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150,000 pph
Low NOx, 350 psig
Skid-Mounted Package Boiler

Nationwide Boiler's low NOx 150,000 pph, 350 psig design (150 - 300 psig operating), saturated steam, skid-mounted D type package Babcock & Wilcox watertube boiler is set to burn natural gas or #2 oil. It is piped and wired and includes the following components:

- Low NOx Burner
- EconoStak Economizer
- Burner Management System
- Parallel Positioning Combustion Controls
- Forced Draft Fan & Motor
- Complete Fuel Train & Pilot Ignition System
- Water Column & Site Glass
- Steam Pressure Gauge
- Low-water Cutoffs
- Safety Valves
- Feedwater Control, Stop & Check Valves
- Blowdown Valves
- Continuous Blowdown Metering Valve
- Chemical Feed Valve
- Flues & Ducts
- Steam Non-return Valve (loose)
- Stack (loose)
- NEMA 4 Electrical Enclosure
- Low NOx CataStak™ SCR System (optional)
- Weatherproofed (except for freezing)
- Meets FM, NFPA 85 & IRI Insurance Standards
- Operating Manuals with Drawings



Fuel Consumption:

Natural Gas: 182,250 SCFH

Connection Sizes:

Main Steam: 10"-300# FLG
 Natural Gas: 6"-150# FLG
 Feedwater: 4"-600# FLG
 Bottom Blowdown: 1½"-600# FLG
 Continuous Blowdown: 1" NPT
 Chemical Feed: ½" NPT
 Instrument Air: ½" NPT
 Water Column Drain: ¾" NPT

Electrical Power Service Requirements:

480 VAC, 3 ph, 60 hz, 300 AMPS

Boiler Base Dimensions & Weights:

Length / Width / Height: 29' 4" / 12' 6" / 16' 10"
 Shipping Weight: 131,000 lbs
 Operating Weight: 164,000 lbs

Emissions Data (natural gas):

NOx (corr. to 3% O₂): 30 ppm
 CO (corr. to 3% O₂): 50 ppm

Ask About Our **Green Solutions**



42400 Christy Street / Fremont, CA 94538 / (510) 490-7100 / www.nationwideboiler.com / info@nationwideboiler.com
 True Nationwide Coverage & Beyond. Representatives Located Worldwide.

* Actual Equipment may differ from listed specification. Please consult Nationwide Boiler Inc. for additional details.

PREDICTED BOILER EMISSION DATA

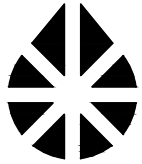
NATURAL GAS FIRING

NBI MODEL NO	150-B&W-D-350 SAT	
BOILER MFG AND MODEL	BABCOCK & WILCOX FM120-97	
BURNER MFG AND MODEL	TBD	
BOILER CAPACITY	150,000	
DESIGN PRESSURE, PSIG	350	
OPERATING PRESURE, PSIG	300	
FUEL HEAT INPUT, MMBTU	182.0	
FUEL FLOW, SCFH	182,250	
FLUE GAS OUTLET TEMP, DEG F	300	
FLUE GAS FLOW, LB/HR	161,219	
FLUE GAS SPECIFIC VOLUME, CF/LB	20.0	
STACK OUTLET DIA., IN	66	
STACK OUTLET FLOW AREA, SQ FT	23.8	
STACK GAS EXIT VELOCITY, FPM	2,258	
STACK GAS EXIT FLOW, ACFM	54,045	
	PPMVD	#/MMBTU
NO _x @ 3% O ₂	30	0.036
CO @ 3% O ₂	50	0.037
VOC @ 3% O ₂	10	0.004
PM10 @ 3% O ₂	-	0.010
EXCESS AIR, %	15	15

