


By Courier/Regd. Post/Speed Post

	<b>TENDER ENQUIRY</b> (Supplier's Copy)	Enquiry no. & Date	Due date for Quotation
To,		<b>16E0036</b>	<b>13.08.2016</b>
M/s	<b>LIMITED TENDER ENQUIRY</b>  <b>16E0036 DATED 10.08.2016</b> <b>DUE ON 13.08.2016</b>	<b>Bharat Heavy Electricals Ltd.</b> (A Govt. of India Under Taking) Rudrapur - 263153 Distt. Udham Singh Nagar (Uttarakhand) India Phone no.- 05944-241400/242326 Fax no. 05944-243605 e-mail: shilanand@bhel.in manohar@bhel.in	

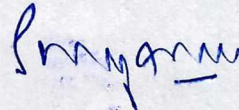
Sl.No.	Description	Unit	Req. Qty.	Delivery Schedule
1.	<b>TENDER ENQUIRY FOR " PRE FABRICATION MACHINING, FABRICATION AND SUPPLY OF SEGREGATED PHASE BUSDUCT (SPBD) ENCLOSURE FROM CRCA STEEL SHEET" ON FINISHED BASIS.</b>  ----- <b>I. TENDER TERMS SHALL BE AS PER ANNEURE-III II. QUANTITY AND PRICE BID SHALL BE AS PER ANNEXURE-I III. SPECIAL TECHNICAL TERMS AND CONDITIONS SHALL BE AS PER ANNEXURE-II</b>	<b>Kg.</b>	<b>234.46+ 233.32</b>	<b>WITHIN 02 WEEKS FROM ORDER.</b>  <b>(ANY DEVIATION IN DELIVERY TERMS SHALL NOT BE ACCEPTED AND SUCH OFFER/S SHALL BE REJECTED.)</b>

Dear Sir,

Please submit your lowest quotation, subject to our terms and conditions written overleaf for the above mentioned items so as to reach us on or before the due date by 2.00 P.M.

Enquiry No. & Due Date should be superscribed on the envelope containing the quotation

FOR BHARAT HEAVY ELECTRICALS LTD.  
(SIGN. & NAME)



**SHYAM BIHARI JAISWAL  
SR. ENGINEER-MM**

**श्री श्री श्याम बियारी जैसवाल  
एच. (सि. एन. एन.) एन्ग. (मै. म. ए.)  
भारत भारी बि. एल. रुद्रपुर  
उत्तरांचल-263153**

## TERMS AND CONDITIONS

- 1- **SUBMISSION OF TENDER.** Quotation must be enclosed in a sealed cover, duly superscribed & addressed as  
Due on.....13.08.2016..... Enq. No...16E0036 DT:10.08.2016.....  
TO,  
**THE MANAGER (MM)**  
**BHARAT HEAVY ELECTRICALS LTD.**  
**COMPONENT FABRICATION PLANT**  
**RUDRAPUR, DISTT. UDHAM SINGH NAGAR (UTTARAKHAND) - 263153**  
**TEL :05944-242326**
- 1- The quotation must be posted with due date allowance for postal delay. Alternatively the tender duly sealed and superscribed may be deposited in the tender box placed in the office of the undersigned.  
**ANY TENDER NOT SUBMITTED IN THIS MANNER IS LIKELY TO BE IGNORED.**
- 2- **OPENING :** All tender must reach this office/deposited in the tender box before 2 P.M. The tender will be opened on the due date at 3 P.M. in the Office of the undersigned in the persence of tenderer who may like to be present.  
**LATE & DELAYED TENDER WILL BE REJECTED**
- 3- Prices should be quoted for delivery on F.O.R. basis or Ex-Godown basis. Ex-Godown rates must include packing and forwarding charges if applicable extra. Please indicate percentage. The prices should be as per DGS & D rate contract if any held currently by the tenderer.  
A copy of rate contract, should be enclosed. If there is no rate contract. lowest price applicable to DGS & D and other Government should be quoted and a certificate to this effect must be incorporated in the quotation.  
The prices quoted must be exclusive of sales tax, excise duty etc. The rates at which these taxes are applicable must be seperately mentioned, If not mentioned. it will be presumed that prices quoted are inclusive of these charges and no other charges will be entertained later on.
- 4- **DELIVERY :** The supplier must mention the delivery period clearly. If the delivery is not completed within the prescribed time specified in the order, supplier shall be liable to unconditional penalty of 1/2% per week subject to 10% max.  
For material not supplied in time and/or confirming to specifications, the Purchaser shall have the descretion to resort to purchase from elsewhere on the risk and cost of the supplier without any notice.
- 5- **PENALTY :** Orders placed against this enquiry will be subject to imposition of penalty/liquidated damages, risk purchases, cancellation, arbitration as per the terms of purchase order in case of dealy in effecting supply or other default as mentioned in clause 4.
- 6- **TERMS OF PAYMENT :** Our standard payment terms are "100% after receipt, subject to acceptance at our end in 45 days.
- 7- **SPECIFICATION :** The good supplied must conform to required specifications. For the standard products, the trade mark etc. must be stated in the offer. Complete illustrative technical literature/Catalouge/drawing should be attached with the offer, falling which, same may be ignored. The prices must be quoted only in the units mentioned. Original T.C. from the manufacturer Govt. approved. Test house will have to be produced. The goods/ equipment shall have to be guaranteed against all defects for a period of 12 months from the date of acceptance/ and at their risk.
- 8- **SAMPLE :** Whenever demanded/necessary, parties may submit samples before the tender opening or alongwith the quotation, The samples should be properly tagged indicating the supplier's name, enquiry No. and due date, against which the supplier's name is to be considered. Rejected samples must be replaced within 15 days of our intimation, failling which the same will be destroyed.
- 9- **TESTIMONIALS :** Income tax clearance certificates and other testimonial from bank or other authorities may be called by us wherever neccessary.
- 10- **QUANTITIES :** All the quantities in the enquiry may not be ordered, Supplier should be prepared to accept orders for reduced quantities without any extra charges.
- 11- **VALIDITY :** All quotation should be valid for acceptance for 3 months from the date of opening.
- 12- Bharat Heavy Electricals Ltd., Rudrapur Distt. Udham Singh Nagar reserves the right to reject any or all tenders without assigning any reason there of.

