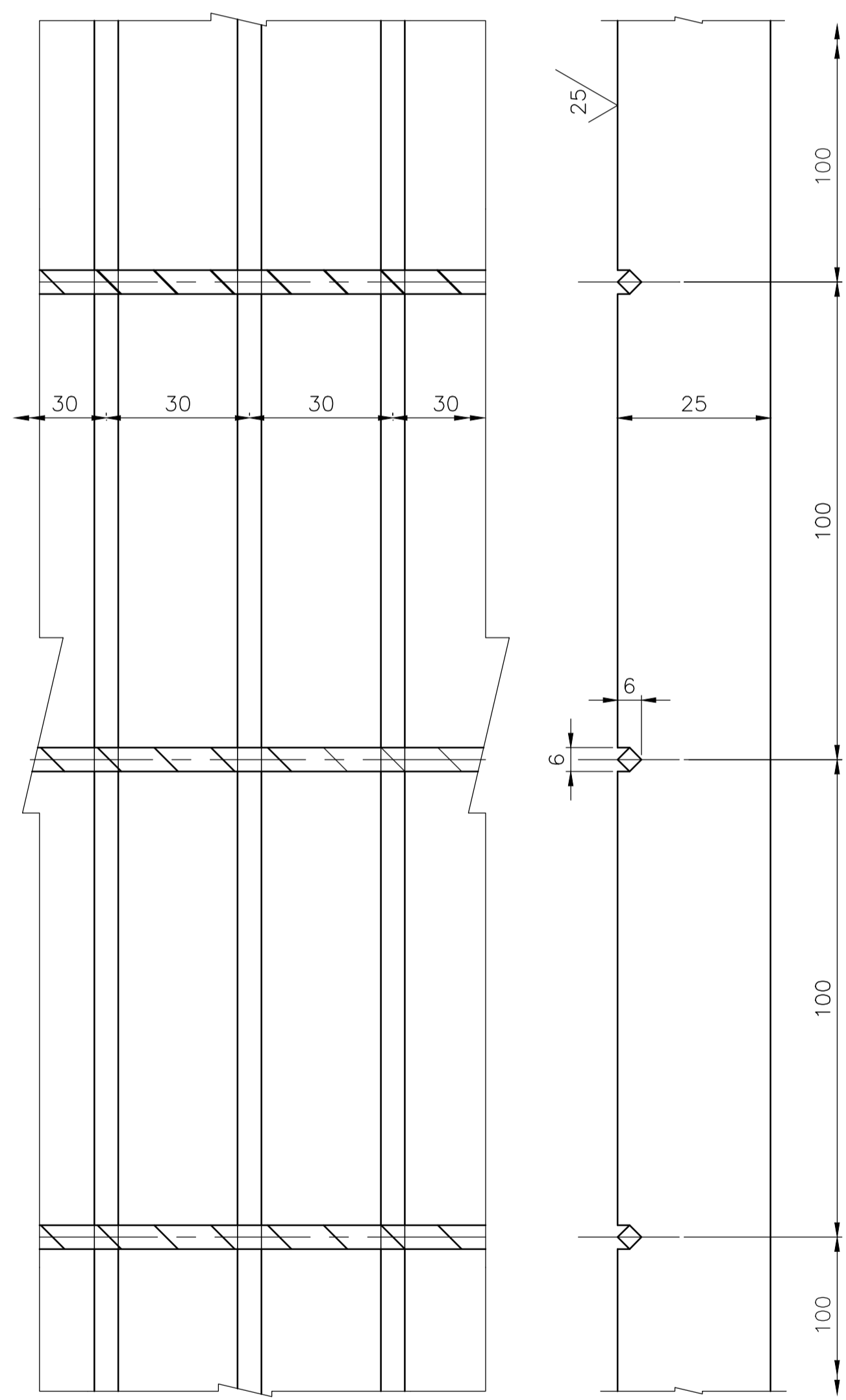


NOTES: -

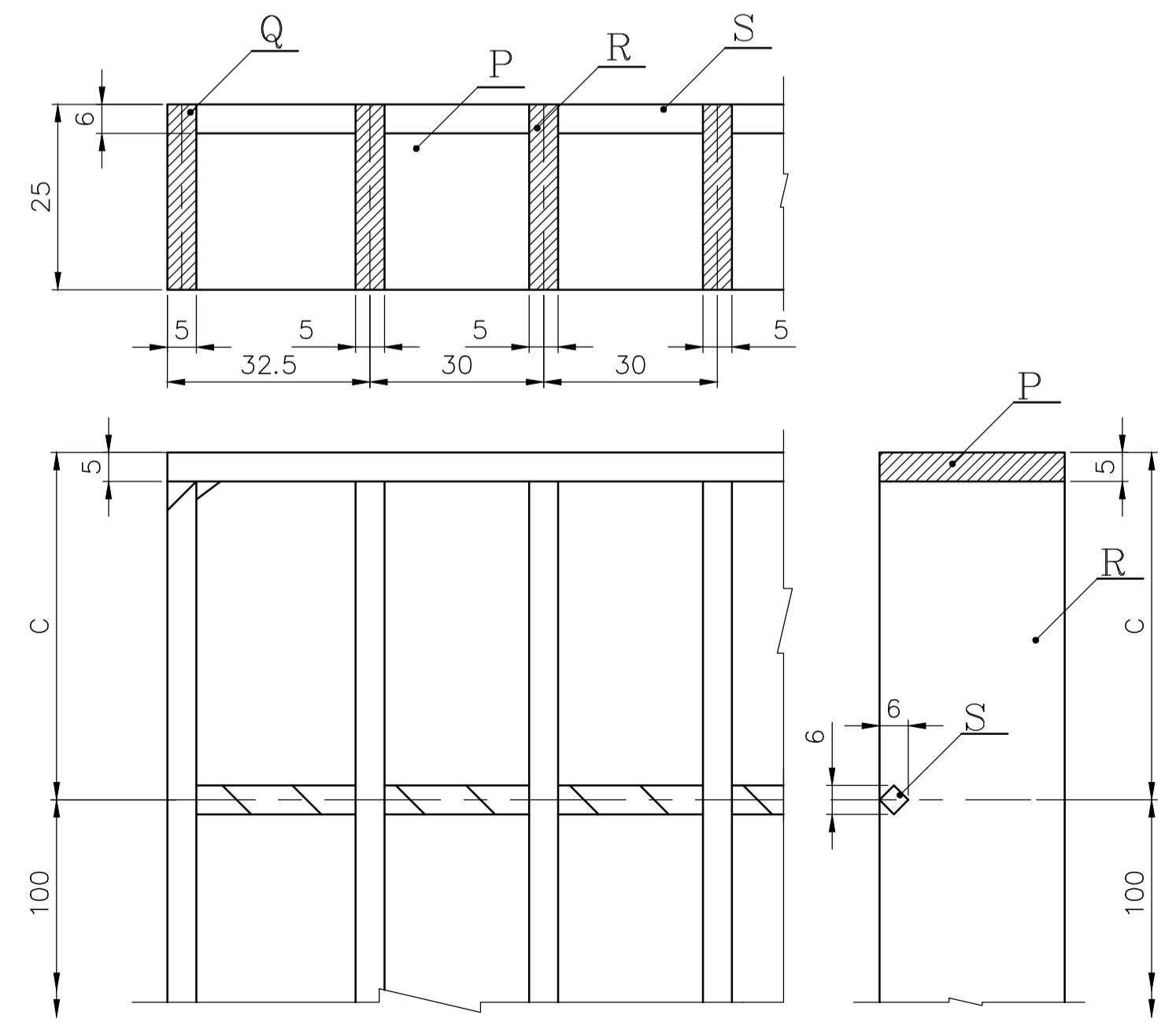
- FLOOR GRATINGS ARE TO BE GALVANISED BY HOT DIP PROCESS AFTER CLEANING BY PICKLING PROCESS. MINIMUM AVERAGE WEIGHT OF ZINC COATING SHALL BE 610 GRAMS PER SQ. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRATINGS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRATINGS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



DETAIL-B



DETAIL-A

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY	G/S		
24		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									13		
23		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			32		
22		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			2		
21		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
20		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									12		
19		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			32		
18		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			2		
17		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
16		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									11		
15		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			32		
14		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			2		
13		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
12		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									10		
11		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			32		
10		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			2		
09		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
08		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									9		
07		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			32		
06		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			2		
05		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
04		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									4		
03		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			32		
02		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			2		
01		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

REV 01 DATE ALTERED: CHD & APPD:

DEPT: ST ALL DIMENSIONS ARE IN MM PROJECTION: SCALE: WEIGHT (Kg): REF TO ASSY / OLD DWG

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783

REV: 00

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731						
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012						
		SUB-SYSTEM :Steam Generator and Auxiliaries,						PAGE: 1 OF 1						
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	11

<b>1.0 RAW MATERIAL:</b>												
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			√	P	W	W	
			B	Visual, Dimensions Straightness Surface finish	At random			IR	√	P	W	
<b>2.0 IN PROCESS CONTROL:</b>												
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-1) / 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-1) / 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.
<b>3.0 TESTS</b>												
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.		

**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.**

**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 1000 X 995 AS PER  
DRG:1-35-811-10783 for MEJIA PROJECT**

**REMARKS:**

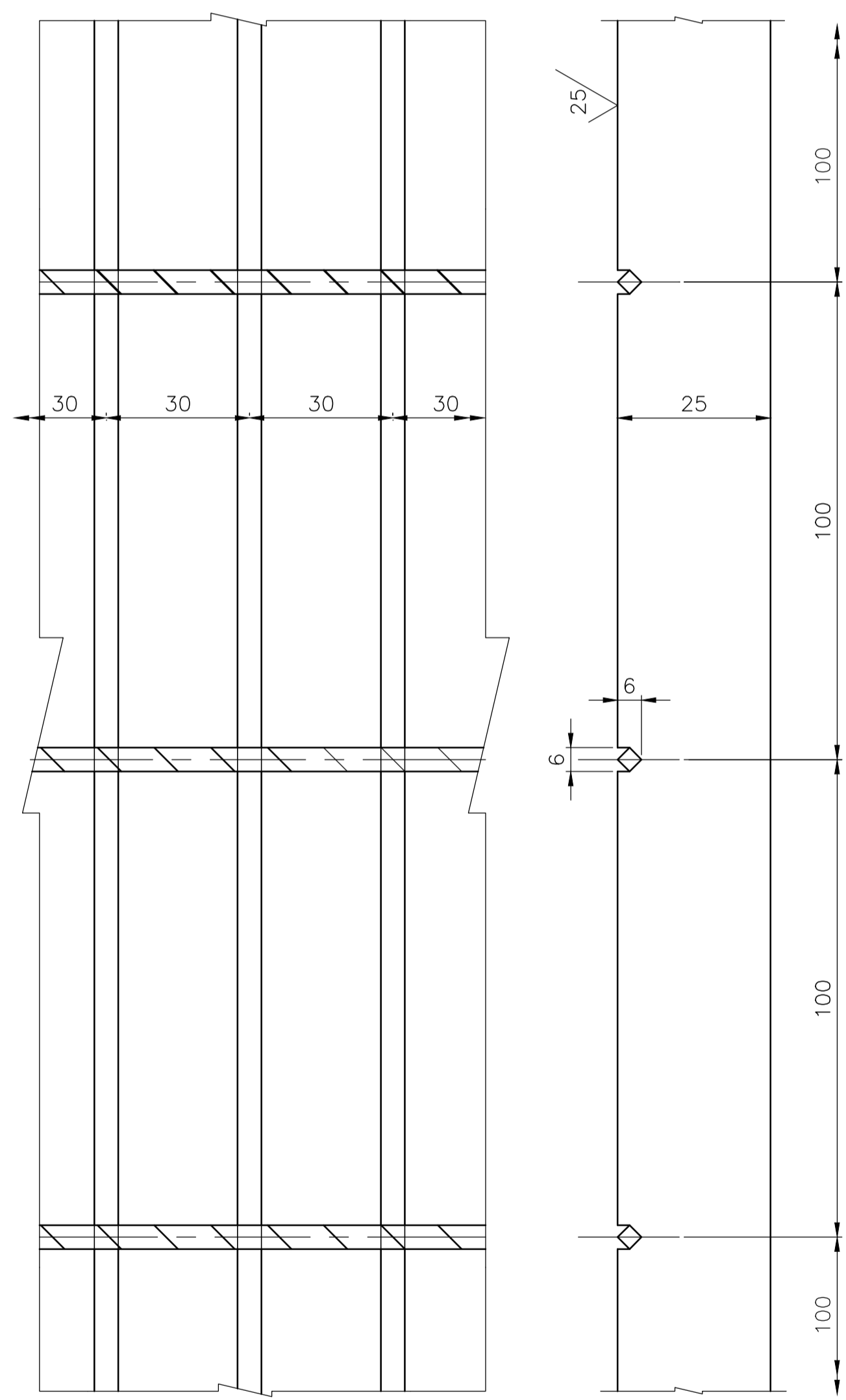
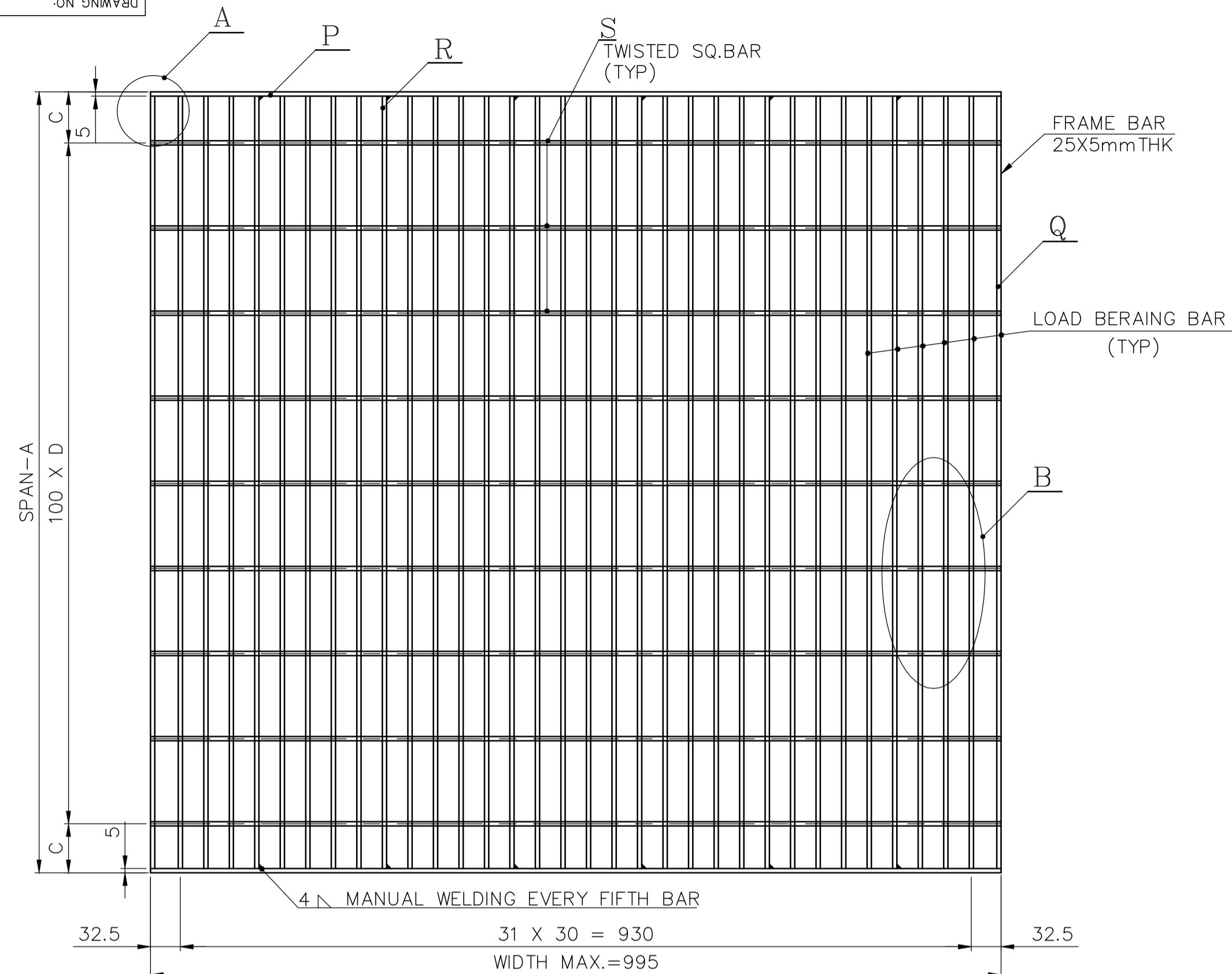
1. THE VENDOR SHALL FOLLOW THE STANDARD QUALITY PLAN CQP:4731/REV 00 DATED 21.06.2012.
2. THE VENDOR SHALL SUBMIT ALL THE CREDENTIALS AS PER PQR REQUIREMENT.
3. THE VENDOR SHALL SUBMIT THE TEST CERTIFICATE AND GUARANTEE CERTIFICATE.