DATE: 3/31/15


NATIONWIDE BOILER INCORPORATED

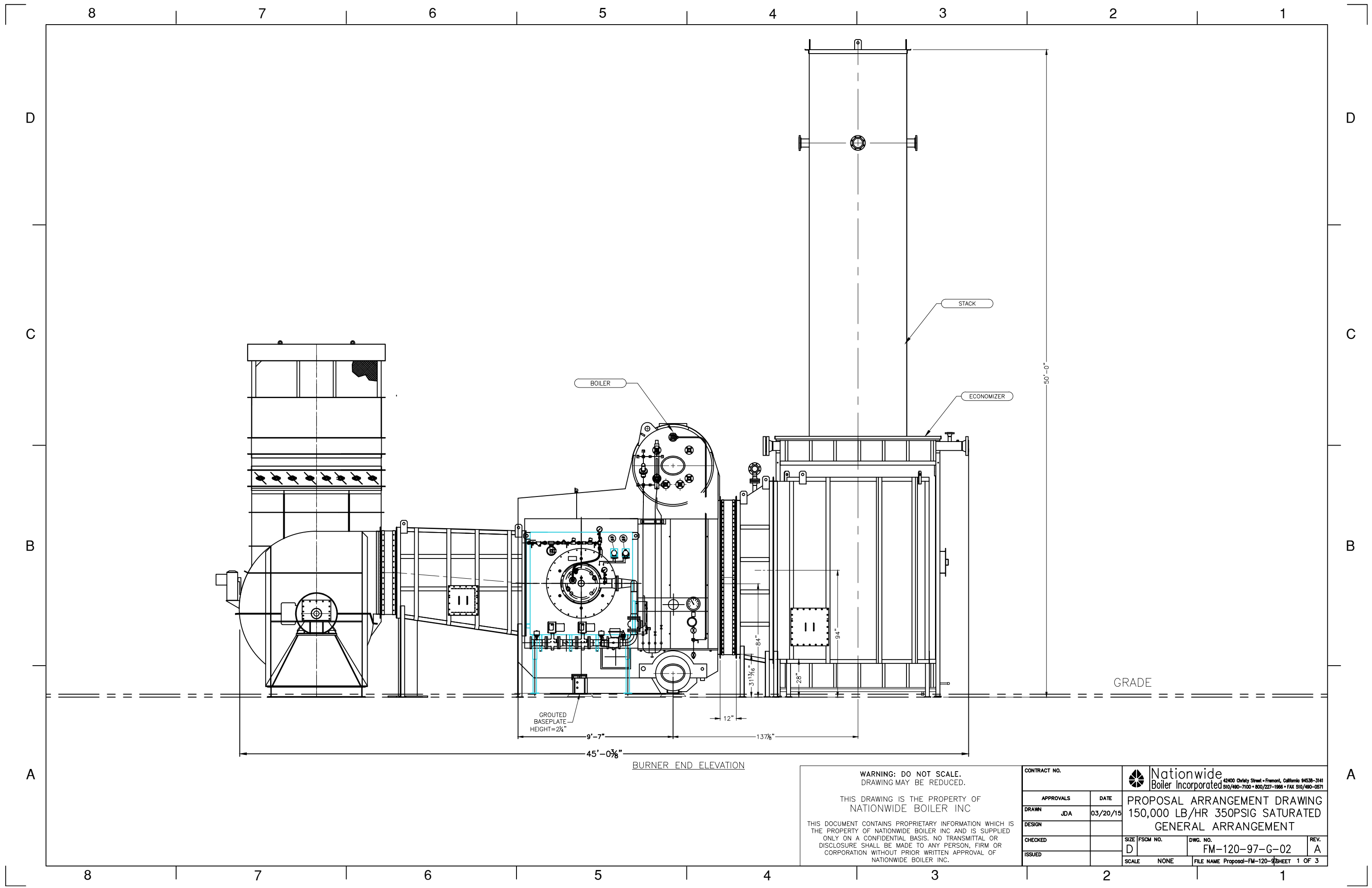
42400 CHRISTY STREET, FREMONT, CA 94538-3141



PROPOSAL ARRANGEMENT 150,000 LB/HR 350 PSIG DESIGN SATURATED

INDEX OF DRAWINGS		
Proposal-FM-120-97-T-01	TITLE SHEET, INDEX OF DRAWINGS	REV. A
Proposal-FM-120-97-G-02	GENERAL ARRANGEMENT, 3 SHEETS	REV. A
Proposal-FM-120-97-L-03	MECHANICAL LEGENDS	REV. A
Proposal-FM-120-97-F-04	PROCESS FLOW DIAGRAM	REV. A
Proposal-FM-120-97-I-05	PIPING AND INSTRUMENT DIAGRAM	REV. A

