

INDEX	
SHEET NO.	SHEET CONTENT
1	GENERAL NOTES, SYMBOLS, REVISIONS
2	SHIP SERVICE & EMERGENCY SWITCHBOARD
3	208/120V PANELS – ENGINE ROOM A & B
4	208/120V PANELS – PILOT HOUSE & HOLD VENTILATION
5	208/120V PANELS – HVAC 1 & HVAC 2
6	EMERGENCY 208/120V PANELS – ENGINE ROOM & PILOT HOUSE
7	DC PANELS – ENGINE ROOM & EOS
8	DC PANELS – PILOT HOUSE

SYMBOLS LIST	
	<b>TRANSFER SWITCH</b> (NORMAL CONNECTION SHOWN) ABT – AUTOMATIC BUS TRANSFER MBT – MANUAL BUS TRANSFER X – PWR AVAILABLE INDICATION (LED)
	<b>CIRCUIT BREAKER</b> X – NUMBER OF POLES Y – CIRCUIT BREAKER FRAME SIZE Z – CIRCUIT BREAKER TRIP SETTING
	<b>CIRCUIT BREAKER W/ TRIP DEVICE</b> ST – SHUNT TRIP UV – UNDER VOLTAGE TRIP
	<b>GENERATOR</b>
	RS – RUN, STOP HOA – HAND, OFF, AUTO HLS – HIGH, LOW, STOP FOR – FORWARD, OFF, REVERSE LVP – LOW VOLTAGE PROTECTION LVR – LOW VOLTAGE RELEASE FNVR – FULL VOLTAGE NON-REVERSING SS – SOFT START RVNR – REDUCED VOLTAGE NON-REVERSING FVR – FULL VOLTAGE REVERSING VFD – VARIABLE FREQUENCY DRIVE NEMA SIZE <b>COMBINATION STARTER</b>
	<b>CONTROL DEVICES/FUNCTIONS</b> PB – PUSH-BUTTON PB/IL – PUSH-BUTTON, ILLUMINATED PS – PRESSURE SWITCH LS – LEVEL SWITCH FR – FIRE SHUTDOWN RELAY FS – FLOW SWITCH DS – DISCONNECT SWITCH TH – THERMOSTAT SC – SPEED CONTROL
	<b>DEM CONTROLLER</b> SUPPLIED/INTEGRAL WITH EQUIPMENT
	<b>CONTROLLER, LOW-VOLTAGE RELEASE EFFECT</b> MOUNTED ADJACENT TO EQUIPMENT
	<b>INDICATOR LIGHTS</b>
	<b>MOTOR</b>
	<b>SWITCH</b> NORMALLY CLOSED
	<b>SWITCH</b> NORMALLY OPEN
	<b>EQUIPMENT</b>
	<b>LIGHTING</b>
	<b>DUPLEX RECEPTACLE</b>
	<b>SHORE POWER RECEPTACLE</b>
	<b>JUNCTION BOX</b>
	<b>DC POWER SUPPLY</b>
	<b>SWITCHBOARD INSTRUMENT</b>
	<b>MOMENTARY SWITCH</b> NORMALLY CLOSED
	<b>SELECTION SWITCH</b>

- GENERAL NOTES – CONT'D**
- AVAILABLE FAULT CURRENT IS ESTIMATED AS 10 TIMES THE COMBINED MAXIMUM GENERATOR CURRENT PLUS 4 TIMES THE CONNECTED MOTOR LOAD.  
 GENERATOR CURRENT (1x150KW) 10 x 521A = 5210A  
 MOTOR CURRENT (EST 100KW) 4 x 246A = 984A  
 AVAILABLE FAULT CURRENT 6194A
  - CABLES HAVE BEEN DERATED FOR DOUBLE BANKING, HOWEVER, CABLES SHALL BE SINGLE BANKED WHEREVER PRACTICAL.
  - GROUND DETECTION AND INDICATION SHALL BE PROVIDED IN COMPLIANCE WITH SUBCHAPTER J REGULATIONS.
  - CABLES SHALL BE LABELED WITH PERMANENTLY PRINTED POLYOLEFIN OR EMBOSSED ALUMINUM CABLE TAGS PERMANENTLY ATTACHED TO THE CABLE BY BANDING. CABLES SHALL BE LABELED ON EACH SIDE OF EACH BULKHEAD AND DECK PENETRATION, AND AT EACH ELECTRICAL ENCLOSURE.
  - ALL NON-CURRENT CARRYING METAL EQUIPMENT SHALL BE EFFECTIVELY GROUNDED TO SHIP STRUCTURE. GROUNDING CONDUCTORS SHALL BE ADDED IN WAY OF ISOLATION MOUNTS, POURED CHOCKS, AND OTHER INSULATING FOUNDATIONS.
  - CONVENIENCE RECEPTACLES IN HEADS, CLEANING GEAR LOCKERS, THE VEHICLE SPACE, EXTERIOR, CREW GALLEY, MECHANICAL SPACES, AND OTHER SPACES PRESCRIBED BY USCG SHALL INCLUDE GROUND FAULT CIRCUIT INTERRUPTION PROTECTION.
  - THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING A CIRCUIT BREAKER COORDINATION STUDY, AND ADJUSTING CIRCUIT BREAKER TRIP RATINGS AS NECESSARY TO FACILITATE COORDINATION.
  - SINGLE CONDUCTOR CABLE SHALL NOT BE USED FOR AC POWER DISTRIBUTION.
  - CABLES SHOWN ARE SIZED PER IEEE-45 (2002) TABLE 25. CABLE SIZING IS BASED UPON 90 DEGREE C CONDUCTOR TEMPERATURE, 45 DEGREE C AMBIENT TEMPERATURE OUTSIDE OF CLASS A MACHINERY SPACES, AND 50 DEGREE C AMBIENT TEMPERATURE WITHIN CLASS A MACHINERY SPACES.
  - PANEL P205 TO BE PROVIDED WITH SHUNT TRIP FOR VENTILATION SHUTDOWN. ONE MANUAL ACTIVATION SWITCH IS TO BE LOCATED IN THE PILOT HOUSE AND ONE AUTOMATIC SWITCH IS TO BE CONNECTED TO THE ENGINE ROOM FIRE SUPPRESSION SYSTEM.