88201-118-93-1

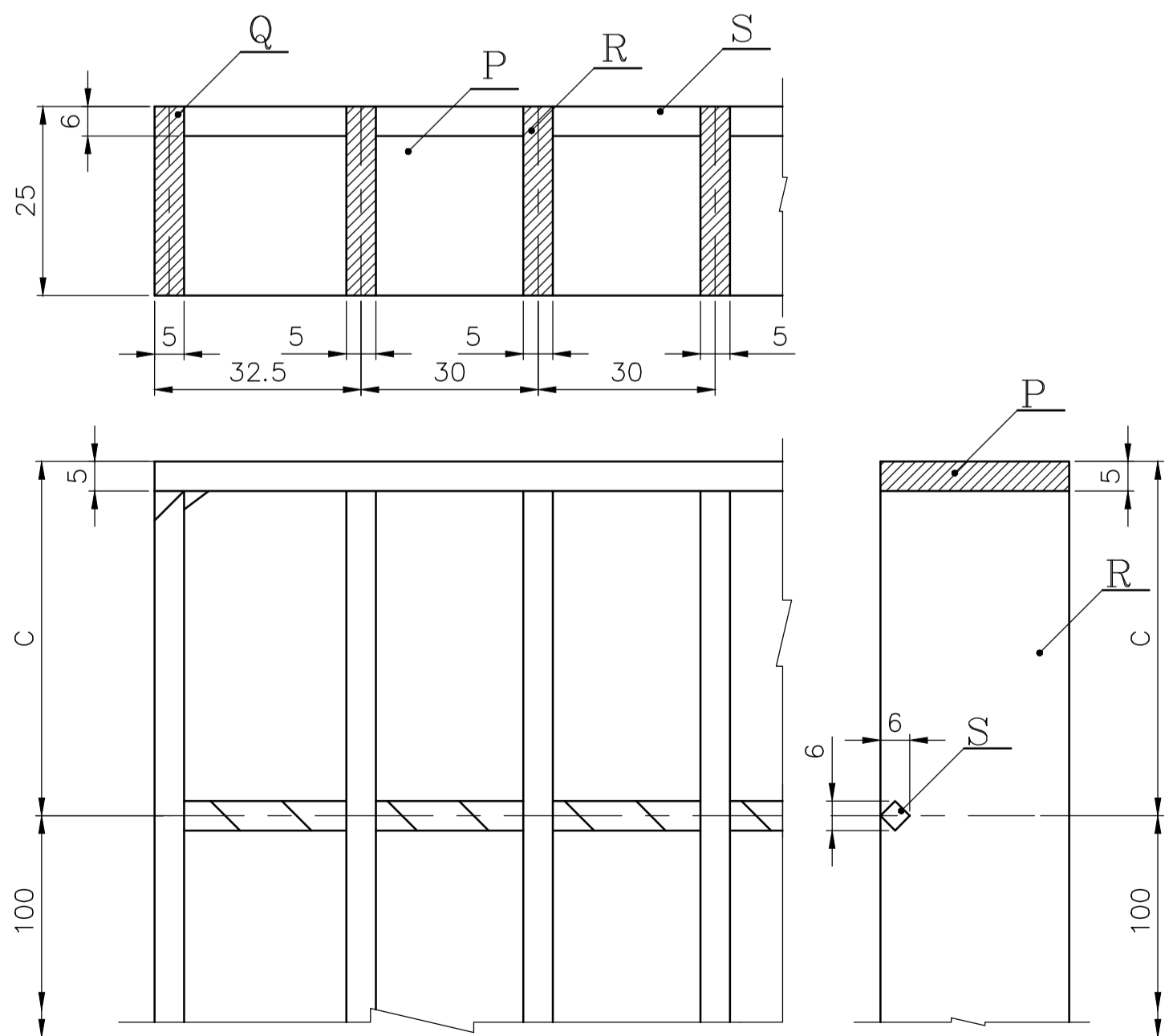
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

NOTES: -

- 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. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRILLS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRILLS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm



S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY			
24		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									13		
23		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			32		
22		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			2		
21		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
20		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									12		
19		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			32		
18		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			2		
17		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
16		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									11		
15		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			32		
14		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			2		
13		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
12		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									10		
11		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			32		
10		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			2		
09		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
08		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									9		
07		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			32		
06		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			2		
05		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
04		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									4		
03		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			32		
02		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			2		
01		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

DEPT: 355-053  
SCALE: NTS  
WEIGHT (Kg): REF TO ASSY / OLD DWG

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783  
REV: 00

REV	DATE	ALTERED :
01		CHD & APPD :

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM :Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / 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-1) / 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.	
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.

**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.**

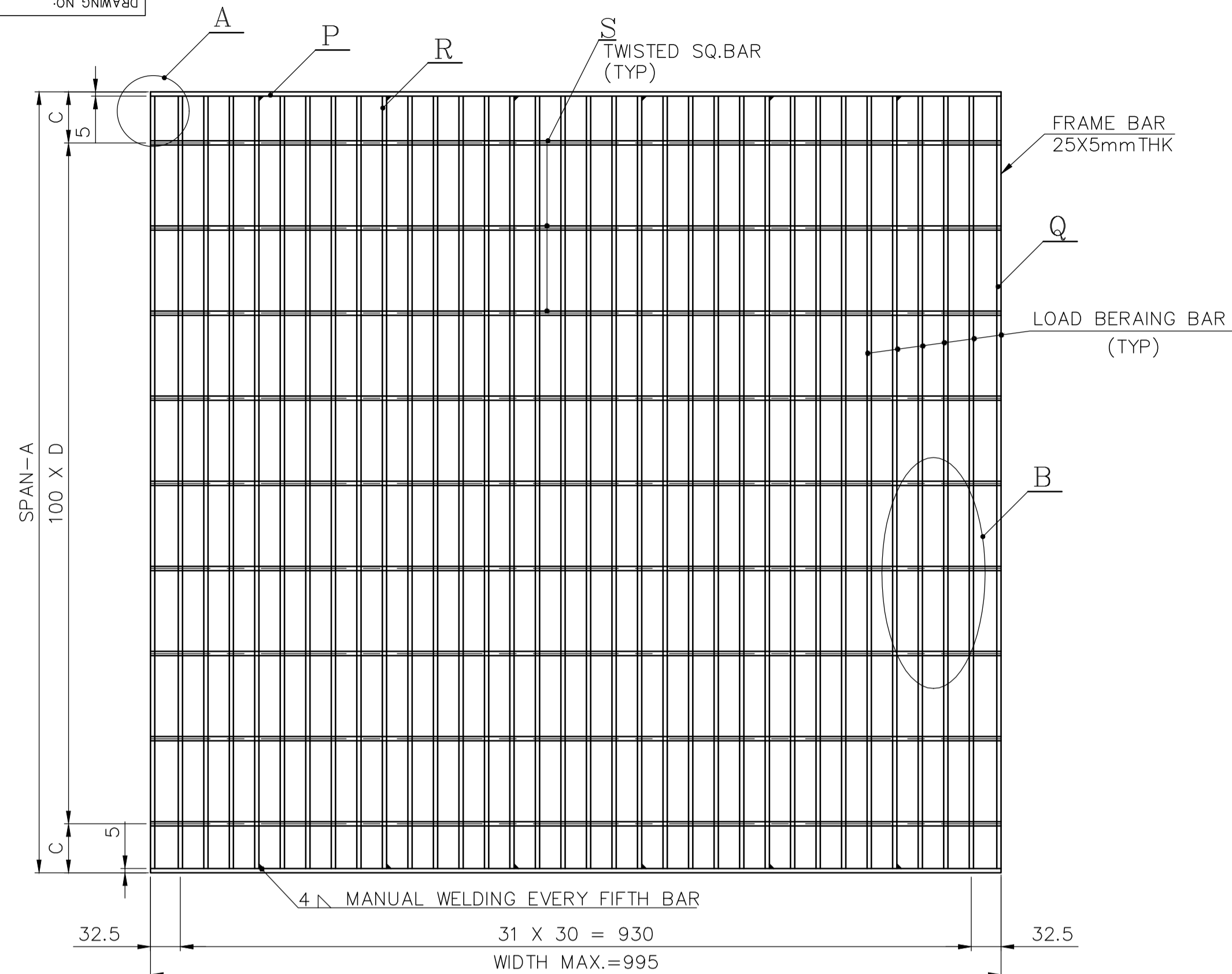
**BHEL reserves the right to consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. If required, BHEL also reserves the right to verify information submitted by vendor. In case the information is found false/incorrect, the offer shall 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.**

