

Checklist

For Registered vendors with Permanent Vendor code

1. Confirmation to all Annexures I to VI

For New Vendors not registered with BHEL Trichy

1. Confirmation to all Annexures I to IV
2. Technical brochure.
3. Supplier Registration Form (SRF) has to be duly filled up online and send one copy with all the documents as mentioned in SRF. Offers with incomplete forms will not be entertained
URL for online Registration form is as below

<http://vis.bheltry.co.in/olsa/>

For any help regarding filling of SRF, you may contact following

Mr Sukumar (Head - Supplier Development Cell)
Ph: 0431/2577383
Email: sukumar@bheltry.co.in

Mr. Ebinesan (Sr. Manager- Supplier Development Cell)
Ph:0431/2577448
Email ID: ebi@bheltry.co.in

Systems / BHEL /TRICHY
Ph:System SDC:0431/2577121,ljp@bheltry.co.in

Ph:System ERP:0431/2577522,erpsubcon@bheltry.co.in

For any queries regarding tender you may contact

Mr. Sachin Saini
Engineer/MM/BOI
BHEL Trichy
0431-2577897
sachinsaini@bheltry.co.in

| | 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 | 11 |

| | | | | | | | | | | | | |
|--------------------------------|---|--|---|--|---|--|---------------|---|---|---|----|--|
| 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 | |

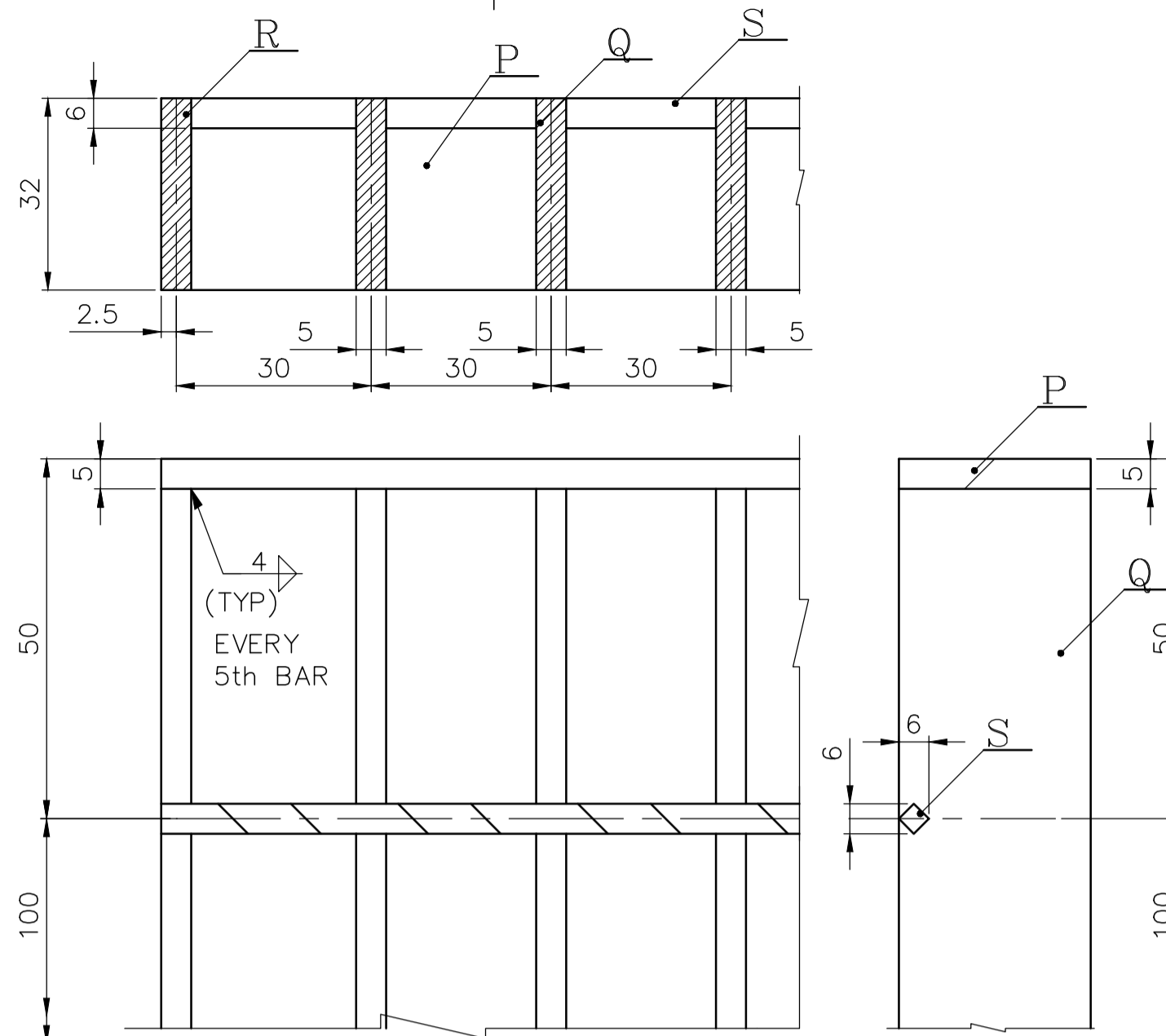
LEGEND:

| | | |
|---|-------------------------------|--|
| J. Nanthini 21/06/2012 J.NANTHINI | 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. |

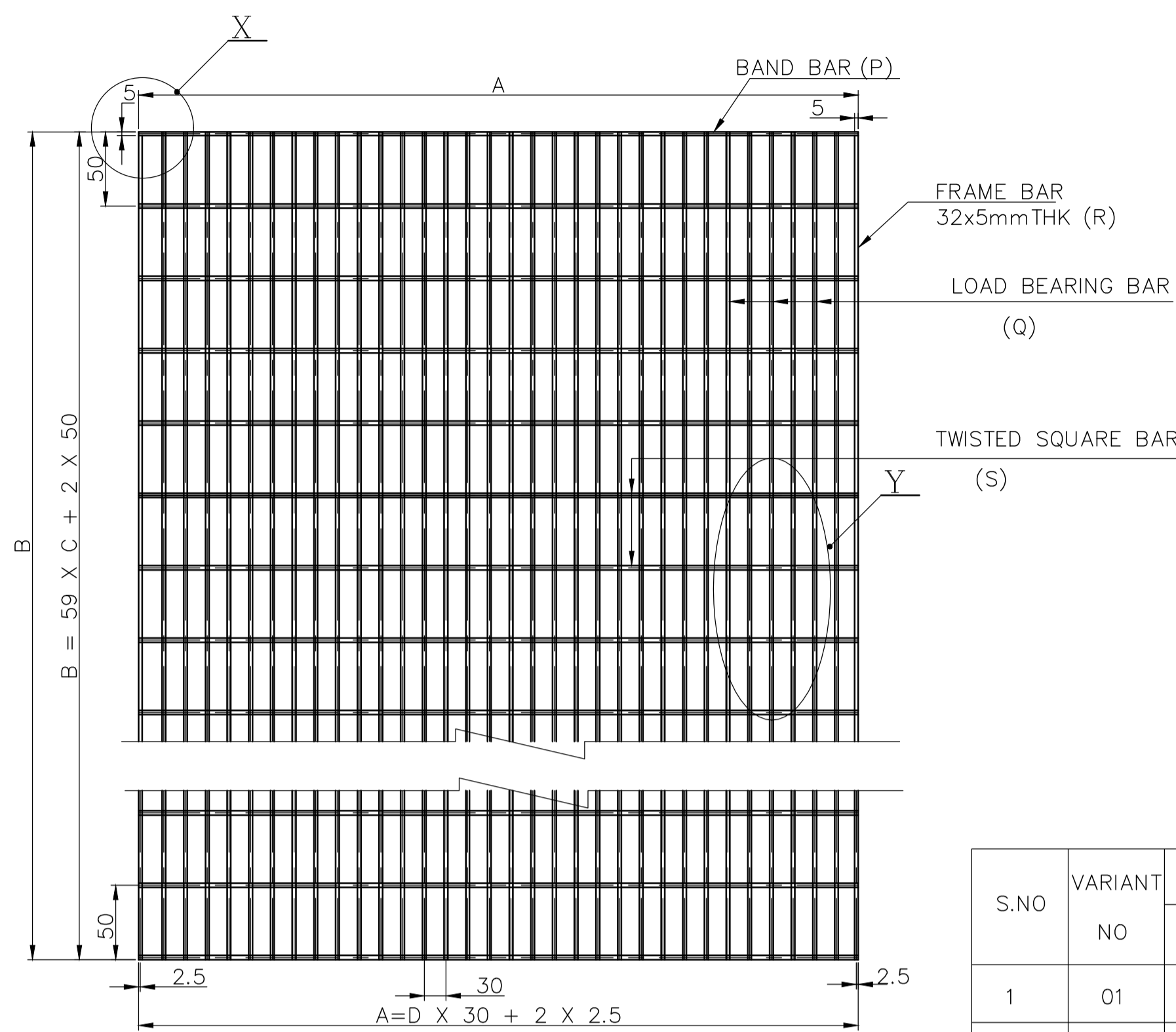
1-35-811-02525

