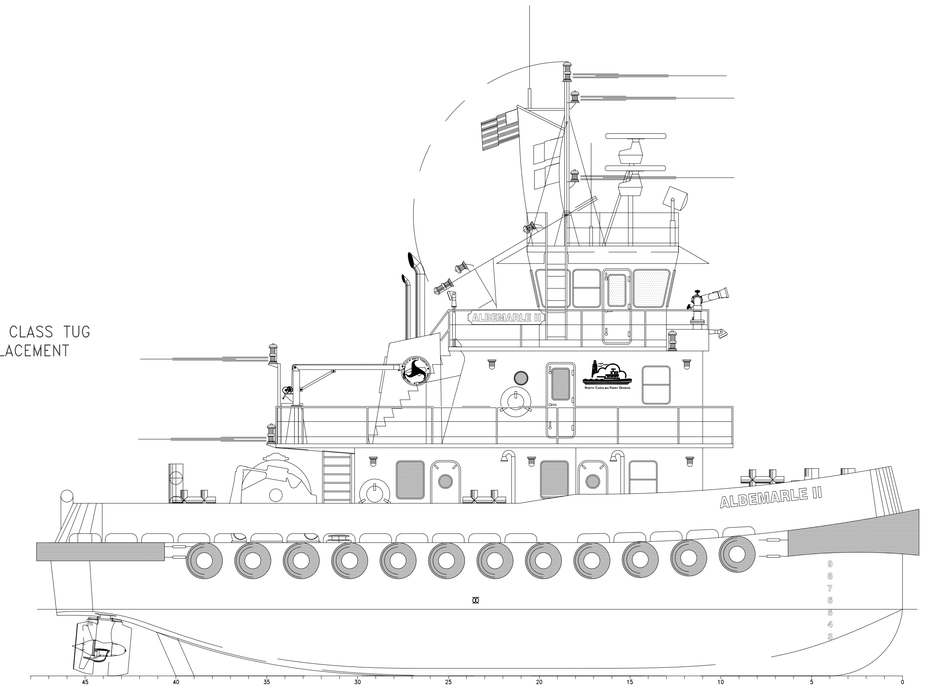
This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

VESSEL NAME:	ALBEMARLE II
CONTRACT NO.:	C204260
TIP NUMBER:	F-5703A
WBS NUMBER:	47256.1.1
PROJECT:	Z-DRIVE SOUND CLASS TUG ALBEMARLE REPLACEMENT

VESSEL PARTICULARS

LENGTH OVERALL HULL	70'-6"
BEAM - MOLDED	30'-0"
DEPTH AT SIDE	11'-0"
LIGHTSHIP DISPLACEMENT	161 LT
FULL LOAD DISPLACEMENT	215 LT



OUTBOARD PROFILE

LIST OF DRAWINGS:

	DRAWING NUMBER:	DRAWING TITLE:
1.	17-1372-100	GENERAL ARRANGEMENTS
2.	17-1372-101	LINESPLAN
3.	17-1372-110	BOTTOM & SIDESHELL STRUCTURAL DETAILS
4.	17-1372-117	TRANSVERSE FRAME STRUCTURAL DETAILS
5.	17-1372-120	INBOARD STRUCTURAL DETAILS
6.	17-1372-121	HULL W.T. FLATS & BULKHEADS STRUCTURAL DETAILS
7.	17-1372-122	TYPICAL STRUCTURAL SECTION
8.	17-1372-131	MAIN DECK STRUCTURAL DETAILS
9.	17-1372-132	2ND DECK STRUCTURAL DETAILS
10.	17-1372-133	3RD DECK STRUCTURAL DETAILS
11.	17-1372-152	MAIN DECK DECKHOUSE BULKHEADS STRUCTURAL DETAILS
12.	17-1372-153	2ND DECK DECKHOUSE BULKHEADS STRUCTURAL DETAILS
13.	17-1372-154	PILOTHOUSE STRUCTURAL DETAILS
14.	17-1372-167	HATCHES & MANHOLES SCHEDULE
15.	17-1372-171	MAST DETAILS
16.	17-1372-182	ENGINE GIRDER DETAILS
17.	17-1372-200	MACHINERY ARRANGEMENTS
18.	17-1372-256	ENGINE & GENSET COOLING SYSTEM DETAILS
19.	17-1372-259	ENGINE & GENSET EXHAUST DETAILS
20.	17-1372-261	FUEL OIL PIPING DETAILS

	DRAWING NUMBER:	DRAWING TITLE:
21.	17-1372-264	DIRTY OIL PIPING DETAILS
22.	17-1372-265	DECK MACHINERY HYDRAULIC SYSTEM DETAILS
23.	17-1372-320	ELECTRICAL ONE-LINE DIAGRAM
24.	17-1372-331	POWERDECK WIRING DETAILS
25.	17-1372-422	LIGHTING BLOCK DIAGRAM
26.	17-1372-506	VENTS & FILLS
27.	17-1372-514	HVAC SYSTEM
28.	17-1372-521	BILGE & FIREMAIN PIPING DETAILS
29.	17-1372-528	SEWAGE PIPING DETAILS
30.	17-1372-533	POTABLE WATER PIPING
31.	17-1372-551	COMPRESSED AIR SYSTEM DETAILS
32.	17-1372-600	BULWARKS STRUCTURAL DETAILS
33.	17-1372-612	RAILS & STANCHIONS STRUCTURAL DETAILS
34.	17-1372-622	BELOWDECKS WALKING FLAT STRUCTURAL DETAILS
35.	17-1372-624	DOOR SCHEDULE
36.	17-1372-625	WINDOW SCHEDULE
37.	17-1372-635	INSULATION SCHEDULE
38.	17-1372-655	CREW, GALLEY, STATEROOMS & STATEROOMS
39.	17-1372-680	LIFE, EMERGENCY & FIRE-FIGHTING EQUIPMENT
40.	17-1372-684	FENDERING DETAILS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

