

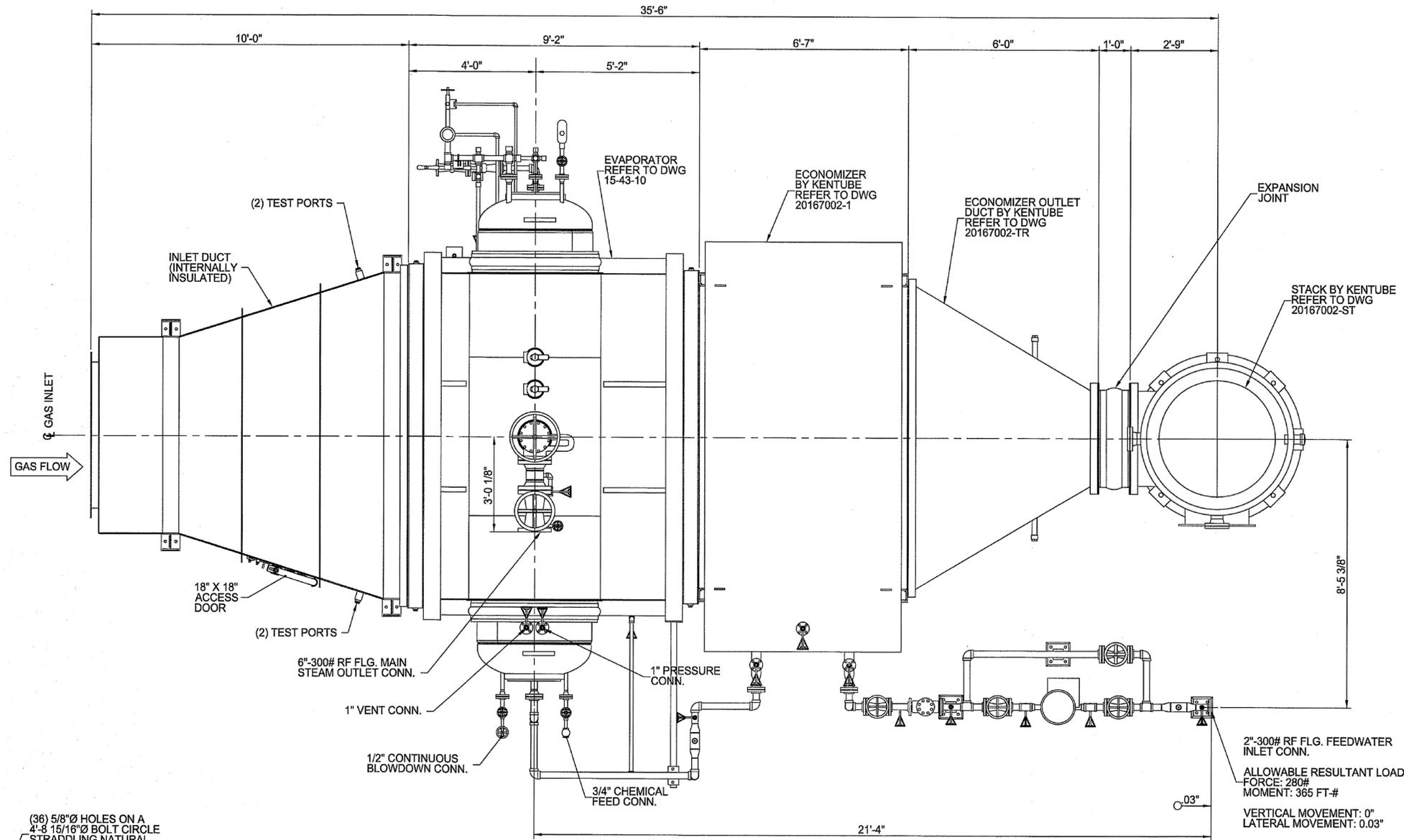
TYPICAL INNER LINER LAP AT FIELD JOINT DETAIL
THIS IS TO BE COMPLETED BY THE FIELD INSTALLING CONTRACTOR

NOTES:

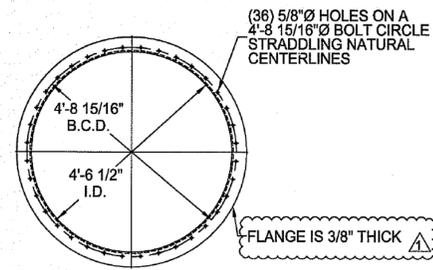
1. GAS SIDE DESIGN PRESSURE = 20" W.C.
2. ADJUSTABLE PIPE SUPPORTS MAY REQUIRE FIELD WELDING.
3. AN ADDITIONAL 3" WILL BE ADDED AT PIPING FIELD WELDS FOR ADJUSTMENT IN THE FIELD. CUT AND PREP AS REQUIRED.
4. ALL GAS FLANGES TO BE WELD TYPE CONNECTIONS UNLESS OTHERWISE NOTED.
5. CUSTOMER TO INCLUDE RENTECH'S PORTION OF STEAM OUTLET PIPING IN THEIR STRESS ANALYSIS AND ADVISE RENTECH OF SUPPORT DETAILS REQUIRED. SEE DRAWING 15-43-10 FOR STEAM OUTLET NOZZLE LOADS AND MOVEMENTS.
6. \square IS SOLAR REFERENCE DATUM LINE. "PLEASE REFERENCE SOLAR DRAWINGS FOR GROUT BELOW C DATUM LINE AND CORRELATE IT TO RENTECH'S FOUNDATION AND OVERALL SYSTEM ARRANGEMENT DRAWINGS."
7. $\odot \rightarrow$ INDICATES THERMAL EXPANSION FROM COLD POSITION.