**QUOTATIONS NOT IN ACCORDANCE WITH THE ABOVE INSTRUCTIONS AND CONDITIONS MAY BE DISQUALIFIED**

**ANNEXURE-I TO TENDER ENQUIRY 16E0036 DATED 10.08.2016 DUE ON 13.08.2016**

IWO NO: 5109027/5109029

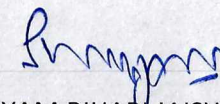
PAINT SHADE:- 631 IS 5

Project RSPL

Product SPBD (TYPE TEST ENCL.)

Sl.No	BOM NO	MIS Qty.	Drawing No	Rev. No.	Shape	ENCLOSURE SIZE	Encl.Wt. (Kg.)	Total Encl.Wt. (Kg.)	Rate (Rs / Kg)	Amount / Duct (Rs)	Total Amount (Rs.)	
									Encl.	Encl.		
1	014000	1	32071510014	00	RIGHT ANGLE	450X1350X2500	234.46	234.46	PLEASE QUOTE			
2	015000	1	32071510015	00	STRAIGHT	450X1350X2500	233.32	233.32	PLEASE QUOTE			
TOTAL		2						Total Encl. Wt. (Kg)=	467.78		Grand Total	

- NOTE:-
1. THIS TENDER CONSISTS ONLY SUPPLY OF SPBD ENCLOSURE.
  2. ENCLOSURE SHALL BE MADE UP OF CRCA STEEL SHEET.
  3. CRCA STEEL SHEET SHALL BE IN THE SCOPE OF SUPPLIER.
  4. PLEASE MAKE YOUR QUOTE ACCORDINGLY.

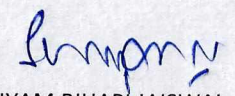


SHYAM BIHAR JAISWAL  
SR. ENGINEER-MM

एस० बी० जायसवाल S.B. Jaiswal  
अधि. (सांख्यिकी प्रबंधन) Engg.(Mat. Mang.)  
बी.एच.ई.एल.-रुद्रपुर BHEL-Rudrapur  
उत्तराखण्ड-263153 Uttarakhand-263153

**ANNEXURE-II TO TENDER ENQUIRY 16E0036 DATED 10.08.2016 DUE ON 13.08.2016**

<b>Special Technical Terms &amp; Conditions</b>	
1	Fabrication of SPBD Enclosure on Finished basis i.e. CRCA Sheet and angle are in the scope of supplier.
2	Barrier sheet (Al.) and Cond. (Al) will be fabricated and assembled inside BHEL.
3	Paint Shade : Internal surface of Enclosure to be painted through BLACK MATT PAINT and External to be painted by Synthetic Enamel Paint
4	Final finished Paint Thickness : 65 Micron (min.)
5	Paint shall be of Asian Paint, Berger, Shalimar, British Paints, Nerolac and equivalent make confirming ISI.
6	All specifications as per Drg 42071510001 and Quality plan -QP/SP/RSPL Rev-01
7	Transportation in the scope of vendor
8	Proper packing to be done in order to restrict the damage/dent.
9	Fabrication of Enclosure to be done as per BHEL Drg. 32071510014 & 32071510015
10	<b>Following Raw material TC's of CRCA sheet shall be furnished by the vendor at the time of final inspection of Busduct Enclosure :</b>
10 (i)	Mechanical Test report for tensile strength and percentage elongation as per relevant IS
10 (ii)	Chemical Composition Test report as per relevant IS
10 (iii)	Electrical conductivity (if applicable ) as per relevant IS
10 (iv)	Failing to furnish the above reports liable for rejection of jobs/busduct enclosure.
11	<b>Inspection shall be done by BHEL representative for the following :</b>
11 (i)	Dimensional verification as per BHEL Drg
11 (ii)	Welding and in process inspections as per BHEL Drg No 42071510001 (General Notes for SP Busducts)
11 (iii)	DP test of weld joints as per standard
11 (iv)	100% Surface finish check
11 (v)	Check for painting thickness, adhesion and shade
11 (vi)	Check for expiry of paint and primer
12	Vendor to first confirm the latest revision and Drgs before starting manufacturing of busduct enclosure
13	Vendor can be considered doing 7 tank treatment / Sand Blasting of jobs at other location , if facility is not available at their works.