REVISION HISTORY					
REV	ZONE	DESCRIPTION	DWN	DATE	APVD

- GENERAL NOTES**
- VESSEL TO BE CONSTRUCTED IN ACCORDANCE WITH 46 CFR SUBCHAPTER H REGULATIONS AND IEEE-45 (2002).
  - SWITCHBOARD INTERLOCKS SHALL PREVENT PARALLELING OF POWER SUPPLIES.
  - PENETRATIONS AT WATERTIGHT AND FIRE RATED BULKHEADS AND DECKS, AND AT ELECTRICAL ENCLOSURES, SHALL BE SEALED WITH APPROVED STUFFING TUBES OR MULTI-CABLE TRANSITS (MCT). CABLES PASSING THROUGH OTHER PENETRATIONS SHALL BE SECURED AND PROTECTED FROM CHAFING.
  - IN GENERAL, EQUIPMENT SHALL BE RATED AS FOLLOWS:  
 MECHANICAL SPACES: 1P22 OR NEMA 12  
 FINISHED INTERIORS: 1P20 OR NEMA 1  
 EXTERIOR, VEHICLE DK NON-LIGHTING: 1P56 OR NEMA 4X  
 EXTERIOR, VEHICLE DK LIGHTING: 1P55 OR NEMA 4X
  - POWER DISTRIBUTION CABLE SHALL MEET THE REQUIREMENTS OF IEEE-1580 (2010). CABLES SHALL USE TYPE LSX OR LSE INSULATION AND TYPE L OR TPO JACKETING, UNLESS REQUIRED BY USCG, CABLE SHALL BE UNARMORED AND UNSHIELDED. CABLE TYPE DESIGNATIONS USE THE FOLLOWING ABBREVIATIONS:  
 S – SINGLE CONDUCTOR  
 D – TWO CONDUCTOR  
 T – THREE CONDUCTOR  
 F – FOUR CONDUCTOR  
 NUMBERS IN CABLE TYPE DESIGNATION INDICATE CONDUCTOR SIZE IN CIRCULAR MILS. CABLE MEETING THE SPECIFICATIONS OF MIL-C-24643 MAY BE SUBSTITUTED.

- REFERENCES**
- 16101-200-832-1 TECHNICAL SPECIFICATION
  - 16101-200-300-1 AC AND DC LOADS ANALYSIS
  - 16101-200-422-1 NAVIGATION LIGHT ARR. AND BLOCK DIAGRAM



**Elliott Bay Design Group**  
 North Carolina, PLLC

CLIENT: NORTH CAROLINA D.O.T.  
 RALEIGH, NORTH CAROLINA

PROJECT: NEW RIVER CLASS FERRY



TITLE: AC AND DC ELECTRICAL ONE LINE DIAGRAM

SIZE: D DWG NO.: 16101-200-320-1 REV: -

SCALE: NONE FILE NAME: 16101-200-320-1- SHEET 1 OF 8

DWN: NUB MOD: CD: TMH APVD: TMH APVD DATE: 07/22/17

6

5

4

3

2

1

D

C

B

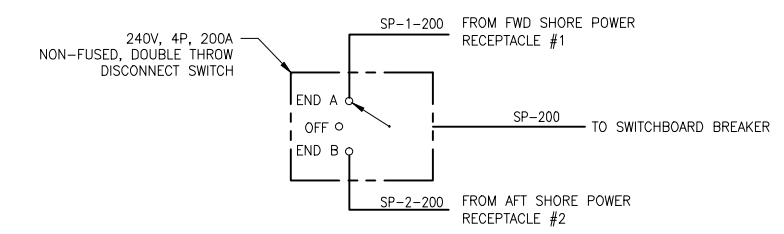
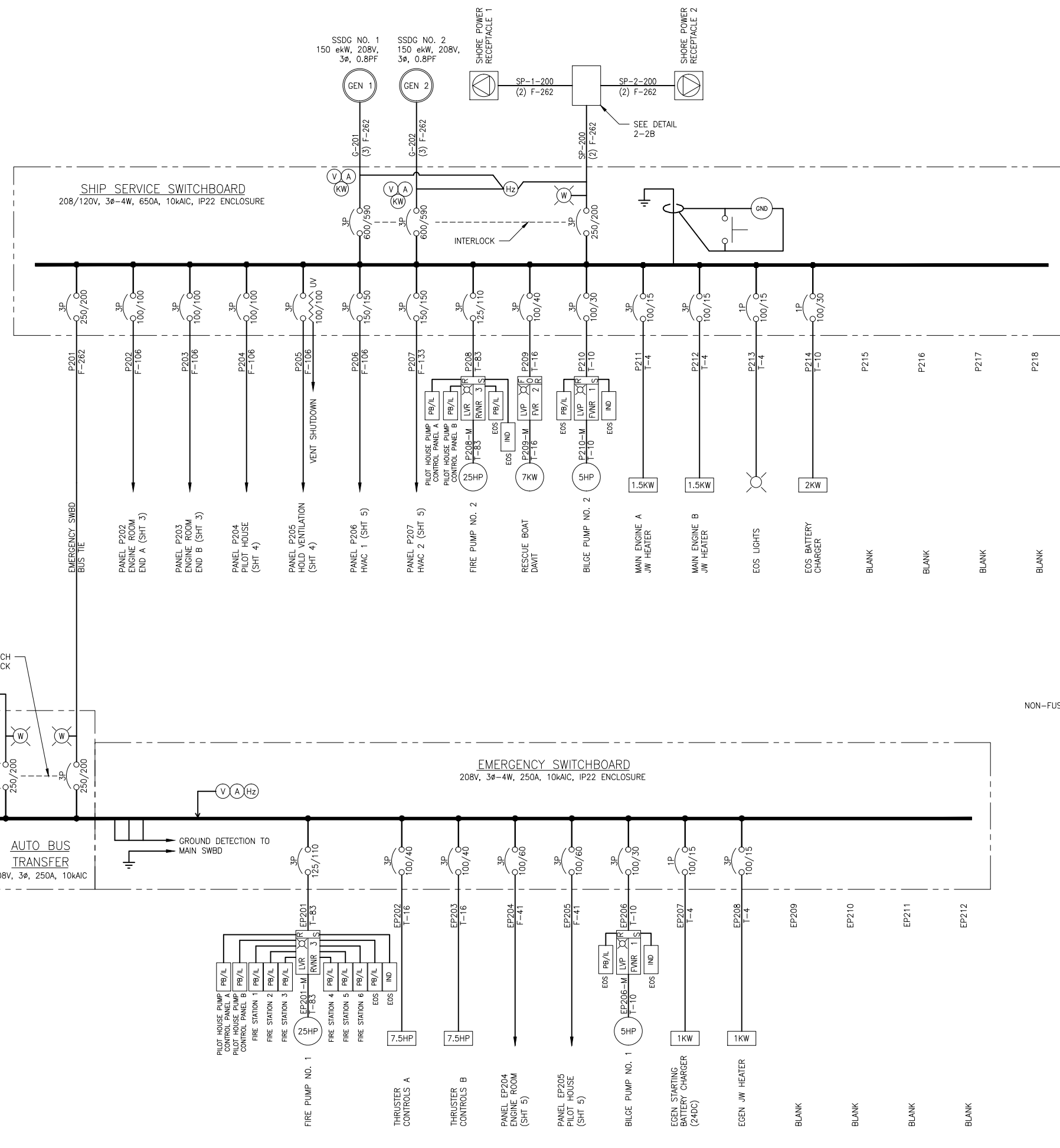
A