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

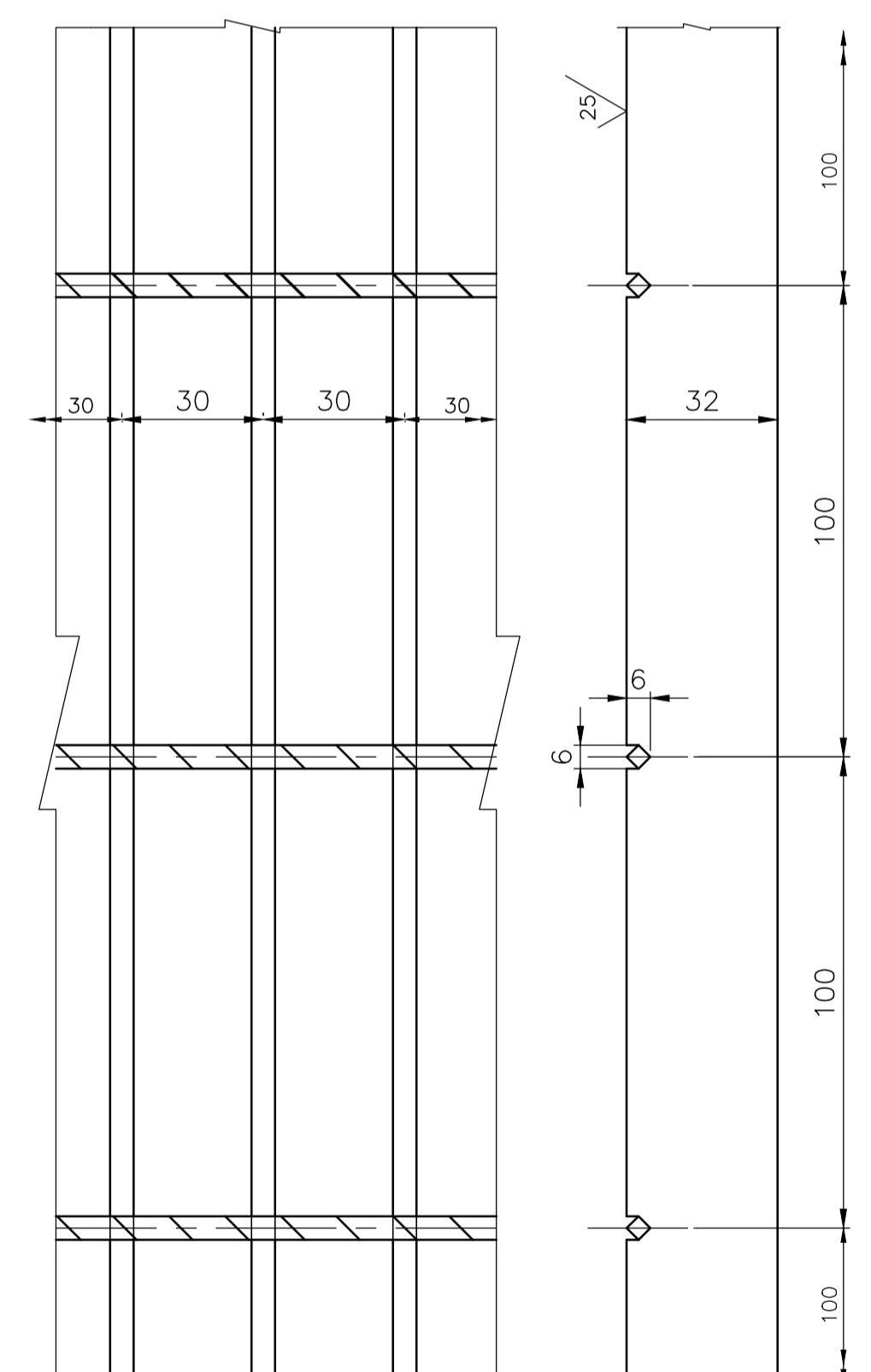
| TYPE & SIZE OF WELD | TYPE OF ELECTRODE |
|---------------------|-------------------|
| 4 Δ | E7018 (SMAW/GMAW) |



