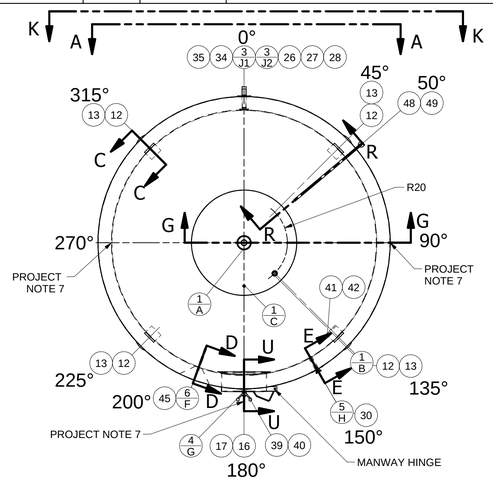
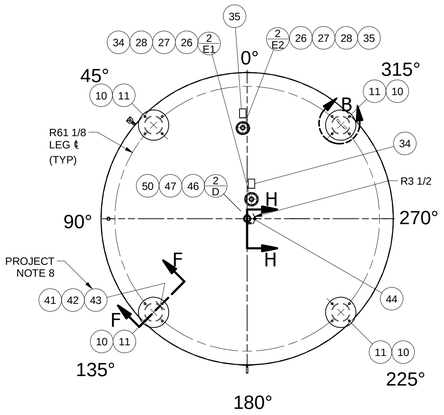
NOZZLE SCHEDULE				
MARK	LOCATION	SIZE	TYPE	SERVICE
A	TOP HEAD	6"	TC	HANDTMANN RLV (CUSTOMER PROVIDED)
B	TOP HEAD	D65	SPUD	SHELL GAUGE SHORT ENDRESS & HAUSER MODEL #61001740
C	TOP HEAD	G1/2"	SPUD	NEGELE LSH
D	BOTTOM HEAD	2.5"	FERRULE	OUTLET LINE T/C FERRULE
E1	BOTTOM HEAD	1.5"	NPT PIPE	HEAT TRANSFER INLET
E2	BOTTOM HEAD	1.5"	NPT PIPE	HEAT TRANSFER OUTLET
F	SHELL	.5	FPT	THERMOWELL FOR E+H TR88 RTD
G	SHELL	15" X 20"	MC3-71	MANWAY W/WHITE NEOPRENE GASKET
H	SHELL	40MM	DN FITTING	(MALE THREAD) SAMPLE VALVE
J1	SHELL	1.5"	NPT PIPE	HEAT TRANSFER INLET
J2	SHELL	1.5"	NPT PIPE	HEAT TRANSFER OUTLET



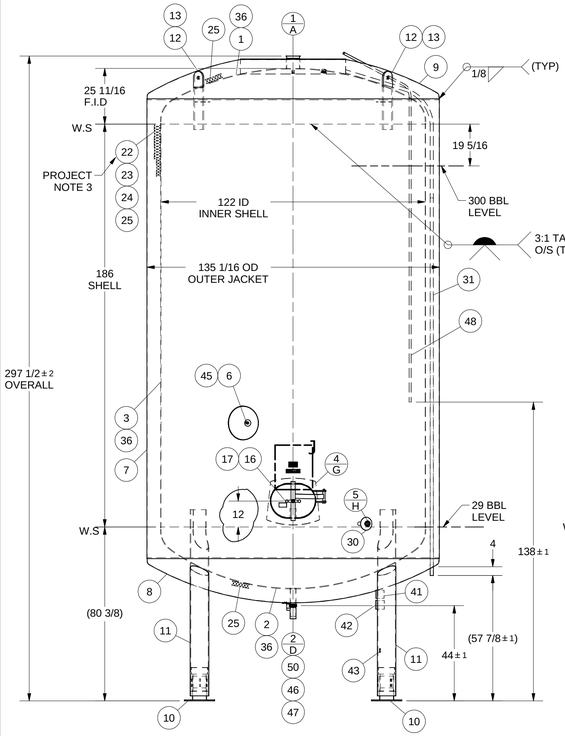
TOP HEAD AND SHELL ORIENTATION

(AS VIEWED LOOKING DOWN AT TOP TANK)