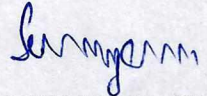
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अभि. ( सामग्री प्रबंधन ) Engr. (Mat. Mang.)  
बी.एच.ई.एल. - रुद्रपुर BHEL-Rudrapur  
उत्तरांचल-263153 Uttarakhand-263153

**ANNEXURE-III TO**

**TENDER ENQUIRY 16E0036 DT: 10.08.2016 DUE ON 13.08.2016**

**THE FOLLOWING POINTS ARE INCORPORATED IN THE ENQUIRY.**

- Rates have be quoted on finished basis and on FOR BHEL Rudrapur delivery basis only with 100% payment after receipt of material within 45 days subject to acceptance. Any deviation in payment terms will be loaded @ (SBI PLR at thome of payment loading +6)% annual interest for comparing standing.
- The validity period of the quotation must be for 3 months from the date of quotation.
- Delivery of the material at BHEL-Rudrapur shall be within 02 weeks from order.  
ANY DEVIATION IN DELIVERY TERMS SHALL NOT BE ACCEPTED AND SUCH OFFER/S SHALL BE REJECTED.
- Offers shall be submitted in **TWO BID SYSTEM**.
- Quantity and Price Bid formate shall be as per annexure-I enclosed with this tender.
- Special Technical Terms & Conditions shall be as per annexure-II enclosed with this tender.
- Applicable drawing no. 32071510014 R00 and 3207150015 R00 are being enclosed with this tender.
- Applicable QUALITY ASSURANCE PLAN is being enclosed with this tender.
- LD CLAUSE & RISK PURCHASE CLAUSE shall be applicable with this tender.
- For terms and conditions other than above noted, the bidders should go through the terms and conditions of Enquiry format's back side before submitting the quotations.
- The offer must reach at our office on or before due date. late offers shall not be considered received after due date even if posted by speed/register post before due date.



**SHYAM BIHARI JAISWAL  
(SR. ENGINEER-MM)**

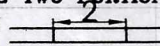
एस० बी० जायसवाल S.B. Jaiswal  
अधि. ( सामग्री प्रबंधन ) Engg. (Mat. Mang.)  
बी.एच.ई.एल.-रुद्रपुर BHEL-Rudrapur  
उत्तराखण्ड-263153 Uttarakhand-263153

REV.	DATE	ALTERED —	REV.	DATE	ALTERED —	REV.	DATE	ALTERED —
—	—	CHECKED —	—	—	CHECKED —	—	—	CHECKED —
—	—	APPD. —	—	—	APPD. —	—	—	APPD. —

**NOTES FOR WELDING OF FRAME:—**


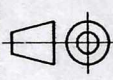
1. FILLET WELDING 3Δ IS TO BE DONE AT ALL THE CORNERS AND WHEREVER FILLET IS FORMED.
2. WHEREVER BUTT WELDING IS REQUIRED, THE OUTER SURFACES SHOULD BE GROUND FLUSH.
3. FROM INSIDE OF FRAME ALL THE 2TK. SHEETS (BARRIER) ARE TO BE INTERMITTED BOLTED.
4. THE FLANGE OF DUCTS ARE TO BE DRILLED WITH DRILL JIG TO AVOID MISMATCH DURING ERECTION.