D

C

B

A



6

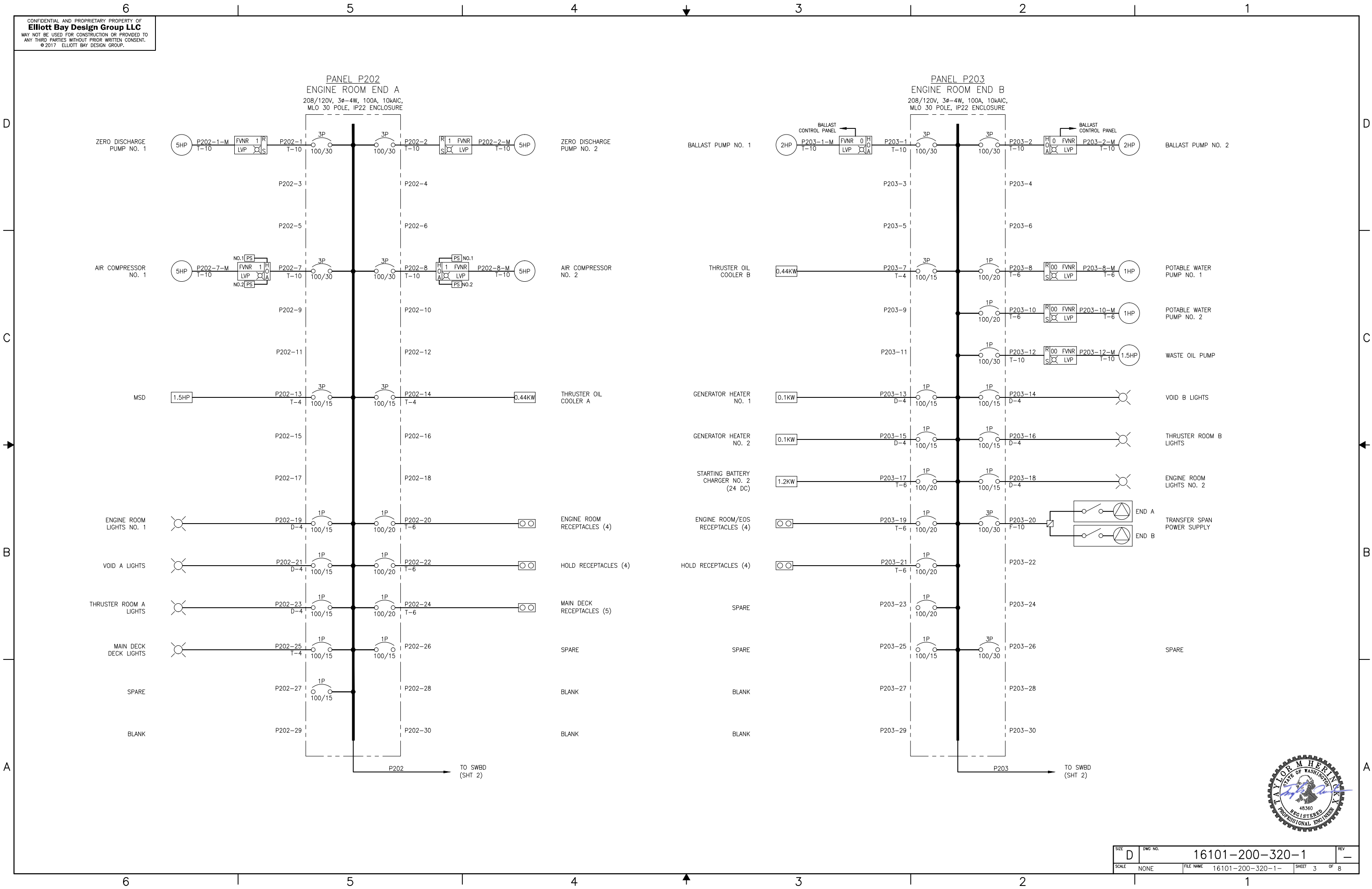
5

4

3

2

1



6

5

4

3

2

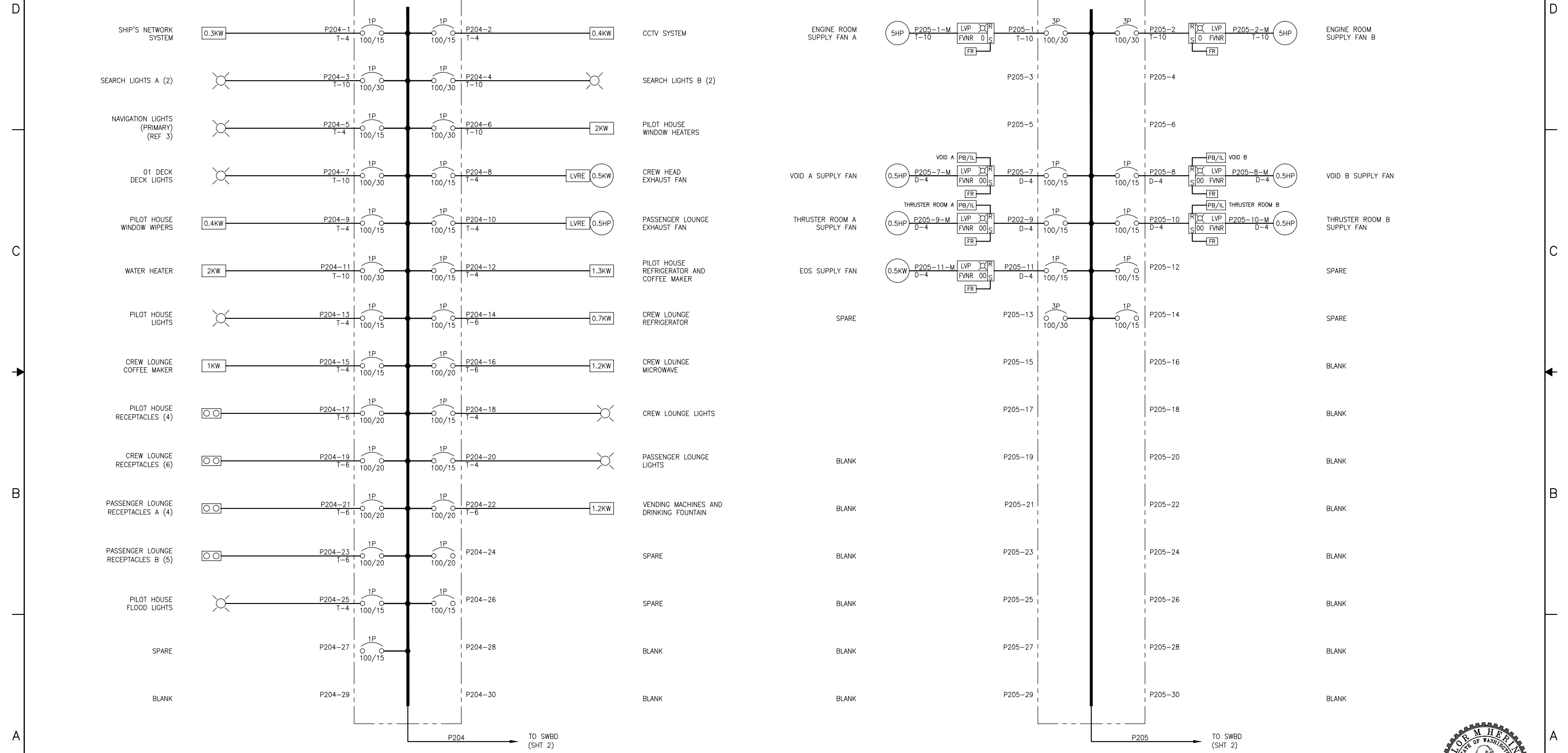
1

**PANEL P204  
 PILOT HOUSE**

208/120V, 3Ø-4W, 100A, 10kAIC,  
 MLO 30 POLE, IP20 ENCLOSURE

**PANEL P205  
 HOLD VENTILATION**

208/120V, 3Ø-4W, 100A, 10kAIC,  
 MLO 30 POLE, IP22 ENCLOSURE



P204 TO SWBD (SHT 2)

P205 TO SWBD (SHT 2)