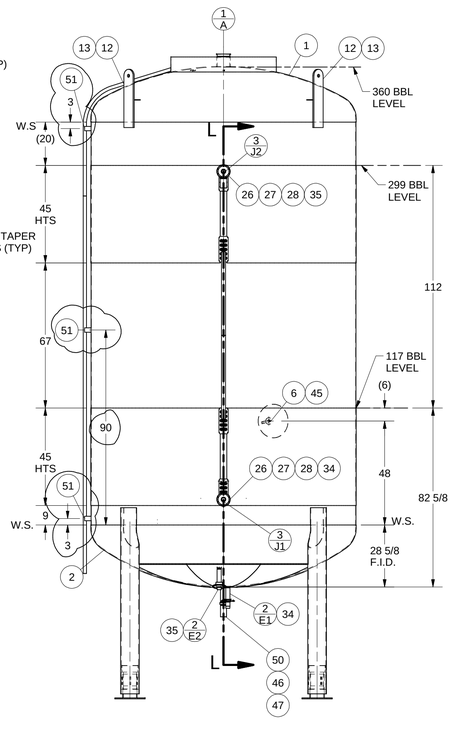
BOTTOM HEAD ORIENTATION

(AS VIEWED LOOKING UP AT BOTTOM OF TANK)



ELEVATION VIEW

(SEE TOP AND BOTTOM VIEWS FOR TRUE ORIENTATION)