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<p>APPROVALS</p>	<p>DATE</p>	<p>PROPOSAL ARRANGEMENT DRAWING 150,000 LB/HR 350PSIG SATURATED TITLE SHEET/INDEX OF DRAWINGS</p>	
<p>DRAWN</p>	<p>JDA</p>	<p>03/20/15</p>	<p>REV.</p>
<p>DESIGN</p>			<p>A</p>
<p>CHECKED</p>			<p>FILE NAME Proposal-FM-120-97-SHEET 1 OF 1</p>
<p>ISSUED</p>			
<p>SCALE</p>	<p>NONE</p>	<p>SIZE FSCM NO.</p>	<p>DWG. NO.</p>
		<p>D</p>	<p>FM-120-97-T-01</p>



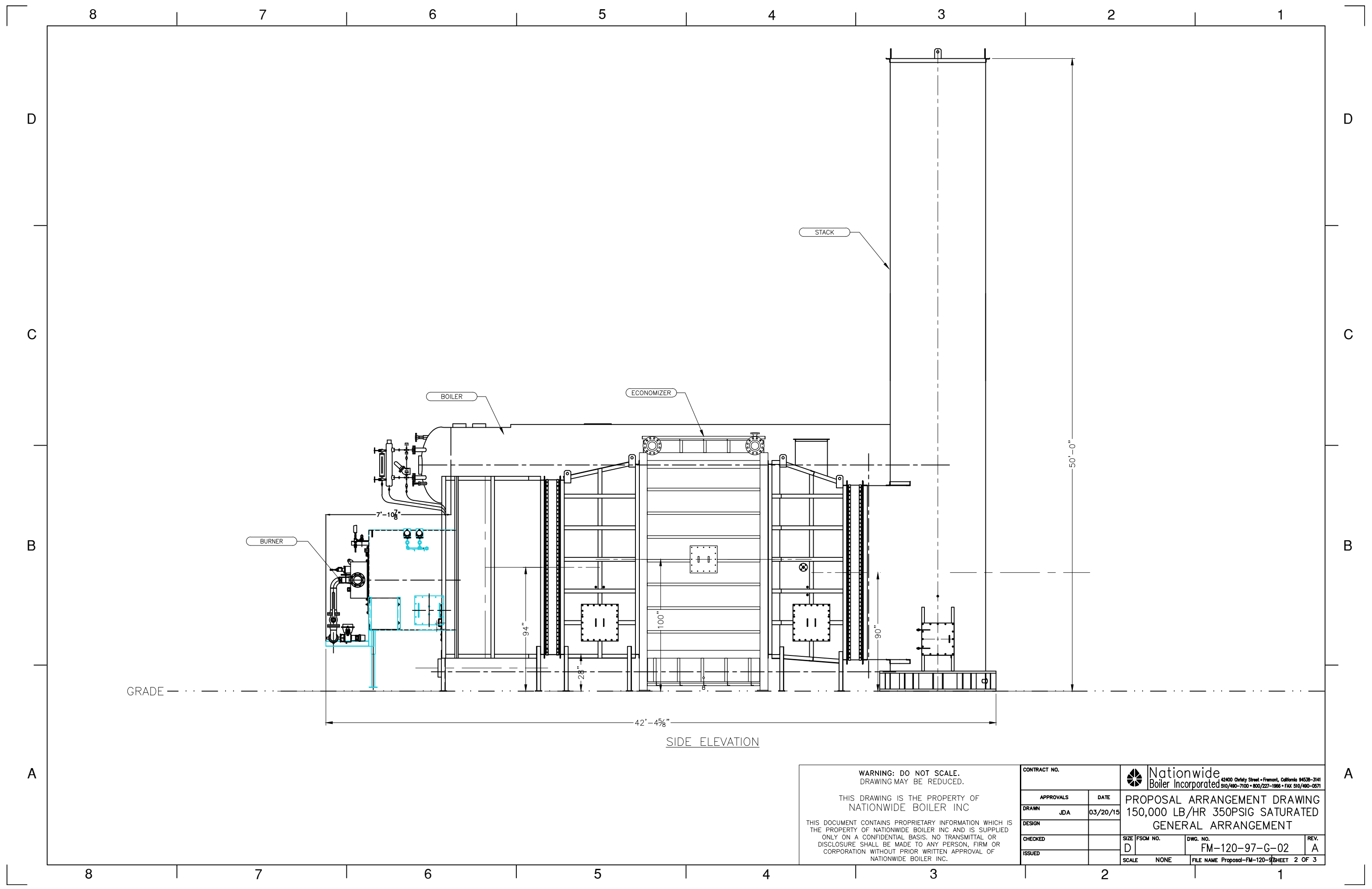
BURNER END ELEVATION

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APPROVALS	DATE	PROPOSAL ARRANGEMENT DRAWING	
DRAWN JDA	03/20/15	150,000 LB/HR 350PSIG SATURATED	
DESIGN		GENERAL ARRANGEMENT	
CHECKED		SIZE FSCM NO.	DWG. NO.
ISSUED		D	FM-120-97-G-02
		SCALE NONE	FILE NAME Proposal-FM-120-97 SHEET 1 OF 3
			REV. A