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 |



DETAIL-Y

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. METRE.
- STRUCTURAL STEEL CONFORMING TO SPECIFICATION IS 2062 E250A 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
- 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 MAXIMUM DEFLECTION IS LIMITED TO L /250 OR 6MM WHICHEVER IS MINIMUM WHERE THE SPAN OF SUPPORTS (L) WILL BE 1.5M MAXIMUM.
- 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.
- GRATINGS (32mm THICK) ARE FOR OUT DOOR APPLICATION
- TOLERANCE FOR LENGTH AND WIDTH OF GRATINGS SHALL BE ±5 mm

| VARIANT NUMBER | ITEM NUMBER | DESCRIPTION | STD | DRAWING NUMBER | ITEM NO | MATERIAL CODE | UNIT | UNIT WEIGHT | QTY | ZONE |
|----------------|-------------|-------------------------------------|-----|----------------|---------|---------------|------|-------------|-----|------|
| 03 | 12 | TWISTED SQ. BAR 6mm (DIAGONAL)X 995 | | | | IS1786 Fe500 | | 0.141 | | |
| 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 | | | | IS1786 Fe500 | | 0.073 | | |
| 02 | 07 | FLAT 5 X 32 X 5990 | | | | IS2062 E250A | | 7.523 | 2 | |
| 02 | 06 | FLAT 5 X 32 X 5990 | | | | IS2062 E250A | | 7.523 | 16 | |
| 02 | 05 | FLAT 5 X 32 X 515 | | | | IS2062 E250A | | 0.647 | 2 | |
| 01 | 04 | TWISTED SQ. BAR 6mm (DIAGONAL)X 305 | | | | IS1786 Fe500 | | 0.043 | | |
| 01 | 03 | FLAT 5 X 32 X 5990 | | | | IS2062 E250A | | 7.523 | 2 | |
| 01 | 02 | FLAT 5 X 32 X 5990 | | | | IS2062 E250A | | 7.523 | 9 | |
| 01 | 01 | FLAT 5 X 32 X 305 | | | | IS2062 E250A | | 0.383 | 2 | |

| REV | DATE | ALTD. | CHD | APPD | REV | DATE | ALTD. | CHD | APPD | REV | DATE | ALTD. | CHD | APPD |
|-----|------------|---------|---------|------|-----|----------|---------|---------|------|-----|----------|---------|---------|------|
| 06 | 03.01.08 | kesavan | PENCHAL | RJK | 05 | 10-06-05 | KARTHIK | PENCHAL | RJK | 04 | 20-05-05 | KARTHIK | PENCHAL | RJK |
| 09 | 12.02.2013 | PRAKASH | MPR | MPR | 08 | 22.02.12 | PRAKASH | MPR | RRS | 07 | 04-05-08 | kesavan | PENCHAL | RJK |
| 03 | 10.09.'03 | SKR | SKR | RRS | 02 | 21.08.03 | SKR | SKR | RRS | 01 | | | | |

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BHARAT HEAVY ELECTRICALS LTD
 UNIT-HIGH PRESSURE BOILER PLANT
 TIRUCHIRAPPALLI-620 014

DEPT CODE: ST122
 NAME: S.MANIVANNAN
 DESN: S.K.RAMAN
 CHD: S.K.RAMAN
 APPD: R.RAMASAMY

DATE: 31/05/03
 DATE: 31/05/03
 DATE: 31/05/03

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

BHEL DRG NO. **1-35-811-02525**

SCALE:

REV. 09