VIEW A-A

PARTS LIST								
ITEM NO.	QTY	DESCRIPTION	MAT'L TYPE	DOC. REQ'D	PART NO.	REF. DOCUMENT	A	M
1	1	TOP HEAD ASSEMBLY (CUSTOM D&F .3125"THK 11"IKR 114"IDR 1.5"SF)	304 S/S SA-240	MTR	1408654-0122	1408654-01-02-01		08
2	1	INNER BOTTOM HEAD ASSY (CUSTOM D&F .3125"THK 11"IKR 98"IDR 1.5"SF) W/14GA DIMPLE HTS	304 S/S SA-240	MTR	1408654-0132	1408654-01-03-01		08
3	1	INNER SHELL ASSEMBLY 7GA W/18GA INFLATED HTS	304 S/S SA-240	MTR	1408654-0140	1408654-01-04-01		08
4	1	BOSS PLATE ASSY MC3-71 W/ 8.5"LG COLLAR 32RA MAX	316/316L S/S SA-240	MTR	1408654-0161	SD1408654-0161		08
5	1	FITTING DN40 WELDMENT	304 S/S		1408654-0170	SD1408654-0170		08
6	1	THERMOWELL .5 FPT FOR E&H TR88 RTD (CUSTOMER FURNISHED)	304 S/S SA-479	MTR	1408654-0099			05
7	1	OUTER JACKET ASSEMBLY 12GA	304 S/S		1408654-0150	SD1408654-0150		08
8	1	OUTER BOTTOM HEAD STANDARD D&F 10GA 134.585"OD 134.315"IDR 2"IKR 1.5"SF	304 S/S		1408654-0101		Y	08
9	1	OUTER TOP HEAD STANDARD D&F 10GA 134.585"OD 134.315"IDR 2"IKR 1.5"SF	304 S/S		1408654-0101		Y	08
10	4	PLATE BASE .5"THK 4 HOLES 14"OD W/ ADJUSTABLE LEG	304 S/S SA-240		1408654-0155	SD1408654-0155		08
11	4	PIPE LEG 8" SCH40 X 88.5"LG POL OD W/LEG COUPLING	304 S/S SA-312		1408654-0104	SD1408654-0104		08
12	4	LUG LIFTING .75"THK 6"WD X 26.875"LG W/1.375" DIA HOLE HRAP/2S	304 S/S		1408654-0134	SD1408654-0134		08
13	4	LUG LIFTING GUSSET .25"THK X 6"WD X 4"LG HRAP/2S	304 S/S		1408654-0135			08
14	1	DELETED						
15	1	DELETED						
16	1	COMPONENT ASSEMBLY MANWAY MC3-71 15X20	S/S		1408654-0162			08
17	1	GASKET MANWAY 15.5"X 20.5" CONVEX SURFACE	WHITE NEOPRENE	COC	9827340	9500691		
18		DELETED						
19		DELETED						
22	1045 BF	INSULATION 3"THK GRVD 24"X48" (2) LAYERS	STYROFOAM		9803922	PROECT NOTE 3		
23	768 BF	INSULATION 3"THK GRVD 24"X96" FOIL BACK (2) LAYERS	POLYISO		1408654-0185	PROECT NOTE 3		05
24	3120 BF	INSULATION 3"THK GRVD 24"X48" (2) LAYERS	BEADBOARD		9802649	PROECT NOTE 3		
25	912 SF	INSULATION 2" .805 DENSITY	FIBERGLASS		3076	PROECT NOTE 3		
26	4	COVER ESCUTCHEON 14GA .5"WD X 6"OD	304 S/S		9855067	9002299		
27	4	ESCUTCHEON .125"THK FOR 1.5" PIPE 1.5"ID X 6.25"OD	SILICONE		9817328	9000692		
28	32	RIVET POP .125"DIA .251-.312" GRIP RANGE FASTENAL #41413	S/S		9855087			
29		DELETED						
30	1	ESCUTCHEON SWAGED 14GA 1.75"ID X 6"OD	304 SA240		9853270	9000165		
31	1	DRAIN TUBE .75"OD X .065"W	304 S/S SA-249		1408654-0177	SD1408654-0177		08
32		DELETED						
33	1	DELETED						
34	2	LABEL "INLET" ATTENTION	MYLAR		9853169			
35	2	LABEL "OUTLET" ATTENTION	MYLAR		9853170			
36	4 GAL	PAINT FLAT BLACK SILICONE WILKO #836-01	SILICONE		8823715	PROECT NOTE 5		
37		DELETED						
38		DELETED						
39	1	PLATE NAME "U.S. FLAG"	LEXAN		513916			
40	1	PLATE NAME MUELLER	MYLAR		9808998			
41	1	PLATE DATA "MUELLER"	FOIL		9852750			
42	1	PLATE DATA "ASME" VESSEL & HTS	18-8 S/S		9851152			
43	1	PERMANENT STAMPED SERIAL NUMBER						
44	1	VENT JACKET PLUG	BLACK NYLON 6/6		9828988			
45	1	CONE CLOSURE 12GA X 3" ID	304 S/S		1408654-0181	SD1408654-0181		08
46	1	GASKET 40MP-E-2.5" USP CLASS VI & FDA APPROVED (SHIP LOOSE)	EPDM	COC	9824015			
47	1	CLAMP 13MHHM 2.5" HEAVY DUTY (SHIP LOOSE)	304 S/S		9803943			
48	1	CONDUIT 1.0"OD X .065"W	304 S/S SA-249		1408654-0174	SD1408654-0174		08
49	3	HANGER ASSY FOR 1"OD TUBE SILICONE GROMMET 12"LG .5"RND	304 S/S, SILICONE		9100789	9002134		
50	1	FERRULE 14MPW 2.5" X .203" W X 6" LG W/DN 65 END MACHINED (SHIP LOOSE)	316L S/S SA-479		1408654-0190	SD1408654-0190		08
E 51	3	SHEET 12GA 8"LG X 2"WD (SHOP SUPPLIED)	304 S/S					

