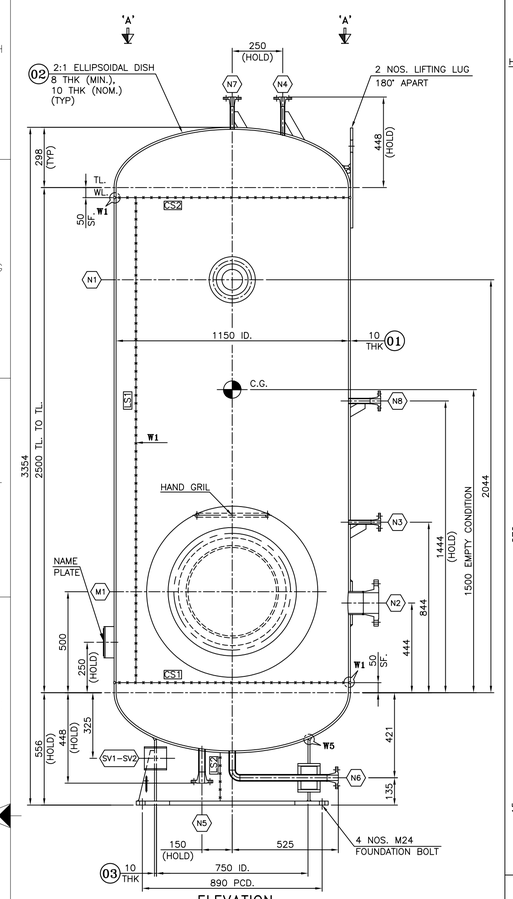
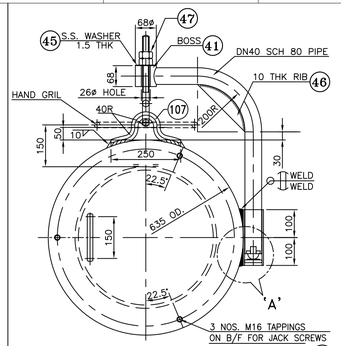
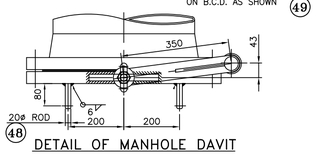
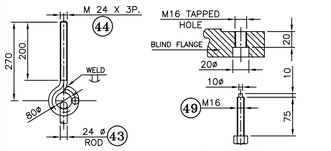
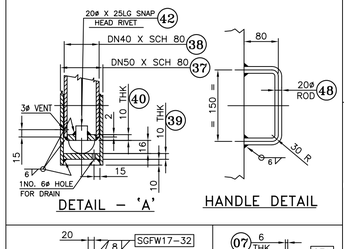
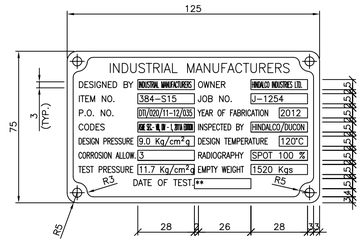




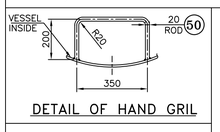


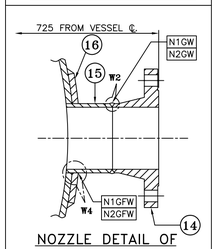


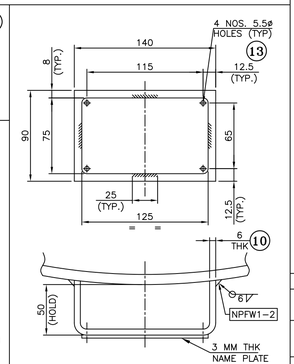


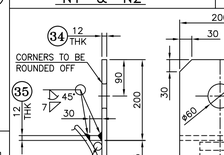


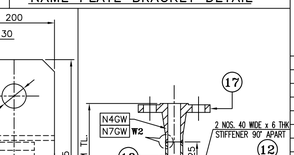
1) ALL LETTTERS. BLOCKS. AS WELL AS EDGES. SHALL HAVE RAISED POLISHED FACE–RELIEF 0.5 MM APPROX.
2) BLACK BACKGROUND.
3) NAME PLATE SHALL BE RIVETED WITH 5ø SS 304 RIVETS & SHALL BE TACK WELDED TO BRACKET ON ALL FOUR SIDE.
4) ** ACTUAL DATE TO BE PUNCHED AFTER HYDROTEST.