**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 1200 X 995 AS PER  
DRG:1-35-811-10783 for MEJIA PROJECT**

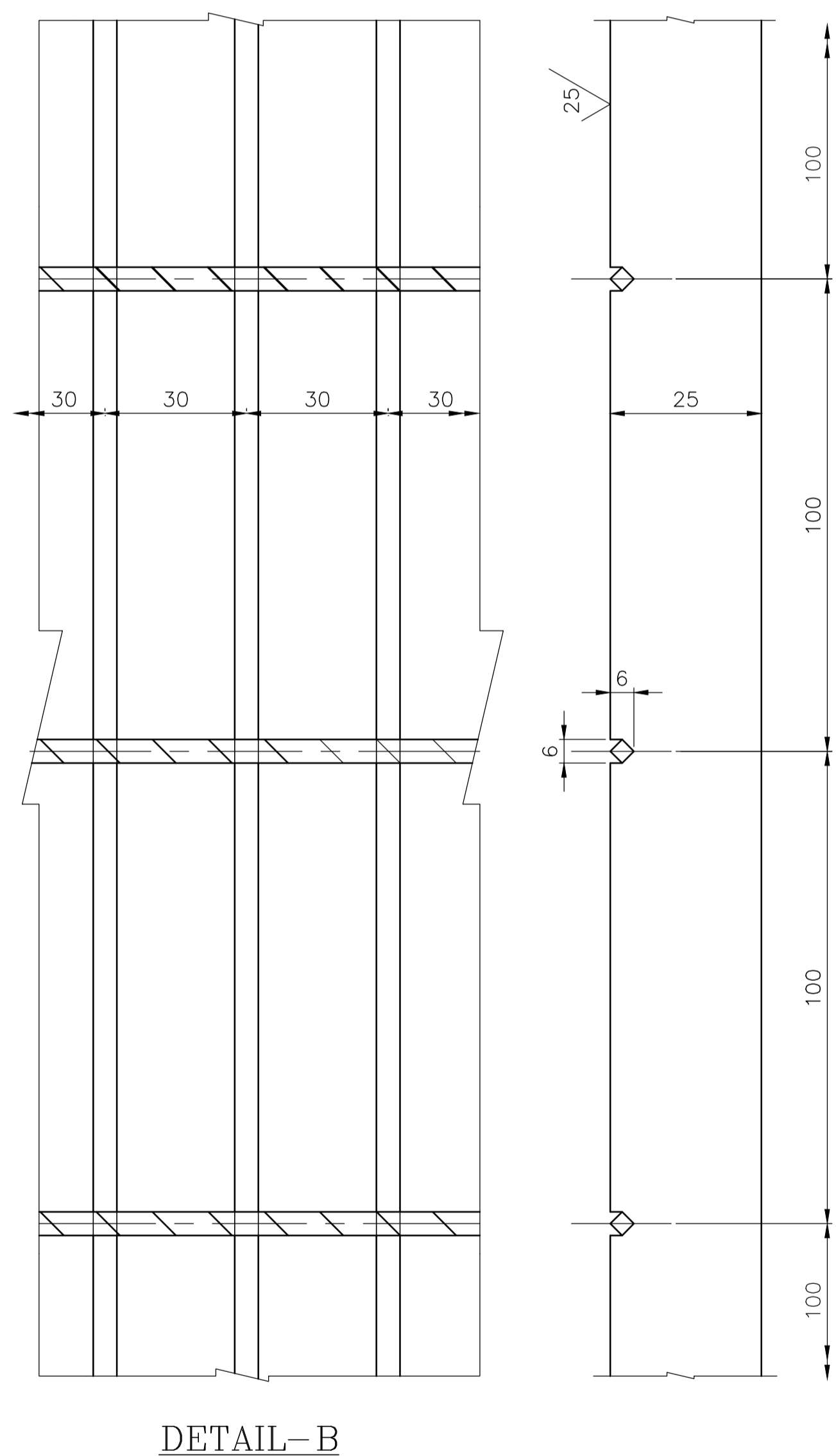
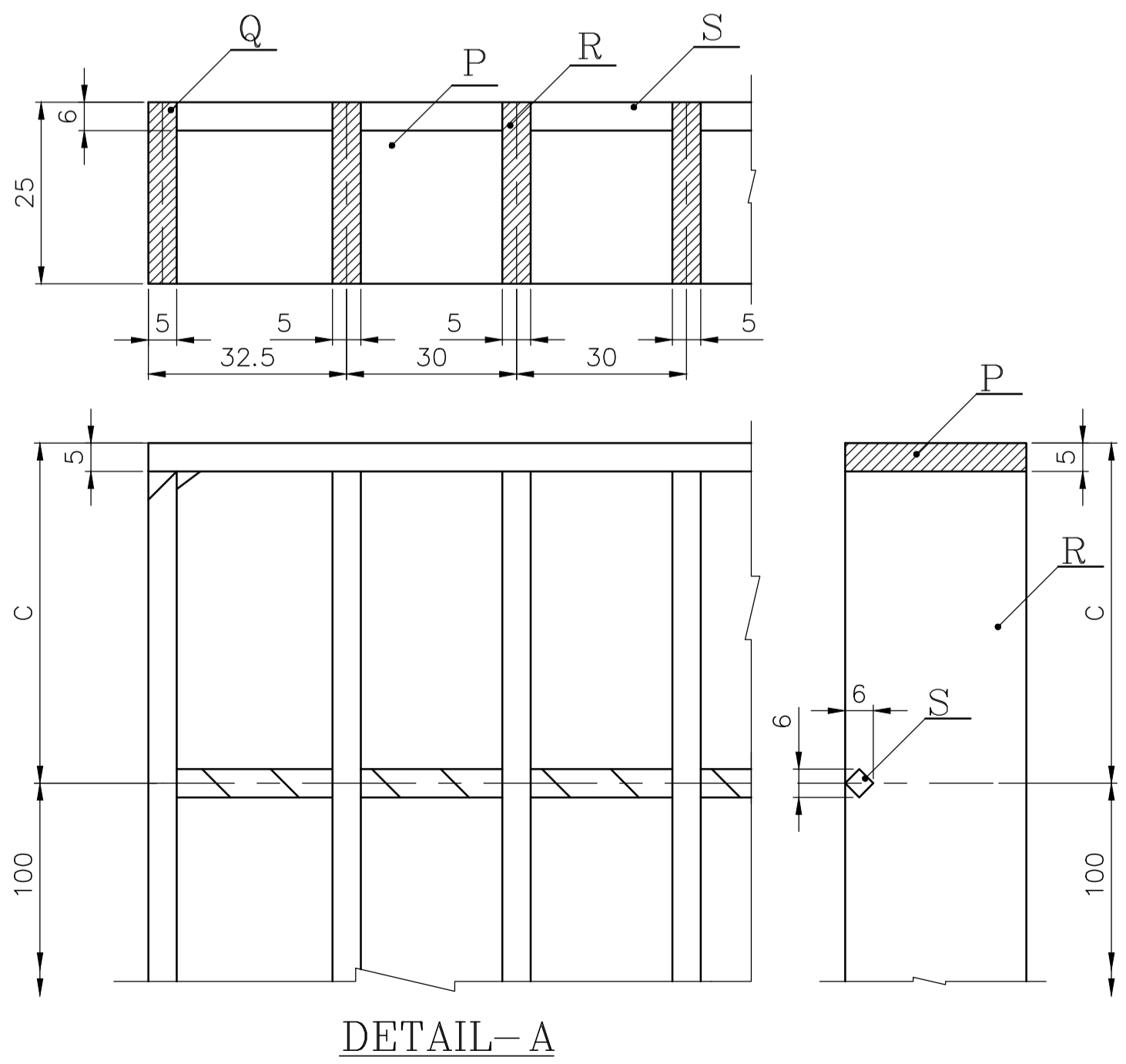
**REMARKS:**

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.

88201-118-93-1



S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



NOTES: -

- 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. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRATINGS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRATINGS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
					VAR NO	MATERIAL SPECN		DI	QUANTITY		
24	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			13		
23	PLATE 5 25 X 1290					IS2062Fe410A			No 1.266		
						15011029			32		
22	PLATE 5 25 X 1290					IS2062Fe410A			No 1.266		
						15011029			2		
21	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
20	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			12		
19	PLATE 5 25 X 1190					IS2062Fe410A			No 1.168		
						15011029			32		
18	PLATE 5 25 X 1190					IS2062Fe410A			No 1.168		
						15011029			2		
17	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
16	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			11		
15	PLATE 5 25 X 1090					IS2062Fe410A			No 1.070		
						15011029			32		
14	PLATE 5 25 X 1090					IS2062Fe410A			No 1.070		
						15011029			2		
13	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
12	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			10		
11	PLATE 5 25 X 990					IS2062Fe410A			No 0.971		
						15011029			32		
10	PLATE 5 25 X 990					IS2062Fe410A			No 0.971		
						15011029			2		
09	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
08	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			9		
07	PLATE 5 25 X 890					IS2062Fe410A			No 0.873		
						15011029			32		
06	PLATE 5 25 X 890					IS2062Fe410A			No 0.873		
						15011029			2		
05	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
04	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			4		
03	PLATE 5 25 X 390					IS2062Fe410A			No 0.383		
						15011029			32		
02	PLATE 5 25 X 390					IS2062Fe410A			No 0.383		
						15011029			2		
01	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

REV 01 DATE ALTERED: CHD & APPD:

DEPT: ST ALL DIMENSIONS ARE IN MM PROJECTION: SCALE: WEIGHT (Kg): REF TO ASSY / OLD DWG:

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783

REV: 00

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM : Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / BHEL Drawing		IR / Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.
			B	Load test	Once per Shift **			By applying 20Kg Pull load on weld joint.	Log book	√	P	W	
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-1) / 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.
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.

**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.	
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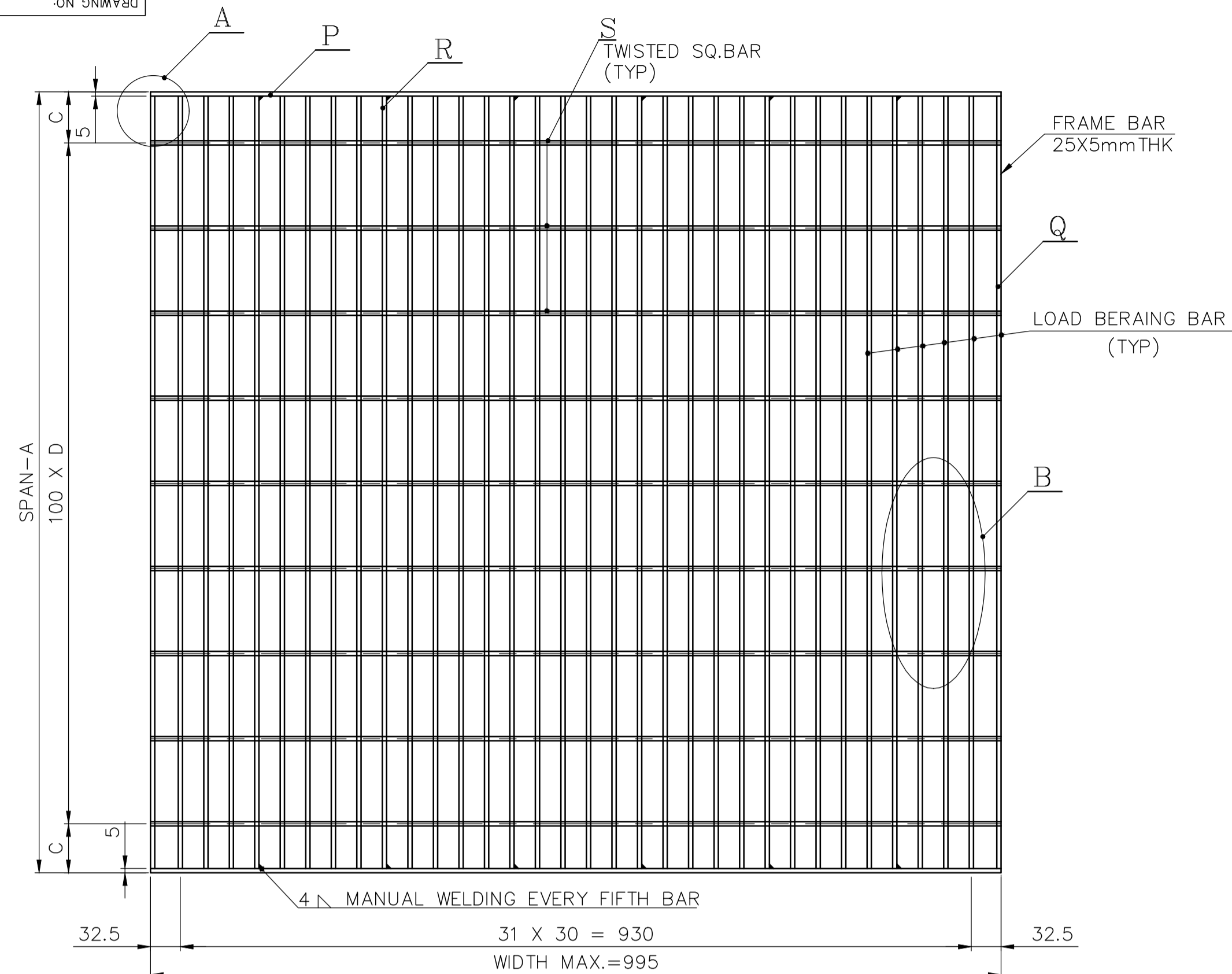
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**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 400 X 995 AS PER  
DRG:1-35-811-10783 for CHANDRAPURA PROJECT**