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE NOMINAL AND ALL EXPECTED TOLERANCES ARE: LINEAR: ±1/4 AND ANGULAR: ±1DEG. MEASUREMENTS FOR ANY FIELD ATTACHMENTS SHOULD BE VERIFIED ON SITE BY OTHERS BEFORE FABRICATION OF THE ATTACHMENTS.
2. CORROSION DISCLAIMER
   PAUL MUELLER COMPANY IS NOT RESPONSIBLE FOR CORROSION OR SUITABILITY FOR USE OF ANY MATERIAL IN ANY PARTICULAR APPLICATION! THE CORROSION RESISTANCE AND SUITABILITY FOR USE OF A MATERIAL IS DEPENDENT ON OPERATING ENVIRONMENT AND CONDITIONS, CLEANING PRACTICES, AND MANY OTHER FACTORS BEYOND THE CONTROL OF THE EQUIPMENT FABRICATOR. THE USER OF THE EQUIPMENT BEARS TOTAL RESPONSIBILITY FOR CORROSION OR SUITABILITY FOR USE OF ALL MATERIALS IN THEIR PARTICULAR APPLICATION!
3. VESSEL TO BE VENTED FOR SHIPMENT.
4. CORROSION ALLOWANCE: 0 INCHES.
5. UNLESS OTHERWISE NOTED ON THE DRAWINGS, VESSEL NOZZLES ARE NOT DESIGNED FOR EXTERNAL LOADINGS OF ANY KIND. CUSTOMER IS RESPONSIBLE TO ENSURE THAT CONNECTING PIPING IS ACCURATELY ALIGNED, PARALLEL, ADEQUATELY SUPPORTED AND WITHOUT STRAIN. NEVER USE FORCE TO DRAW PIPING INTO POSITION FOR MATING WITH VESSEL NOZZLES, WHICH CAN IMPOSE DANGEROUS STRAINS AND POTENTIALLY DAMAGE THE VESSEL.
6. CERTAIN ITEMS ARE INDICATED TO BE SHIPPED LOOSE FROM THE MAIN ASSEMBLY. ADDITIONAL ITEMS MAY BE DISASSEMBLED AND SHIPPED LOOSE DUE TO TRANSPORTATION CONSTRAINTS. REFER TO THE PACKING LIST FOR A COMPLETE RECORD OF ITEMS SHIPPED.
7. OVER FILLING, FAILURE TO PROPERLY VENT THE TANK DURING CIP, OR FILLING/EMPTYING THE TANK IN A MANNER THAT CAUSES A PRESSURE OR VACUUM IN EXCESS OF THE RATING STATED ON THIS DRAWING MAY CAUSE STRUCTURAL DAMAGE TO THE TANK.

ASME NOTES:

1. RADIOGRAPHY REQUIREMENTS BASED ON THE DESIGN JOINT EFFICIENCY ARE AS FOLLOWS:
   TOP HEAD: NONE
   TOP HEAD TO SHELL: NONE
   SHELL: NONE
   BOTTOM HEAD: NONE
   BOTTOM HEAD TO SHELL: NONE
   HEAT TRANSFER SURFACE: NONE
   ADDITIONAL RADIOGRAPHY MAY BE REQUIRED DUE TO THE PHYSICAL CONSTRUCTION OF THE VESSEL (E.G. CROSSES, NOZZLES LOCATED IN SEAMS, ETC.)
2. ALL WELDING TO BE DONE BY ASME CERTIFIED WELDERS.
3. SUITABLE PRESSURE RELIEF VALVE MUST BE INSTALLED BY CUSTOMER FOR TEMP-PLATE OPERATION AND VESSEL OPERATION.
4. VESSEL CODE JURISDICTION ENDS AT FIRST CIRCUMFERENTIAL BUTT WELD.