MATERIAL OF CONSTRUCTION

- INLET DUCT: (1/4") THICK PLATE, SA-36 INTERNALLY INSULATED WITH 4" CERAMIC FIBER INSULATION AND PROTECTED BY 14 GA. 409 STAINLESS STEEL LAGGING EXPOSED SURFACE PREP IS PER SSPC-SP6 CLEANING PROCEDURES AND PRIMED WITH PPG97-676 ONE-PAC INORGANIC PRIMER, 3.0-4.0 MILS D.F.T. TOP COAT WITH CARBOLINE 4800R SILICONE ACRYLIC ENAMEL, RAL 7032 GRAY, 1.5-2.0 MILS D.F.T.
- BOILER: SEE RENTECH DRAWING 15-23-10
- ECONOMIZER: SEE KENTUBE DRAWING 20167002-1
- ECONOMIZER OUTLET DUCT: SEE KENTUBE DRAWING 20167002-TR
- STACK: SEE KENTUBE DRAWING 20167002-ST



PLAN VIEW



INLET FLANGE DETAIL

REFERENCE DRAWINGS	
15-43-02	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-03	SYSTEM ARRANGEMENT - END VIEW
15-43-04	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-05	ANCHOR BOLT ARRANGEMENT
15-43-10	EVAPORATOR



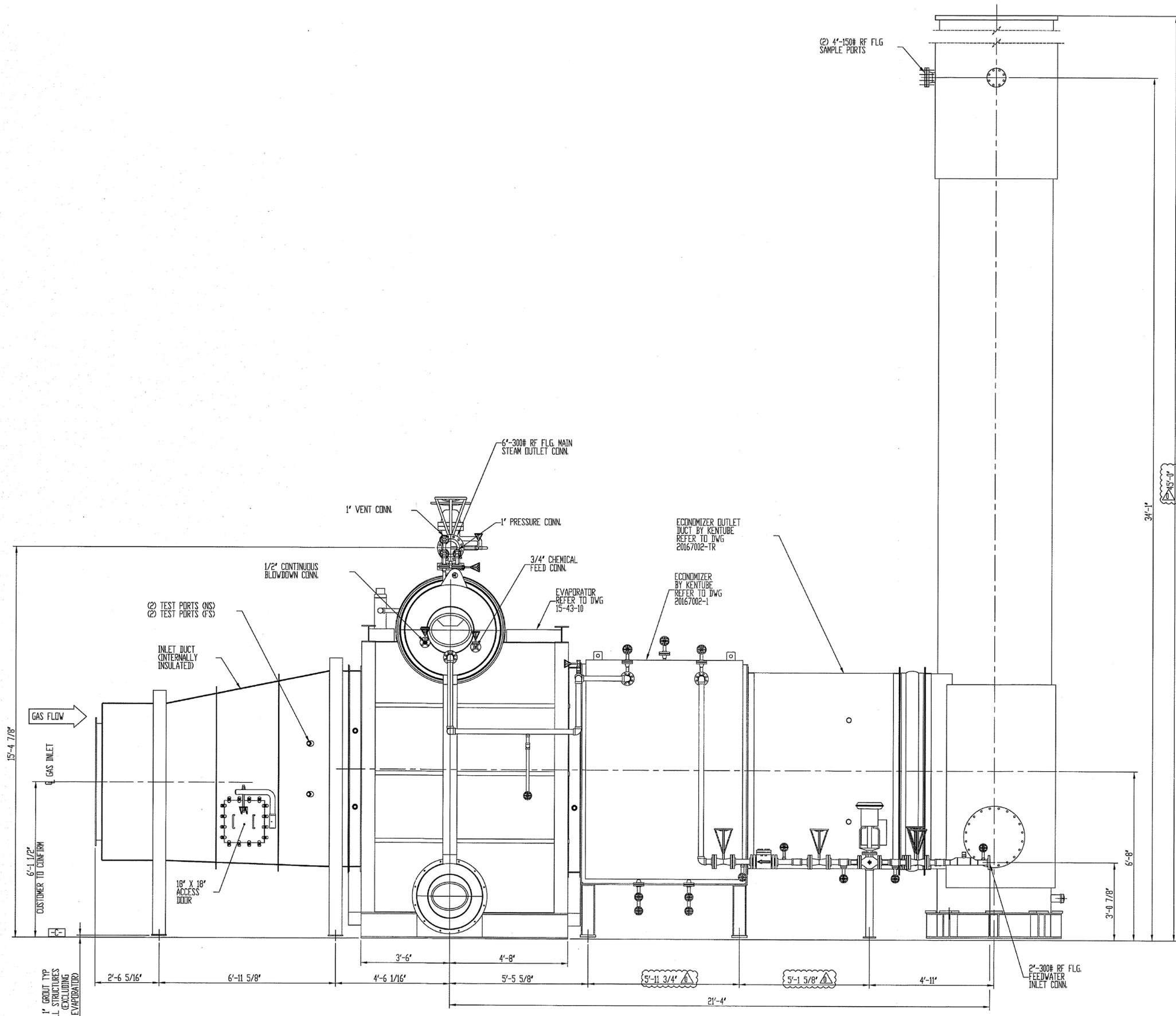
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DESCRIPTION: SYSTEM ARRANGEMENT - PLAN VIEW

NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	CUSTOMER COMMENTS	DDE	EAT
2	8/11/16	GENERAL REVISION	DDE	EAT
3				
4				

CUSTOMER: [REDACTED]

SCALE: 1/2" = 1'-0" DRAWN BY: DDE DRAWING NUMBER: 15-43-01 REV: 1
DATE: 1/25/16 APPR. BY: EAT



REFERENCE DRAWINGS	
15-43-01	SYSTEM ARRANGEMENT - PLAN VIEW
15-43-03	SYSTEM ARRANGEMENT - END VIEW
15-43-04	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-05	ANCHOR BOLT ARRANGEMENT
15-43-10	EVAPORATOR