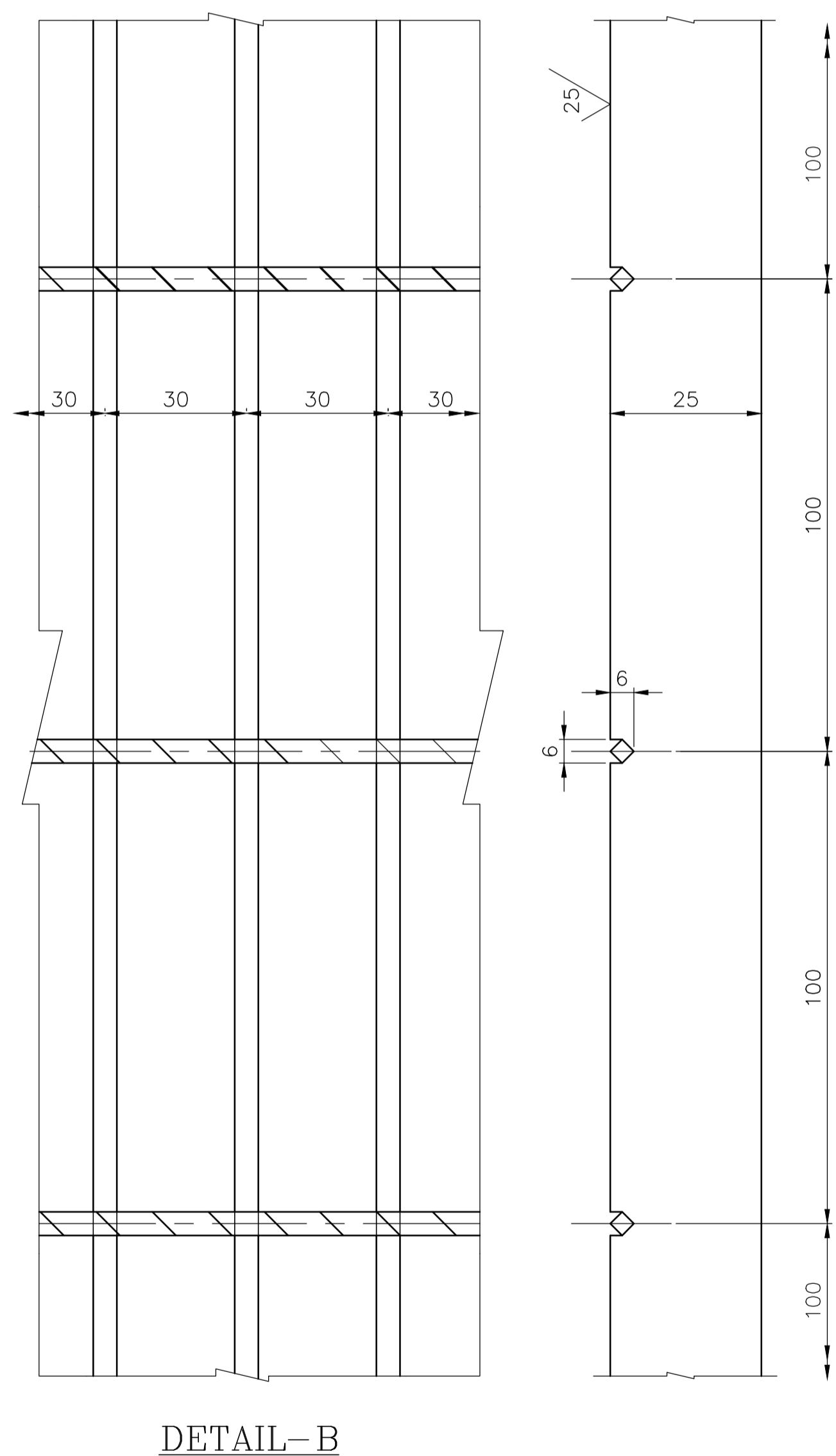
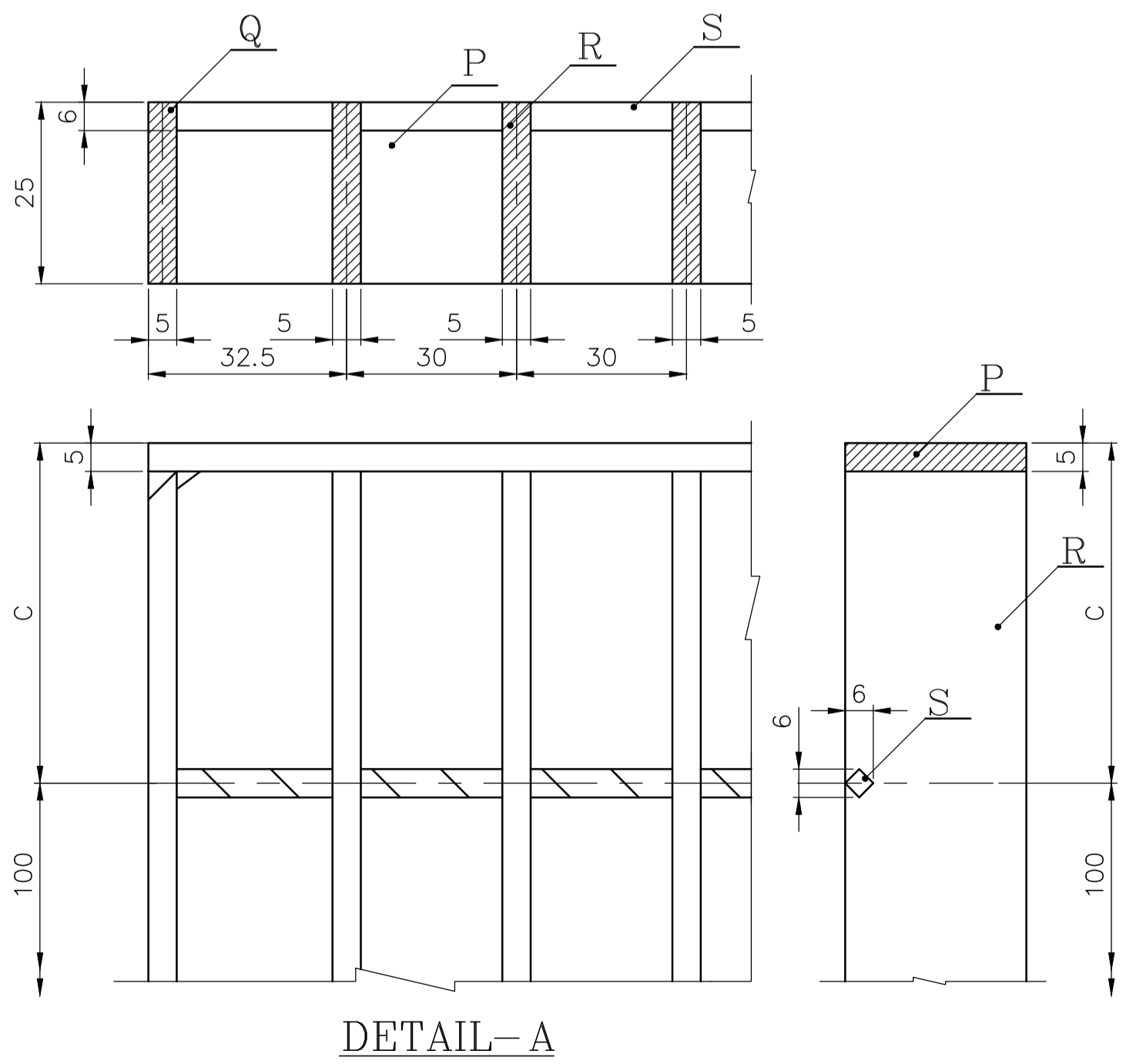
**REMARKS:**

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.

88201-118-93-1



S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



NOTES: -

- 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. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRATINGS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRATINGS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO								DI	QUANTITY		
	24	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
						15011029		No	1.266		
	23	PLATE 5 25 X 1290				IS2062Fe410A		No	32		
						15011029		No	1.266		
	22	PLATE 5 25 X 1290				IS2062Fe410A		No	2		
						15011029		No	0.976		
	21	PLATE 5 25 X 995				IS2062Fe410A		No	2		
						IS1786		No	0.141		
	20	TWISTED SQ.BAR 6mm X 995				IS1786		No	12		
						15011029		No	1.168		
	19	PLATE 5 25 X 1190				IS2062Fe410A		No	32		
						15011029		No	1.168		
	18	PLATE 5 25 X 1190				IS2062Fe410A		No	2		
						15011029		No	0.976		
	17	PLATE 5 25 X 995				IS2062Fe410A		No	2		
						IS1786		No	0.141		
	16	TWISTED SQ.BAR 6mm X 995				IS1786		No	11		
						15011029		No	1.070		
	15	PLATE 5 25 X 1090				IS2062Fe410A		No	32		
						15011029		No	1.070		
	14	PLATE 5 25 X 1090				IS2062Fe410A		No	2		
						15011029		No	0.976		
	13	PLATE 5 25 X 995				IS2062Fe410A		No	2		
						IS1786		No	0.141		
	12	TWISTED SQ.BAR 6mm X 995				IS1786		No	10		
						15011029		No	0.971		
	11	PLATE 5 25 X 990				IS2062Fe410A		No	32		
						15011029		No	0.971		
	10	PLATE 5 25 X 990				IS2062Fe410A		No	2		
						15011029		No	0.976		
	09	PLATE 5 25 X 995				IS2062Fe410A		No	2		
						IS1786		No	0.141		
	08	TWISTED SQ.BAR 6mm X 995				IS1786		No	9		
						15011029		No	0.873		
	07	PLATE 5 25 X 890				IS2062Fe410A		No	32		
						15011029		No	0.873		
	06	PLATE 5 25 X 890				IS2062Fe410A		No	2		
						15011029		No	0.976		
	05	PLATE 5 25 X 995				IS2062Fe410A		No	2		
						IS1786		No	0.141		
	04	TWISTED SQ.BAR 6mm X 995				IS1786		No	4		
						15011029		No	0.383		
	03	PLATE 5 25 X 390				IS2062Fe410A		No	32		
						15011029		No	0.383		
	02	PLATE 5 25 X 390				IS2062Fe410A		No	2		
						15011029		No	0.976		
	01	PLATE 5 25 X 995				IS2062Fe410A		No	2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

REV 01 DATE ALTERED: CHD & APPD:

DEPT: ST ALL DIMENSIONS ARE IN MM PROJECTION: SCALE: WEIGHT (Kg): REF TO ASSY / OLD DWG

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783

REV: 00

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM : Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / BHEL Drawing	IR / Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.	
			B	Load test	Once ** per Shift								By applying 20Kg Pull load on weld joint.
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-1) / 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.	
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.		

**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.

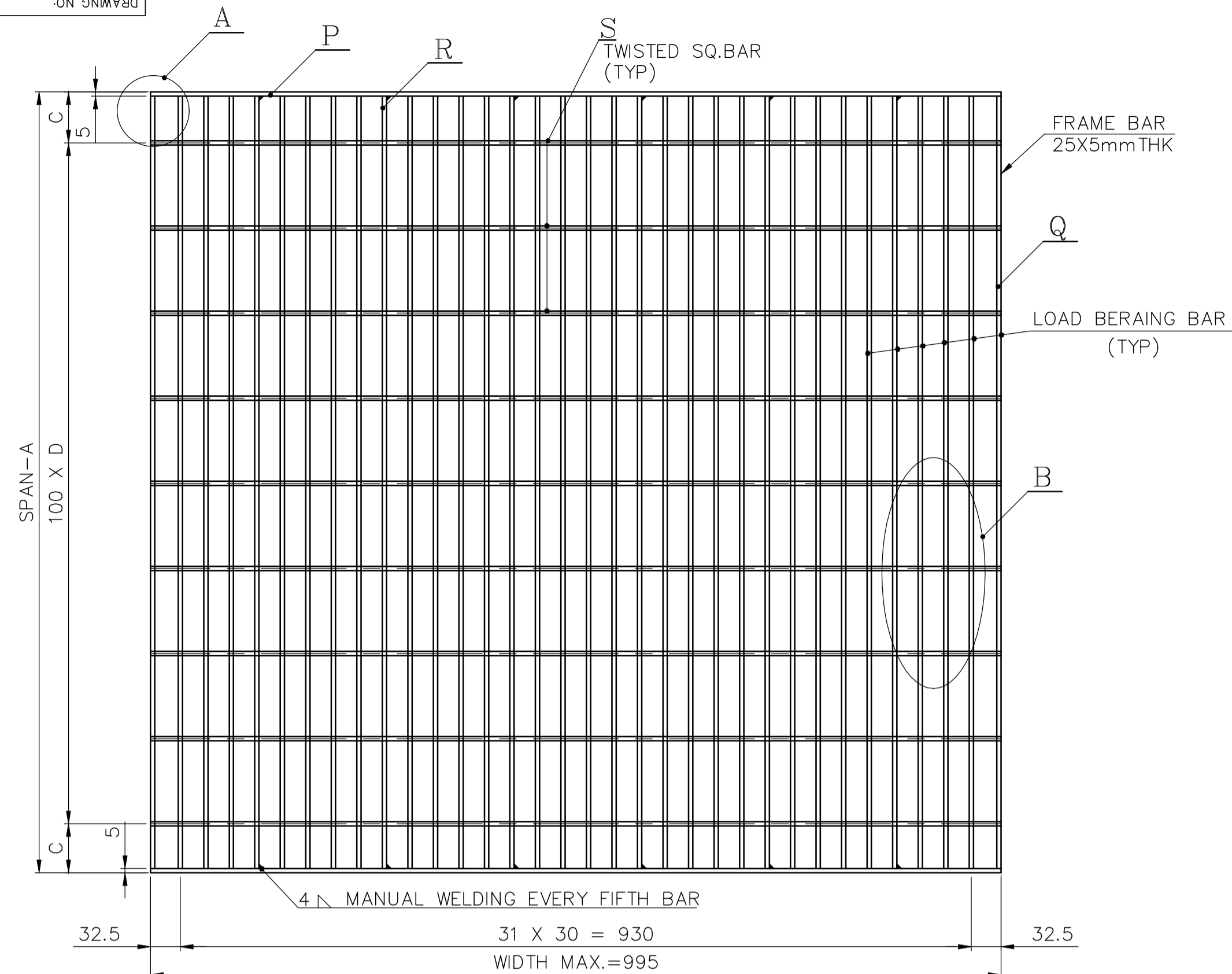
BHEL reserves the right to consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. If required, BHEL also reserves the right to verify information submitted by vendor. In case the information is found false/incorrect, the offer shall be 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.

**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 900X 995 AS PER  
DRG:1-35-811-10783 for CHANDRAPURA 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.