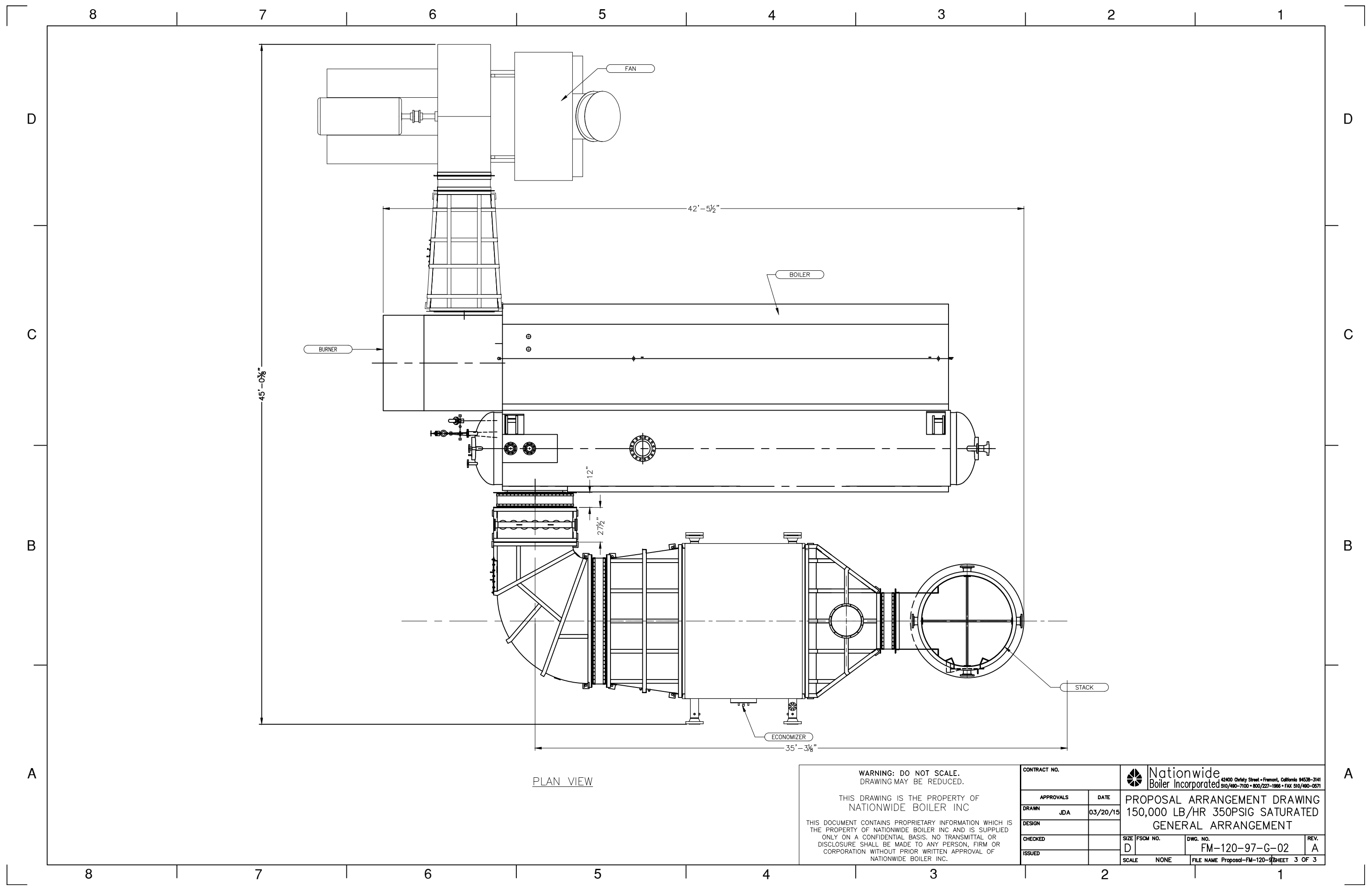
SIDE ELEVATION

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APPROVALS	DATE	PROPOSAL ARRANGEMENT DRAWING 150,000 LB/HR 350PSIG SATURATED GENERAL ARRANGEMENT		
DRAWN	JDA 03/20/15			
DESIGN				
CHECKED				
ISSUED		SIZE FSCM NO. D SCALE NONE	DWG. NO. FM-120-97-G-02 FILE NAME Proposal-FM-120-97	REV. A SHEET 2 OF 3



PLAN VIEW

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CONTRACT NO.	
APPROVALS	DATE
DRAWN JDA	03/20/15
DESIGN	
CHECKED	
ISSUED	

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PROPOSAL ARRANGEMENT DRAWING
150,000 LB/HR 350PSIG SATURATED
GENERAL ARRANGEMENT

SIZE	FSCM NO.	DWG. NO.	REV.
D		FM-120-97-G-02	A
SCALE	NONE	FILE NAME Proposal-FM-120-97 SHEET 3 OF 3	

L E G E N D

SYMBOL	IDENTIFICATION	SYMBOL	IDENTIFICATION	SYMBOL	IDENTIFICATION	INSTRUMENT DESIGNATION
GENERAL SYMBOLS						
	CONTINUATION FLAG; M-2-DRAWING NUMBER		CONTROL VALVE (GENERAL SYMBOL)		AIR ACTUATED SAFETY SHUTOFF VALVE	INSTRUMENT SHALL BE IDENTIFIED BY A SYSTEM OF LETTERS AND NUMBERS AS FOLLOWS: A. IDENTIFICATION LETTERS SHALL BE PER TABLE SHOWN BELOW B. ID NUMBER SHALL BE UNIQUE THE INSTRUMENT DESIGNATIONS SHALL BE:
	EQUIPMENT IDENTIFICATION EQUIPMENT NUMBER		PRESSURE REDUCING REGULATOR, SELF-CONTAINED PRESSURE REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP		AIR ACTUATED FLOW CONTROL VALVE	
	BREAK POINT INTERFACE BETWEEN VENDOR SKID MOUNTED SCOPE OF SUPPLY AND INTERCONNECTING PIPING	ACTUATOR SYMBOLS				
	INSTRUMENT FOR SINGLE MEASURED VARIABLE SYMBOLS (SYMBOL SIZE MAY VARY ACCORDING TO SIZE AND TYPE OF DOCUMENT)		ELECTRIC MOTOR			
	LOCALLY MOUNTED		MODULATING ELECTRIC MOTOR			
	PANEL MOUNTED IN PANEL		SOLENOID			
	MOUNTED INTERNAL TO CONTROL PANEL					
