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**24/7 • (800) 227-1966**

## **New 100,000 pph Low NOx, 350 psig Skid-Mounted Package Boiler**

Nationwide Boiler's low NOx 100,000 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: 121,500 SCFH

### **Connection Sizes:**

Main Steam: 10"-600# 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:**

460 VAC, 3 ph, 60 hz, 250 AMPS

### **Boiler Base Dimensions & Weights:**

Length / Width / Height: 30' 0" / 11' 9" / 13' 10"  
 Shipping Weight: 91,400 lbs  
 Operating Weight: 117,800 lbs

### **Emissions Data (natural gas):**

NOx (corr. to 3% O<sub>2</sub>): 30 ppm  
 CO (corr. to 3% O<sub>2</sub>): 50 ppm

Ask About Our **Green Solutions**



42400 Christy Street / Fremont, CA 94538 / (510) 490-7100 / [www.nationwideboiler.com](http://www.nationwideboiler.com) / [info@nationwideboiler.com](mailto: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

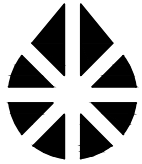
### NATURAL GAS FIRING

NBI MODEL NO	100-B&W-D-350 SAT	
BOILER MFG AND MODEL	BABCOCK & WILCOX FM103-97	
BURNER MFG AND MODEL	TBD	
BOILER CAPACITY	100,000	
DESIGN PRESSURE, PSIG	350	
OPERATING PRESURE, PSIG	325	
FUEL HEAT INPUT, MMBTU	121.1	
FUEL FLOW, SCFH	121,500	
FLUE GAS OUTLET TEMP, DEG F	300	
FLUE GAS FLOW, LB/HR	107,450	
FLUE GAS SPECIFIC VOLUME, CF/LB	20.0	
STACK OUTLET DIA., IN	56	
STACK OUTLET FLOW AREA, SQ FT	17.1	
STACK GAS EXIT VELOCITY, FPM	2,090	
STACK GAS EXIT FLOW, ACFM	36,010	
	<b>PPMVD</b>	<b>#/MMBTU</b>
NO <sub>x</sub> @ 3% O <sub>2</sub>	30	0.036
CO @ 3% O <sub>2</sub>	50	0.037
VOC @ 3% O <sub>2</sub>	10	0.004
PM10 @ 3% O <sub>2</sub>	-	0.010
EXCESS AIR, %	15	15