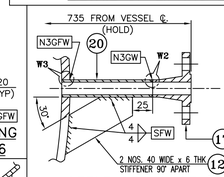


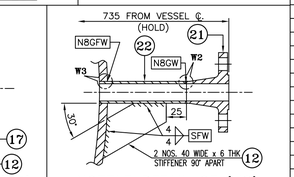


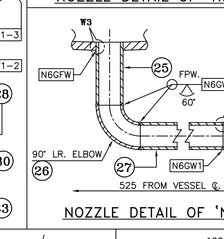


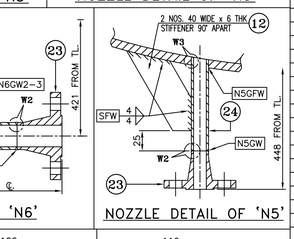


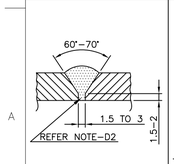


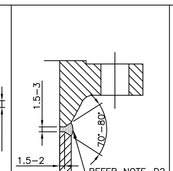


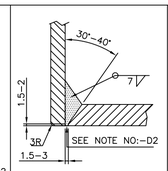


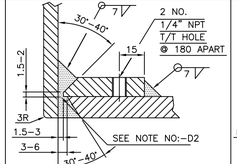


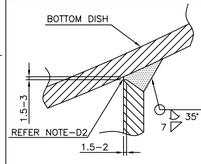


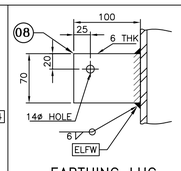


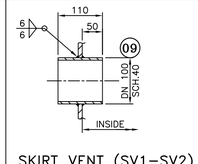












A GENERAL NOTE

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. ALL ANCHOR BOLT HOLES TO STRADDLE N/S CENTRE LINE.
3. ALL FLANGES BOLT HOLES SHALL STRADDLE THE NORTH SOUTH CENTER LINE OF VESSEL.
4. ALL MACHINED SURFACE AND CONNECTIONS SHALL BE PROTECTED WITH RUST PREVENTIVE COMPOUND AFTER MACHINING.
5. ALL EDGES AND CORNERS TO BE DEBURRED (OR ROUNDED IF SHOWN).INSIDE CORNERS OF NOZZLE PIPE AT SHELL I.D. SHALL HAVE 3mm. RADIUS.
6. BILL OF MATERIAL INDICATES FINISHED SIZE. ADD NECESSARY FABRICATION MARGIN.
7. I.D. OF WN FLANGE SHALL MATCH WITH THE I.D. OF CORRESPONDING NOZZLE PIPES.
8. FABRICATION TOLERANCES AS PER DESIGN CODE WHICH EVER IS STRINGENT.
9. FLANGES FOR NOZZLES AND MANHOLE, INCLUDING BLIND FLANGES, UP TO DN 600 SHALL HAVE DIMENSIONS IN ACCORDANCE WITH ASME B16.5 2009 EDITION.
10. THREADS FOR STUDS AND NUTS SHALL BE UNC. UP AND INCLUDING 1" DIA. ABOVE 1" DIA EIGHT(8) THREAD SERIES(8N) SHALL BE FURNISHED. NUTS SHALL CONFORM TO THE DIMENSIONS OF HEAVY HEX NUTS PER ASME STANDARD B18.2.2 2010 EDITION.
11. ALL NOZZLES DN 50 & BELOW TO HAVE TWO STIFFENERS 40 WIDE x 6 THK AT 90° APART.
12. EQPT. SHALL BE WELL DRIED & THOROUGHLY CLEANED BOTH INSIDE AND OUTSIDE AND ALL WATER, DIRT, SAND, WELD METAL,SPATTER,WELD ELECTRODES,STUB & FOREIGN MATERIALS SHALL BE REMOVED.
13. ALL DIMENSIONS ARE TAKEN FROM REFERENCE LINE/TAN LINE & NOZZLE PROJECTIONS ARE TAKEN FROM VESSEL CENTERLINE TO FACE OF FLANGE.
14. MANDATORY SPARE PARTS
    GASKET 200%
    BOLTING 10% (MIN. 2 SET)
15. SHELL ROLLING SHALL BE IN ROLLING DIRECTION OF PLATE.
16. VENT NOZZLE TO BE KEPT OPEN DURING WATER FILLING FOR HYDROTEST AND DURING DRAINAGE.