**NOTES FOR WELDING OF COVERING SHEET:—**

1. ALL THE COVERING SHEETS ARE TO BE WELDED WITH 3Δ FILLET AND SUITABLE BUTT WELDING ALL AROUND FOR JOINING TWO PORTIONS OF COVER SHEET.
2. BUTT WELD IS FORMED AS SHOWN 
3. ENCLOSURE SHEET TO BE WELDED WITH ANGLE FRAME WORK (IF/ANY) FROM INSIDE BY INTERMITTED WELDING (3Δ 25(100))
4. CARE SHOULD BE TAKEN TO AVOID ANY DISTORTION DUE TO WELDING.
5. FOR OTHER WELDING REFERENCES WPS BDE:15008/R03 & BDE:15009/R03.
7. FOR SURFACE PREPARATION AND PAINTING REFER JS:0674196 / R00
8. BUSDUCT FABRICATION IS TO BE DONE AS PER APPROVED QUALITY PLAN.
9. PARTY WELDER QUALIFICATION TO BE DONE PRIOR TO START OF WELDING.
10. FOR TOLERANCES OF BUSDUCT ENCLOSURE AND CONDUCTOR REFER STD. BD-25001T.
11. CODE OF PRACTICE FOR ALUMINIUM WELDING IN BUSDUCT REFER STD. BD-15010W.
12. FOR PAINTING OF BUSDUCT REFER PROCESS SPEC. JS0674196.
13. CONDUCTIVITY MEASUREMENT (MILLI VOLT DROP) TEST ON ENCLOSURE & CONDUCTOR WELDED JOINT TO BE DONE ON SAMPLE AS PER BS:159.
14. PO NO., PROJECT NAME, BOM NO. & DRG. NO. WILL BE MENTIONED ON ENCLOSURE & CONDUCTORE.
15. D.P. TEST TO BE DONE 10% AS PER AA0850129.

**FINISH NOTES:—**

1. FOR FABRICATION OF BUSDUCT, CUBICLES, MARSHALLING BOXES MATERIAL SHOULD BE USED AS PER TDS.
2. EXTERNAL SURFACES OF ALL BUSDUCT ENCLOSURES, CUBICLES, MARSHALLING BOXES SHALL BE THOROUGHLY CLEANED AND DE-GREASED TO REMOVE MILL SCALE, RUST, GREASE AND DIRT. ALL SHEET MATERIAL SHALL UNDERGO SEVEN TANK TREATMENT/ SAND BLASTING PROCESS. TWO COATS OF PRIMER SUITABLE FOR ENAMEL PAINT SHALL BE FOLLOWED BY TWO COATS OF FINAL ENAMEL PAINT. COLOR SHADE SHALL BE 631 AS PER IS:5 FOR INDOOR AND SHADE No. 632 AS PER IS:5 FOR OUTDOOR BUSUDCT (MINIMUM THICKNESS 65 MICRONS. INCLUDING PRIMER THICKNESS). ALL UNPAINTED STEEL PARTS SHALL BE CADMIUM PLATED OR SUITABLY TREATED TO PREVENT RUST CORROSION.
3. INTERNAL SURFACES OF ENCLOSURE & EXTERNAL SURFACES OF CONDUCTOR ARE TO BE PAINTED WITH SELF ECHING MATT. BLACK PAINT TO BP56184. MINIMUM THICKNESS 65 MICRONS.
4. AT BOTH ENDS OF CONDUCTOR'S OUTSIDE SURFACE, 125mm LENGTH TO BE LEFT UNPAINTED.
5. INTERNAL SURFACES OF ALL CUBICLES, MARSHALLING BOXES TO BE PAINTED WITH GLOSSY WHITE ENAMEL PAINT MIN. THICKNESS OF PAINT SHOULD BE 65 MICRONS.
7. SPACE HEATER AND THERMOSTAT WIRING WILL BE DONE AS PER DRG. NO. 25415153459 VAR.00.

CUSTOMER M/s RSPL LIMITED GUJARAT				PROJECT/PRODUCT 3x16.75MW MW (STG) RSPL CHEMICAL COMPLEX JAMNAGAR, GUJARAT			
 BHARAT HEAVY ELECTRICALS LTD. RUDRAPUR	DEPT.	UNTOL.DIMS.GR.	SCALE	WEIGHT(KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEM
	BDE	—		—	—	—	—
	CODE	—	—	—	—	—	—
TITLE GENERAL NOTES ON SP BUSDUCT				DOCUMENT NO. 42071510001		REV. 00	
SHT. NO. —				NO. OF SHT. —			

एन.एच.ई.एल. - रुद्रपुर  
अभि. (सापेक्षी प्रबंधन) एन.एच.ई.एल.  
बी.एच.ई.एल. - रुद्रपुर BHEL  
उत्तराखण्ड-263153/Unarakhand-263153