6

5

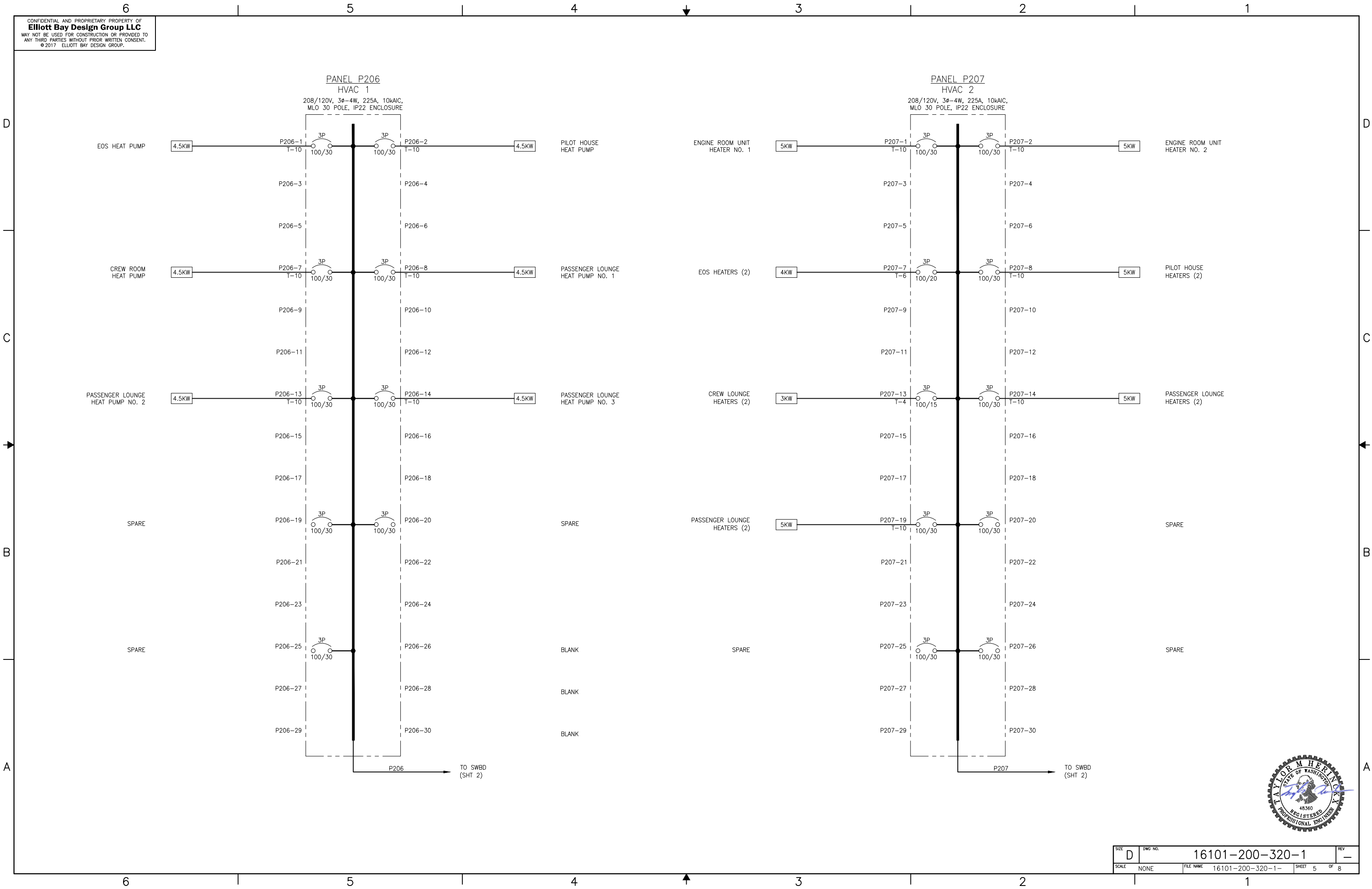
4

3

2

1

CONFIDENTIAL AND PROPRIETARY PROPERTY OF  
**Elliott Bay Design Group LLC**  
 MAY NOT BE USED FOR CONSTRUCTION OR PROVIDED TO  
 ANY THIRD PARTIES WITHOUT PRIOR WRITTEN CONSENT.  
 © 2017 ELLIOTT BAY DESIGN GROUP.