PROJECT NOTES:

1. INTERIOR FINISHES SHALL BE AS FOLLOWS:
   INNER SHELL MATERIAL: 2B EXCEPT HEAT TRANSFER SURFACES SHALL BE POLISHED TO 32RA MAX
   INNER SHELL WELDS: 32RA MAX
   INNER HEADS MATERIAL & WELDS: 24RA MAX
2. EXTERIOR MATERIAL FINISH SHALL BE 2B WITH BUFF WELDS EXCEPT LEGS & BASE PLATES SHALL BE POLISHED TO #4 FINISH WITH WELDS BUFF
3. INSULATION SHALL BE AS FOLLOWS:
   A. ONE (1) 6"THK X 24" WIDE BAND OF STYROFOAM AT VERY TOP AND BOTTOM OF INNER SHELL.
   B. ONE (1) 6"THK X 12" WIDE STRIP OF FOIL BACKED POLYISOCYANURATE LOCATED UNDER OUTER JACKET CLOSING SEAMS.
   C. 6"THK BEADBOARD ON REMAINDER OF SHELL.
   D. 6"THK FIBERGLASS ON TOP & BOTTOM HEADS AND TO FILL ALL VOIDS.
4. ALL ESCUTCHEONS SHALL BE STAINLESS STEEL EXCEPT HEAT TRANSFER CONNECTIONS SHALL HAVE SILICONE ESCUTCHEONS SECURELY ATTACHED TO VESSEL.
5. PAINT EXTERIOR OF INNER LINER WHICH WILL BE IN CONTACT WITH INSULATION WITH TWO COATS OF FLAT BLACK SILICONE PAINT. COATS TO BE APPLIED IN OPPOSITE DIRECTIONS TO GUARANTEE COMPLETE COVERAGE.
6. ALL S/S DATA PLATES SHALL BE SEAL WELDED.
7. OUTER JACKET CLOSING SEAMS SHALL BE LOCATED AT APPROXIMATELY 90°& 270°. MANWAY SHALL BE CENTERED ON SHEET IN OUTER JACKET ASSEMBLY.
8. PERMANENT STAMPED SERIAL NUMBER TO BE LOCATED ON LEG @ 135°FACIN G CENTER OF TANK.
9. THIS DRAWING IS FOR SERIAL NUMBERS 18140865401-01 & 180865401-02. ITEM QUANTITIES SHOWN ON FABRICATION DRAWING PARTS LISTS ARE FOR ONE TANK ONLY.
10. TAG VESSELS AS FOLLOWS:
    18140865401-01: BBT-300-1
    18140865401-02: BBT-300-2

REVISIONS						
REV	DESCRIPTION	BY	DATE	REVIEW	DATE	
E	ADDED ITEM 51* ELEVATION VIEW ADDED DIM 12* VIEW A-A ADDED ITEM 51 DIM* SHEET 02: ADDED WELD SYMBOL TO SECTION G-G**	JAL	1/21/2015	J.D	1/21/2015	
D	ITEM 6 WAS P/N 1408654-0115 & ADDED CUSTOMER FURNISHED TO DESCRIPTION**	LOC	11/14/2014	LOC	11/14/2014	
C	ITEM 10 WAS PLATE BASE ADJ .5"THK 4 HOLE 14"OD*ITEM 11 WAS PIPE LEG 8" SCH40 X 88"LG POL OD W/LEG COUPLING*IN SPEC HEAT TRANSFER AREA WAS 266.16 SQ.FT AND VOLUME WAS 2.22 CU.FT*DELETED ITEM 18 & 19*ITEM 17 WAS GASKET MANWAY 15.5"X 20.5" EXTENDED LEG*ADDED REF.DOCUMENT FOR ITEM 4,5 & 12*ADDED SECTION VIEW U-U*ADDED SHIP LOOSE IN ITEM 46,47 & 50*ITEM 16 WAS COMPONENT ASSEMBLY MANWAY MC3-70 15X20*MATERIAL TYPE OF ITEM 31 & 47 WAS 316L S/S*RELEASED FOR PRODUCTION**	JK	10/11/2014	LOC	10/28/2014	