88201-118-93-1

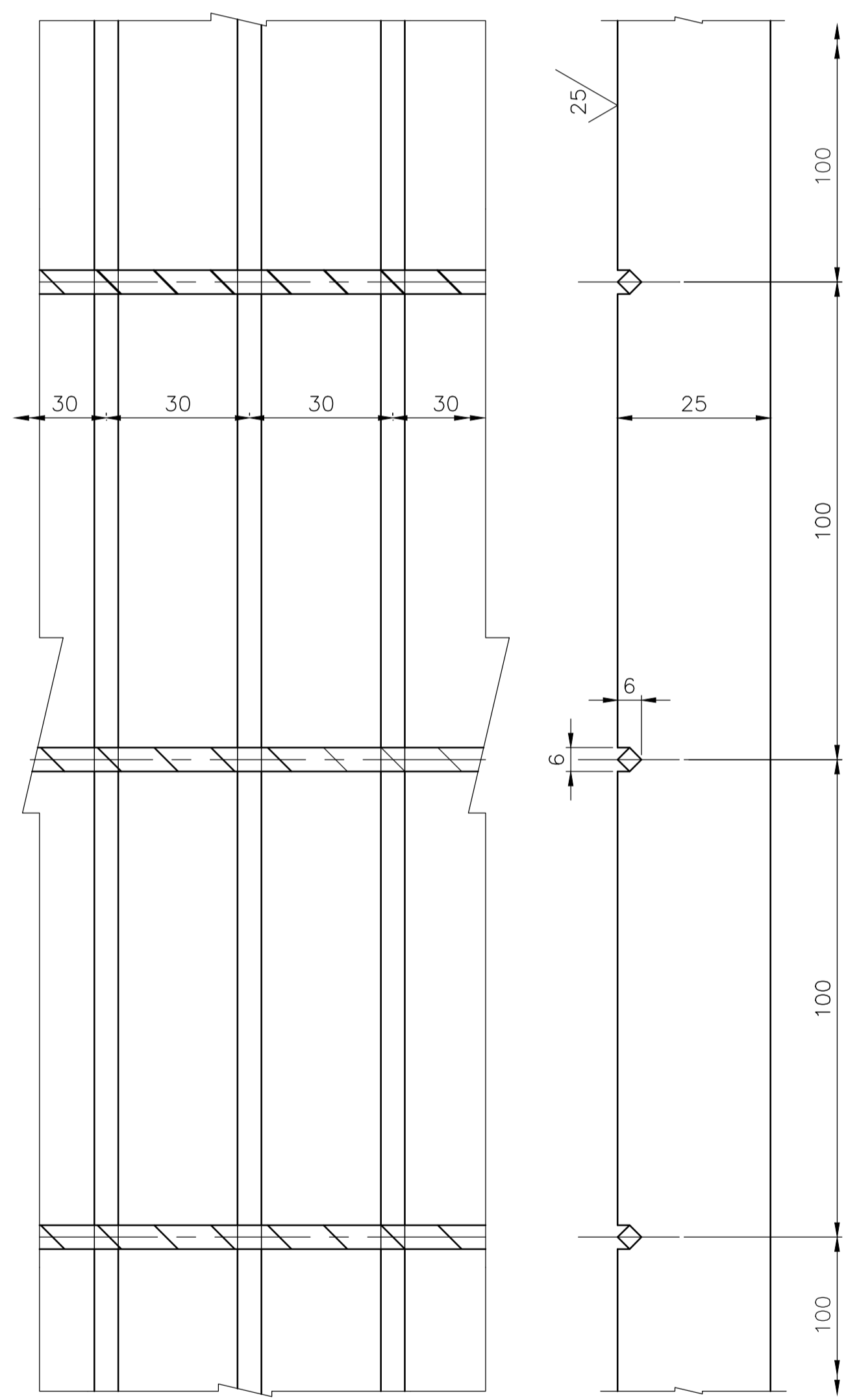


NOTES: -

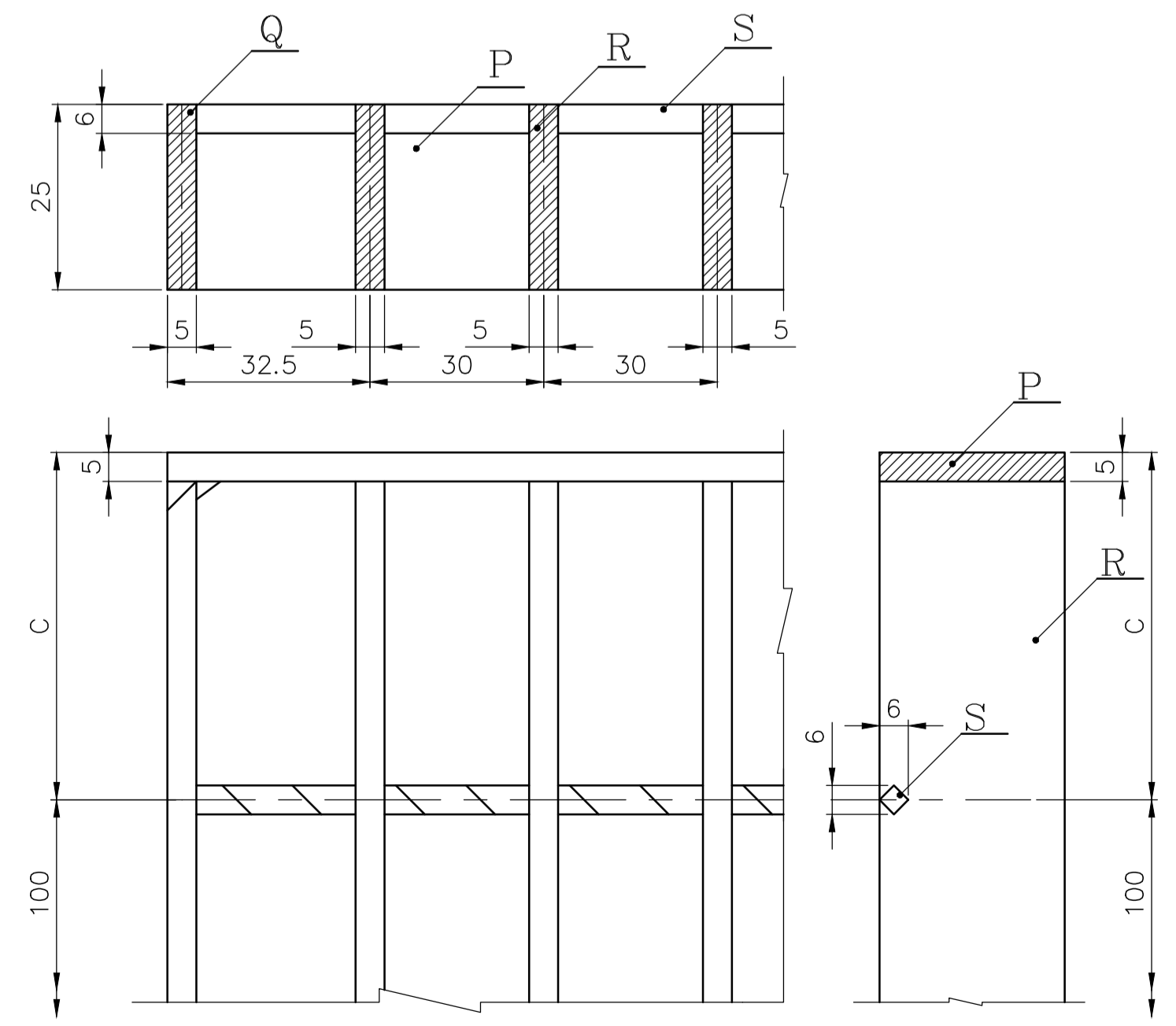
- FLOOR GRATINGS ARE TO BE GALVANISED BY HOT DIP PROCESS AFTER CLEANING BY PICKLING PROCESS. MINIMUM AVERAGE WEIGHT OF ZINC COATING SHALL BE 610 GRAMS PER SQ. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRATINGS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRATINGS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



DETAIL-B



DETAIL-A

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
					VAR NO	MATERIAL SPECN		DI	QUANTITY		
24	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			13		
23	PLATE 5 25 X 1290					IS2062Fe410A			No 1.266		
						15011029			32		
22	PLATE 5 25 X 1290					IS2062Fe410A			No 1.266		
						15011029			2		
21	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
20	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			12		
19	PLATE 5 25 X 1190					IS2062Fe410A			No 1.168		
						15011029			32		
18	PLATE 5 25 X 1190					IS2062Fe410A			No 1.168		
						15011029			2		
17	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
16	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			11		
15	PLATE 5 25 X 1090					IS2062Fe410A			No 1.070		
						15011029			32		
14	PLATE 5 25 X 1090					IS2062Fe410A			No 1.070		
						15011029			2		
13	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
12	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			10		
11	PLATE 5 25 X 990					IS2062Fe410A			No 0.971		
						15011029			32		
10	PLATE 5 25 X 990					IS2062Fe410A			No 0.971		
						15011029			2		
09	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
08	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			9		
07	PLATE 5 25 X 890					IS2062Fe410A			No 0.873		
						15011029			32		
06	PLATE 5 25 X 890					IS2062Fe410A			No 0.873		
						15011029			2		
05	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		
04	TWISTED SQ.BAR 6mm X 995					IS1786			No 0.141		
						15011029			4		
03	PLATE 5 25 X 390					IS2062Fe410A			No 0.383		
						15011029			32		
02	PLATE 5 25 X 390					IS2062Fe410A			No 0.383		
						15011029			2		
01	PLATE 5 25 X 995					IS2062Fe410A			No 0.976		
						15011029			2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

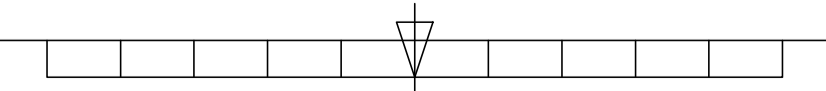
DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

DEPT: 355-053  
SCALE: NTS  
WEIGHT (Kg): REF TO ASSY / OLD DWG

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783

REV: 00



	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM : Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / BHEL Drawing		IR / Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.
			B	Load test	Once per Shift **			By applying 20Kg Pull load on weld joint.	Log book	√	P	W	
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-1) / 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.
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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.
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SIGNATURE		C: MANUFACTURERS ' QC N: BHEL / BHEL AIA P: PERFORM. W: witness. V: verification , CHP: customer shall identify in column N "N" AS ' W'
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**BHEL/TRICHY**  
**MM/BOI/PURCHASE**

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

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

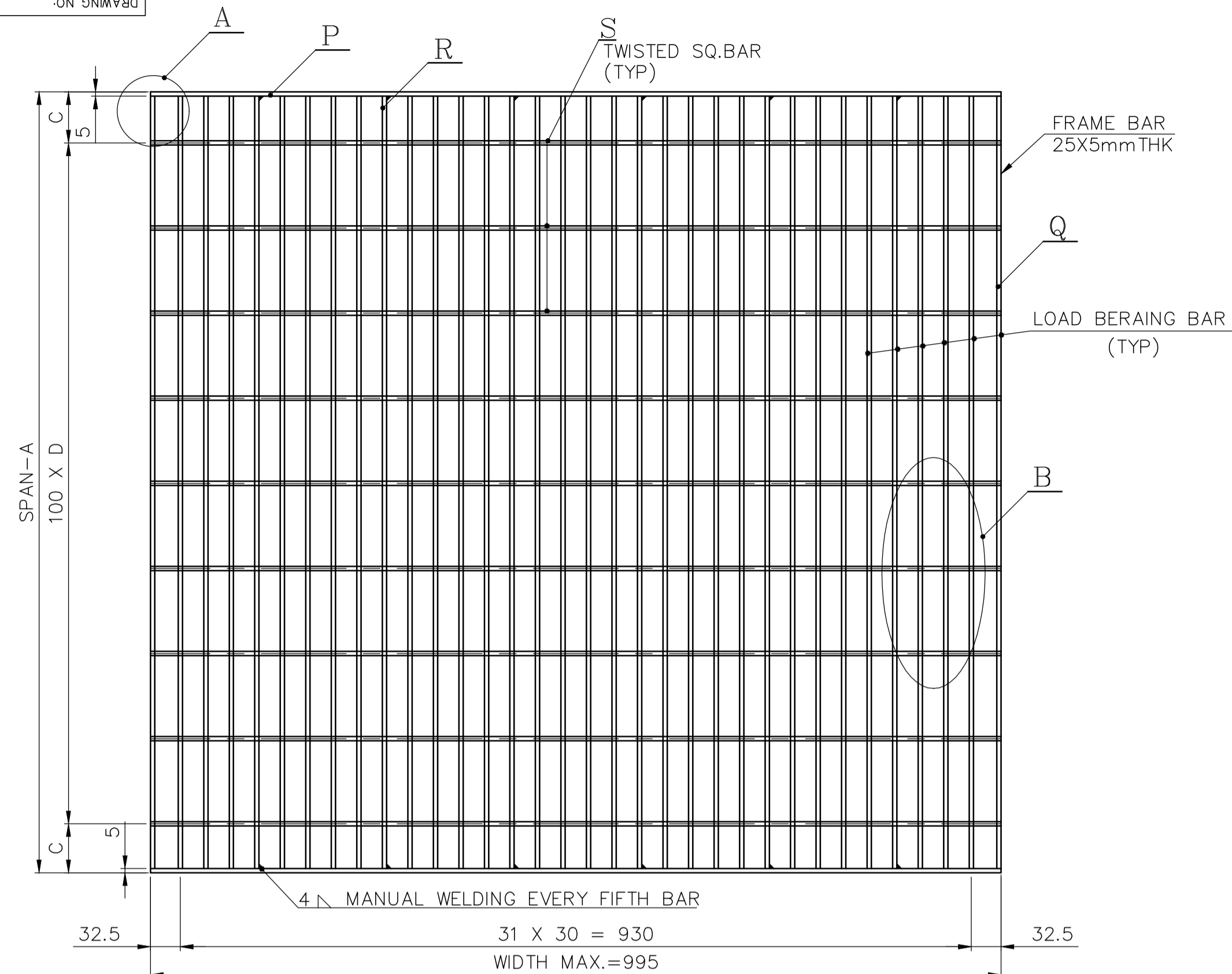
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**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 1000X 995 AS PER  
DRG:1-35-811-10783 for CHANDRAPURA PROJECT**

**REMARKS:**

1. THE VENDOR SHALL FOLLOW THE STANDARD QUALITY PLAN CQP:4731/REV 00 DATED 21.06.2012.
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3. THE VENDOR SHALL SUBMIT THE TEST CERTIFICATE AND GUARANTEE CERTIFICATE.