SIZE	D	DWG NO.	16101-200-320-1	REV	-
SCALE	NONE	FILE NAME	16101-200-320-1-	SHEET	5 OF 8

6

5

4

3

2

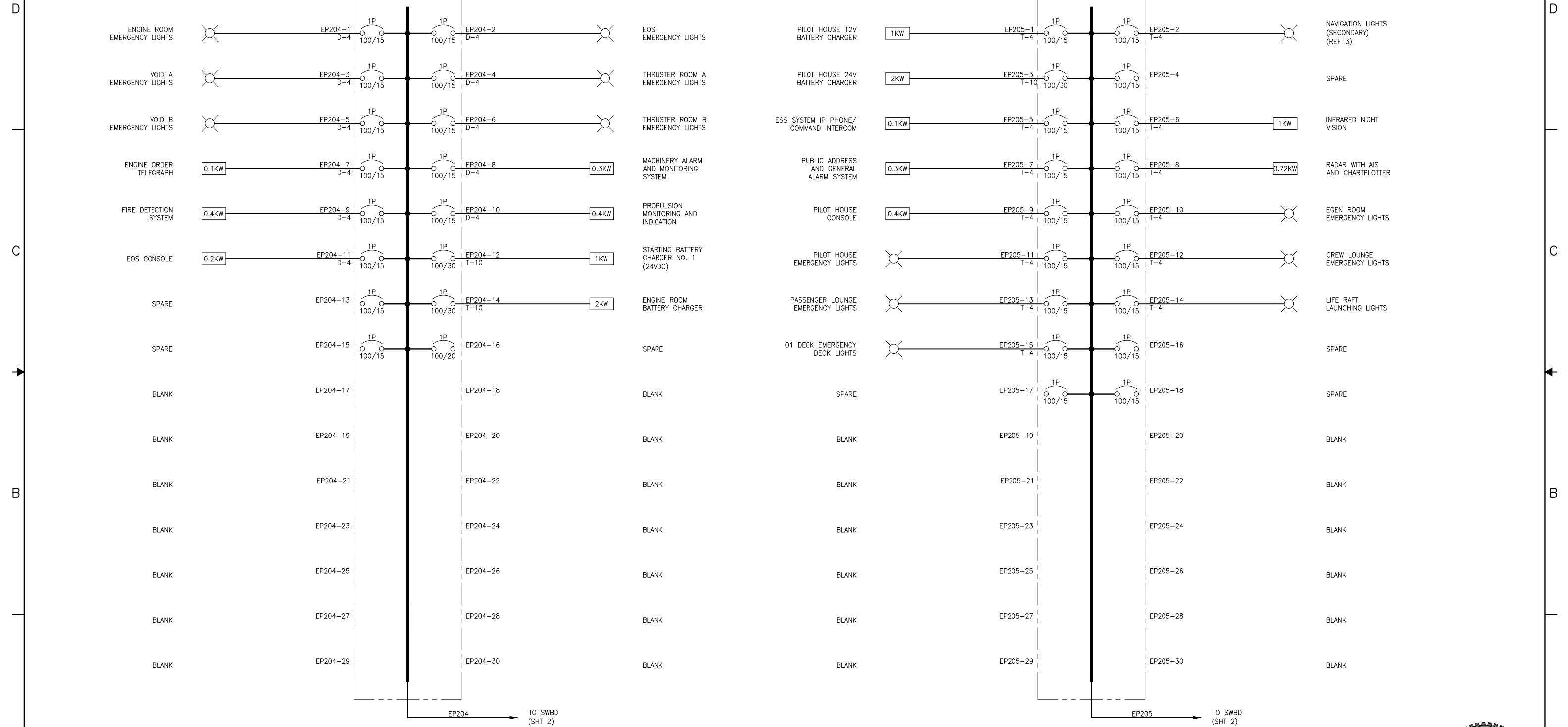
1

**PANEL EP204  
 ENGINE ROOM**

208/120V, 3Ø-4W, 100A, 10kAIC,  
 MLO 30 POLE, IP22 ENCLOSURE

**PANEL EP205  
 PILOT HOUSE**

208/120V, 3Ø-4W, 100A, 10kAIC,  
 MLO 30 POLE, IP22 ENCLOSURE