DATE: 3/31/15


# NATIONWIDE BOILER INCORPORATED

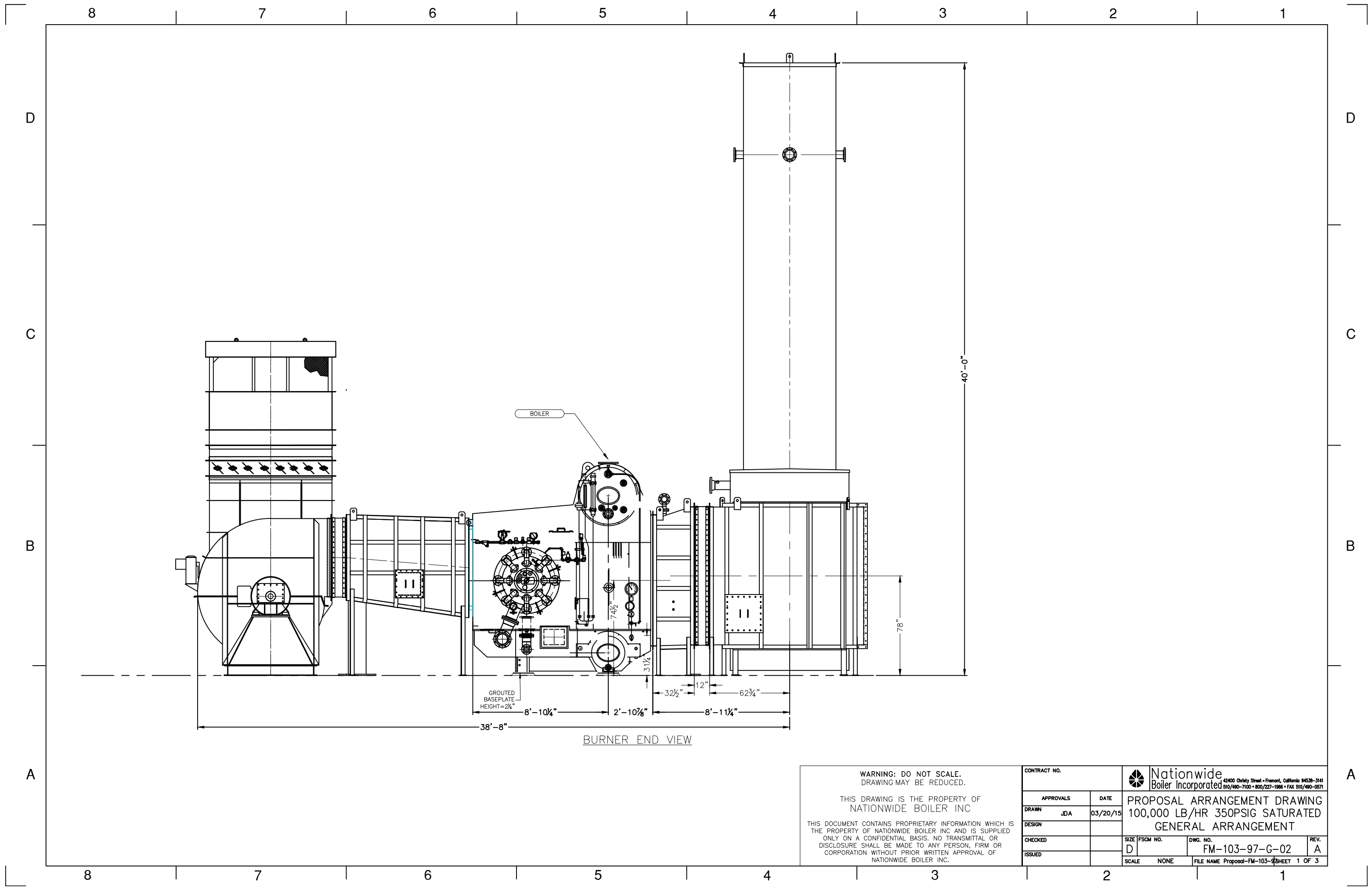
42400 CHRISTY STREET, FREMONT, CA 94538-3141



## PROPOSAL ARRANGEMENT 100,000 LB/HR 350 PSIG DESIGN SATURATED

INDEX OF DRAWINGS		
Proposal-FM-103-97-T-01	TITLE SHEET, INDEX OF DRAWINGS	REV. A
Proposal-FM-103-97-G-02	GENERAL ARRANGEMENT, 3 SHEETS	REV. A
Proposal-FM-103-97-L-03	MECHANICAL LEGENDS	REV. A
Proposal-FM-103-97-F-04	PROCESS FLOW DIAGRAM	REV. A
Proposal-FM-103-97-I-05	PIPING AND INSTRUMENT DIAGRAM	REV. A


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<p>APPROVALS</p>	<p>DATE</p>	<p>PROPOSAL ARRANGEMENT DRAWING 100,000 LB/HR 350PSIG SATURATED TITLE SHEET/INDEX OF DRAWINGS</p>	
<p>DRAWN JDA</p>	<p>03/20/15</p>	<p>SIZE FSCM NO.</p>	<p>DWG. NO.</p>
<p>DESIGN</p>	<p>CHECKED</p>	<p>D</p>	<p>FM-103-97-T-01</p>
<p>ISSUED</p>	<p>SCALE NONE</p>	<p>FILE NAME Proposal-FM-103-97-SHEET 1 OF 1</p>	<p>REV. A</p>