88201-118-93-1

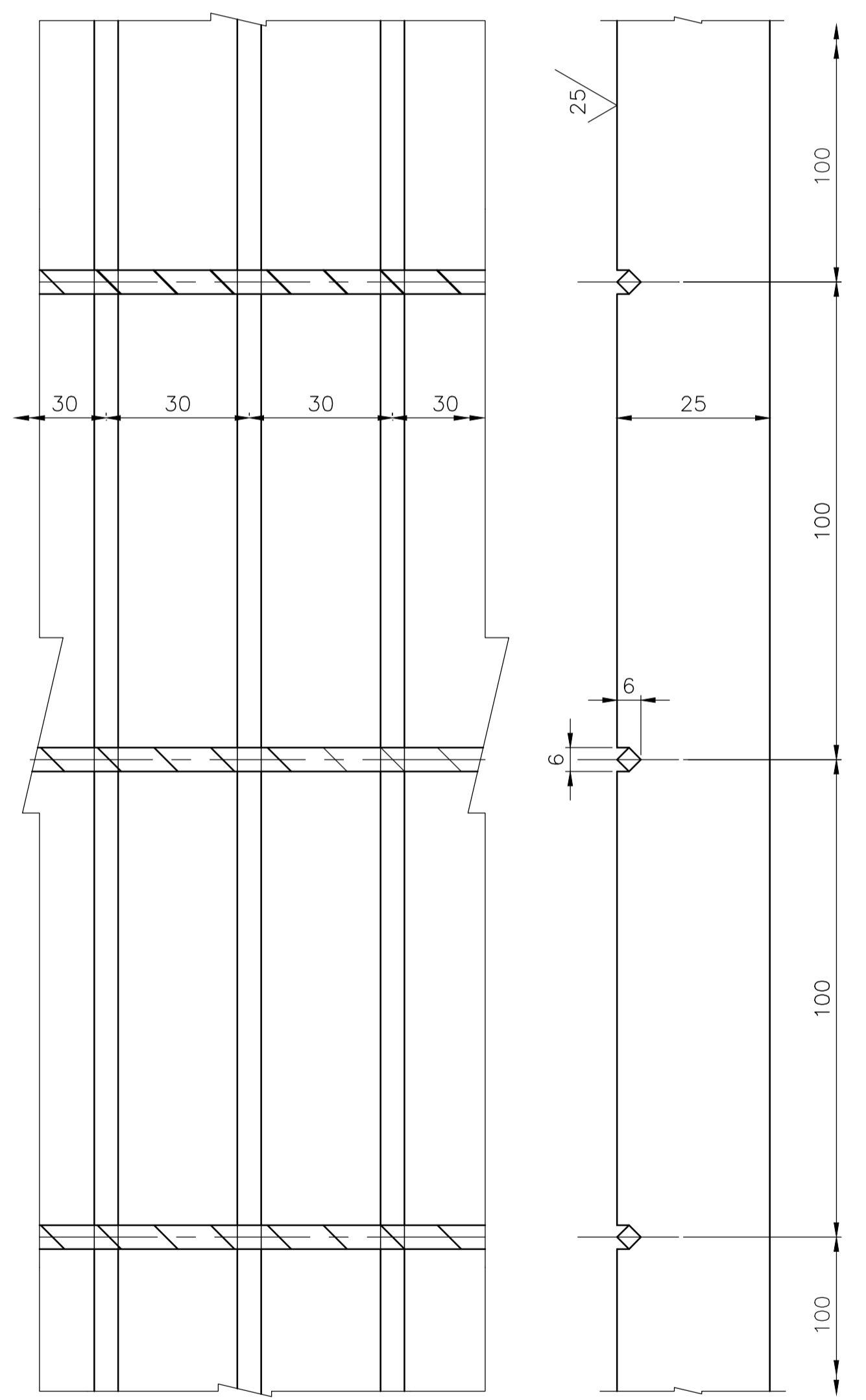


**NOTES: -**

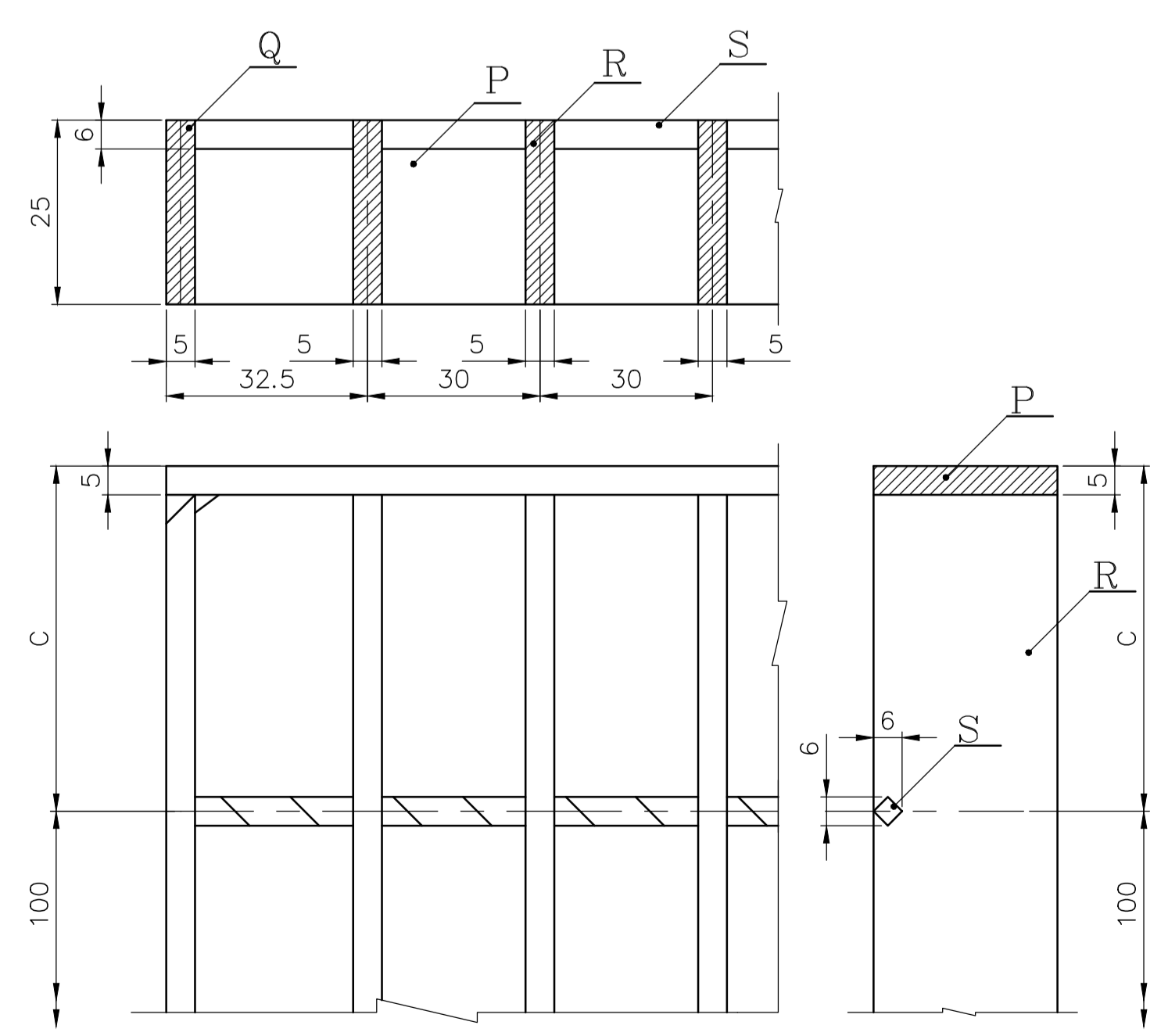
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- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- ALL SCRATCHED SURFACES AND AREAS DAMAGED BY SITE WELDING SHALL RECEIVE ATLEAST TWO COATS OF COLD GALVANISING USING ZINC RICH PRIMER /PAINTS. THE TOTAL DRY FILM THICKNESS OF SUCH TOUCH UP COLD GALVANISING SHALL NOT BE LESS THAN 150 MICRONS.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRILLS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRILLS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



DETAIL-B



DETAIL-A

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
	24	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									13		
	23	PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			32		
	22	PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			2		
	21	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
	20	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									12		
	19	PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			32		
	18	PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			2		
	17	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
	16	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									11		
	15	PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			32		
	14	PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			2		
	13	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
	12	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									10		
	11	PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			32		
	10	PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			2		
	09	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
	08	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									9		
	07	PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			32		
	06	PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			2		
	05	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
	04	TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									4		
	03	PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			32		
	02	PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			2		
	01	PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**Bharat Heavy Electricals Ltd**  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

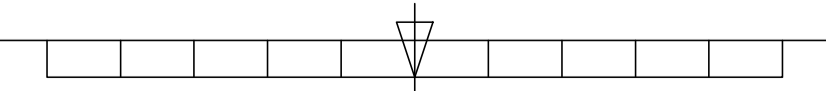
DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

DEPT: 355-053  
SCALE: NTS  
WEIGHT (Kg):

TITLE: **25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM**

DRAWING NO: 1-35-811-10783  
REV: 00



	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM : Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / 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-1) / 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.
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.		

