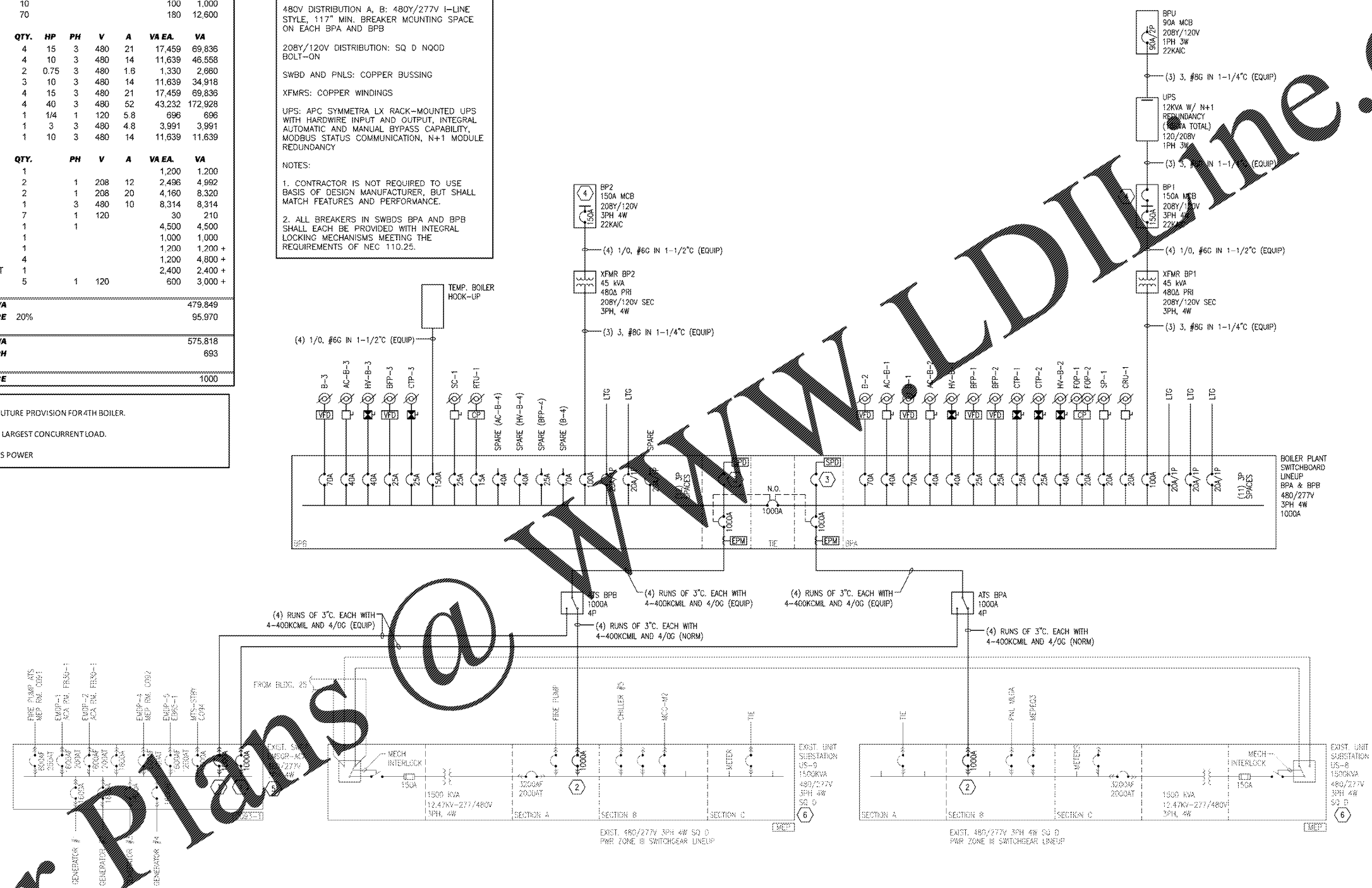


ELECTRICAL LOAD ESTIMATION						
NEW BOILER BUILDING						
FINAL DESIGN 7/8/2016						
<b>GENERAL ITEMS</b>						
INTERIOR LIGHTING @ 2VA/SF	8125			2	16,250	
EXTERIOR LIGHTING	10			100	1,000	
GENERAL RECEPTACLES	70			180	12,600	
<b>LARGE MOTOR ITEMS</b>						
MAKEUP AIR FAN	4	15	3	480	21	17,459 69,836
FEED WATER PUMPS <sup>A</sup>	4	10	3	480	14	11,639 46,558
FUEL PUMPS	2	0.75	3	480	1.6	1,330 2,660
CONDENSATE PUMPS	3	10	3	480	14	11,639 34,918
AIR COMPRESSORS <sup>A</sup>	4	15	3	480	21	17,459 69,836
BOILER COMBUSTION FANS <sup>A</sup>	4	40	3	480	52	43,232 172,928
EXHAUST FANS	1	1/4	1	120	5.8	696
BLOWDOWN PUMP PUMPS	1	3	3	480	4.8	3,991 3,991
TOOL AIR COMPRESSOR	1	10	3	480	14	11,639 11,639
<b>MISC. ITEMS</b>						
SAMPLE COOLER	1					1,200 1,200
HEAT PUMP MINI-SPLITS	2	1	208	12		2,496 4,992
HEAT PUMP MINI-SPLITS	2	1	208	20		4,160 8,320
ROOF TOP UNIT	1	3	480	10		8,314 8,314
STEAM UNIT HEATERS	7	1	120			30 210
ELEC. WATER HEATER	1	1				4,500 4,500
CHEMICAL FEED SYSTEM	1					1,000 1,000
MASTER CONTROL PANEL	1					1,200 1,200
BOILER DDC CONTROLS <sup>A</sup>	4					1,200 4,800
CONTROL ROOM EQUIPMENT	1					2,400 2,400
WORKSTATIONS	5	1	120			600 3,000
<b>SUBTOTAL VA</b>					479,849	
<b>SPARE 20%</b>					95,970	
<b>TOTAL VA</b>					575,818	
<b>AMPS AT 480V, 3PH</b>					693	
<b>CAPACITY OF SERVICE</b>					1000	

