



DRAWING SCHEDULE	
DRAWING TITLE	DRAWING NO.
FINAL ASSY 200 BARREL FERMENTER	1012803-01-02-01
INNER SHELL ASSY	1012803-01-03-01
INNER SHELL LOWER	1012803-01-04-01
INNER SHELL UPPER	1012803-01-05-01
JACKET OUTER	1012803-01-06-01
HEAD CONICAL OUTER	1012803-01-07-01
BOTTOM HEAD ASSY	1012803-01-08-01
BOTTOM CONE MIDDLE LEFT	1012803-01-09-01
BOTTOM CONE MIDDLE RIGHT	1012803-01-10-01
BOTTOM CONE UPPER LEFT	1012803-01-11-01
BOTTOM CONE UPPER RIGHT	1012803-01-12-01
HEAD ASME D&F TOP	1012803-01-13-01
LEG SHIPPING FIXTURE	1012803-01-14-01
HEAD REVERSED D&F CONE CLOSURE	1012803-01-15-01

SPECIAL FEATURES		
CUST. MARK	MARK	DESCRIPTION
	AA	LUG LIFTING 304 S/S
	BB	THERMOWELL 3/4" FPT 20 5/8" LG PYROMATION WS-(X)-20 5/16-08-T14 7/8 .75" FPT(X)=.645" DIA BORE "V"=7/8"
	CC	THERMOWELL 3/4" FPT 20 5/8" LG PYROMATION WS-(X)-20 5/16-08-T14 7/8 .75" FPT(X)=.645" DIA BORE "V"=7/8"
	DD	BASE PLATE TIE DOWN 1" THK
	EE	LEG SHIPPING JIG U-BOLT STYLE
	FF	LEVELING LUGS
	GG	SAMPLE VALVE PERLICK F-38300-SS .375"-18 STRAIGHT THREADS
	HH	LEG 8" SCH 40
	JJ	INSULATION 2" URETHANE(SIDEWALL) 2" CERAMIC BLANKET(BOTTOM HEAD)

NOZZLE SCHEDULE						
CUST. MARK	MARK	LOCATION	SIZE	TYPE	MATL TYPE	SERVICE
	A	TOP HEAD	DN100	MALE	304 S/S	INLET
	B	BOTTOM CONE	16"	MC16	304 S/S	MANWAY
	C	MANWAY	3"	TUBE OD	304 S/S	MANWAY OUTLET
	D	BOTTOM CONE	DN80	MALE	304 S/S	SIDE CONNECTION
	E	BOTTOM CONE	3/8"	FNPT	304 S/S	SAMPLE CONNECTION
	F1	BOTTOM CONE	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER INLET
	F2	BOTTOM CONE	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER OUTLET
	F3	SHELL	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER INLET
	F4	SHELL	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER INLET
	F5	SHELL	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER OUTLET
	F6	SHELL	1 1/2"	NPT PIPE	304 S/S	HEAT TRANSFER OUTLET
	G	TOP HEAD	DN80	MALE	304 S/S	INLET

MAJOR COMPONENTS					
	ITEM	TYPE	THK	MATL TYPE	SPEC. NO.
HEADS	TOPLEFT INNER	ASME D&F	7GA	304 S/S	SA-240
	BOTTOM/RIGHT INNER	CONICAL	10GA	304 S/S	SA-240
SHELLS	TOPLEFT OUTER	-	-	-	-
	BOTTOM/RIGHT OUTER	CONICAL	12 G A	304 S/S	SA-240
HEAT TRANSFER	INNER		10GA/12GA	304 S/S	SA-240
	OUTER		12GA	304 S/S	SA-240
	TOPLEFT HEAD	-	-	-	-
	SHELL	INFLATED	20GA	304 S/S	SA-240
	BOTTOM/RIGHT HEAD	INFLATED	20GA	304 S/S	SA-240

FOR OTHER CONFIGURATIONS SEE PROJECT NOTES

**INTERIOR FINISHES**  
MATERIAL: 2B(PROJECT NOTES 2)  
WELDS: FINE GRIND #4

**EXTERIOR FINISHES**  
MATERIAL: 2B (PROJECT NOTES 2)  
WELDS: BUFF (BF)(PROJECT NOTES 2)

**DESIGN SPECIFICATIONS**

SIZE (GALLONS) - MODEL		SERIAL NUMBER	
200	BBL	F	PROJECT NOTE 4
VESSEL INFORMATION			
DESIGN PRESSURE	14.9	PSI	DESIGN TEMP. 100 °F
HYDRO TEST PRESSURE	0	PSI	DESIGN VACUUM 4"H2O
HEAT TRANSFER INFORMATION			
DESIGN PRESSURE	100	PSI	DESIGN TEMP. 100 °F
TEST PRESSURE	130	PSI	DESIGN VACUUM 0
HEATING / COOLING MEDIUM			
-		GLYCOL	