CERTIFIED BY
BY PAUL MUELLER COMPANY

VESSEL

MAWP	32	P.S.I. at	100	˚F
MAWP	-0.614	P.S.I. at	100	˚F
MDMT	0	˚F at	32	P.S.I.
SERIAL NUMBER	PROJECT NOTE 9			
YEAR BUILT	2014			

HEAT TRANSFER SURFACE

MAWP	90	P.S.I. at	100	˚F
MAWP		P.S.I. at		˚F
MDMT	0	˚F at	90	P.S.I.

0503 MUELLER 9851152

INTERIOR FINISHES

MATERIAL: PROJECT NOTE 1
WELDS: PROJECT NOTE 1

EXTERIOR FINISHES

MATERIAL: PROJECT NOTE 2
WELDS: PROJECT NOTE 2

DESIGN SPECIFICATIONS

SIZE (GALLONS) - MODEL: 300 BBL F
SERIAL NUMBER: PROJECT NOTE 9

VESSEL INFORMATION

DESIGN PRESSURE	32	PSI	DESIGN TEMP.	100	˚F
HYDRO TEST PRESSURE	42	PSI	DESIGN VACUUM	0.614	PSI

HEAT TRANSFER INFORMATION

DESIGN PRESSURE	90	PSI	DESIGN TEMP.	100	˚F
TEST PRESSURE	117	PSI	DESIGN VACUUM	0	PSI

HEATING / COOLING
MEDIUM: - / GLYCOL

CODES

VESSEL: ASME SECTION VIII, DIV. 1, 2013 EDITION
HEAT TRANSFER: ASME SECTION VIII, DIV. 1, 2013 EDITION

STRUCTURAL SPECIFICATIONS

SEISMIC CODE: IBC 2012
SEISMIC FACTORS: SS = 0.220, S1 = 0.057
LOCATION: DENVER CO 80216
WIND LOAD: 0 MPH
SNOW LOAD: 0 LIVE LOAD: 0
SPECIFIC GRAVITY: 1.10
NOZZLE LOADS: GENERAL NOTE 5
ESTIMATED WEIGHTS (LBS):
EMPTY: 12,986
FULL AT INDICATED LEVEL: 98,360 @ 300 BBL

PROCESS SPECIFICATIONS

HEAT TRANSFER:
AREA (SQ. FT.): 268.47 VOLUME (CU. FT.): 2.27
AGITATION:
PROCESS: -
MAX VISCOSITY (CPS): -
BENDING MOMENT (IN-LBS): -
TORQUE (IN-LBS): -
DOWNWARD LOAD (LBS): -
CIP:
FLOW (GPM): 70 PRESSURE (PSI): 25
VENTING:
FILL RATE (MAX): GENERAL NOTE 7
EMPTY RATE (MAX): GENERAL NOTE 7

DRAWN BY	J. KINGSTON	DATE	08/12/2014
DESIGN REVIEWED BY	L. OCONNOR	DATE	8/22/2014
PROCESS REVIEWED BY	J. LESTER	DATE	10/28/2014
STRUCTURAL REVIEWED BY	J. DU	DATE	10/29/2014
ASME APPROVED BY	J. DU	DATE	10/29/2014

SOLD TO: GREAT DIVIDE BREWING COMPANY
ADDRESS: DENVER CO 80205
CUSTOMER ORDER NO.: 11776
CUSTOMER TAG NO.: PROJECT NOTE 10

TITLE

MAIN TANK ASSEMBLY
300 BBL MODEL "F"
BRIGHT BEER TANK

MUELLER
1600 W. PHELPS STREET, SPRINGFIELD, MISSOURI 65802, U.S.A.

SHEET 1 OF 2

SERIAL NO.	DRAWING NO.
PROJECT NOTE 9	1408654-01-01-01

ORIGINAL DOCUMENT SIZE D