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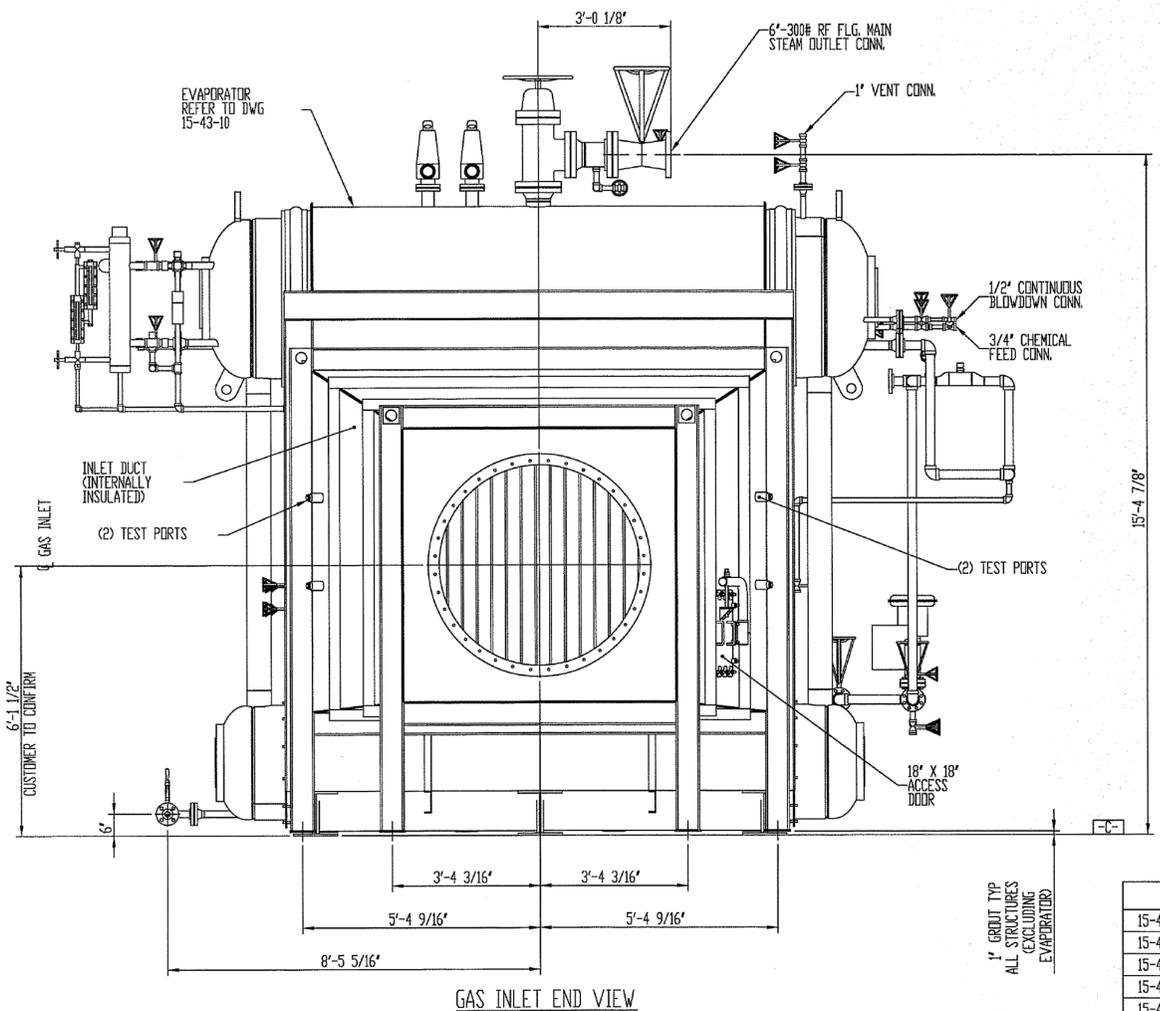
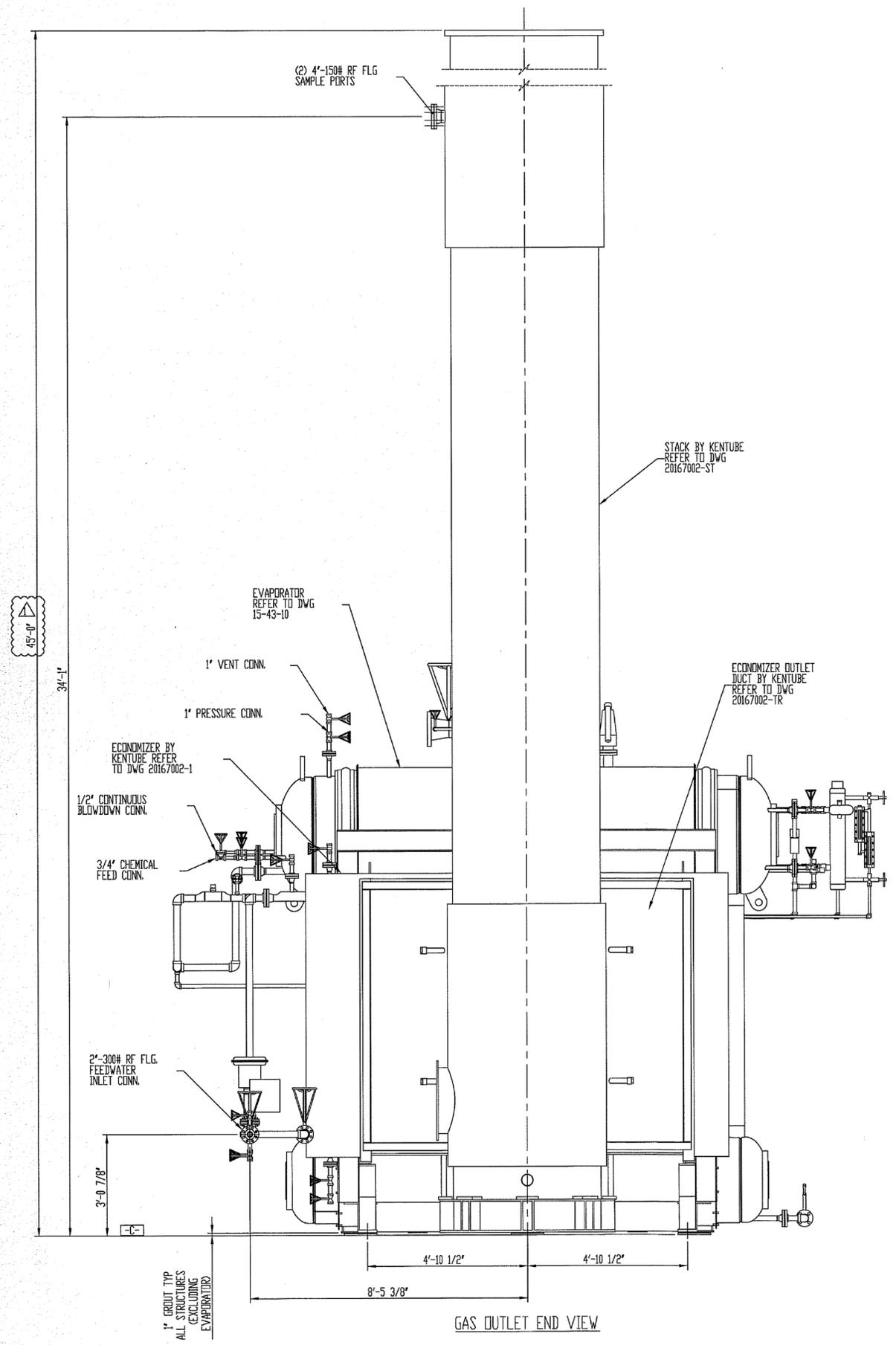
DESCRIPTION: SYSTEM ARRANGEMENT - SIDE VIEW

