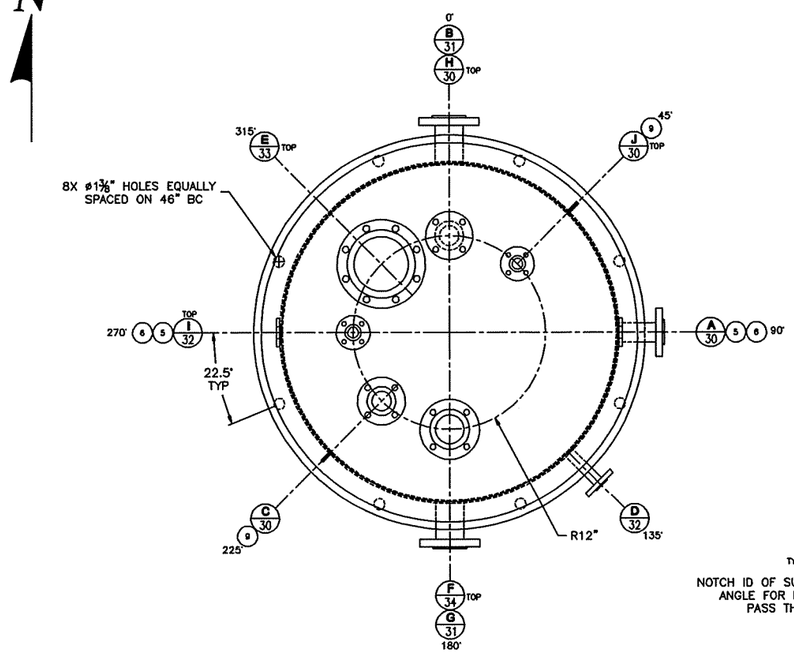
PLAN VIEW
(SHOWS TRUE ORIENTATION)



NOZZLE SCHEDULE

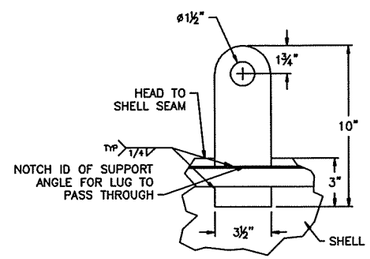
MARK	SIZE	CONNECTION TYPE	SERVICE	PROJECT ±1/4 IN	PROJECT ±1/4 OUT	DETAIL NO.	WELD SIZE T1	T2	T3	T4	T5	T6	T7
A	2"	150# LRVT	OUTLET	–	8"	N-1	3/16	3/16	–	–	–	–	–
B	3"	150# LRVT	OVERFLOW	–	8"	NP-1A	3/16	3/16	3/16	–	–	–	–
C	2"	150# LRVT	SPARE	–	8"	N-1	3/16	3/16	–	–	–	–	–
D	1"	150# LRVT	PH	–	8"	N-1	3/16	3/16	–	–	–	–	–
E	6"	150# LRVT	ACCESS	–	8"	NP-3A	3/16	3/16	3/16	–	–	–	–
F	3"	150# LRVT	LEVEL	–	8"	NP-1A	3/16	3/16	3/16	–	–	–	–
G	3"	150# LRVT	LEVEL	–	8"	NP-1A	3/16	3/16	3/16	–	–	–	–
H	2"	150# LRVT	SPARE	–	8"	N-1	3/16	3/16	–	–	–	–	–
I	1"	150# LRVT	INLET	–	8"	N-1	3/16	3/16	–	–	–	–	–
J	1"	150# LRVT	RECIRC	–	8"	N-1	3/16	3/16	–	–	–	–	–

STANDARD– **NOZZLE PROJECTIONS GIVEN IN SCHEDULE ARE FOR SHORT SIDE LENGTHS MEASURED FROM ID OF VESSEL.**
NOZZLE PROJECTION MEASUREMENTS ARE TAKEN FROM THE INSIDE
NOZZLE LENGTHS ON DISHED HEADS OR SIDEWALLS NOT TO EXCEED 1 ½ PIPE DIAMETERS FROM LONG SIDE UNLESS NOTED OTHERWISE IN NOZZLE SCHEDULE