B MATERIAL NOTE

1. ALL PIPES SHALL BE OF SEAMLESS CONSTRUCTION. C.S PIPES ABOVE DN 250 MAY BE FABRICATED FROM PLATE WITH 100% RADIOGRAPHY OF LONG SEAM JOINT.
2. ALL PRESSURE PART PLATE MATERIAL SHALL BE NORMALISED CONDITION.
3. SS. 304 SPIRAL WOUND GASKET GRAPHITE FILLED WITH SS 304 INNER & CS OUTER RING AS PER ASME B16.20, 2007 EDITION.
4. ALL FORGING SHALL BE IN NORMALISED CONDITION.
5. BUTT WELD ALLIGNEMENT TOLERANCES SHALL BE AS PER TABLE UW–35.

C NON DESTRUCTIVE TEST NOTE

1. ALL REINFORCING PADS SHALL BE PROVIDED WITH TWO NOS. 1/4" NPT T/T HOLES 180° APART PAD TO BE AIR SOAP TO SOLUTION TEST WITH A PRESSURE OF 1.05 Kg/cm2 g. AFTER TESTING HOLE SHALL BE FILLED WITH HARD GREASE.
2. ALL PRESSURE HOLDING WELDS SHALL BE LIQUID PENETRANT TESTED AFTER COMPLETION OF WELDING & DRESS UP.
3. ALL ATTACHMENT WELDS SHALL BE LIQUID PENETRANT TESTED.
4. RADIOGRAPHY SHALL BE DONE BY GAMA RADIATION.
5. HYDRO TEST WILL BE CONDUCTED IN HORIZONTAL POSITION IN SHOP.
6. HYDROSTATIC TEST PRESSURE SHALL BE HELD FOR ATLEAST ONE HOUR DURING THE TEST. TEST MEDIUM SHALL BE PORTABLE WATER.

D WELDING NOTE

1. ALL INSIDE WELDS TO BE GROUND SMOOTH AND EXTERNAL WELDS TO BE LEFT IN DESCALED CONDITION.
2. WHEREVER POSSIBLE ALL WELDS SHALL BE CHIPPED BACK TO SOUND METAL AND REWELDED. IF BACK CHIPING IS NOT POSSIBLE JOINT SHALL BE F.P.W. WITH ROOT RUN BY GTAW PROCESS, PROVIDED 1:3 TAPER FOR OFF SET.
3. ALL ROOT RUN OF SINGLE WELDED F.P.W. JOINT SHALL BE CARRIED OUT BY GTAW PROCESS.
4. ALL FILLET WELD SHALL HAVE TOLERANCE OF +2/–0 MM. FOR LEG LENGTH.
5. PERMANENT WELD JOINT BACKING STRIPS ARE NOT PERMITTED.
6. ALL NOZZLE TO SHELL WELD JOINT ROOT RUN BY TIG WELDING.
7. ALL NOZZLE TO VESSEL WELD JOINTS ROOT RUN BY TIG WELDING.
8. WELD JOINT NO. ARE INDICATED IN ▭ BOX.

E HEAT TREATMENT NOTE

1. DISH END SHALL BE STRESS RELIEVE AS PER CYCLE GIVEN BELOW.
   a) LOADING TEMPERATURE – 300°C.
   b) RATE OF HEATING – 100°C / HR.
   c) SOAKING TEMPERATURE – 620°C ± 10°C
   d) SOAKING TIME – 30 MINUTE (MIN)
   e) RATE OF COOLING – 100°C / HR UP TO 300°C
   f) BELOW 300°C–STILL AIR

F PAINTING NOTE

1.

PARTS	PAINTING	
	DERUSTING	PAINT QUALITY (MFGR)
COMPLETE VESSEL EXTERNAL SURFACE OF CS PARTS	NEAR WHITE BLAST CLEANING TO SSPC–SP–10	PRIMER COAT :– INORGANIC ZINC SILICATE PRIMER 1 COAT OF 75 MICRONS, DFT

2. EARTHING LUG SHALL NOT BE PAINTED.

G PROTECTION AND DESPATCH NOTE

1. P.O NO. VESSEL TITLE, ITEM NO., MANUFACTURERS NAME ETC. SHALL BE PAINT STENCIL AT CONSPICUOUS PLACE BEFORE DESPATCH,LETTER SHALL BE 100mm HIGH.