D

C

B

A

D

C

B

A



6

5

4

3

2

1

6

5

4

3

2

1

D

C

B

A

D

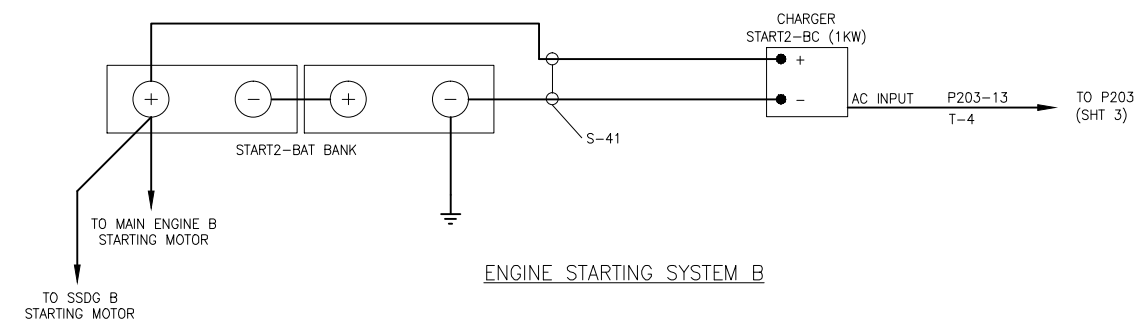
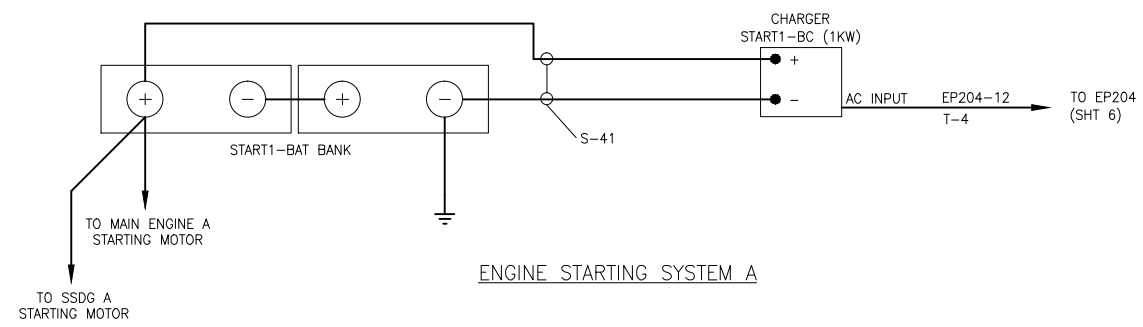
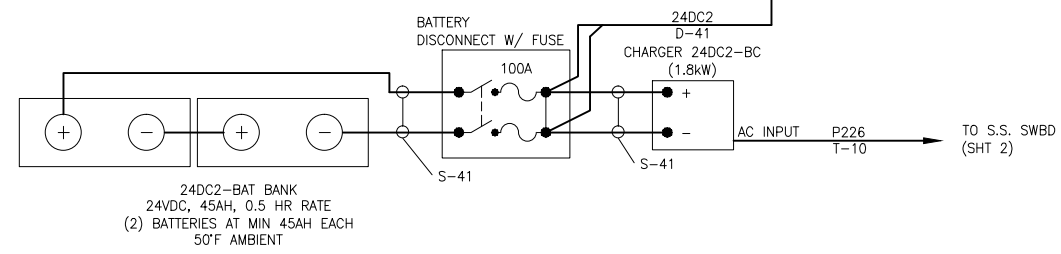
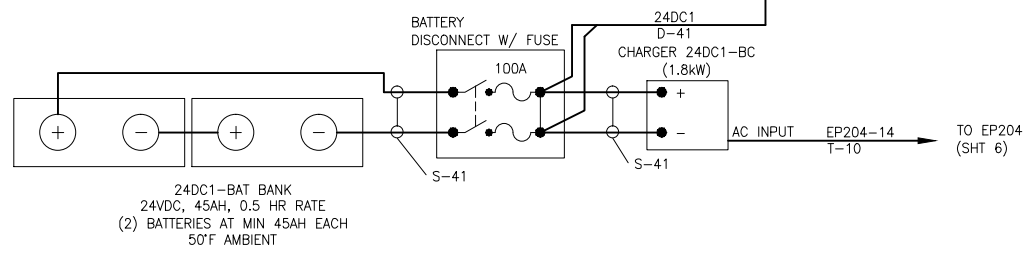
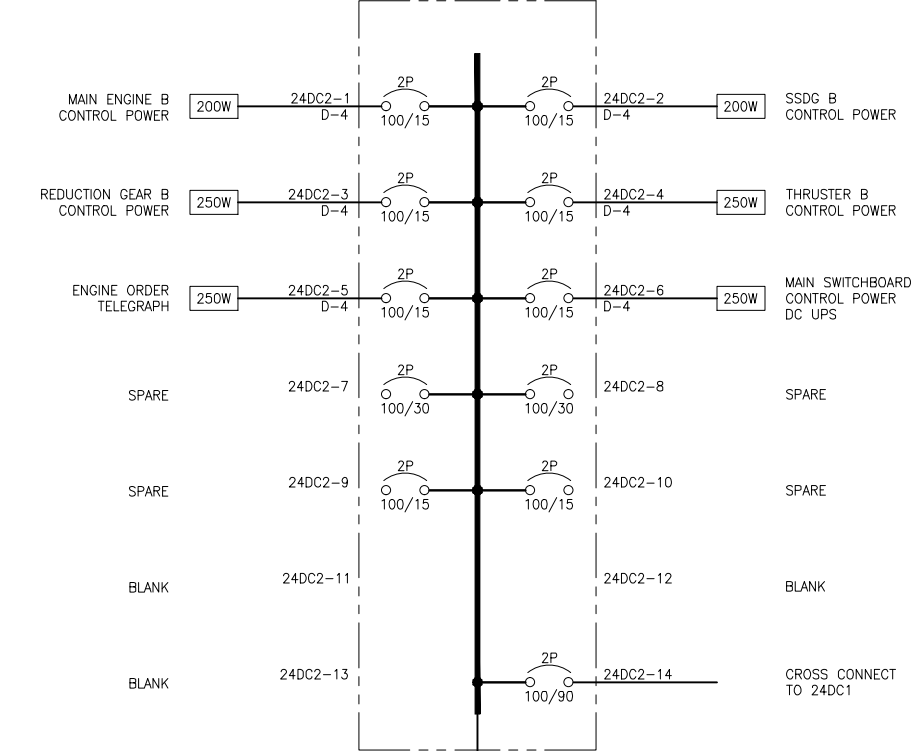
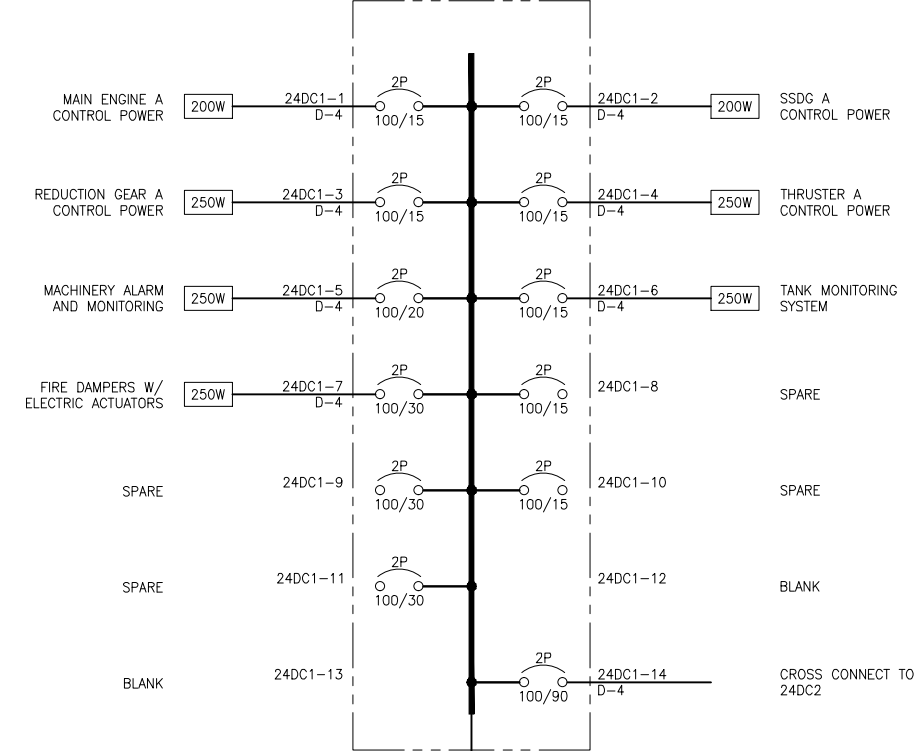
C