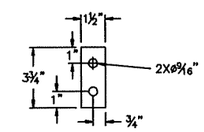
BILL OF MATERIAL

ID	ITEM	QTY	DESCRIPTION	MAT'L SPEC	DWG/REF	NOTES
	1	1	TOP HEAD – 3/16" THK 161" INCLUSIVE ANGLE CONE HEAD	SA-240-304L	–	PLASMA
	2	1	SHELL – 3/16" THK X 42" OD 50" TALL	SA-240-304L	0913640611-2	–
	3	1	BOTTOM HEAD – 1/4" THK X 48 7/8" OD FLAT HEAD	SA-240-304L	–	PLASMA
	4	1	SUPPORT RING – 1/4" THK X 2 1/2" X 2 1/2" ROLLED ANGLE	SA-479-304L	–	–
	5	2	TANK LIFTING LUGS – 3/8" THK X 3 1/2" X 10"	SA-240-304L	–	PLASMA
	6	2	LIFTING LUG REPADS – 1/4" THK X 2 1/2" X 5 1/2"	SA-240-304L	–	–
	7	1	API 650 ID TAG	SA-240-316L	–	–
	8	1	A&B LOGO – LARGE –	VINYL		–
	9	2	3/8" THK GROUNDING LUG	SA-240-304	–	PLASMA
	10	2	1/4" THK X 2 1/2" WIDE OUTER SUPPORT RING	SA-240-304	–	PLASMA
	11	1	ADDITIONAL INFORMATION TAG	SA-240-316L	–	–
A, C, & H	33	3	2" SCH 80s WLD PIPE	SA-312-304L	–	–
		3	2" LAP JOINT STUB END	316L	–	–
		3	2" 150# LAP JOINT FLANGE (GALVANIZED)	CS	–	–
		2	2" 150# RF BLIND FLANGE (C & H ONLY)	SA-182F-304L	–	–
		2	2" 150# GARLOCK RING GASKET (C & H ONLY)	GARLOCK GRAFOIL	–	–
		8	5/8"-11UNC HEX HEAD BOLT X 3 3/4" LG (C & H ONLY)	SA-193-B7 CS	–	–
		8	5/8"-11UNC HEX NUT (C & H ONLY)	SA-194-2H CS	–	–
		2	3/16" THK X 2 1/16" WIDE WATERSHED ANGLE TOP RING (C & H ONLY)	SA-240-304L	–	PLASMA
		2	3/16" THK X 1" WIDE WATERSHED ANGLE ROLLED RING (C & H ONLY)	SA-240-304L	–	–
E, F & G	31	3	3" SCH 80s WLD PIPE	SA-312-304L	–	–
		3	3" LAP JOINT STUB END	316L	–	–
		3	3" 150# LAP JOINT FLANGE (GALVANIZED)	CS	–	–
		3	3/16" THK X 4" WIDE REPAD	SA-240-304L	–	PLASMA
		1	3/16" THK X 2 1/16" WIDE WATERSHED ANGLE TOP RING (F ONLY)	SA-240-304L	–	PLASMA
		1	3/16" THK X 1" WIDE WATERSHED ANGLE ROLLED RING (F ONLY)	SA-240-304L	–	–
D, I & J	32	3	1" SCH 80s WLD PIPE	SA-312-304L	–	–
		3	1" LAP JOINT STUB END	316L	–	–
		3	1" 150# LAP JOINT FLANGE (GALVANIZED)	CS	–	–
		2	3/16" THK X 2 1/16" WIDE WATERSHED ANGLE TOP RING (I & J ONLY)	SA-240-304L	–	PLASMA
		2	3/16" THK X 1" WIDE WATERSHED ANGLE ROLLED RING (I & J ONLY)	SA-240-304L	–	–
B	33	1	6" SCH 40s WLD PIPE	SA-312-304L	–	–
		1	6" LAP JOINT STUB END	316L	–	–
		1	6" 150# LAP JOINT FLANGE (GALVANIZED)	CS	–	–
		1	6" 150# RAISED FACE BLIND FLANGE	SA-182F-304L	–	–
		1	6" 150# GARLOCK GASKET	GARLOCK GRAFOIL	–	–
		8	3/4"-10UNC HEX HEAD BOLT X 4 1/2" LG	SA-193-B7 CS	–	–
		8	3/4"-10UNC HEX NUT	SA-194-2H CS	–	–
		1	3/16" THK X 5" WIDE REPAD	SA-240-304L	–	PLASMA
		1	3/16" THK X 2 1/16" WIDE WATERSHED ANGLE TOP RING	SA-240-304L	–	PLASMA
		1	3/16" THK X 1" WIDE WATERSHED ANGLE ROLLED RING	SA-240-304L	–	–