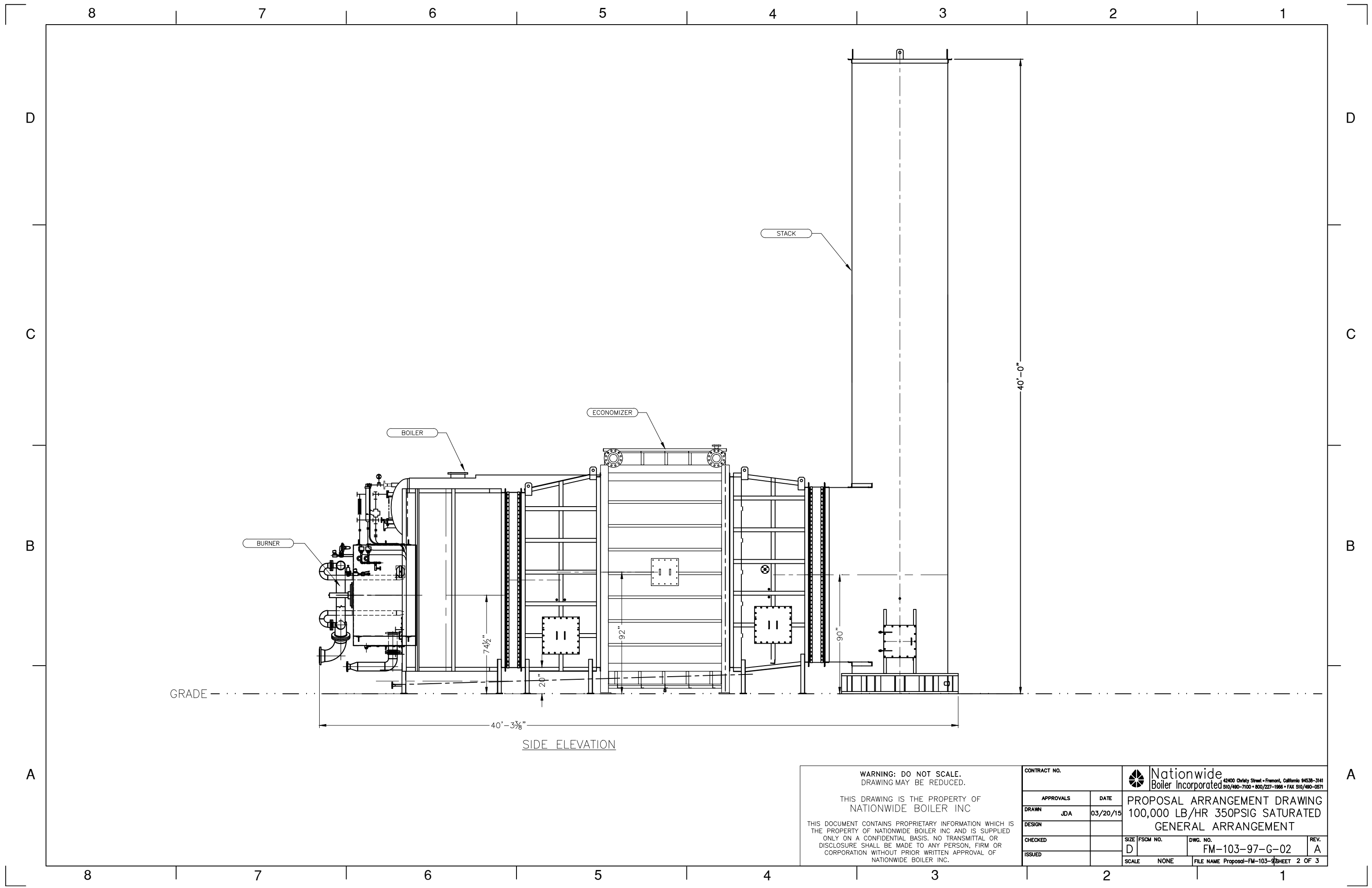


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APPROVALS	DATE	PROPOSAL ARRANGEMENT DRAWING	
DRAWN JDA	03/20/15	100,000 LB/HR 350PSIG SATURATED	
DESIGN		GENERAL ARRANGEMENT	
CHECKED		SIZE FSCM NO.	DWG. NO.
ISSUED		D	FM-103-97-G-02
		SCALE NONE	REV. A
		FILE NAME Proposal-FM-103-97-SHEET 1 OF 3	



GRADE

BURNER

BOILER

ECONOMIZER

STACK

74 1/2"

92"

90"

40'-0"

40'-3 3/8"