**CODES**

VESSEL: NONE  
HEAT TRANSFER: NONE

**STRUCTURAL SPECIFICATIONS**

SEISMIC CODE: IBC 2006  
SEISMIC FACTORS: SS=0.359, S1=0.084  
WIND LOAD: 0 MPH  
LIVE LOAD:  
DEAD LOAD:  
SPECIFIC GRAVITY: 1.05  
NOZZLE LOADS: GENERAL NOTES 5  
ESTIMATED WEIGHTS (LBS):  
EMPTY: 7200  
FULL AT INDICATED LEVEL: (250BBL)75,000

**PROCESS SPECIFICATIONS**

HEAT TRANSFER:  
AREA: 184.2  
VOLUME: 1.2 CU FT  
PROCESS: COOLING

AGITATION:  
MAX. VISCOSITY (CPS):  
PROCESS:

CIP:  
FLOW:  
PRESSURE:

VENTING:  
FILL RATE (MAX): UNKNOWN  
EMPTY RATE (MAX): UNKNOWN

DRAWN BY R. GREEN	DATE 10/22/2010
DESIGN REVIEWED BY K. REED	DATE 10/27/2010
PROCESS REVIEWED BY	DATE
STRUCTURAL REVIEWED BY G. WILKERSON	DATE 11/11/2010
ASME APPROVED BY	DATE

SOLD TO: CRAFT BREWERS ALLIANCE, INC  
ADDRESS: PORTLAND, OREGON  
CUSTOMER ORDER NO.: 0000011022  
CUSTOMER TAG NO.:

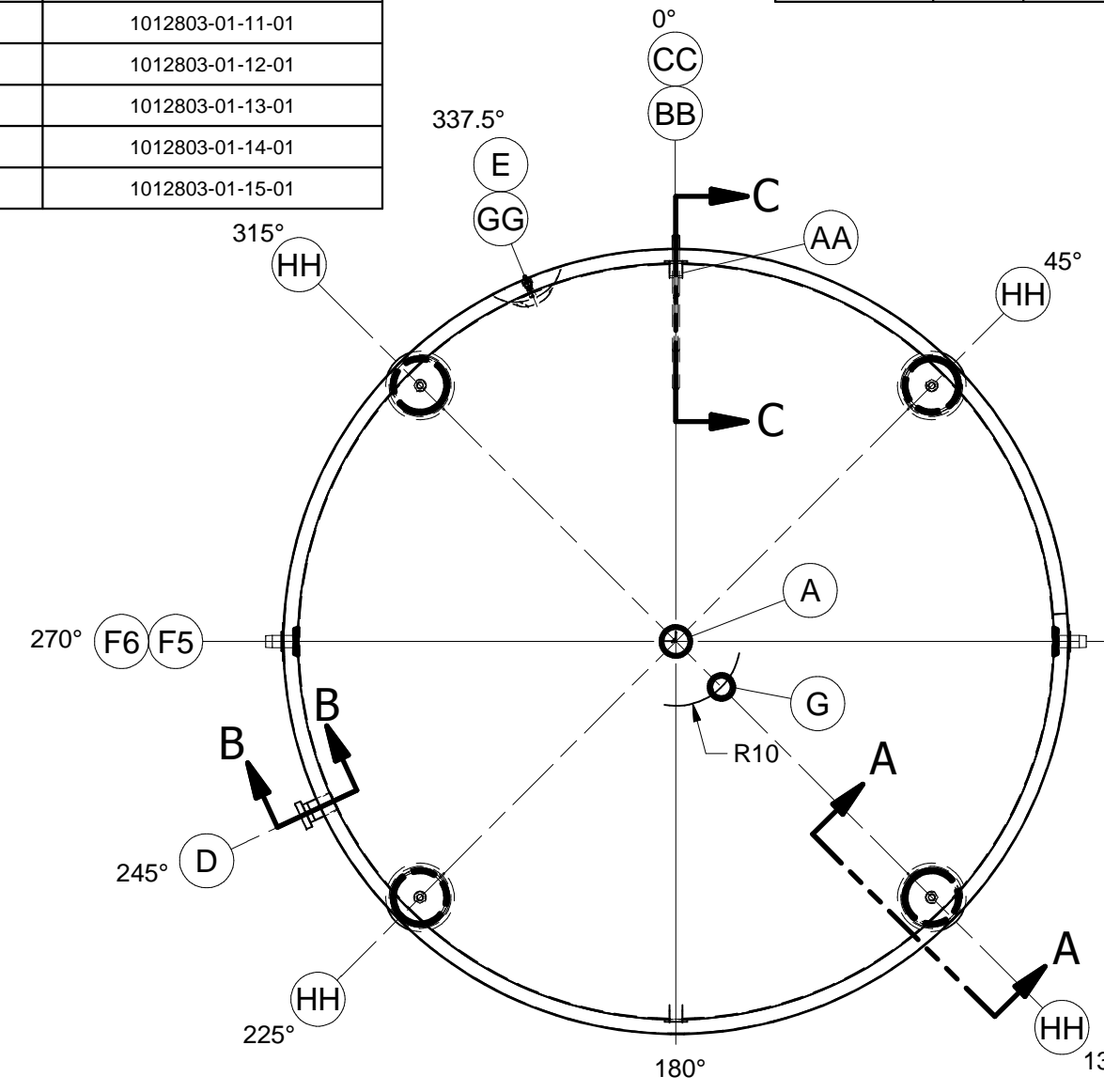
TITLE:  
**200 BBL MODEL "F" CONE BOTTOM FERMENTER**