CUSTOMER	[REDACTED]		
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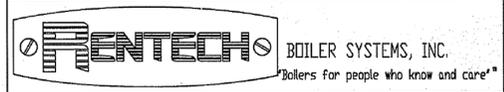
NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	CUSTOMER COMMENTS	DDE	EAT
2				
3				
4				

SCALE	1/2" = 1'-0"	DRAWN BY	DDE	DRAWING NUMBER	15-43-02	REV.	0
DATE	1/25/16	APPR. BY	EAT				

SIDE VIEW



REFERENCE DRAWINGS	
15-43-01	SYSTEM ARRANGEMENT - PLAN VIEW
15-43-02	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-04	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-05	ANCHOR BOLT ARRANGEMENT
15-43-10	EVAPORATOR

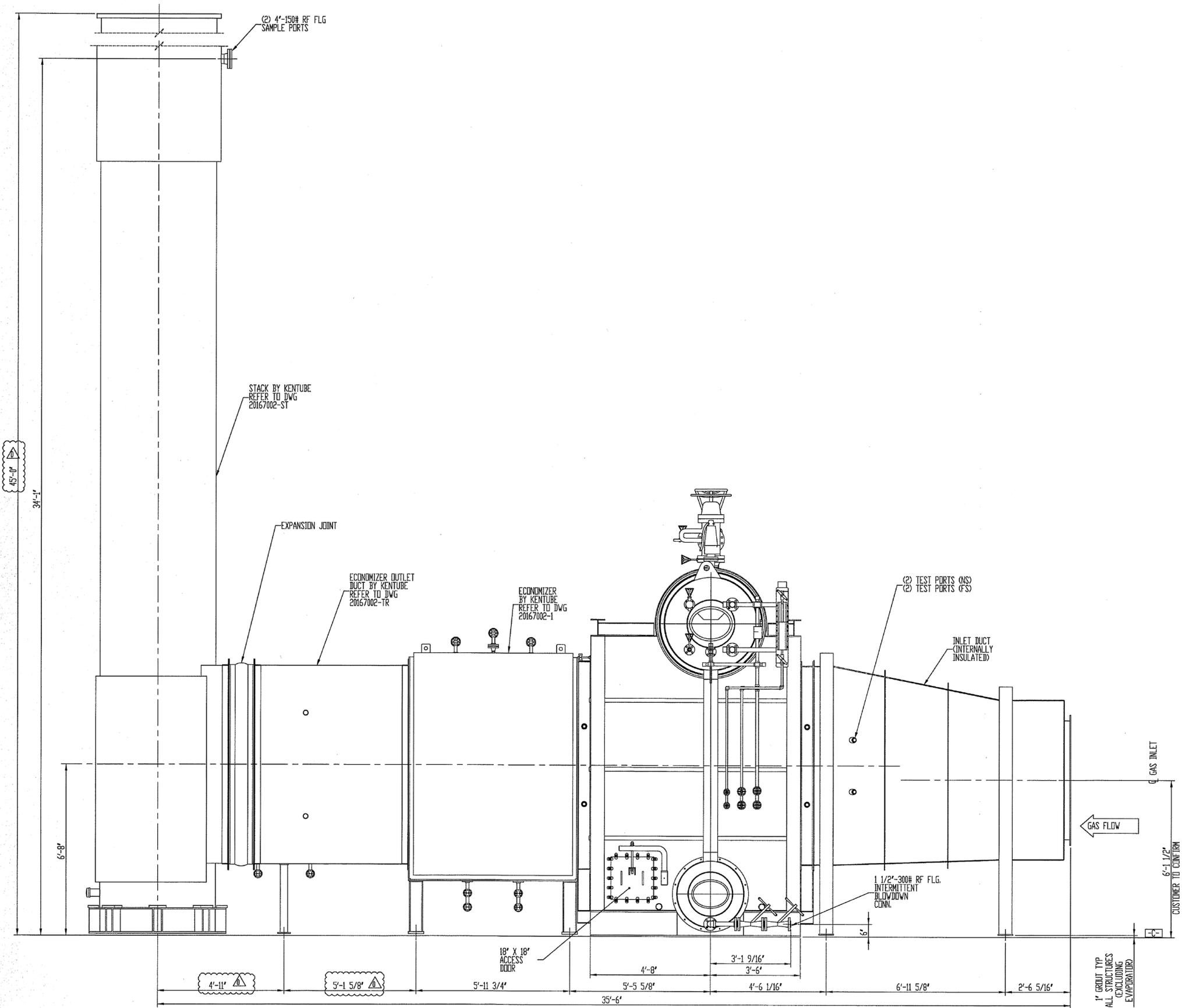


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DESCRIPTION: SYSTEM ARRANGEMENT - END VIEWS

NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	CUSTOMER COMMENTS	DDE	EAT
2				
3				
4				

CUSTOMER		DRAWING NUMBER		REV.
[REDACTED]		15-43-03	0	
SCALE	1/2" = 1'-0"	DRAWN BY	DDE	
DATE	1/25/16	APPR. BY	EAT	



SIDE VIEW

REFERENCE DRAWINGS	
15-43-01	SYSTEM ARRANGEMENT - PLAN VIEW
15-43-02	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-03	SYSTEM ARRANGEMENT - END VIEW
15-43-05	ANCHOR BOLT ARRANGEMENT
15-43-10	EVAPORATOR