B

A

**PANEL 24DC1**  
 24VDC DISTRIBUTION  
 ENGINE ROOM  
 24VDC, 2W, 100A, 10kAIC, MLO  
 30 POLE, NEMA-12 ENCLOSURE

**PANEL 24DC2**  
 24VDC DISTRIBUTION  
 EOS  
 24VDC, 2W, 100A, 10kAIC, MLO  
 30 POLE, NEMA-1 ENCLOSURE



6

5

4

3

2

1

6

5

4

3

2

1

D

C

B

A

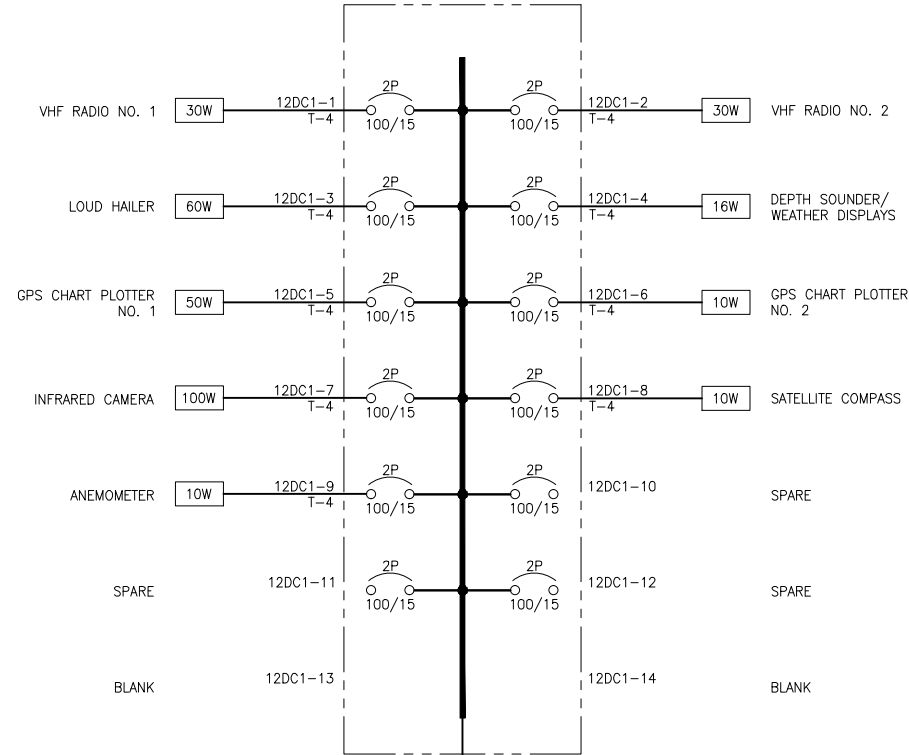
D

C

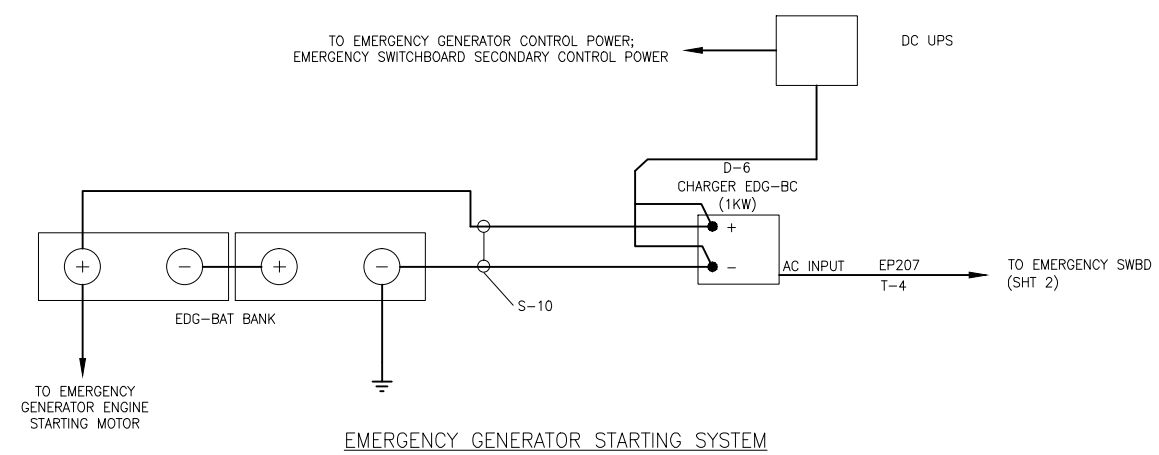