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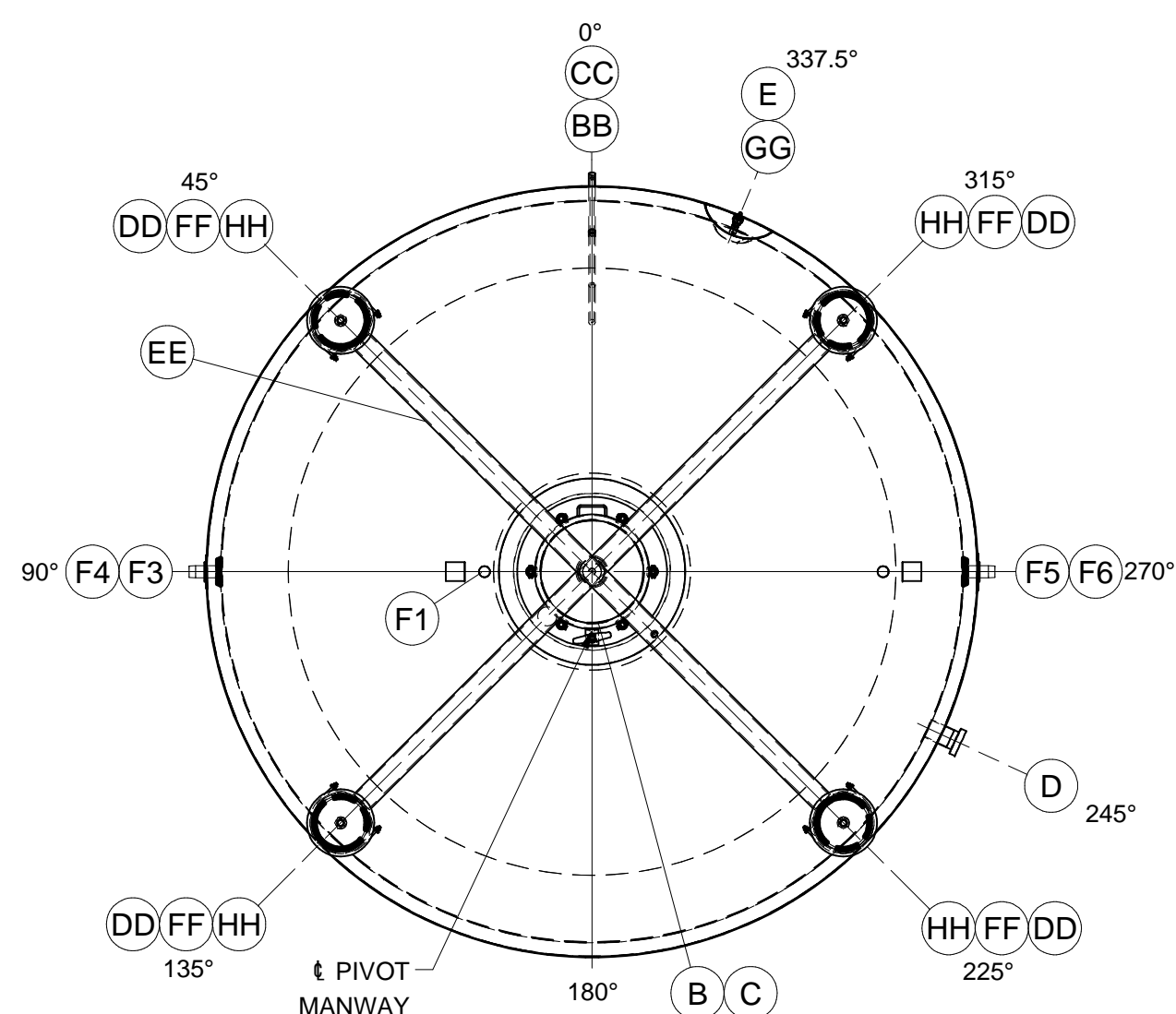
**MUELLER**  
P. O. BOX 829 / SPRINGFIELD, MISSOURI 65801-0829, U.S.A.