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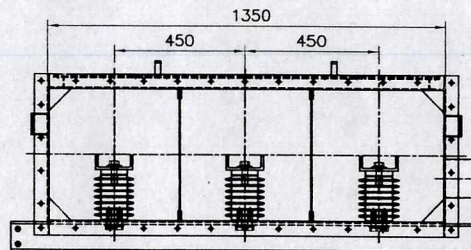
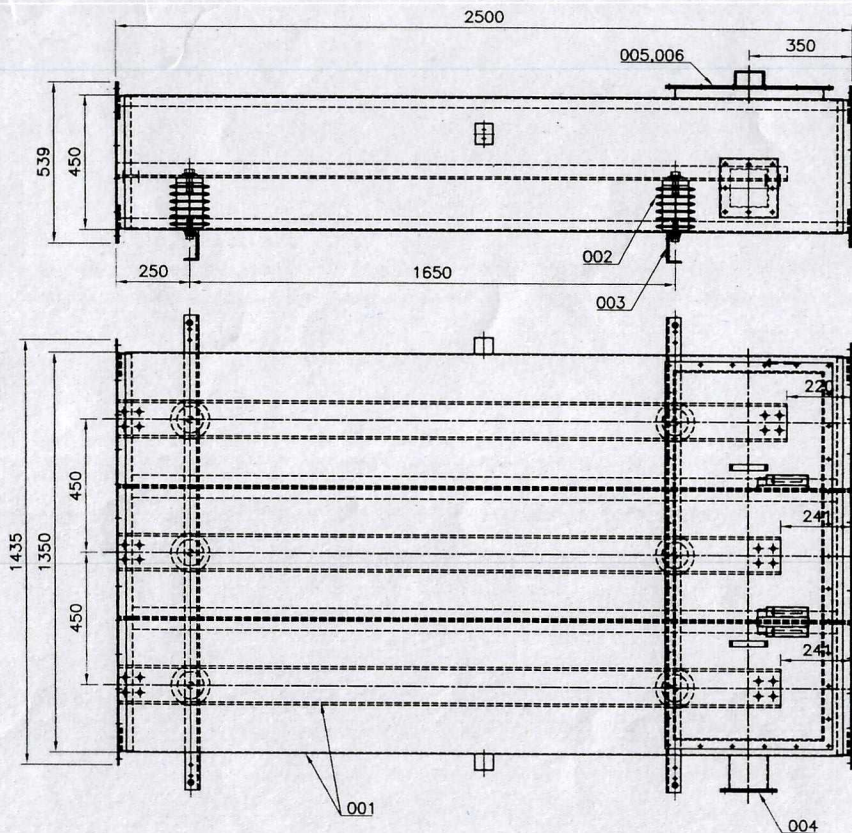
First Angle Projection

All Dimensions in 'mm'

32071510015

DRAWING NO.

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



ASSY. WEIGHT OF VAR. 00 = 325.92 KG

WEIGHT OF MATERIAL:-

AS PER IS: 513  
 STEEL SHEET - 2.5 TK x 1219 x 3580 LG. = 179.03 KG  
 AL ALLOY SHEET FOR BARRIER - 2.00 TK = 11.69 KG  
 AL ALLOY PLATE 8.00 TK (FOR SPACER) = 0.00 KG  
 AL ALLOY CHANNEL 127.0x48.0x8.00 = 31.07 KG  
 ISA 3TKx35x35 (STEEL ANGLE) = 37.03 KG  
 ISA 3TKx50x50 (STEEL ANGLE) = 16.79 KG

W. A. OF ENCL. WT. WITH BARRIER = 245.01 KG

W. A. OF STEEL ENCL. WEIGHT = 233.32 KG

W. A. OF CONDUCTOR WEIGHT = 31.13 KG

CRCA  
*File*

VAR 00	REMARKS	ITEM NO.	DESCRIPTION	DRAWING NO.	IT NO. VAR	MATL CODE MATL. SPECN.	WT(KG) QTY.	GS
030	L-25 (SCREW SET)	006	WINDOW FASTENING ARRGT.	42561011011	01	-	0.000 001	
001	-	005	WINDOW COVER GASKET 564x1306 LG.	31001000219	-	-	0.000 001	
001	-	004	HEATER / THERMOSTATE ARRGT.	25415153459	00	-	0.000 001	
002	-	003	SUPPORT CHANNEL	35411251101	003	-	0.000 001	
006	-	002	CONDUCTOR MOUNTING ARRGT.	32001200028	01	-	0.000 001	
001	-	001	W.A. OF ENCL AND COND.	---	-	-	0.000 001	

BILL OF QUANTITY

NAME OF CUSTOMER: M/s RSPL LIMITED GUJARAT  
 NAME OF PROJECT: RSPL CHEMICAL COMPLEX GUJARAT  
 NAME OF CONSULTANT: M/s JACOBS MUMBAI

NAME	SIGN	DATE	NO. OF VAR
DRN SANJAY	<i>Sanjay</i>	18/07/16	-
CKD RUPESH	<i>Rupesh</i>	18/07/16	-
APPD A.NARAYAN	<i>A.Narayan</i>	18/07/16	-

DEPT. BDE  
 CODE -  
 TITLE: SP BUSDUCT 450x1350x2500 LG.  
 DRAWING NO.: 32071510015  
 REV.: 00  
 SHT. NO. 01 NO. OF SHT. 01

REV.	DATE	ALTERED
-	-	CHECKED -
-	-	APPD. -

Zone -

NOTE:-

- FOR ASSY. TOLERANCES REF. STD. BD-25001T.
- FOR GENERAL & FINISH NOTES REFER DRG. No.42071510001 REV.00
- FOR MANUFACTURING DETAILS SEE DRG. No.01001000243 REV.00 (PLAIN) AND 01001000244 REV.00 (CANOPY)
- FOR CONDUCTOR DETAIL SEE DRG. No.32001200040 REV.00.