	DCS INDICATION					
RELATED ELECTRICAL AND CONTROL SYMBOLS						
	INTERLOCK LOGIC					
	ELECTRIC MOTOR DRIVE					
	120V AC POWER CORD TO 110V AC RECEPTACLE					
INSTRUMENT LINE SYMBOLS						
	INSTRUMENT AIR (PNEUMATIC)					
	MECHANICAL LINK					
	ELECTRIC SIGNAL					
	CAPILLARY TUBE					
	HYDRAULIC (WATER OR OIL) BY N.B.I.					
VALVE SYMBOLS						
	SWING CHECK VALVE					
	STOP CHECK ANGLE VALVE (NON-RETURN)					
	ANGLE VALVE					
	MAKE-UP LEVEL CONTROL OR FLOAT VALVE					
	PRESSURE SAFETY, RELIEF OR SAFETY-RELIEF VALVE					
	GATE VALVE					
	GLOBE VALVE					
	PLUG VALVE					
	NEEDLE VALVE					
	BALL VALVE					
	NORMALLY CLOSED VALVE					
	MANUAL OPERATED FUEL CONTROL VALVE					
	COUPLING					
	DIAPHRAGM VALVE					
	BUTTERFLY VALVE					
SELF-ACTUATED REGULATOR SYMBOLS						
	CONTROL VALVE (GENERAL SYMBOL)					
	PRESSURE REDUCING REGULATOR, SELF-CONTAINED PRESSURE REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP					
ACTUATOR SYMBOLS						
	ELECTRIC MOTOR					
	MODULATING ELECTRIC MOTOR					
	SOLENOID					
PRIMARY ELEMENT SYMBOLS						
	ORIFICE PLATE					
	PROPELLER METER					
ABBREVIATION EQUIPMENT IDENTIFICATION						
	A	AGITATOR				
	B	BOILER				
	BNR	BURNER				
	BT	BRINE TANK				
	CIP	CHEMICAL INJECTION PUMP				
	F	FAN				
	FI	FILTER/AIR INLET				
	FS	DEAERATOR OR FEEDWATER SYSTEM				
	M	MOTOR				
	P	PUMP				
	S	SOFTENER				
	SC	SAMPLE COOLER				
	SP	BLOWDOWN TANK				
	T	TANK				
ABBREVIATION PROCESS PIPING DESIGNATION						
	BFW	BOILER FEEDWATER				
	CBD	CONTINUOUS BLOWDOWN				
	CF	CHEMICAL FEED				
	COND	CONDENSATE				
	CW	CITY WATER				
	D	DRAIN				
	DG	DIGESTER GAS				
	FW	FEEDWATER				
	IA	INSTRUMENT AIR				
	NG	NATURAL GAS				
	PROP	PROPANE				
	STM	STEAM				
	V	VENT				