SERIAL NO. PROJECT NOTE 4	DRAWING NO. 1012803-01-01-01
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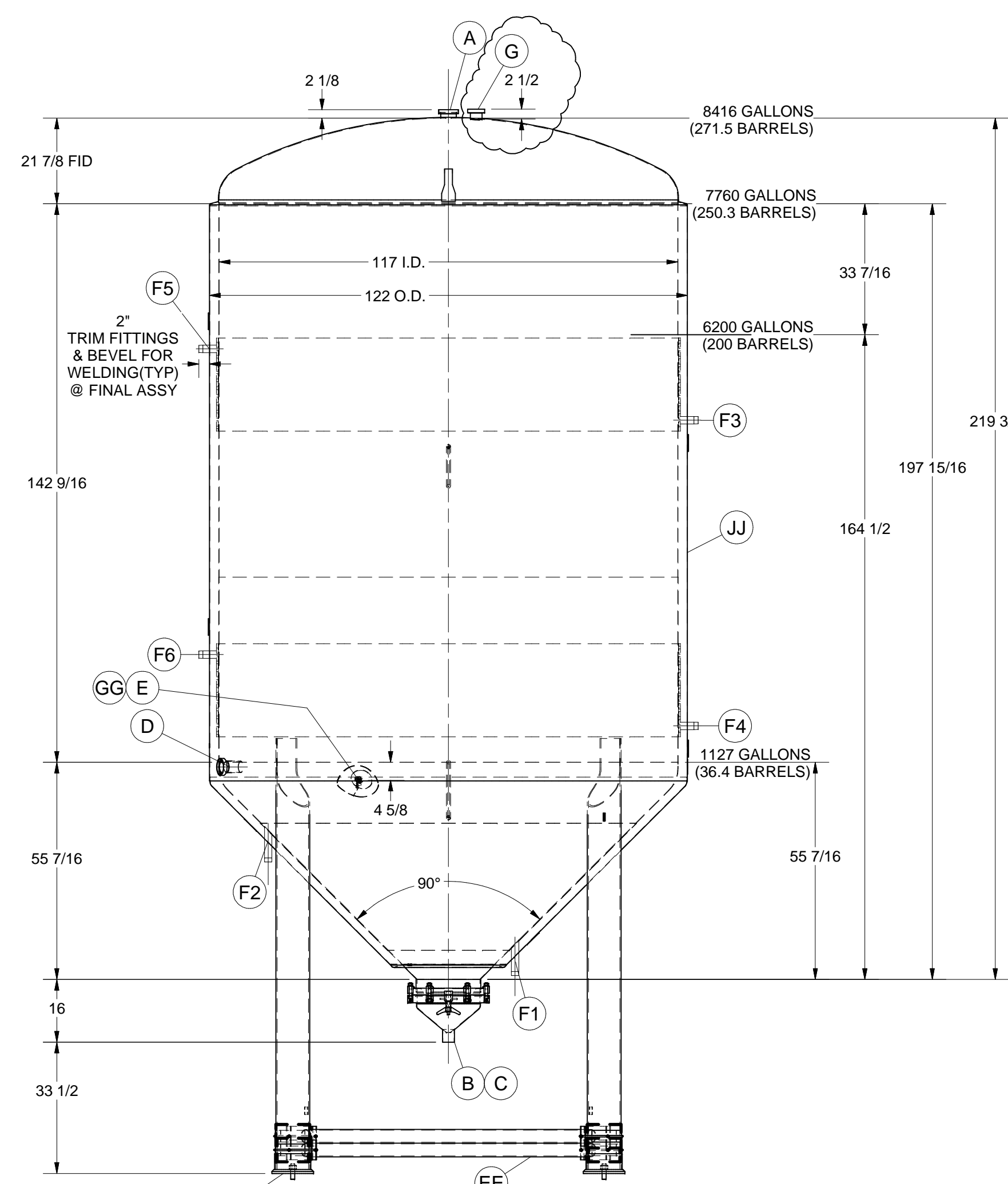
ORIGINAL DOCUMENT SIZE D