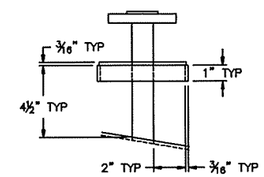
NOTE: A&B IS NOT RESPONSIBLE FOR ANCHOR BOLT DESIGN.



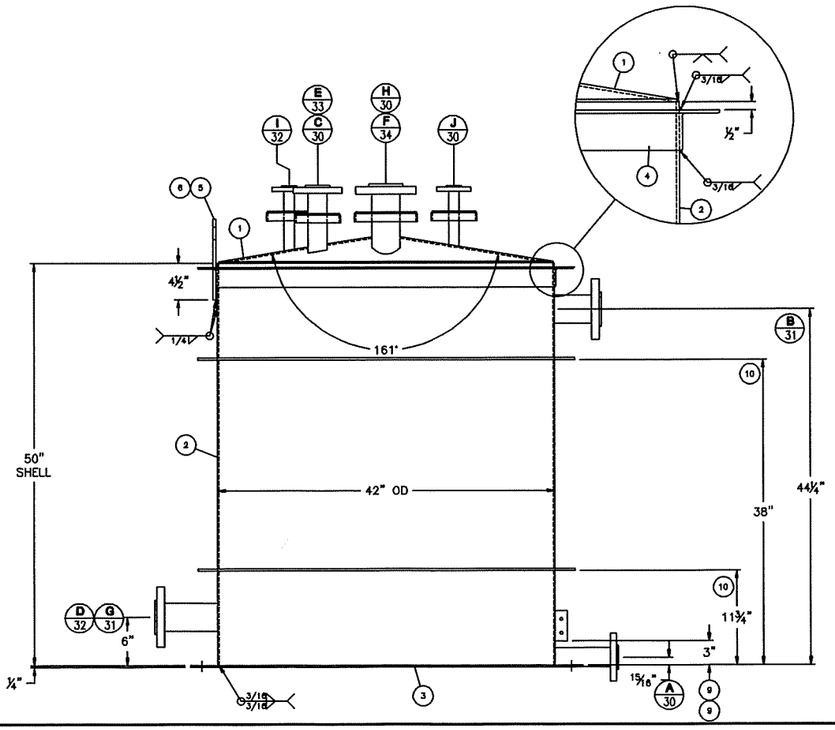
LIFTING LUG DETAIL
QTY (2) REQ'D
NTS

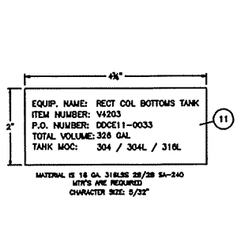


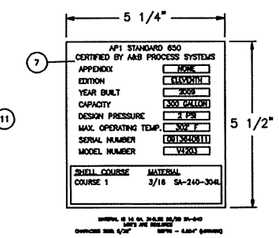
GROUNDING LUG DETAIL
QTY (2) REQ'D
NTS



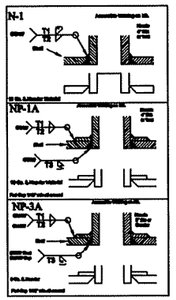
WATERSHED ANGLE DETAIL
REQUIRED ON ALL TOP HEAD NOZZLES
NTS







DESIGN DATA	
DESIGN AND FABRICATION API 650 CODE STAMPED	
	SHELL
DESIGN PRESSURE, PSIG	-0.36/2
DESIGN TEMPERATURE °F	302
HYDROTEST PRESSURE, PSIG	–
M.A.W.P. PSIG	2
M.D.M.T. °F	-30
CORROSION ALLOWANCE, IN	–
HYDROSTATIC CONDITION	NONE
JOINT EFFICIENCY E	.70
WIND MPH	100
SEISMIC ZONE	SEC 1997 3A
ERECTION (SHIPPING) WEIGHT, LBS	1,140 LBS (APPROX)
WEIGHT, FULL OF WATER, LBS	2,800 LBS (APPROX)
DATA NOT SHOWN ARE NOT FACTOR IN DESIGN	