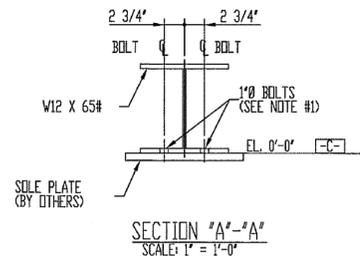
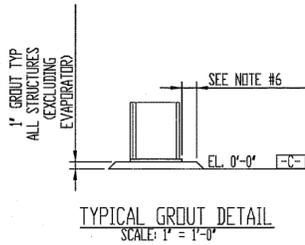
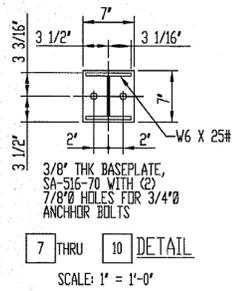
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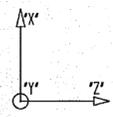
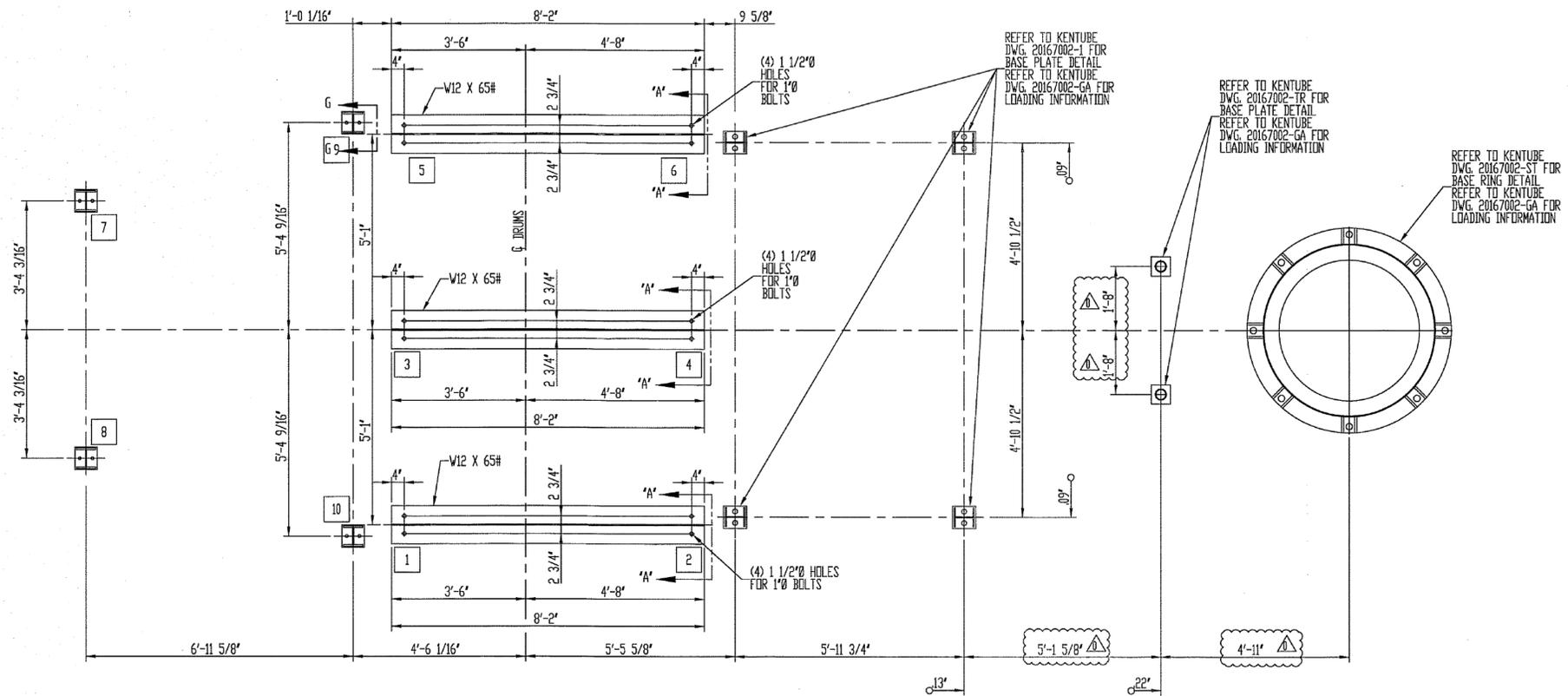
DESCRIPTION		SYSTEM ARRANGEMENT - SIDE VIEW	
NO.	DATE	DESCRIPTION	BY
1	3/4/16	CUSTOMER COMMENTS	DDE
2			EAT
3			
4			

NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	CUSTOMER COMMENTS	DDE	EAT
2				
3				
4				

SCALE:	1/2" = 1'-0"	DRAWN BY:	DDE	DRAWING NUMBER:	15-43-04	REV.	0
DATE:	1/25/16	APPR. BY:	EAT				



- NOTES:**
- ANCHOR BOLTS ARE SUPPLIED AND INSTALLED BY OTHERS.
 - BASE BEAMS ARE DIMENSIONED IN THE COLD POSITION.
 - SLIDE PLATES AND SHIM PLATES ARE NOT REQUIRED.
 - ALL LOADINGS IN CHART ARE IN POUNDS.
 - GROUT ELEVATION SHALL NOT EXCEED BOTTOM OF BASE BEAMS OR BASE PLATES.
 - GROUT SHALL EXTEND 2" BEYOND EDGES OF BASE BEAMS AND BASE PLATES.
 - LOADINGS PER IBC
SEISMIC: $S_s = 0.337$, $S_1 = 0.103$, $F_a = 1.600$, $F_v = 2.400$, $I = 1.25$
WIND = 120 MPH, EXPOSURE C, $I = 1.0$
 - \ominus DENOTES THERMAL EXPANSION FROM COLD POSITION.
 - LIVE LOADS INCLUDE AN ALLOWANCE FOR PLATFORMS TO BE ADDED BY OTHERS.