SIDE ELEVATION

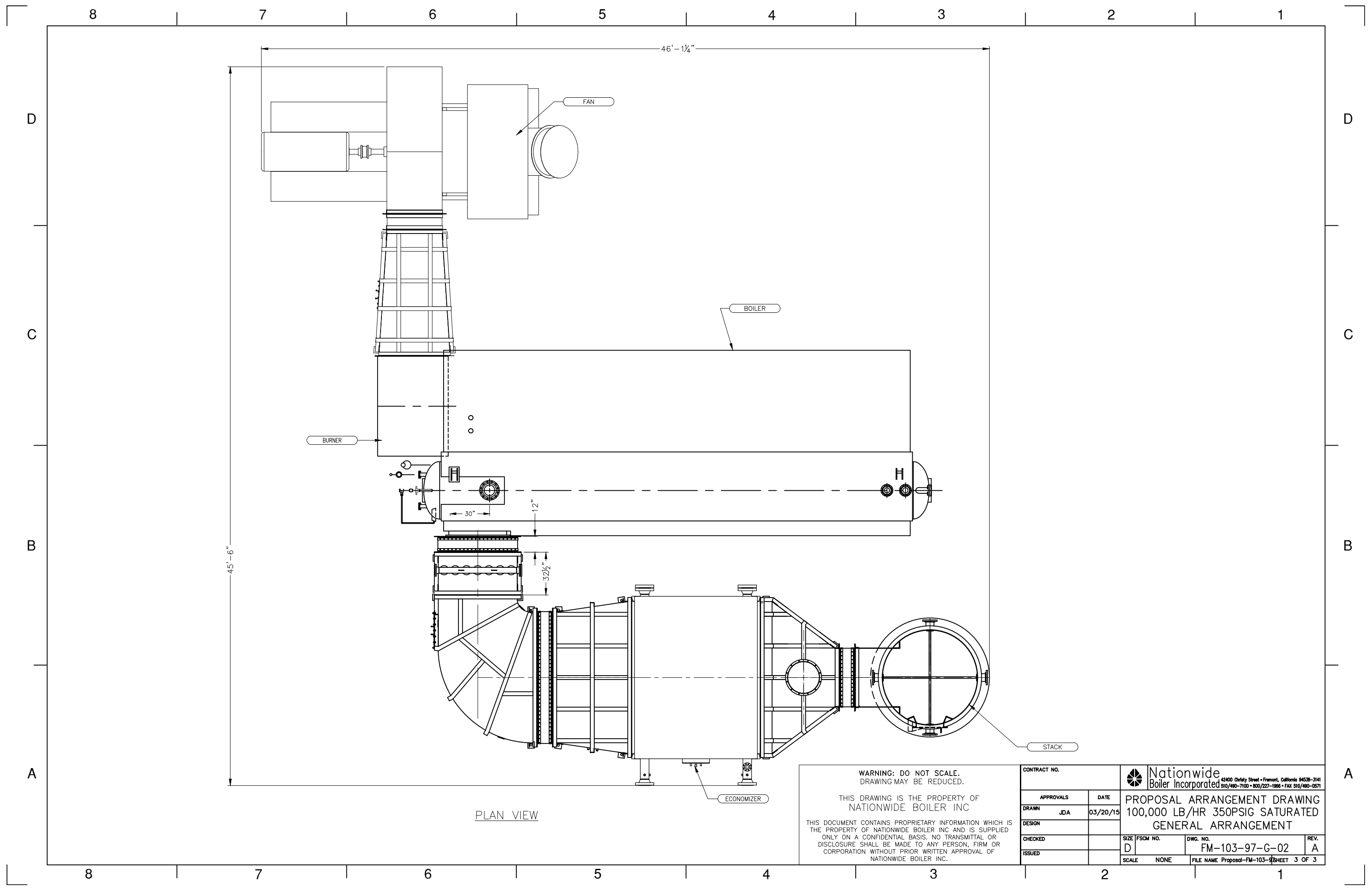
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ISSUED	

 <small>42400 Christy Street • Fremont, California 94538-3141 510/490-7100 • 800/227-1966 • FAX 510/490-0571</small>			
PROPOSAL ARRANGEMENT DRAWING 100,000 LB/HR 350PSIG SATURATED GENERAL ARRANGEMENT			
SIZE D	FSCM NO.	DWG. NO. FM-103-97-G-02	REV. A
SCALE NONE	FILE NAME Proposal-FM-103-97-SHEET 2 OF 3		



BURNER

FAN

BOILER

STACK

ECONOMIZER

45'-6"

46'-1 1/4"

PLAN VIEW

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CHECKED		SIZE D	FSCM NO.
ISSUED		DWG. NO.	REV. A
		SCALE NONE	FILE NAME Proposal-FM-103-97-SHEET 3 OF 3

Nationwide Boiler Incorporated

PROPOSAL ARRANGEMENT DRAWING  
100,000 LB/HR 350PSIG SATURATED  
GENERAL ARRANGEMENT

SIZE D FSCM NO.  
DWG. NO. FM-103-97-G-02 REV. A  
SCALE NONE FILE NAME Proposal-FM-103-97-SHEET 3 OF 3

8 7 6 5 4 3 2 1

L E G E N D

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

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	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	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	MULTIFUNCTION
V VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W WEIGHT, FORCE		WELL		
X UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