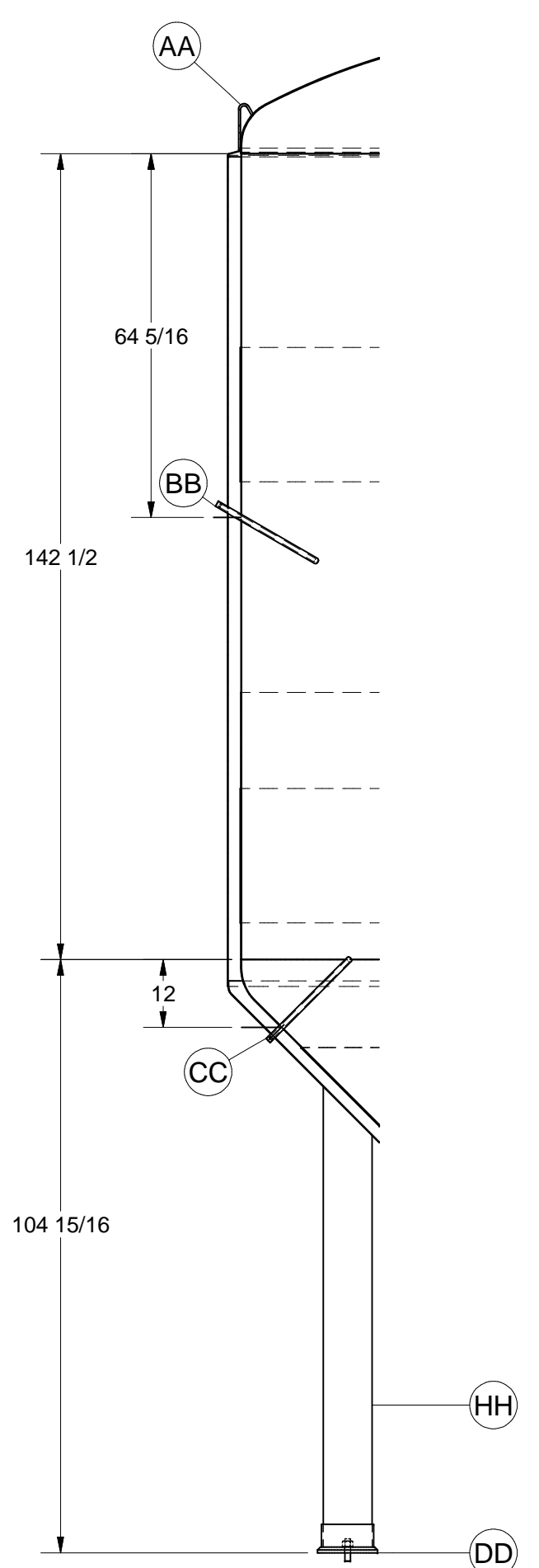
TOP HEAD AND SHELL ORIENTATION



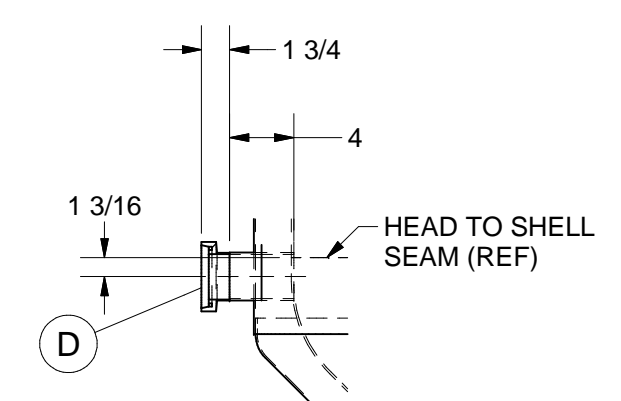
BOTTOM VIEW OF BOTTOM HEAD ORIENTATION



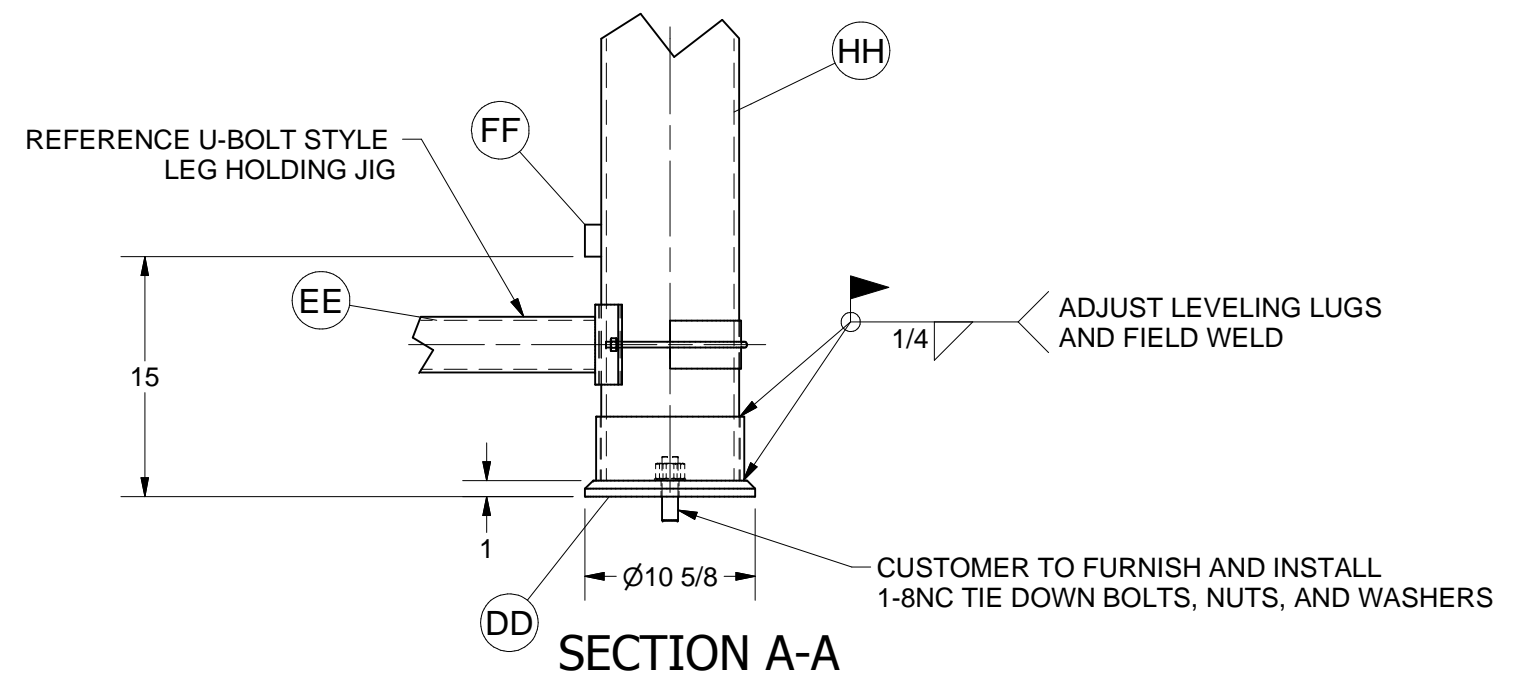
ELEVATION VIEW  
SEE TOP & BOTTOM HEAD VIEWS FOR TRUE ORIENTATION



SECTION C-C



SECTION B-B



SECTION A-A

**GENERAL NOTES:**

- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. DIMENSIONS ARE NOMINAL AND ALL EXPECTED TOLERANCES ARE: LINEAR: ±1/4 AND ANGULAR: ±1 DEG. MEASUREMENTS FOR ANY FIELD ATTACHMENTS SHOULD BE VERIFIED ON SITE BY OTHERS BEFORE FABRICATION OF THE ATTACHMENTS.
- 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!
- VESSEL TO BE VENTED FOR SHIPMENT.
- CORROSION ALLOWANCE: 0 INCHES.
- 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.
- 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.
- OVERFILLING OR FILLING/EMPTYING THE TANK IN EXCESS OF THE VENTING SPECIFICATIONS MAY CAUSE STRUCTURAL FAILURE OF THE TANK.