REFERENCE DRAWINGS	
15-43-01	SYSTEM ARRANGEMENT - PLAN VIEW
15-43-02	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-03	SYSTEM ARRANGEMENT - END VIEW
15-43-04	SYSTEM ARRANGEMENT - SIDE VIEW
15-43-10	EVAPORATOR

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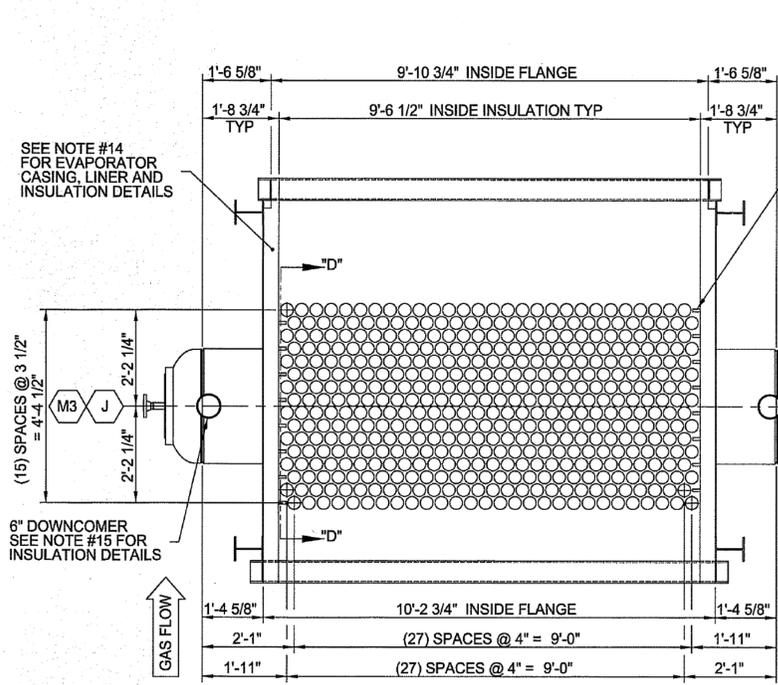
DESCRIPTION: ANCHOR BOLT ARRANGEMENT

CUSTOMER: [REDACTED]

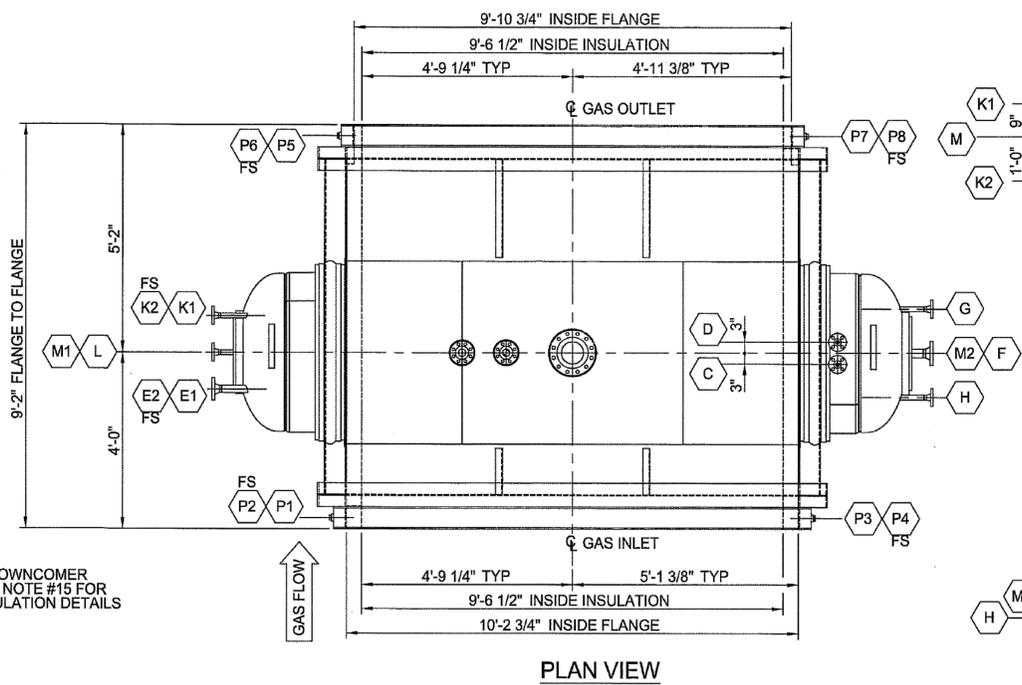
SCALE: 1/2" = 1'-0"
DATE: 1/25/16
DRAWN BY: DDE
APPROVED BY: EAT
DRAWING NUMBER: 15-43-05
REV: 0

NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	REVISED PER CUSTOMER COMMENTS	DDE	EAT

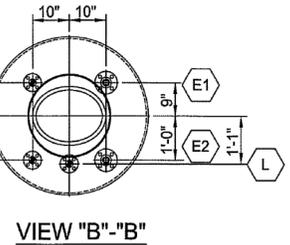
LOADINGS										
LOCATION	1	2	3	4	5	6	7	8	9	10
DEAD	17040	15960	7610	7280	17040	15950	2600	2600	2960	2960
LIVE	1400	3180	200	320	1400	3180	0	0	0	0
X WIND HORIZ	0	0	9160	8220	0	0	1230	1160	1880	1550
X WIND VERT (+)	1270	3060	130	20	1390	3050	4710	4710	630	630
Z WIND HORIZ	1870	2010	1420	680	1870	2010	610	610	920	930
Z WIND VERT (+)	4020	4060	110	20	4020	4060	1390	1390	1390	1390
X SEISMIC HORIZ	0	0	7260	6490	0	0	350	350	640	640
X SEISMIC VERT (+)	1000	3050	100	10	1100	3040	2190	2190	150	150
Z SEISMIC HORIZ	3230	3420	1320	320	3230	3420	390	390	600	600
Z SEISMIC VERT (+)	6650	6700	180	30	6650	6710	1100	1100	1100	1100



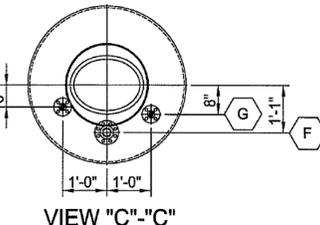
SECTION "A"-"A"