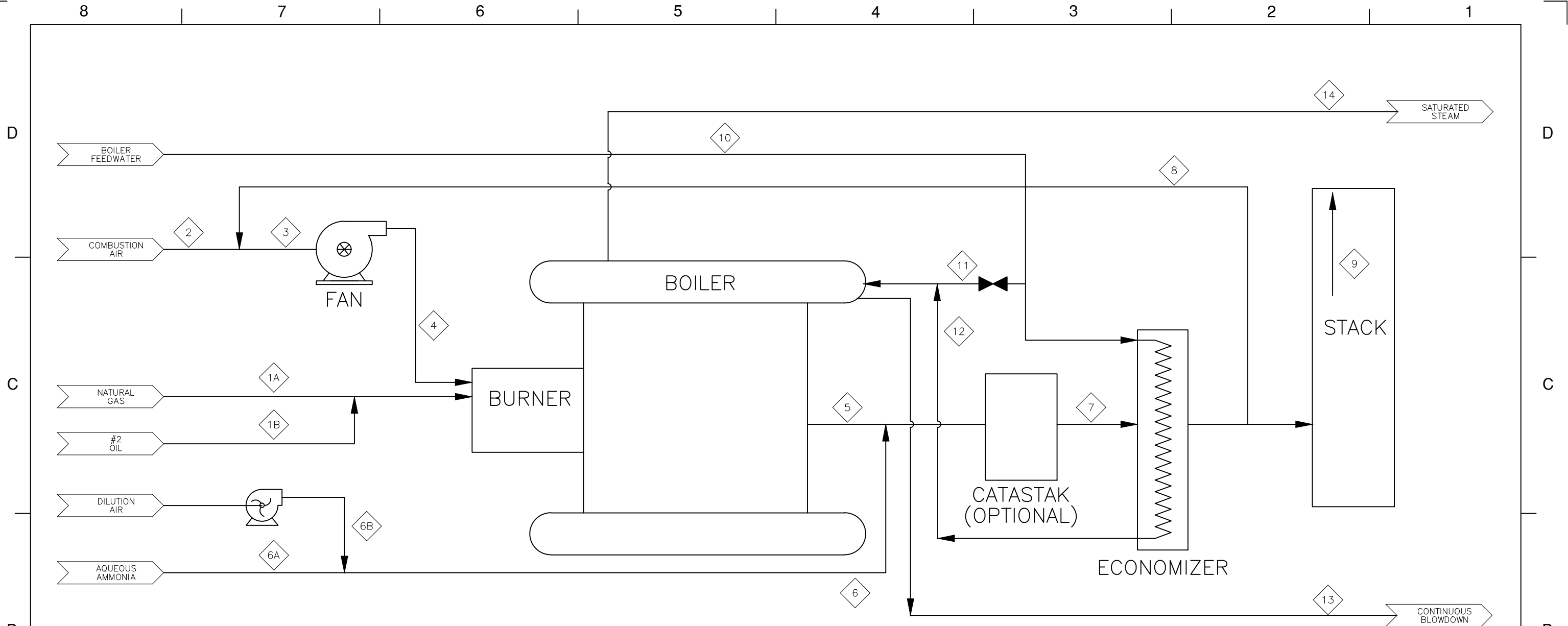
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APPROVALS	DATE	42400 Christy Street • Fremont, California 94538-3141 510/490-7100 • 800/227-1986 • FAX 510/490-0571	
DRAWN JDA	03/20/15	<b>PROPOSAL ARRANGEMENT DRAWING</b> <b>100,000 LB/HR 350PSIG SATURATED MECHANICAL LEGENDS</b>	
DESIGN		SIZE FSCM NO.	DWG. NO.
CHECKED		D	FM-103-97-L-03
ISSUED		SCALE NONE	FILE NAME Proposal-FM-103-97 SHEET 1 OF 1
		REV. A	

8 7 6 5 4 3 2 1



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

ITEM		1A	1B	2	3	4	5	6A	6B	6 (OPTIONAL)	7	8	9	10	11	12	13	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	121,311	-	23,290	27,093	25,201	51,421	---	-	-	51,887	3,592	36,027	215.1	0	224.1	7.3	---
MASS FLOW	LB/HR	5,548	6,030	101,756	112,487	112,487	118,035	6.0	194	200	118,235	10,731	107,504	103,093	0	103,093	3,093	100,000
TEMPERATURE	*F	70	70	80	103	103	540	80	80	80	540	300	300	227	227	301	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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D		FM-103-97-F-04
SCALE	NONE	FILE NAME Proposal-FM-103-97-SHEET 1 OF 1