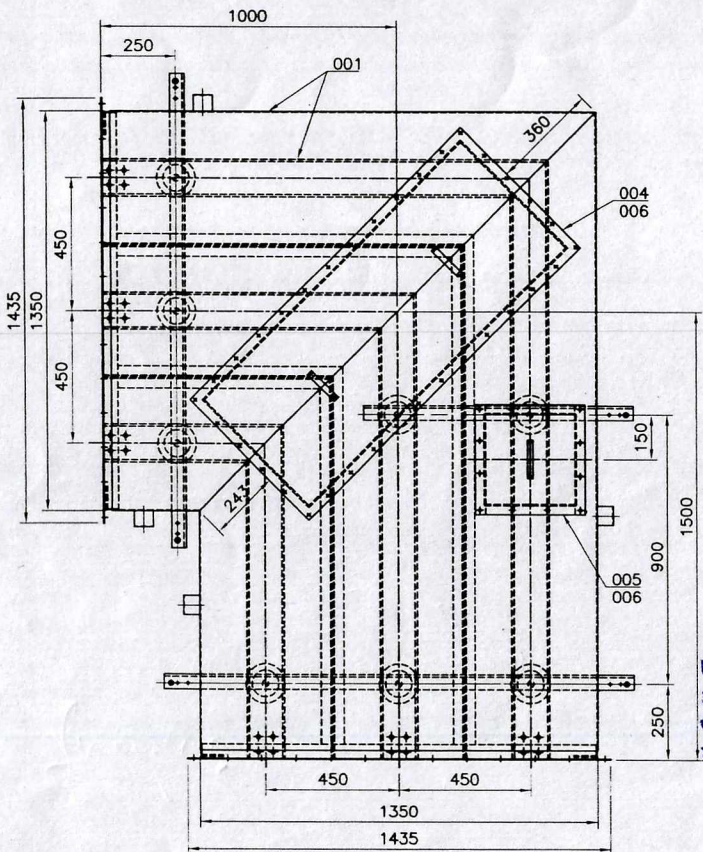
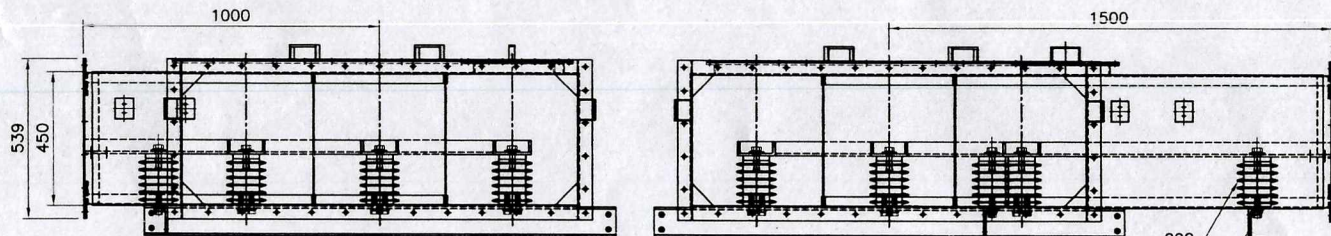
INVENTORY NO. SIGN. & DATE REF. DRG. NO.

*Sanjay*  
 एम. बी. जायसवाल S.B. Jaiswal  
 ऑफ. (सहायक प्रबंधक) Engg.(Mat. Mang.)  
 बी.एच.ई.एल.-रुद्रपुर BHEL-Rudrapur  
 उत्तराखण्ड-263453 Uttarakhand-263152

First Angle Projection

All Dimensions in 'mm'

DRAWING NO. 32071510014



**ASSY. WEIGHT OF VAR. 00 = 347.38 KG**

**WEIGHT OF MATERIAL:-**

*CRCA*

STEEL SHEET <sup>(AS PER IS: 513)</sup> 2.5 TK x 1219 x 3580 LG.	= 178.03 KG
AL ALLOY SHEET FOR BARRIER - 2.00 TK	= 11.69 KG
AL ALLOY PLATE 8.00 TK (FOR SPACER)	= 0.00 KG
AL ALLOY CHANNEL 127.0x48.0x8.00	= 34.28 KG
ISA 3TKx35x35 (STEEL ANGLE)	= 39.17 KG
ISA 3TKx50x50 (STEEL ANGLE)	= 16.79 KG
<b>W.A. OF ENCL. WT. WITH BARRIER</b>	<b>= 246.15 KG</b>
<b>W.A. OF STEEL ENCL. WEIGHT</b>	<b>= 234.46 KG</b>
<b>W.A. OF CONDUCTOR WEIGHT</b>	<b>= 34.34 KG</b>

VAR	REMARKS	ITEM NO	DESCRIPTION	DRAWING NO.	IT.NO.	MATL CODE	WT(KG)	GS
050		L=25 (SCREW SET)	006 WINDOW FASTENING ARRGT.	42561011011	-	-	0.000	001
001		-	005 WINDOW COVER GASKET 364x364 LG.	31001000219	-	-	0.000	001
001		-	004 WINDOW COVER GASKET 564x1306 LG.	31001000219	-	-	0.000	001
003		-	003 SUPPORT CHANNEL	35411251101	003	-	0.000	001
008		-	002 CONDUCTOR MOUNTING ARRGT.	32001200028	-	-	0.000	001
001		-	001 W.A. OF ENCL AND COND.	--	-	-	0.000	001
VAR 00					VAR	MATL SPECN.	QTY.	