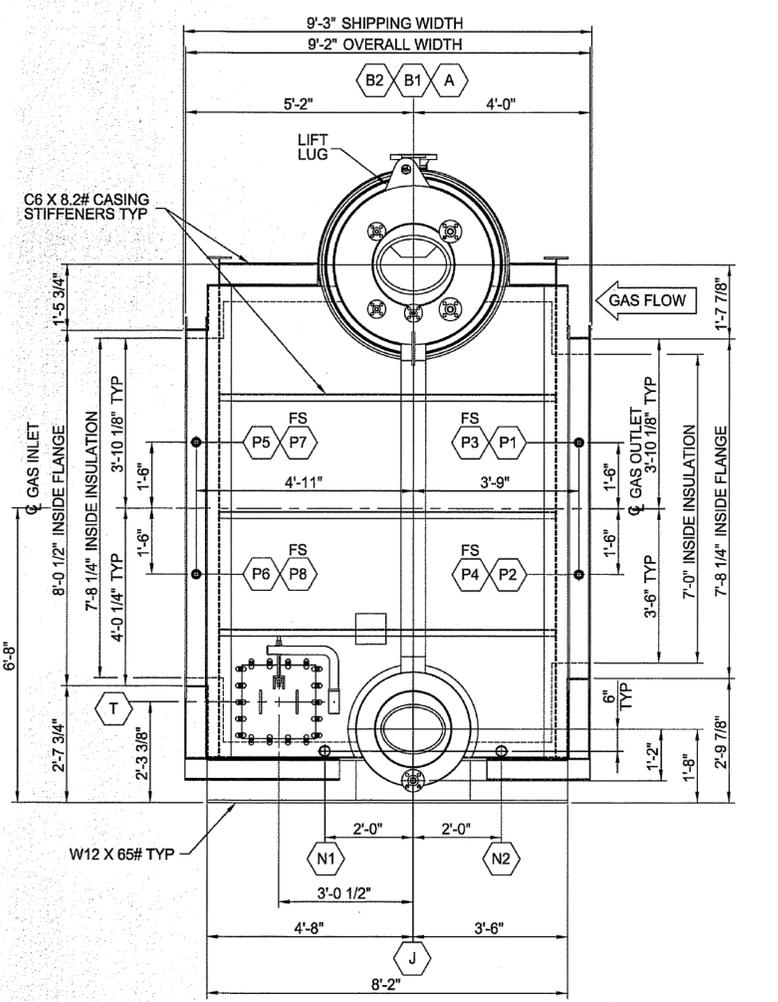
PLAN VIEW



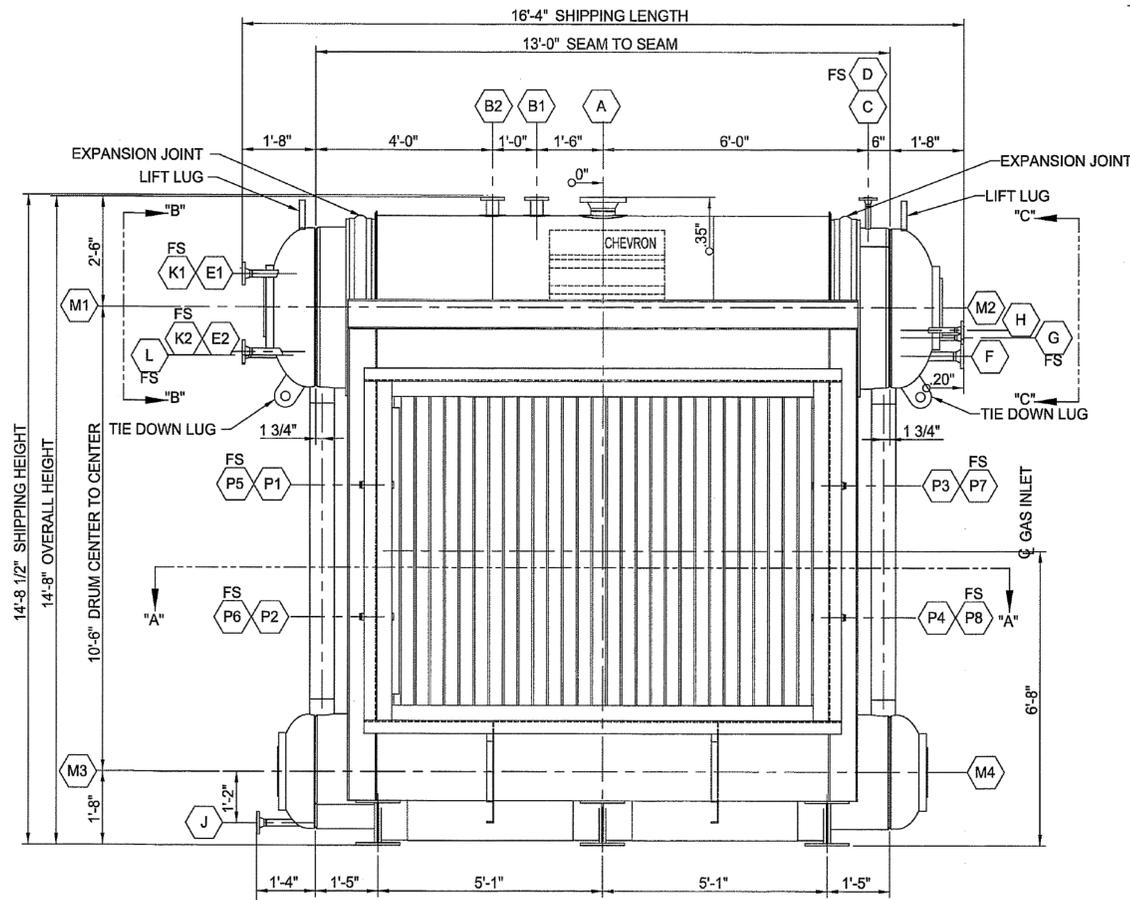
VIEW "B"-"B"