<sup>A</sup> QUANTITIES ABOVE INCLUDE FUTURE PROVISION FOR 4TH BOILER.  
<sup>B</sup> CALCULATION ONLY INCLUDES LARGEST CONCURRENT LOAD.  
<sup>C</sup> LOAD SHALL BE PLACED ON UPS POWER

**BASIS OF DESIGN:**  
 SWITCHBOARD: SQ D POWER-STYLE QED-2 LINEUP  
 MAIN A, MAIN B, AND TIE BREAKERS: SQ D POWERPACT W/ ML 5.0P  
 480V DISTRIBUTION A, B: 480Y/277V I-LINE STYLE, 117" MIN. BREAKER MOUNTING SPACE ON EACH BPA AND BPB  
 208Y/120V DISTRIBUTION: SQ D NOOD BOLT-ON  
 SWBD AND PNLS: COPPER BUSSING  
 XFMRs: COPPER WINDINGS  
 UPS: APC SYMMETRA LX RACK-MOUNTED UPS WITH HARDWIRE INPUT AND OUTPUT, INTEGRAL AUTOMATIC AND MANUAL BYPASS CAPABILITY, MODBUS STATUS COMMUNICATION, N+1 MODULE REDUNDANCY  
 NOTES:  
 1. CONTRACTOR IS NOT REQUIRED TO USE BASIS OF DESIGN MANUFACTURER, BUT SHALL MATCH FEATURES AND PERFORMANCE.  
 2. ALL BREAKERS IN SWBDS BPA AND BPB SHALL EACH BE PROVIDED WITH INTEGRAL LOCKING MECHANISMS MEETING THE REQUIREMENTS OF NEC 110.25.



**BOILER PLANT ONE-LINE DIAGRAM**  
 SCALE: N.T.S.

**SHEET NOTES**

- ITEMS SHOWN WITH LIGHT LINEWEIGHT ARE EXISTING TO REMAIN, ITEMS SHOWN WITH BOLD LINEWEIGHTS ARE NEW.
- BRANCH CLASSIFICATION (PART NUMBER):  
 (EQUIP) EQUIPMENT  
 (NORM) NORMAL - BOILER
- WHERE NEW BREAKERS ARE USED TO EXISTING SWITCHGEAR, CONTRACTOR SHALL PROVIDE NEW LABEL, NEW TRIP SWITCHGEAR SCHEDULE, AND SHALL ADD TO MOCK BUS DISPLAY AS REQUIRED TO INDICATE NEW BREAKER (MATCH EXISTING MOCK BUS PRESENTATION).
- BREAKERS ON THIS SHEET ARE 3P UNLESS NOTED OTHERWISE.

**SHEET KEYNOTES**

- PROVIDE NEW DRAWOUT BREAKER IN AVAILABLE SPACE IN EXISTING GEAR. BREAKER SHALL BE 100% COMPATIBLE WITH EXISTING SWITCHGEAR COMPONENTS AND CONTROLS, 1600AF, 1000AT, EATON CUTLER HAMMER, DSII 616, 65KAC, LSI DIGITRIP 910 TRIP UNIT WITH GROUND FAULT ALARM (ALARM ONLY, NO TRIP).
- PROVIDE NEW DRAWOUT BREAKER IN AVAILABLE SPACE IN EXISTING GEAR. BREAKER SHALL BE 100% COMPATIBLE WITH EXISTING SWITCHGEAR COMPONENTS AND CONTROLS, 1600AF, 1000AT, FULLY ADJUSTABLE LSI TRIP UNIT, 65KAC MIN. (SQ D TYPE DS416, O.A.E.)
- PROVIDE TVSS BREAKER AS SIZED PER MANUFACTURER RECOMMENDATIONS, BUT NOT LESS THAN 30A.
- PROVIDE PANEL WITH INTEGRAL SPD.
- CONTRACTOR SHALL PROVIDE TEMPORARY POWER BYPASS PROVISIONS TO ACCOMPLISH EMSGR-ACA WORK. REFER TO SHEET EP603.
- CONTRACTOR SHALL COORDINATE UTILITY SHUTDOWN ON EQUIPMENT TO ACCOMPLISH NEW WORK.

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FINAL DESIGN  
 APPROVED FOR CONSTRUCTION

<b>CONSULTANTS:</b> [Blank]		<b>ENGINEER-OF-RECORD:</b> [Signature/Stamp]		<b>ARCHITECT/ENGINEERS:</b> <b>AKEA INC.</b> 3803 NW 98th Street, Suite B Gainesville, FL 32606 Phone: (352) 474-6124 Fax: (352) 553-4437 ODA: FL #26693 AKEA Project No. 083-14		<b>Drawing Title:</b> ELECTRICAL ONE-LINE DIAGRAM		<b>Project Title:</b> REPLACE BOILERS - FCA D, ENERGY AT THE MALCOM RANDALL VAMC		<b>Project Number:</b> 573-14-600		<b>Office of Construction and Facilities Management</b>	
<b>Revisions:</b> [Table with 2 columns: Revisions, Date]		<b>Approved:</b> Project Director		<b>Date:</b> MARCH 9, 2016		<b>Checked:</b> CUF		<b>Drawn:</b> KLL		<b>Drawing Number:</b> <b>EP601</b> 113 OF 127		<b>Department of Veterans Affairs</b>	