**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.**

**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 1200X 995 AS PER  
DRG:1-35-811-10783 for CHANDRAPURA PROJECT**

**REMARKS:**

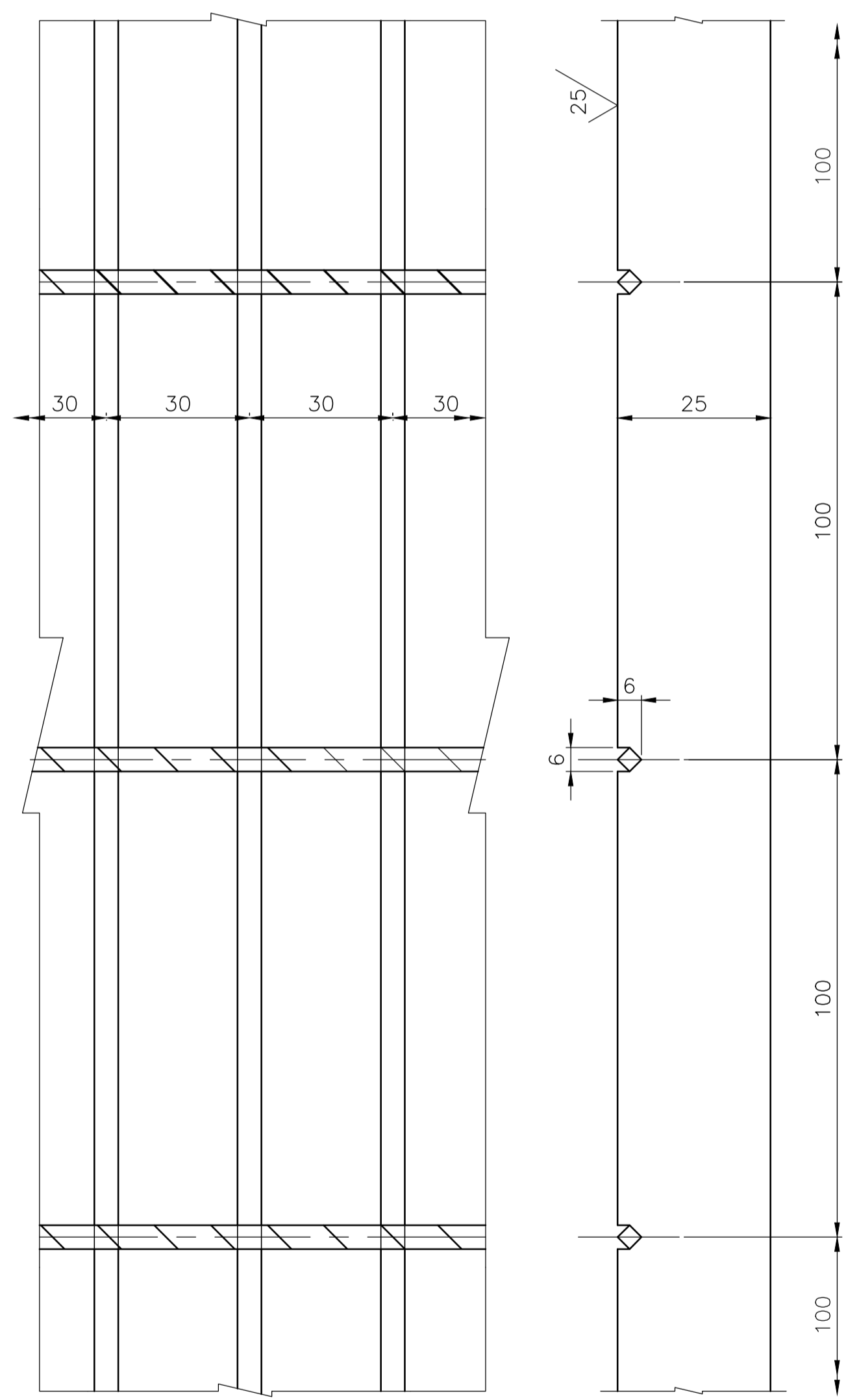
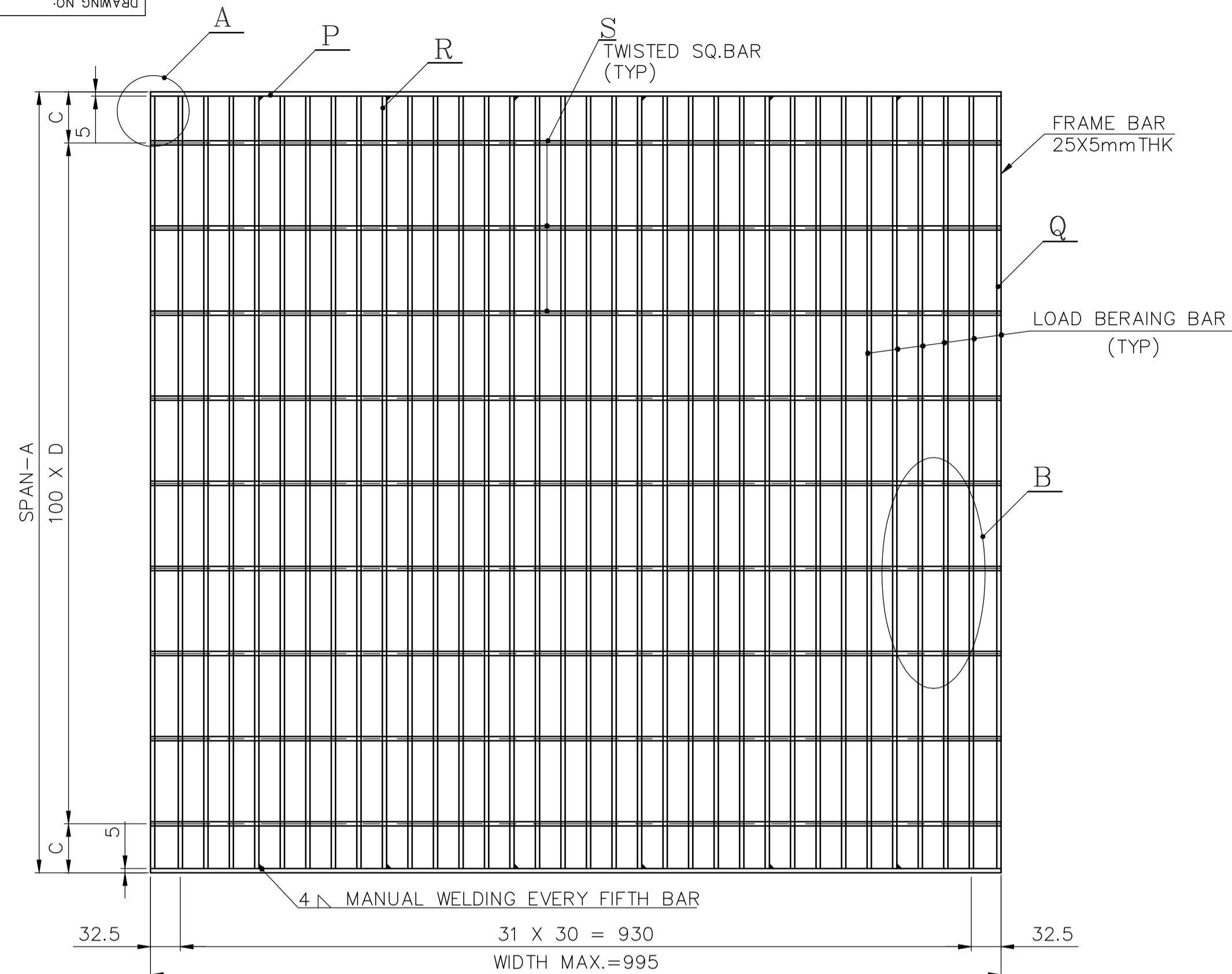
1. THE VENDOR SHALL FOLLOW THE STANDARD QUALITY PLAN CQP:4731/REV 00 DATED 21.06.2012.
2. THE VENDOR SHALL SUBMIT ALL THE CREDENTIALS AS PER PQR REQUIREMENT.
3. THE VENDOR SHALL SUBMIT THE TEST CERTIFICATE AND GUARANTEE CERTIFICATE.

88201-118-93-1

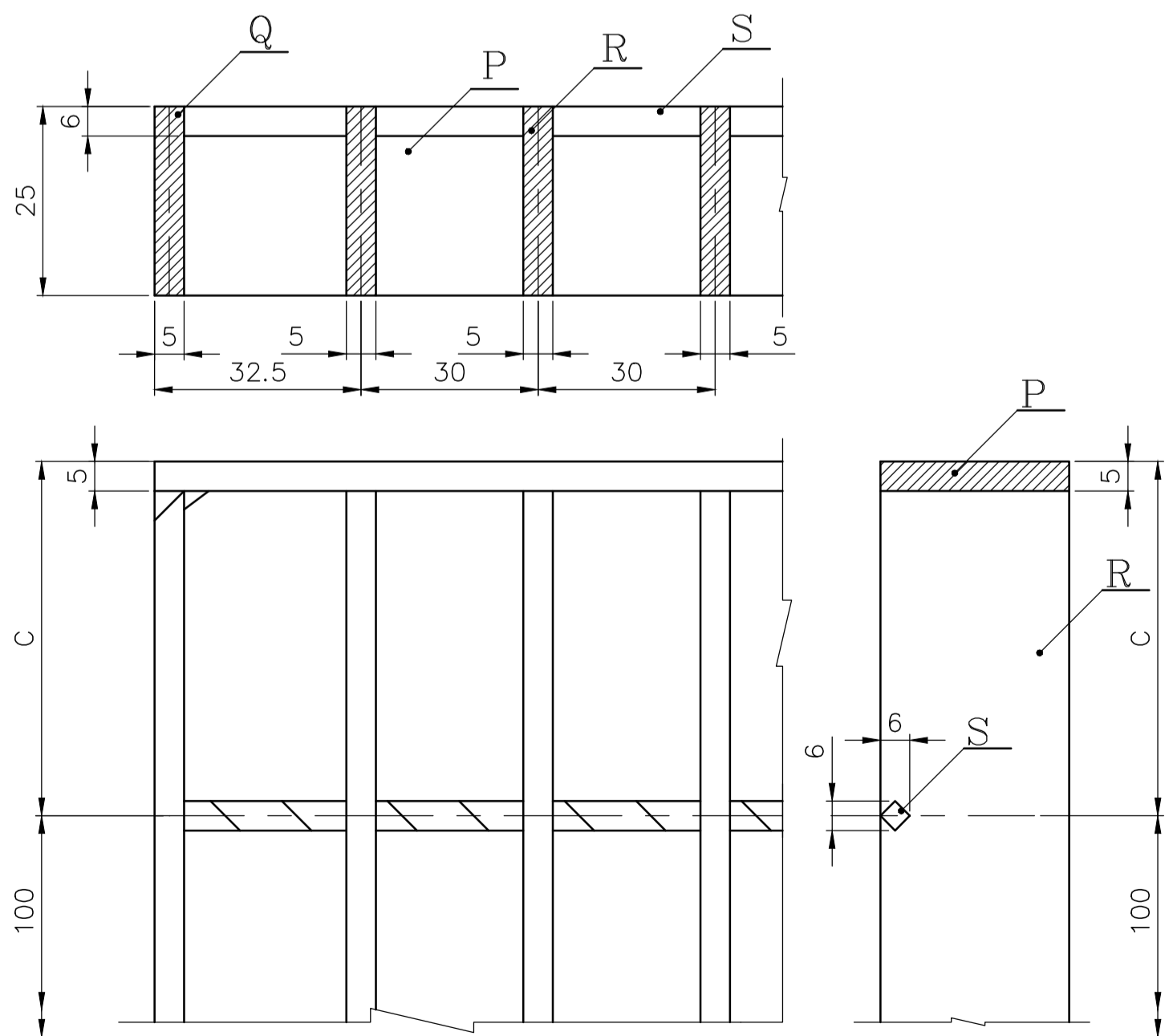
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

NOTES: -

- 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. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRILLS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRILLS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm



S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
					VAR NO	MATERIAL SPECN		DI	QUANTITY		
	24	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			13		
	23	PLATE 5 25 X 1290				IS2062Fe410A			No 1.266		
						15011029			32		
	22	PLATE 5 25 X 1290				IS2062Fe410A			No 1.266		
						15011029			2		
	21	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		
	20	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			12		
	19	PLATE 5 25 X 1190				IS2062Fe410A			No 1.168		
						15011029			32		
	18	PLATE 5 25 X 1190				IS2062Fe410A			No 1.168		
						15011029			2		
	17	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		
	16	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			11		
	15	PLATE 5 25 X 1090				IS2062Fe410A			No 1.070		
						15011029			32		
	14	PLATE 5 25 X 1090				IS2062Fe410A			No 1.070		
						15011029			2		
	13	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		
	12	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			10		
	11	PLATE 5 25 X 990				IS2062Fe410A			No 0.971		
						15011029			32		
	10	PLATE 5 25 X 990				IS2062Fe410A			No 0.971		
						15011029			2		
	09	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		
	08	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			9		
	07	PLATE 5 25 X 890				IS2062Fe410A			No 0.873		
						15011029			32		
	06	PLATE 5 25 X 890				IS2062Fe410A			No 0.873		
						15011029			2		
	05	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		
	04	TWISTED SQ.BAR 6mm X 995				IS1786			No 0.141		
						15011029			4		
	03	PLATE 5 25 X 390				IS2062Fe410A			No 0.383		
						15011029			32		
	02	PLATE 5 25 X 390				IS2062Fe410A			No 0.383		
						15011029			2		
	01	PLATE 5 25 X 995				IS2062Fe410A			No 0.976		
						15011029			2		

CAUTION: The information in this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the prior written consent of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

REV 01 DATE ALTERED: CHD & APPD:

DEPT: ST  
CODE: 122

PROJECTION: NTS  
SCALE: NTS  
WEIGHT (Kg):

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783  
REV: 00

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI	<b>STANDARD QUALITY PLAN</b>						QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR	ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS						REV.NO.00 DATE: 21/06/2012				
		SUB-SYSTEM : Steam Generator and Auxiliaries,						PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / BHEL Drawing		IR / Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.
			B	Load test	Once per Shift **			By applying 20Kg Pull load on weld joint.	Log book	√	P	W	
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-1) / 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.
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.

**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.	
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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.	

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**ITEM: ELECTRO FORGED FLOOR GRILL P25 X 400 X 995 AS PER  
DRG:1-35-811-10783 for MEJIA PROJECT**