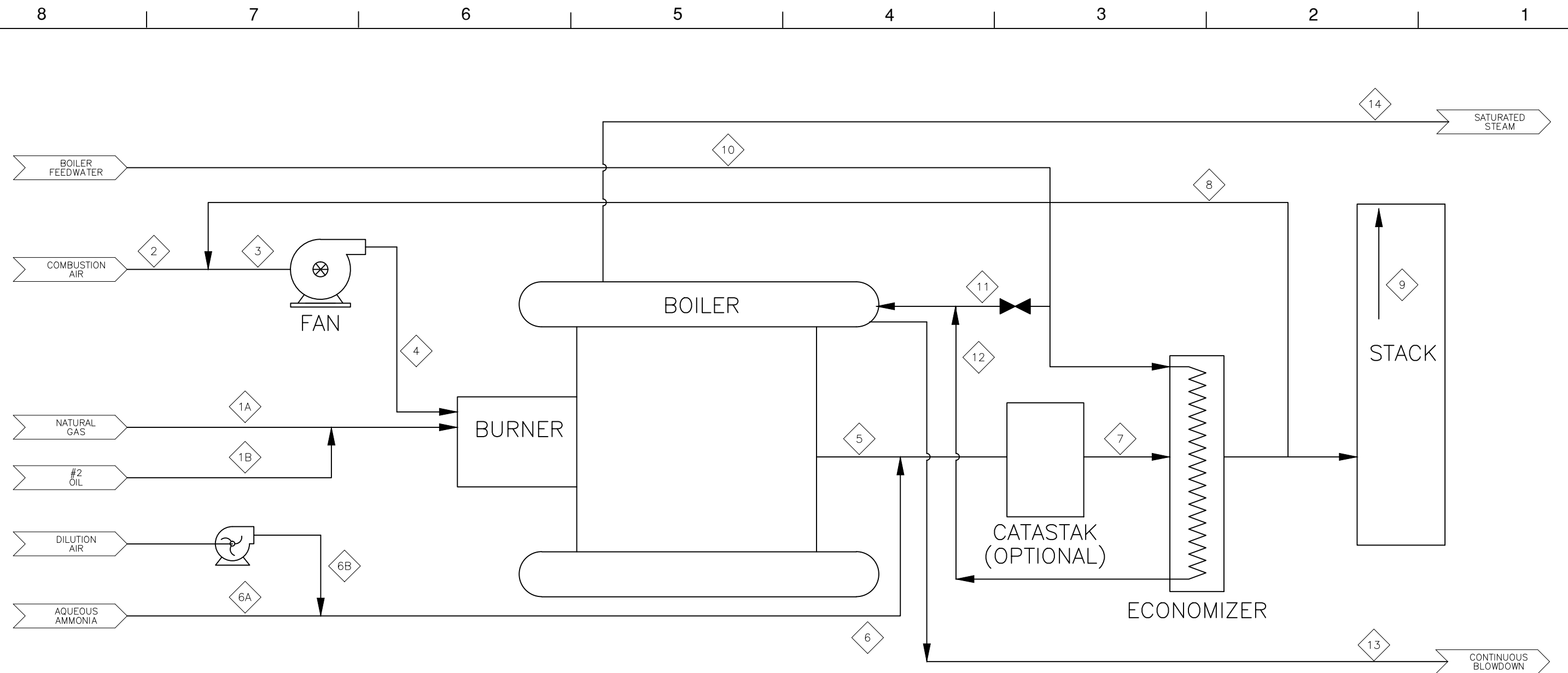
IDENTIFICATION LETTERS PER ISA STANDARD ISA-5.1-1984 (R 1992)				
FIRST-LETTER		SUCCEEDING-LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM	
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROL
D	DENSITY, (MASS)	DIFFERENTIAL		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)	
F	FLOW RATE	RATIO (FRACTION)		
G	GAUGING (DIMENSIONAL)		GLASS, VIEWING DEVICE	
H	HAND (MANUALLY INITIATED)			HIGH
I	CURRENT (ELECTRICAL)		INDICATE	
J	POWER	SCAN		
K	TIME, TIME SCHEDULE	TIME, RATE OF CHANGE		CONTROL STATION
L	LEVEL		LIGHT (PILOT)	LOW
M	MOISTURE, HUMIDITY	MOMENTARY		MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION	
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION	
Q	QUANTITY, EVENT	INTEGRATE, TOTALIZE	INTEGRATOR	INTEGRATOR
R	RADIATION		RECORD	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE			TRANSMIT
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE		WELL	
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT