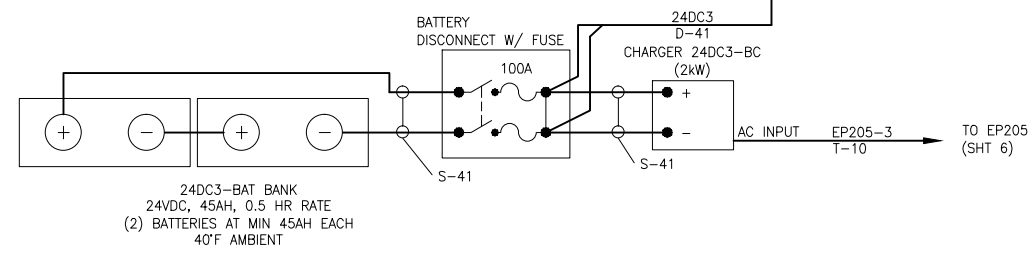
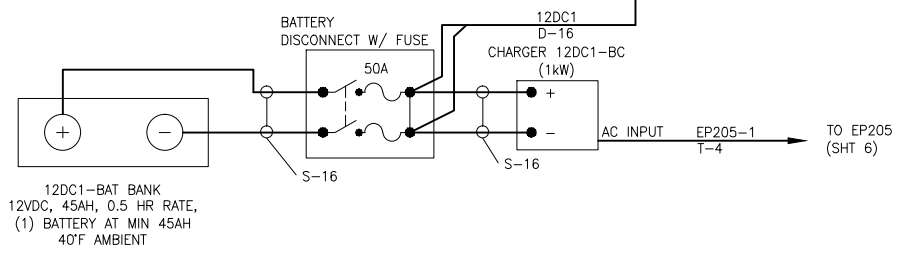
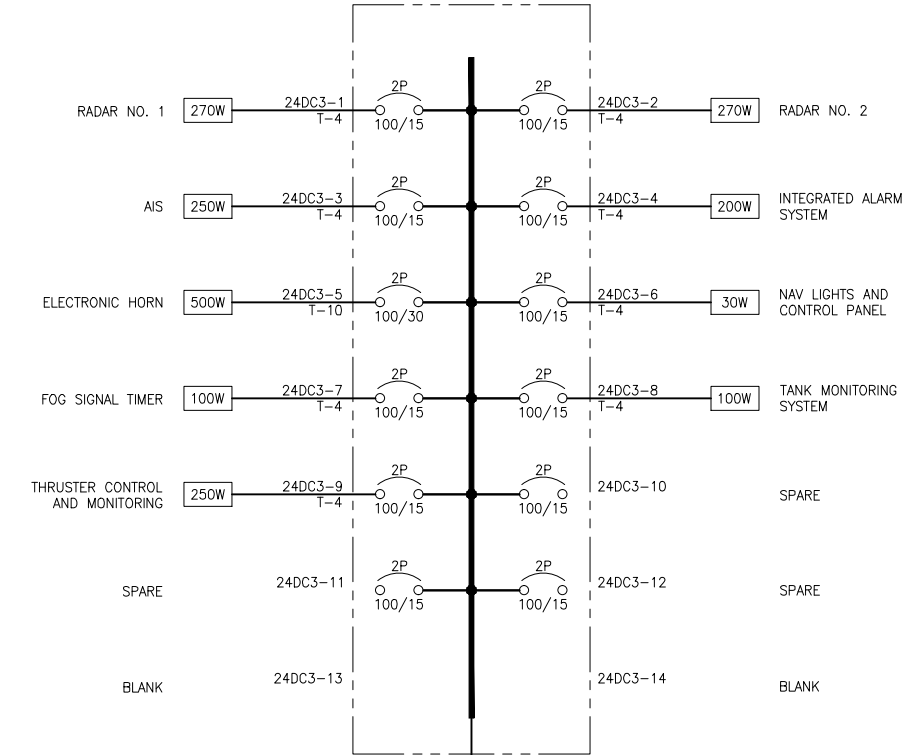
B

A

**PANEL 12DC1**  
 12VDC DISTRIBUTION  
 PILOTHOUSE  
 12VDC, 2W, 100A, 10kAIC, MLO  
 30 POLE, NEMA-12 ENCLOSURE



**PANEL 24DC3**  
 24VDC DISTRIBUTION  
 PILOTHOUSE  
 24VDC, 2W, 100A, 10kAIC, MLO  
 30 POLE, NEMA-1 ENCLOSURE



6

5

4

3

2

1