**REMARKS:**

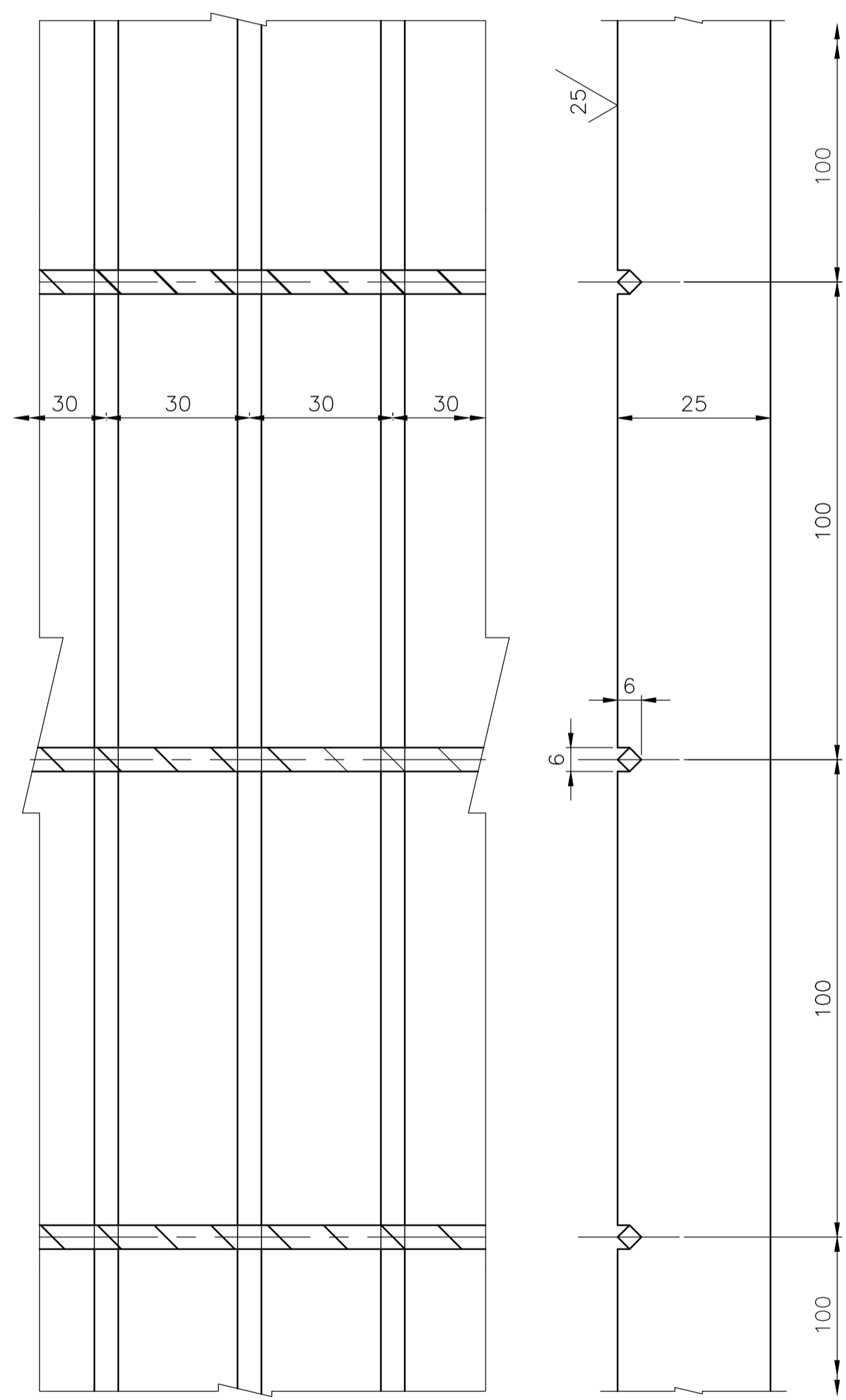
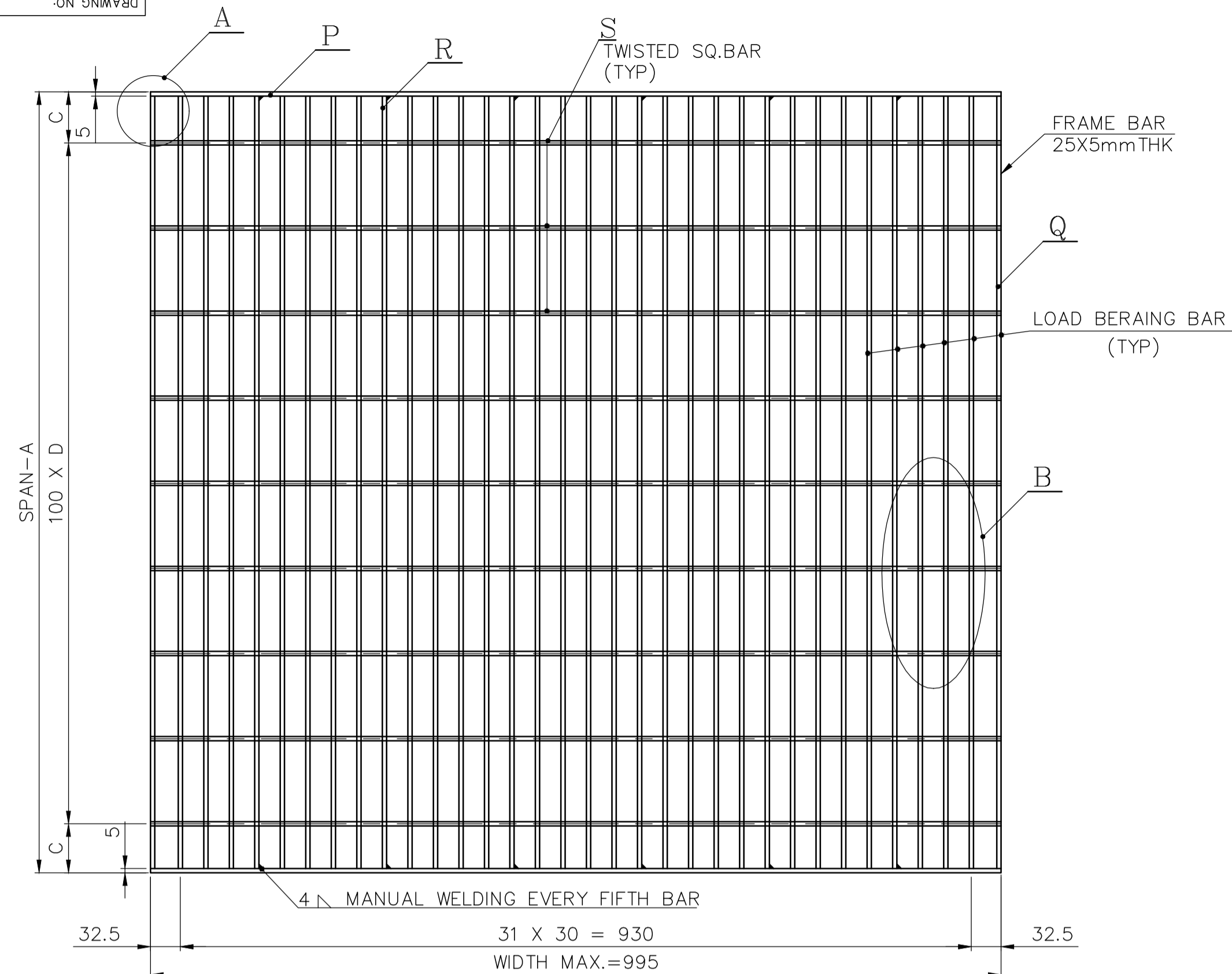
1. THE VENDOR SHALL FOLLOW THE STANDARD QUALITY PLAN CQP:4731/REV 00 DATED 21.06.2012.
2. THE VENDOR SHALL SUBMIT ALL THE CREDENTIALS AS PER PQR REQUIREMENT.
3. THE VENDOR SHALL SUBMIT THE TEST CERTIFICATE AND GUARANTEE CERTIFICATE.

88201-118-93-1

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

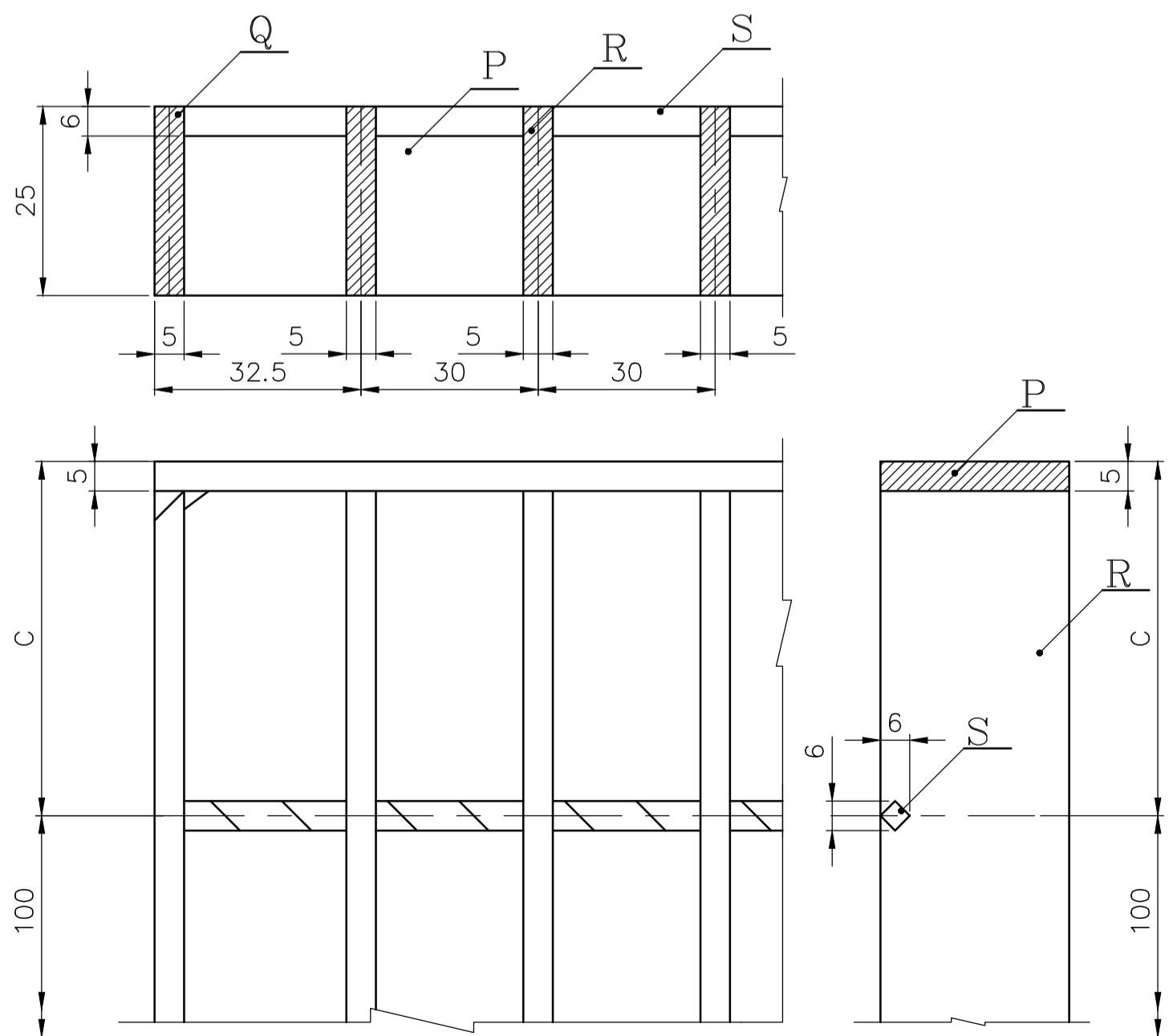
NOTES: -

- 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. METER.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 Fe410A ONLY ARE TO BE USED
- GALVANISING TO BE DONE AFTER ALL WORKS ARE COMPLETED.
- 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.
- DESIGN LIVE LOAD FOR FLOOR GRILL = 1000 KG/SQ.M IN OPERATING FLOORS AND 500 KG/SQ.M IN NON- OPERATING FLOORS.
- ALL GRATING MEMBERS ARE TO BE ELECTROFORGED EXCEPT BAND BARS.
- WEIGHT OF FLOOR GRILL INDICATED DOES NOT INCLUDE WEIGHT OF WELD, WHICH IS NEGLIGIBLE.
- FLOOR GRILLS ARE SUPPORTED BY INTERMITTENT FLOOR BEAMS SUCH THAT, FLOOR GRILLS TAKE LIVE LOAD AS PER NOTE NO.05 AND THEIR DEFLECTION IS WITHIN L /325.
- 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.
- TOLERANCE FOR LENGTH AND WIDTH ±5 mm



DETAIL-B

S.NO	VARIANT NO	STANDARD SIZE OF FLOOR GRILL				ITEM NOS				WT. PER FLOOR GRILL BEFORE GALVANIZING IN KG	MAX. DEF. IN CM	WT. PER FLOOR GRILL AFTER GALVANIZING IN KG
		SPAN A	LENGTH B	C	D	P	Q	R	S			
1	01	400	995	50	3	01	02	03	04	15.538	0.011	16.155
2	02	900	995	50	8	05	06	07	08	32.902	0.204	34.214
3	03	1000	995	50	9	09	10	11	12	36.376	0.347	37.827
4	04	1100	995	50	10	13	14	15	16	39.883	0.497	41.481
5	05	1200	995	50	11	17	18	19	20	43.356	0.816	45.084
6	06	1300	995	50	12	21	22	23	24	46.829	0.816	48.697



DETAIL-A

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY			
24		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									13		
23		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			32		
22		PLATE 5 25 X 1290				15011029		No	1.266		
						IS2062Fe410A			2		
21		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
20		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									12		
19		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			32		
18		PLATE 5 25 X 1190				15011029		No	1.168		
						IS2062Fe410A			2		
17		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
16		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									11		
15		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			32		
14		PLATE 5 25 X 1090				15011029		No	1.070		
						IS2062Fe410A			2		
13		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
12		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									10		
11		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			32		
10		PLATE 5 25 X 990				15011029		No	0.971		
						IS2062Fe410A			2		
09		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
08		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									9		
07		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			32		
06		PLATE 5 25 X 890				15011029		No	0.873		
						IS2062Fe410A			2		
05		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		
04		TWISTED SQ.BAR 6mm X 995				IS1786		No	0.141		
									4		
03		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			32		
02		PLATE 5 25 X 390				15011029		No	0.383		
						IS2062Fe410A			2		
01		PLATE 5 25 X 995				15011029		No	0.976		
						IS2062Fe410A			2		

CAUTION: The information in this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the prior written consent of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd  
UNIT: HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620014

DRN: A.P.SELVAM  
CHD: K.KESAVAN  
APPD: R.JEYAKUMAR

DATE: 04.09.2011  
DATE: 04.09.2011  
DATE: 04.09.2011

DEPT: 355-053  
SCALE: NTS  
WEIGHT (Kg): REF TO ASSY / OLD DWG

TITLE: 25MM THICK ELECTROFORGED FLOOR GRILL GALVANISED-610 GMS/SQM

DRAWING NO: 1-35-811-10783

REV: 00

REV	DATE	ALTERED :
01		CHD & APPD :

	<b>MANUFACTURER'S NAME &amp; ADDRESS</b> BHEL: TIRUCHIRAPPALLI		<b>STANDARD QUALITY PLAN</b>					QP NO.: CQP 4731				
	APPROVED SUB-CONTRACTOR		ITEM: ELECTROFORGE FLOOR GRILLS & STEP TREADS					REV.NO.00 DATE: 21/06/2012				
			SUB-SYSTEM :Steam Generator and Auxiliaries,					PAGE: 1 OF 1				
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*	**	10	11

<b>1.0 RAW MATERIAL:</b>													
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	
<b>2.0 IN PROCESS CONTROL:</b>													
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-1) / BHEL Drawing		IR/ Log book	√	P	W	V	Square twisted bar welding shall be properly fused with Bearing bar.
			B	Load test	Once per Shift **			By applying 20Kg Pull load on weld joint.	Log book	√	P	W	
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-1) / 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.
<b>3.0 TESTS</b>													
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	<b>PACKING, CRATING AND IDENTIFICATION</b>	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	 21/6/12 V.KALYANARAMAN	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
SIGNATURE		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.

**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.