ITEM NO	DESCRIPTION	QTY	MATERIAL	SIZE	WT.IN KGS.	REMARKS
50	HAND GRIL	01	SA 516 GR.60	20ø ROD x 724 LG.		
49	JACK SCREW	03	SS 304	M16 x 85 LG.		
48	HANDLE ROD	02	SA 516 GR.60	20ø ROD x 310 LG.		
47	NUT + LOCKNUT	01 SET	SA 196 GR. 2H	M24 x STD.		
46	RIB	01	IS 2062 GR. B	249 x 52 x 10 THK		
45	WASHER	01	S.S.	68 O.D. X 26 I.D. X 1.5 THK		
44	EYE BOLT	01	IS 2062 GR. B	M24 x 3P x REF. DETAIL		
43	HOOK	01	SA 516 GR.60	24ø X ~375		
42	SNAP HEAD RIVET	01	M.S.	20 OD. x 25 LG.		
41	BOSS	01	M.S.	68 OD. x 26 ID. x 68 LG.		
40	PLATE	01	IS 2062 GR. B	36 OD. x 10 THK		
39	END PLATE	01	IS 2062 GR. B	47 OD. x 10 THK		
38	DAVIT ARM	01	SA 106 GR. B	DN 40 x SCH.80 x 843 LG.	4.5	
37	SLEEVE	01	SA 106 GR. B	DN 50 x SCH.80 x 200 LG.	2.2	
36	ROD FOR LIFTING LUG	02	SA 516 GR.60	20 ø x 100 LG.		
35	PL. FOR LIFTING LUG	02	SA 516 GR.60/70	200 x 30 x 12 THK	1.3	
34	LIFTING LUG	02	SA 516 GR.60/70	200 x 495 x 12 THK	18.6	
33	STUD WITH 2 NUTS M1	16+2	SA 193 GR.B7/ SA 194 2H	1–1/8" UNB x 165 LG.	–	
32	PAD FOR NOZZ. M1	01	SA 516 GR.60/70	847 O.D. x 460 I.D. x 10 THK	31	
31	BLIND FLG. M1	01	SA 105	DN 450 x CL.150 x BLRF	97	
30	NOZZ. GASKET M1	1+2	(REF.NOTE NO.B3)	DN 450 x CL.150 x 4.5 THK.	–	
29	NOZZ. NECK M1	01	SA 516 GR.60/70	1404 CIR. x 10 THK x 168 LG.	18.5	
28	NOZZLE FLANGE M1	01	SA 105	DN 450 x CL.150 x WNRF x 10 THK	69.4	
27	NOZZ. PIPE N6	01	SA 106 GR. B	DN 25 x SCH. XXS x 431 LG.	2.3	
26	NOZZ. ELBOW N6	01	SA 234 GR. WPB	DN 25 x SCH. XXS x 90° LR.	–	
25	NOZZ. NECK N6	01	SA 106 GR. B	DN 25 x SCH. XXS x 95 LG.	0.4	
24	NOZZ. NECK N5	01	SA 106 GR. B	DN 25 x SCH. XXS x 117 LG.	0.6	
23	NOZZLE FLANGE N5 & N6	02	SA 105	DN 25 x CL.150 x WNRF x SCH. XXS	1.8	
22	NOZZ. NECK N8	01	SA 106 GR. B	DN 20 x SCH. XXS x 112 LG.	0.4	
21	NOZZLE FLANGE N8	01	SA 105	DN 20 x CL.150 x WNRF x SCH. XXS	0.9	
20	NOZZ. NECK N3	01	SA 106 GR. B	DN 15 x SCH. XXS x 112 LG.	0.2	
19	NOZZ. NECK N7	01	SA 106 GR. B	DN 15 x SCH. XXS x 112 LG.	0.2	
18	NOZZ. NECK N4	01	SA 106 GR. B	DN 15 x SCH. XXS x 144 LG.	0.3	
17	NOZZLE FLANGE N3,N4 & N7	03	SA 105	DN 15 x CL.150 x WNRF x SCH. XXS	2.7	
16	NOZZ. PAD N1 & N2	02	SA 516 GR.60/70	214 O.D. x 117 I.D. x 10 THK	3.9	
15	NOZZ. NECK N1 & N2	02	SA 106 GR. B	DN 100 x SCH.80 x 77 LG.	1.7	
14	NOZZLE FLANGE N1 & N2	02	SA 105	DN 100 x CL.150 x WNRF x SCH. 80	7	
13	SCREW	04	SS 304	M5 x 10 LG.	–	
12	NOZZ. STIFFENER N3,N4,N5,N7&N8	10	SA 516 GR.60/70	40 WIDE x 6 THK x LG. TO SUIT		
11	NAME PLATE	01	SS 304	125 x 75 x 3 THK	0.4	
10	NAME PLATE BRACKET	01	SA 516 GR.60/70	155 x 228 x 6 THK	1.2	
09	SKIRT VENT	02	SA 106 GR.B	DN 100 x SCH.40 x 110 LG.	1.7	
08	EARTHING LUG	2	SS 304	70 x 100 x 6 THK	0.6	
07	GUSSET	03	SA 516 GR.60/70	6 THK x 60 x 80 LG	0.4	
06	OPENING FOR NOZZ. N6	01	SA 106 GR.B	DN 150 x SCH. 40 x 120 LG.	4	
05	GUSSET PLATE FOR SKIRT	08	SA 516 GR.60/70	250 x 93 x 10 THK	146	
04	SKIRT BASE RING	01	SA 516 GR.60/70	950 O/D x 620 I/D x 20 THK	64	
03	SKIRT	01	SA 516 GR.60/70	CIR. 2387.6 x 307 LG. x 10 THK.	56	
02	ELLIPSOIDAL DISHED END	02	SA 516 GR.60/70	1451 B. D. x 8 THK(MIN)/10 THK(NOM).	225	
01	SHELL	01	SA 516 GR.60/70	3645 CIR. x 2400 LG. x 10 THK	687	