PROPOSAL ARRANGEMENT DRAWING  
100,000 LB/HR 350PSIG SATURATED  
PROCESS FLOW DIAGRAM

REV. A



D

D

C

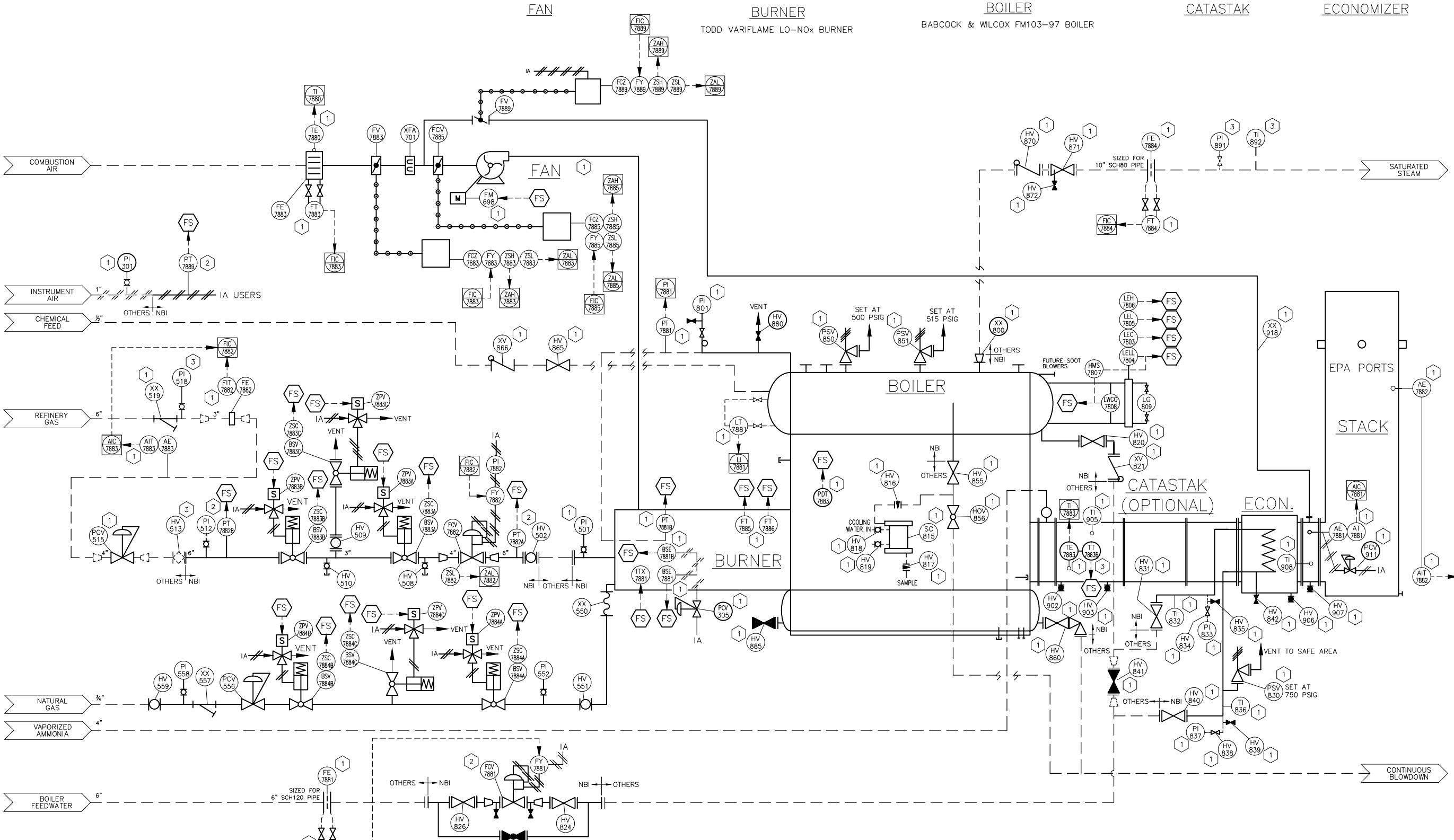
C

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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DRAWN JDA	03/20/15	100,000 LB/HR 350PSIG SATURATED PIPING AND INSTRUMENT DIAGRAM	
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CHECKED		D	FM-103-97-1-05
ISSUED		SCALE NONE	FILE NAME Proposal-FM-103-97 SHEET 1 OF 1
			REV. A