**PROJECT NOTES:**

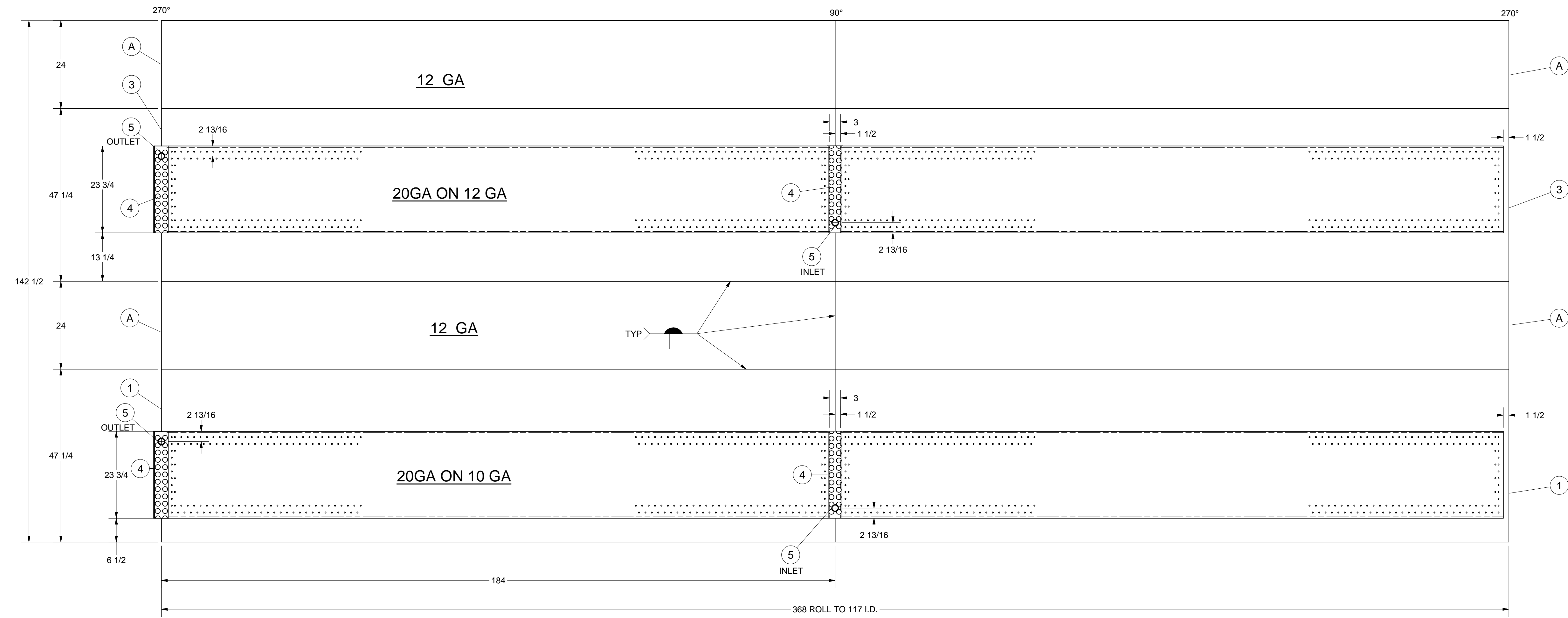
- SUITABLE PRESSURE RELIEF VALVE MUST BE INSTALLED BY CUSTOMER FOR TEMP-PLATE OPERATION.
- INTERIOR FINISH 2B AND REMOVE HEAT TINT FROM VESSEL INTERIOR WITH SHEET POLISHER.  
INTERIOR WELDS #4 FINE GRIND.  
EXTERIOR FINISH 2B EXCEPT ENTIRE CONE TO 1" ABOVE HORIZONTAL JACKET SEAM, LEGS, FOOT ASSY, BRACES FOOT PADS AND MANWAY ASSY TO BE GLASS BEAD BLASTED.  
EXTERIOR WELDS BUFF(BF).
- NO ESCUTCHEON PLATES ARE TO BE USED ON THESE TANKS.
- THIS DRAWING IS FOR TEN(10) TANKS SERIAL NUMBERS 18101280301-01 THRU-10.  
QUANTITIES SHOWN ON FABRICATION DRAWING BILL OF MATERIAL ARE FOR ONE TANK ONLY.
- SHIP TO:  
REDHOOK ALE BREWERY  
PORTSMOUTH NH.

REV	DESCRIPTION	BY	DATE	REVIEW	DATE
C	2 1/2" WAS 1 5/8" (NOZZLE G), REV NOTE 2	REG	1/18/2011	KLR	1/18/2011
B	ADDED DRAWING SCHEDULE, REVISED NOZZLES A & D, ADD NOZZLE G	REG	11/5/2010	KLR	11/10/2010
A	ISSUED FOR CUSTOMER APPROVAL	REG	10/22/2010	KLR	10/27/2010