NOTES:

1.) UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES.
2.) DIMENSIONS ENCLOSED WITHIN PARENTHESES INDICATE REFERENCE.
3.) EQUIVALENT ALTERNATIVE MATERIAL MAY BE USED AFTER A.I.'S APPROVAL.
4.) ALL WELDS TO BE CONTINUOUS WELDED PER MANUFACTURES STD UNLESS OTHERWISE NOTED.
5.) WELDS SHALL BE NEAT IN APPEARANCE, FREE OF SLAG, UNDERCUTS AND OTHER DEFECTS.
6.) VESSEL TO BE THOROUGHLY CLEANED AND DRIED WHERE ACCESSIBLE BEFORE SHIPPING.
7.) PROTECT ALL MACHINED SURFACES, AND ALL CONNECTIONS WITH WOOD OR PLASTIC PROTECTORS BEFORE SHIPMENT.
8.) DELETED.
9.) REINFORCING PADS AND PAD SECTIONS SHALL HAVE 1/8" WEEP HOLE LOCATED AS LOW AS POSSIBLE IN THE PAD WHEN THE VESSEL IS IN OPERATING POSITION.
10.) FLANGE BOLT HOLES SHALL STRADDLE MAJOR VESSEL CENTERLINES UNLESS NOTED.
11.) IF USED IN CONTACT WITH MATERIALS CONTAINING SALT, CHLORIDES OR OTHER CORROSIVE MATERIALS, THE CORROSION RESISTANCE OF THIS EQUIPMENT IS NOT THE RESPONSIBILITY OF A&B PROCESS SYSTEMS CORP.
12.) PASSIVATION REQ'D. -NO
13.) RIBOFLAVIN TESTING REQ'D. -NO
14.) ORBITAL WELDING REQ'D. -NO
15.) PIPE WELD MAPPING REQ'D. -NO
16.) (1) TANK(S) REQUIRED AS SHOWN.

MACHINING TOLERANCES (UNLESS NOTED OTHERWISE)	FABRICATION TOLERANCES (UNLESS NOTED OTHERWISE)
.XXX= ± .005 .XX= ± .010 .X= ± .020 X OR FRACT.= ± .030	X OR FRACT. = ±1/4 HOLE DIAMETERS = ±1/8 HOLD DIM'S ±1/8" X DEGREE = ± 1 DEGREE TOLERANCES DO NOT APPLY TO LISTED REF DIM'S

PLANT: DUPONT DANISCO CELLULOSIC ETHANOL, LLC
PROJECT: MARATHON
DDCE ORDER NO.: DDCE11-0033
EQUIPMENT NUMBER: 4201-V03 (V4203)

NO.	DATE	REVISION DESCRIPTION	DWN BY	CHK BY
B	15SEP09	AS BUILT	TMP	TJG
A	28JUL09	RELEASE FOR FAB	TMM	TJG
4	21JUL09	ADDED WATERSHED ANGLES TO ALL TOP HEAD NOZZLES	TMM	TJG
3	20JUL09	ADDED ADDITIONAL INFORMATION TAG	TMM	TJG
2	10JUL09	REVISED PER CUSTOMER COMMENTS	TMM	TJG
1	23JUN09	REVISED PER CUSTOMER COMMENTS	TMM	TJG
0	14MAY09	SUBMITTED FOR APPROVAL	TMM	TJG

ID/OD: F-S CLEANED ONLY
A. MECHANICALLY REMOVE HEAT TINT.
B. NO STRIP TAPING.
C. USE BLACK WHEEL OR SS WIRE BRUSH.
EQ'D | MATERIAL/FINISH | 304/304L

A & B PROCESS SYSTEMS CORP.
304 S. WISCONSIN AVE.
STRATFORD, WI. 54484
(715) 687-4332
www.abprocess.com

CLIENT NAME: GENERA ENERGY, LLC | DRAWN BY: TMM
CLIENT LOCATION: VONORE, TN 37885 | JOB NUMBER: 0913640611

TITLE: V4203 RECTIFYING COLUMN BOTTOMS TANK

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