BILL OF MATERIAL

REV	DATE	STATUS – DESCRIPTION	DRWN	CHKD	APPD
0.	09.01.2012	ISSUED FOR APPROVAL.	ASR	ANK	HEM

DESIGN DATA

SR.NO	DESCRIPTION	UNIT	DETAIL
1	DESIGN/CONSTRUCTION CODE		ASME SEC.– VIII, DIV – 1, 2011A EDITION
2	DESIGN PRESSURE (INT./EXT.)	Kg/cm^2g	9.0/NA
3	DESIGN TEMPERATURE (INT./EXT.)	°c	120/NA
4	MAWP = DESIGN PRESSURE	Kg/cm^2g	9.0
5	MAEWP	Kg/cm^2g	NA
6	MDMT	°c	0
7	OPERATING PRESSURE	Kg/cm^2g	5.5
8	OPERATING TEMPERATURE	°c	45
9	CORROSION ALLOWANCE (INT./EXT.)	mm	–/3
10	HYDRO TEST PRESSURE	Kg/cm^2g	11.7(V)/12.5(H), REF. NOTE C6 & C5
11	HYDRO TEST TEMP.	°c	18 (MIN.)
12	HEAT TREATMENT		YES, DISH TO BE STRESS RELIED (REF. NOTE E)
13	POST WELD HEAT TREATMENT		NONE
14	OPERATING FLUID / FLOW RATE	m^3/Hr	AIR / 240
15	CAPACITY	m^3	3.0
16	JOINT EFFICENCY (SHELL/DISH)		0.85/1.0
17	RADIOGRAPHY (SHELL/DISH)		SPOT/FULL
18	IMPACT TEST		EXEMPTED AS PER UG–20 (F) FIG UCS–66 GENERAL NOTE (C)
19	APPLICABLE UG–22 LOADINGS		a,b,d,f,&j
20	WIND LOAD		IS:875 (PART 3)
21	SEISMIC LOAD		IS:1893 (PART IV) : 2005
22	CODE STAMP		NO
23	PAINTING / CLEANING		REF. NOTE F
24	INSULATION THICKNESS/TYP	–	NIL
25	WEIGHT : EMPTY	Kg	1520
26	: OPERATING	Kg	1520
27	: HYDROTEST (SITE)	Kg	4550
28	LETHAL SERVICE		NO
29	NATIONAL BOARD REGISTARTION		NOT REQUIRED.
30	INSPECTION		HINDALCO/DUCON