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APPROVALS	DATE	PROPOSAL ARRANGEMENT DRAWING	
DRAWN JDA	03/20/15	150,000 LB/HR 350PSIG SATURATED	
DESIGN		MECHANICAL LEGENDS	
CHECKED		SIZE FSCM NO.	DWG. NO.
ISSUED		D	FM-120-97-L-03
		SCALE NONE	FILE NAME Proposal-FM-120-97-SHEET 1 OF 1



NOTE: ASSUMED 15% EA, 3% BLOWDOWN, 10% FGR AND NEAR SEA LEVEL ELEVATION

ITEM		1A	1B ¹	2	3	4	5	6A	6B	6 ¹ (OPTIONAL)	7	8	9	10	11	12	13 ²	14
DESCRIPTION		NATURAL GAS	#2 OIL	COMBUSTION AIR	COMBUSTION MIX	COMBUSTION MIX	FLUE GAS	AMMONIA	DILUTION AIR	AMMONIA MIX	FLUE GAS	FLUE GAS RECIRCULATION	FLUE GAS	FEEDWATER	ECONOMIZER BYPASS	FEEDWATER	CONTINUOUS BLOWDOWN	SATURATED STEAM
UNITS	FLOW PRESSURE	SCFH PSIG	SCFH PSIG	ACFM IN WC	ACFM IN WC	ACFM IN WC	ACFM IN WC	ACFM PSIG	ACFM IN WC	ACFM IN WC	ACFM IN WC	ACFM IN WC	ACFM IN WC	GPM PSIG	GPM PSIG	GPM PSIG	GPM PSIG	PSIG
FLOW	SEE UNITS	181,966	-	34,935	40,639	37,802	80,218	---	-	-	80,898	5,388	54,007	322.7	0	337.7	11.0	---
MASS FLOW	LB/HR	8,322	9,045	152,634	168,730	168,730	177,052	11.0	191	200	177,252	16,096	161,156	154,639	0	154,639	4,639	150,000
TEMPERATURE	*F	70	70	80	103	103	540	80	80	80	580	300	300	227	227	309	422	422
PRESSURE	SEE UNITS	30	30	0	-0.5	30.0	5.0	80	45	20	2.0	0.5	0	360	-	340	300	300

REFERENCE NOTES

- ¹ ALTERNATE FUEL
- ² FLOW DEPENDS ON WATER QUALITY

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ISSUED		
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SCALE	NONE	FILE NAME Proposal-FM-120-97-SHEET 1 OF 1