*Singh*  
**ए.बी. जायसवाल B.B. Jaiswal**  
 अधि. (सामग्री प्रबंधन) Engg. (Mat. Mang.)  
 बी.एच.ई.एल.-रुद्रपुर BHEL-Rudrapur  
 उत्तराखण्ड-263153 Uttarakhand-263153

NAME OF CUSTOMER		M/s RSPL LIMITED GUJARAT	
NAME OF PROJECT		RSPL CHEMICAL COMPLEX GUJARAT	
NAME OF CONSULTANT		M/s JACOBS MUMBAI	

BILL OF QUANTITY		NAME	SIGN	DATE	NO. OF VAR
	BHARAT HEAVY ELECTRICALS LTD.	DRN	SANJAY	18/07/16	-
	RUDRAPUR	CKD	RUPESH	18/07/16	-
		APPD	A.NARAYAN	18/07/16	-

DEPT.	UNTOL DIMS. GR.	SCALE	WEIGHT(KG)	REF. TO ASSY. DRG.	ITEM NO.	NO OF ITEM
BDE						
CODE						
TITLE				DRAWING NO.	REV.	
SP BUSDUCT				32071510014	00	
450x1350x1000+1500 LG.				SHT. NO. 01	NO. OF SHT. 01	


**NOTE:-**

- FOR ASSY. TOLERANCES REF. STD. BD-25001T.
- FOR GENERAL & FINISH NOTES REFER DRG. No.42071510001 REV.00
- FOR MANUFACTURING DETAILS SEE DRG. No.01001000243 REV.00 (PLAIN) AND 01001000244 REV.00 (CANOPY)
- FOR CONDUCTOR DETAIL SEE DRG. No.32001200040 REV.00.

REV.	DATE	ALTERED	CHECKED	APPD.
-	-	-	-	-
Zone				

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INVENTORY NO. SIGN. & DATE REF. DRG. NO.

		QUALITY ASSURANCE PLAN					QAP NO: QP/BD/SP/RSPL		REV: 01	DATE: 13.06.16			
		SEGREGATED PHASE BUS DUCT & FOR EQUIPMENTS ASSEMBLED IN BUSDUCT (11 KV 1600 A & 11 KV 200 A)					CUSTOMER: M/s RSPL LIMITED		PROJECT: 3 X 16.65 MW STG				
							IWO NO.: 15-107-A-2						
SL. NO.	COMPONENT	CHARACTERISTICS	CATEGORY	METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS
									P	W	R	H	
1.0	RAW MATERIAL												
1.1	CRCA Sheet for Bus-duct Enclosure	a) Dimensions (thickness)	Major	Measurement	5 samples/lot	Appd TDS	Appd TDS	IR	3	2,1			
		b) Surface finish	Minor	Visual	100 %			IR	3	2			
		c) Tensile Strength	Major	Mechanical	1 sample/lot			TR	3	2,1			
		d) % Elongation	Major	Mechanical	1 sample/lot			TR	3	2,1			
		e) Chemical composition	Major	Chemical	1 sample/lot			TR	3	2,1			
		f) Electrical Conductivity (if applicable as per IS)	Major	Electrical	1 sample/lot			TR	3	2,1			
1.2	Aluminium for Conductor (extrusion & plates)	a) Dimensions	Major	Measurement	5 samples/lot	Appd TDS	Appd TDS	IR	3	2,1			
		b) Surface finish	Major	Visual	100 %	IS: 5082	IS: 5082	IR	3	2			
		c) Tensile Strength	Major	Mechanical	1 sample/lot			TR	3	2,1			
		d) % of Elongation	Major	Mechanical	1 sample/lot			TR	3	2,1			
		e) Chemical composition	Major	Chemical	1 sample/lot			TR	3	2,1			
		f) Electrical Conductivity	Critical	Electrical	1 sample/lot			TR	3	2,1			
1.3	Copper Flats/Copper Braided Flexibles	a) Dimensions	Major	Measurement	5% sample			Appd TDS/Drg	Appd TDS/Drg	IR	3	2,1	
		b) Surface finish	Minor	Visual	100 %	IS: 191	IS: 191	IR	3	2			
		c) Chemical Composition	Major	Chemical	1 sample/lot			TR	3	2,1			
		d) Tensile Strength	Critical	Mechanical	1 sample/lot	IS:613/IS:1897	IS:613/IS:1897	TR	3	2,1			
		e) % of Elongation	Critical	Mechanical	1 sample/lot	IS:613/IS:1897	IS:613/IS:1897	TR	3	2,1			
		f) Silver Plating for flexible connector	Critical	Measurement	1 sample/lot	Appd TDS/Drg	Appd TDS/Drg	IR	3	2,1			
		g) Electrical Conductivity	Critical	Electrical	1 sample/lot	IS:613/IS:1897	IS:613/IS:1897	TR	3	2,1			
		2.0	BOUGHT OUT ITEMS										
2.1	Epoxy Insulator	Acceptance Tests											
		a) Visual	Major	Visual	100 %	BHEL Drg / TDS	BHEL Drg / TDS	IR	3	2			
		b) Dimensions	Major	Measurement	5% per lot	BHEL Drg / TDS	BHEL Drg / TDS	IR	3	2,1			
		c) Creepage distance	Major	Measurement	1 Sample/lot	BHEL Drg / TDS	BHEL Drg / TDS	TR	3	2,1			
		d) Dry 1 min. PF voltage withstand	Major	Electrical	100 %	IS: 9431	IS: 9431	TR	3	2,1			
		*e) Impluse voltage withstand test	Major	Electrical	1 Sample	IS: 9431	IS: 9431	TR	3	2,1			
		*f) Temperature cycle test	Major	Thermal	1 Sample	IS: 9431	IS: 9431	TR	3	2,1			
		*g) Mechanical strength test	Major	Mechanical	1 Sample	IS: 9431	IS: 9431	TR	3	2,1			