ITEM	NO. REQD	DESCRIPTION	PARTS LIST	MATL TYPE	DOC. REQD	PROJECT PT. NO.	STD. PT. NO.	REF. DOCUMENT
1	2	TEMP-PLATE ASSY LOWER 20GA ON 10GA		304 S/S SA-240		1012803-01-03-01-001		1012803-01-04-01
2	2	SHEET 12GA 48" X 184" 2B/2S		304 S/S SA-240		1012803-01-03-01-002		
3	2	TEMP-PLATE ASSY UPPER 20GA ON 12GA		304 S/S SA-240		1012803-01-03-01-003		1012803-01-05-01
4	2	HEADER DIMPLE DBL FLOW 14GA		304 S/S SA-240		1012803-01-03-01-004	9900872	
5	4	NIPPLE 1.5"NPTX4.5"LG SCH40 TOE		304 S/S SA312W		1012803-01-03-01-005	9800869	

ON FUTURE ORDERS USE 6" LONG NIPPLES

ITEM	NO. REQ	DESCRIPTION	MAKE FROM
A	4	24" WD X 184" LG	1012803-01-03-01-002



INNER SHELL FLAT LAYOUT

- GENERAL NOTES:**
- ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
  - INTERIOR TEMP-PLATE SURFACE(S) TO BE POLISHED IN SHEET POLISHER TO REMOVE HEAT TINT.
  - FOR DIMPLED HEAT TRANSFER FITTING LOCATION, SEE DRAWING 9000729-C, DETAIL B.
  - INSTALL DIMPLED HEADERS PER 9900872 B.
  - OK TO INFLATE THROUGH HEADERS & FITTINGS FOR 20GA ON 10GA. DO NOT INFLATE 20GA ON 12GA THROUGH HEADERS. MAX HYDROSTATIC INFLATION FOR 20GA ON 12GA = 650 PSIG. MAX HYDROSTATIC INFLATION FOR 20GA ON 10GA = 500 PSIG.
  - RESISTANCE SPOT WELDS ADJACENT TO HEADER(S) ARE TO BE IN STRAIGHT LINE AS SHOWN.
  - SEAM MACHINE:  
2743 (20GA ON 12GA)  
2017 (20GA ON 10GA)

TEST PLATE NO.: MS-054A(20GA/12GA) & MS-332A(20GA/10GA)  
 TYPE:  INFLATED  DIMPLED  DIEFORMED  HALF-PIPE  
 ROW AND SPOT SPACINGS ON INFLATED TYPE CANNOT EXCEED 1/16" MORE THAN DIMENSIONS SHOWN ON THIS DRAWING FOR ASME EQUIPMENT. (REF. SECT. VIII, DIV. 1, APX. 17.)

MACHINE NOS.: SPOT WELDS 4016 SEAM WELDS NOTE7  
 PROTECTIVE PAINT: NONE  
 SURFACES TO BE PAINTED: NONE  
 TRIM EDGES:  ENDS ONLY  ALL EDGES  
 MATERIAL FINISHES: INTERIOR NOTE 2 WELD FINISHES FINE GRIND #4  
 EXTERIOR 2B AS IS (AI)

ASME 'U' STAMPED  ASME DESIGNED (No Stamp)  
 NON ASME  ASME MATERIAL & WELDING (No Stamp)

SPECIFICATIONS	TOP HEAD	SHELL	BTM HEAD
DESIGN PRESSURE (PSI)		100	
DESIGN TEMPERATURE (°F)		100	
MAX. HYDROSTATIC INFLATION (PSIG)		NOTE 5	
HYDROSTATIC TEST (PSIG)		130	
MAX. PNEUMATIC INFLATION (PSIG)		-	
PNEUMATIC TEST (PSIG)		-	
PILLOW DEPTH (INCHES)		.100	
HEATING MEDIUM		-	
COOLING MEDIUM		GLYCOL	
DEHYDRATION		NO	
HEAT TRANSFER CONTACT AREA (S.F.)		121.2	
HEAT TRANSFER VOLUME (CU.FT.)		.756	

DRAWN BY R. GREEN DATE 11/10/2010  
 DESIGN REVIEWED BY K. REED DATE 11/10/2010  
 PROCESS REVIEWED BY DATE  
 STRUCTURAL REVIEWED BY G. WILKERSON DATE 11/11/2010

TITLE  
**INNER SHELL ASSY WITH 20 GA INFLATED TEMP-PLATE**

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REV	DESCRIPTION	BY	DATE	REVIEW	DATE
B	ADDED NOTE FOR FUTURE ORDERS	REG	1/18/2011	KLR	1/18/2011
A	RELEASED FOR PRODUCTION	REG	10/26/2010	KLR	11/10/2010

DRAWING NO.  
**1012803-01-03-01**