PROPOSAL ARRANGEMENT DRAWING
150,000 LB/HR 350PSIG SATURATED
PROCESS FLOW DIAGRAM

D

D

C

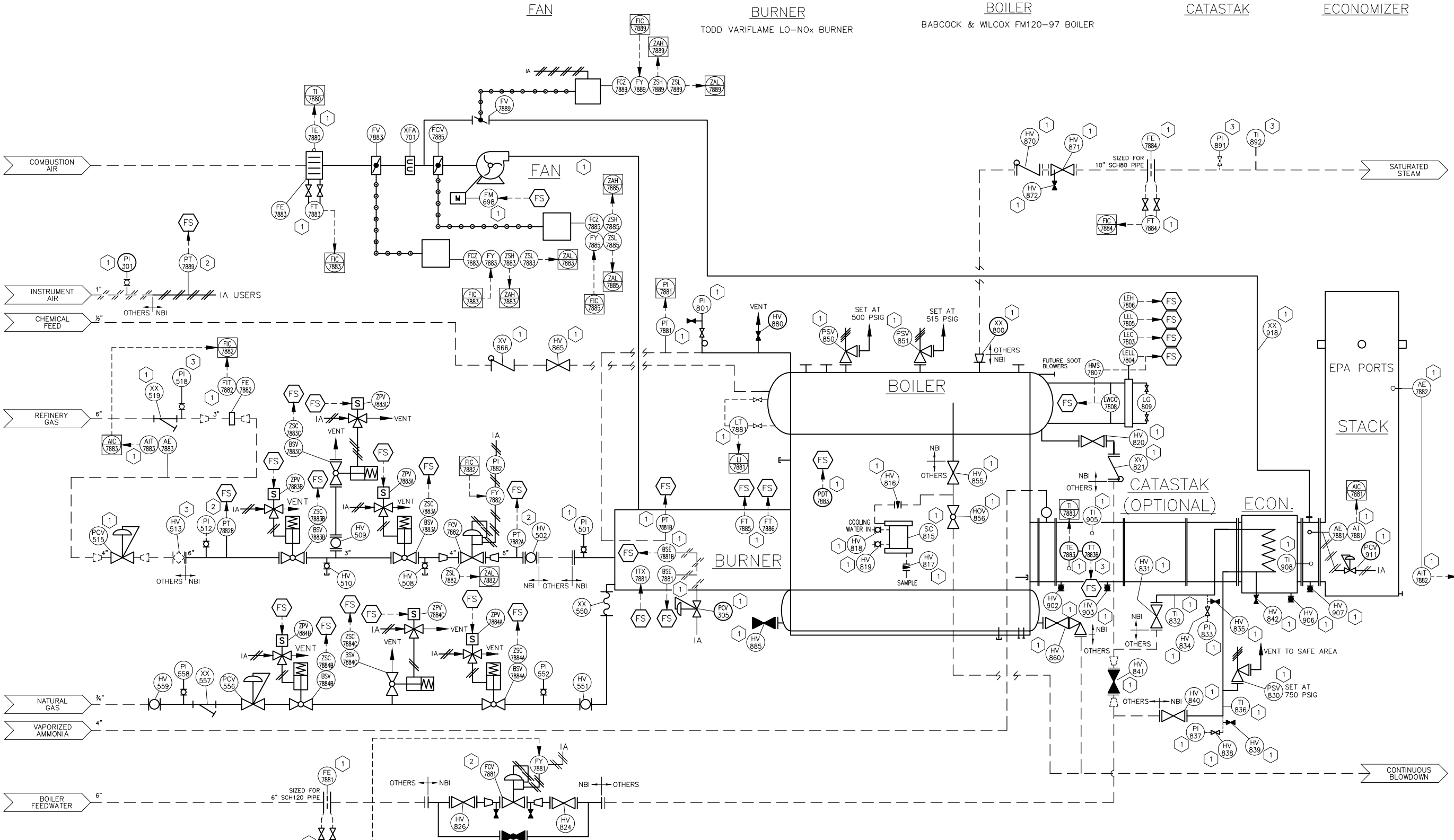
C

B

B

A

A



- DCS - CUSTOMER DCS
- FS - FLAME SAFETY SYSTEM CONNECTION (BMS)
- 1 - COMPONENT SHIPPED LOOSE TO BE MOUNTED AND/OR WIRED TO CONTROL PANEL BY OTHERS.
- 2 - COMPONENT MOUNTED ON SEPARATE SKID AND WIRED TO CONTROL PANEL BY OTHERS.
- 3 - SUPPLIED BY OTHERS.

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ISSUED		SCALE NONE	FILE NAME Proposal-FM-120-97 SHEET 1 OF 1
			REV. A