  
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3.0	<b>PROCESS INSPECTION</b>														
3.1	Fabrication of Enclosure & Conductor	(i) Weld Inspection (Visual)	Major	Visual	100 %	PS	PS	IR	3	2	1				
		(ii) Dimensions	Major	Measurement	100 %	PS	PS	IR	3	2	1				
		(iii) DP Test on finished weld	Major	Visile DP test	100%	PS	PS	IR	3	2	1				
		(iv) mV drop test on straight conductor butt weld joint	Major	Electrical	1 sample of representative section	BS: 159 IS: 5561	BS: 159 IS: 5561	IR	3	2	1				
4.0	<b>FINAL INSPECTION</b>														
4.1	Bus duct sections	<b>Type tests</b>													
		*a) Short time current test	Major	Electrical	1 Sample	IS : 8084	IS : 8084	TR	3		2,1				
		*b) Impulse voltage withstand test	Major	Electrical	1 Sample	IS : 8084	IS : 8084	TR	3		2,1				
		*c) Temp. rise test	Major	Electrical	1 Sample	IS : 8084	IS : 8084	TR	3		2,1				
		<b>*d) Tests for Degree of Protection</b>													
		i) Air tightness test	Major	Mechanical	1 Sample	IS : 8084	IS : 8084	TR	3		2,1				
		ii) Water tightness test	Major	Mechanical	1 Sample	IS : 8084	IS : 8084	TR	3		2,1				
		<b>Routine Tests</b>													
		e) Dimensions	Major	Measurement					IR	3	2,1				
		f) Distance btn. Insulators	Major	Measurement	100 %	BHEL Drg / Appd TDS	BHEL Drg / Appd TDS		IR	3	2,1				
		g) Identification / Marking	Major	Visual					IR	3	2,1				
		h) Paint Shade & thickness	Major	Visual					IR	3	2,1				
		i) Phase to Earth clearance	Major	Measurement					IR	3	2,1				
		<b>j) Electrical Tests :</b>													
i) HV Test	Major	Electrical	100 %	IS : 8084	IS : 8084		TR	3	2,1						
ii) IR test	Major	Electrical				IS : 8084	IS : 8084	TR	3	2,1					

NOTE: FOR CHARACTERISTICS IDENTIFIED WITH "\*", SIMILAR TEST CERTIFICATES SHALL BE ACCEPTED

**ABBREVIATIONS:**

R= REVIEWED BY  
P= PERFORMED BY  
W= WITNESSED BY  
H= HOLD (CHP-CUSTOMER HOLD POINT)

IR= INSPECTION REPORT  
TR= TEST REPORT/CERTIFICATE  
TDS= TECHNICAL DATA SHEET  
APPD DRG= APPROVED DRAWING  
PS= PLANT STANDARD

IS= INDIAN STANDARD  
IEC= INTERNATIONAL ELECTRO TECHNICAL COMMISSION STANDARD  
IEEE= INSTITUTE OF ELECTRONICS & ELECTRICAL ENGINEERS STANDARD

1= CUSTOMER  
2= BHEL / NOMINATED THIRD PARTY INSPECTION AGENCY  
3= BHEL'S SUB-VENDOR / NABL APPROVED EXTERNAL LABORATORY

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