NOZZLE SCHEDULE

NOZZ. MARK	SERVICE	NOZZLE QTY.	NOZZLE SIZE DN	NOZZLE SCH/THK.	FLANGE CLASS	FLANGE TYPE	FLANGE FACE	GASKET FINISH	NOZZ. PROJ. CL.OF VESSEL/ TL TO FLG. R.F.	R.F. PAD ODxTHK	REMARKS
N1	AIR INLET	1	100	80	150	WN	RF	125–250 AARH FINISH	725	214 x 10	
N2	AIR OUTLET	1	100	80	150	WN	RF		725	214 x 10	
N3	UNLOADER CONNECTING	1	15	XXS	150	WN	RF		735	–	
N4	PRESSURE GAUGE	1	15	XXS	150	WN	RF		SEE DWG	–	
N5	MOISTURE TRAP	1	25	XXS	150	WN	RF		SEE DWG	–	(HOLD)
N6	DRAIN VALVE	1	25	XXS	150	WN	RF		SEE DWG	–	
N7	PRESSURE SAFETY VALVE	1	15	XXS	150	WN	RF		SEE DWG	–	
N8	SPARE	1	20	XXS	150	WN	RF		735	–	
MI	MANHOLE	1	450	10 THK	150	WN	RF		835	847 x 10	WITH BF. & DMT

REFERENCE STANDARD & SPECIFICATION

NO.	DESCRIPTION	DOC. NO.
01	SHOP & FIELD PAINTING	6–44–0004
02	LIFTING LUG	7–12–024
03	SKIRT BASE DETAILS	7–12–004
04	SKIRT OPENING DETAILS	7–12–005

HOLD POINT

1. NOZZLE ORIENTATION
2. NOZZLE ELEVATION FOR N4,N5 & N8
3. NAME PLATE ORIENTATION & ELEVATION
4. INSULATION THK
5. DISHED END TYPE
6. SKIRT & BASE PLATE DETAIL
7. NOZZLE FLANGE TYPE

STAMP OF I/M

ISSUE FOR
- ☐ 1. CONSTRUCTION
- ☐ 2. APPROVAL
- ☐ 3. REVIEW
- ☐ 4. INFORMATION

DATE | SIGN.

APPROVAL STAMP OF CLIENT

OWNER: HINDALCO — ADITYA BIRLA GROUP

HINDALCO INDUSTRIES LTD.
MAHAN ALUMINIUM PROJECT

CONSULTANT: इंजीनियर्स इंडिया लिमिटेड — ENGINEERS INDIA LIMITED

PROJECT: MAHAN ALUMINIUM – BATH RECYLE SYSTEM

PROJ. NO. & DATE: MAHAN:- 6954-00-LZ-PR-4050/00 DATED 26.04.2011

TECHNOLOGY PROVIDER: KEMPE

KEMPE
P.O. BOX 4205, GEELONG
VICTORIA, AUSTRALIA, 3220
PHONE – (03) 5225 2900
FAX – (03) 5225 2950
INTERNATIONAL
PHONE – +61 3 5225 2900
FAX – +61 3 5225 2950
INTERNET– www.kempe.com

DUCON TECHNOLOGIES (I) PVT. LTD

(ERSTWHILE DUCON POLUTION CONTROL SYSTEM PVT. LTD.)
'SERVING THE INDUSTRY SINGE 1938'
OFFICE: DUCON HOUSE,Plot No. A/4, MIDC,
Wagale industrial area Thane (W)–400604 Ph: 022 41122114 Fax–022–41122115
URL: www.ducon.com; Email:

Industrial Manufacturers

A–308, T.T.C. INDUSTRIAL AREA, VILLAGE MAHAPE
NAVI MUMBAI,MAHARASHTRA–400 709. INDIA

DRN BY	ASR	P.O.NO. :– DTI/020/11–12/035	DATE :– 18.11.2011
CHKD.BY	ANK	TITLE :– INSTRUMENT AIR RECEIVER 3 m^3	
APPD.BY	HEM		
SCALE	1:8	PLANT:–HINDALCO INDUSTRIES LTD., MAHAN ALUMINIUM PROJECT,	
DATE	26.11.11	NH 75 E BARGAWAN 486886 DIST. SINGRAULI M.P. INDIA	
		PROJECT :– D11–20 & 21	
		IM DRG NO :– IM/VSL/1254–REV–0	SHEET NO.:–1 OF 1
CAD FILE NAME	–	CLIENT DRG NO :– 6681–03–GA–MAP–AAP–AR–051–01	

QTY.: ONE	
W.O. NO.	2011–20
JOB NO.	J–1254
EQPT. NO.	384–S15
REV. NO.	01