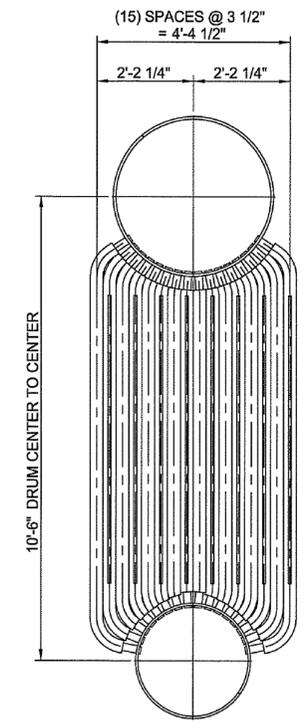
VIEW "C"-"C"



SIDE VIEW



GAS INLET END VIEW



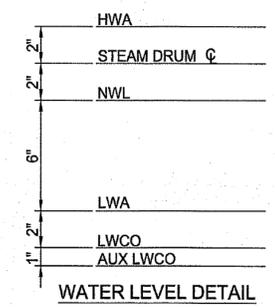
SECTION "D"-"D"

DESIGN NOTES:

- STEAM SIDE TO BE DESIGNED, CONSTRUCTED, AND INSTALLED IN STRICT ACCORDANCE WITH ASME CODE SECTION I, 2013 EDITION. STAMPED AND REGISTERED WITH THE NATIONAL BOARD.
- MAWP: 200 PSIG
- HYDROTEST PRESSURE: 300 PSIG
- DESIGN TEMPERATURE: 500°F (700°F TUBES)
- CORROSION ALLOWANCE: .0625" (0" TUBES)
- WEIGHT: DRY 58,000 LBS FLOODED 74,000 LBS OPERATING 69,000 LBS
- STEAM CAPACITY: 31,500 LB/HR
- RADIOGRAPH TECHNIQUE IS PER CODE. 100% CIRC AND LONG SEAMS.
- PWHT IS PER CODE.
- TUBES ARE ATTACHED BY ROLLING AND FLARING. STEAM DRUM AND MUD DRUM TUBE HOLES ARE SERRATED WITH (1) GROOVE.
- ALL EXPOSED SURFACES PREP PER SSPC-SP6. PRIME WITH PPG METALHIDE ONE-PAC 97-676 INORGANIC ZINC, 3-4 MILS DFT AND PAINT WITH CARBOLINE 4900R SILICONE ACRYLIC ENAMEL, RAL 7032 GRAY, 1.5-2.0 MILS DFT.
- ALL NOZZLE BOLT HOLES TO STRADDLE NATURAL VESSEL CENTERLINES.
- STEAM & MUD DRUM, EXCLUDING HEADS, ARE INSULATED WITH 3" RIGID WRAP. INSULATION AND PROTECTED BY 12 GA. CARBON STEEL LAGGING.
- EVAPORATOR SIDE WALLS, ROOF, & FLOOR ARE CONSTRUCTED OF 1/4" CS PLATE AND INTERNALLY INSULATED WITH 4" CERAMIC FIBER INSULATION AND PROTECTED BY 14 GA 409 S.S. LAGGING.
- DRUM HEADS AND DOWNCOMERS ARE TO BE INSULATED IN THE FIELD BY OTHERS.
- CASING DESIGN PRESSURE: ± 20" W.C.
- ⊕ INDICATES THERMAL EXPANSION FROM FIXED SADDLE.
- SPREADER BAR IS REQUIRED FOR LIFTING BOILER. SPREADER BAR BY OTHERS.
- SLIDE AND SHIM PLATES NOT REQUIRED.

MATERIALS OF CONSTRUCTION

- STEAM DRUM SHELL: 42" I.D. X 3/4" NOM., SA-516-70
 STEAM DRUM HEAD: 42" I.D. X 1/2" NOM., SA-516-70
 MUD DRUM SHELL: 30" I.D. X 5/8" NOM., SA-516-70
 MUD DRUM HEAD: 30" I.D. X 1/2" NOM., SA-516-70
 TUBES: 2" O.D. X .120" M.W., SA-178A S1
 .050" THK X .750" TALL X 6 F.P.I.
 SA-105
 SERRATED CARBON STEEL
- FLANGES: SA-105
 PIPE: SA-106B
 BOLTS: SA-193-B7
 NUTS: SA-194-2H4



WATER LEVEL DETAIL

ALLOWABLE LOADS		
RESULTANT		
MK.	FORCE (LB.)	MOMENT (FT. LB.)
A	2,100	4,500
J	330	210

NOZZLE SCHEDULE			
MK.	QTY.	SIZE & RATING	SERVICE
A	1	8" 300# RFWN	STEAM OUTLET
B1	1	2" 300# RFLWN	SAFETY RELIEF VALVE
B2	1	2" 300# RFLWN	SAFETY RELIEF VALVE
C	1	1" 300# RFWN	VENT
D	1	1" 300# RFWN	PRESSURE
E	2	1 1/2" 300# RFWN	WATER COLUMN
F	1	2" 300# RFWN	FEEDWATER
G	1	1" 300# RFWN	CHEMICAL FEED
H	1	1" 300# RFWN	CONTINUOUS BLOWDOWN
J	1	1 1/2" 300# RFWN	INTERMITTENT BLOWDOWN
K	2	1" 300# RFWN	LEVEL TRANSMITTER
L	1	1" 300# RFWN	ALWCO
M1, M2	2	14" X 18" RING	MANWAY W/ COVER
M3, M4	2	12" X 16" RING	MANWAY W/ COVER
N	2	2" NPT COUPLING	CASING DRAIN W/ PLUG
P	8	1 1/2" X 1" NPT	TEST
T	1	18" X 18"	ACCESS DOOR W/ DAVIT

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DESCRIPTION: EVAPORATOR

CUSTOMER: [REDACTED]

NO.	DATE	DESCRIPTION	BY	APPR
1	3/4/16	RELEASE FOR FABRICATION	DDE	EAT
2	8/11/16	GENERAL REVISION	DDE	EAT

SCALE: 1/2" = 1'-0" DRAWN BY: DDE DRAWING NUMBER: 15-43-10 REV: 2
 DATE: 1/25/16 APPR. BY: EAT

NO.	DATE	DESCRIPTION	BY	APPR
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2	8/11/16	GENERAL REVISION	DDE	EAT