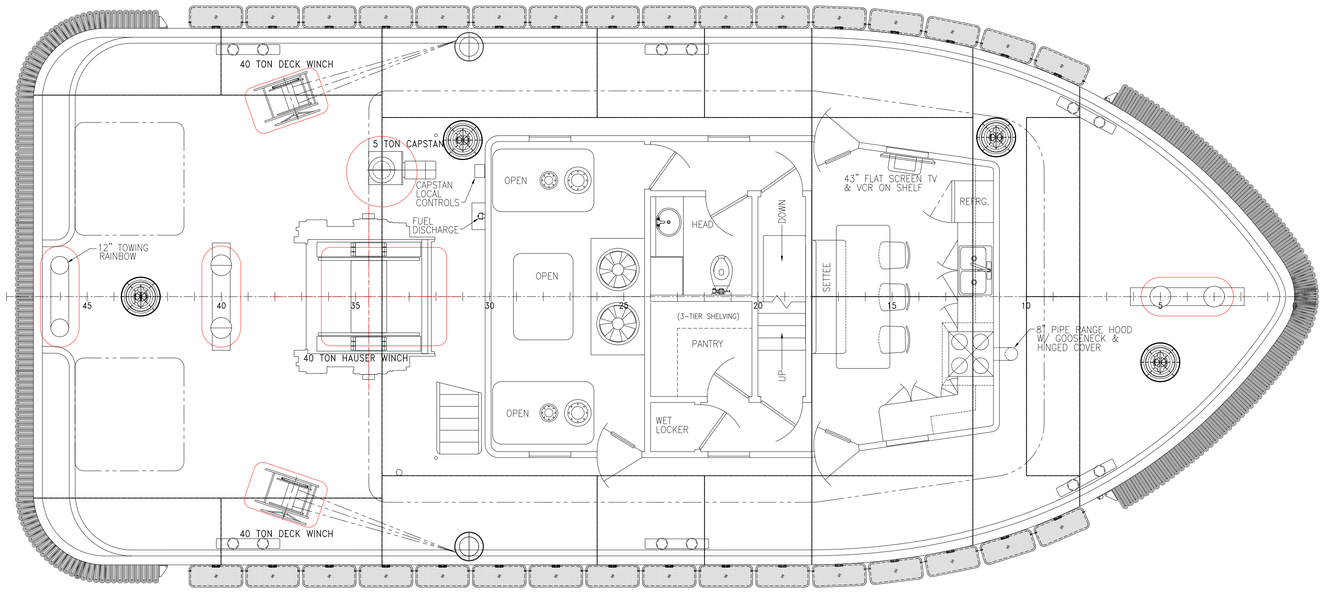
Title: 70.5'x30'x11' NCDOT TOWBOAT

COVER PAGE

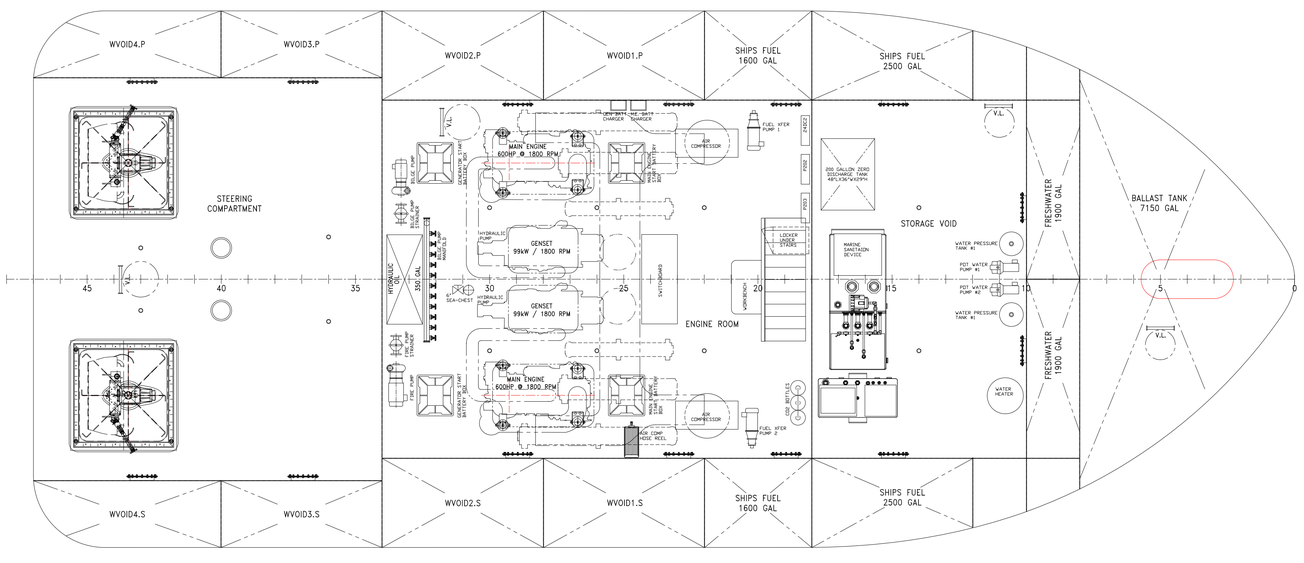
Dwg. No. 17-1372-001
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: OCTOBER 16, 2018
Checked By:
Date:
App'd By:
Scale: NONE
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")



MAIN DECK ARRANGEMENTS



HOLD ARRANGEMENTS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

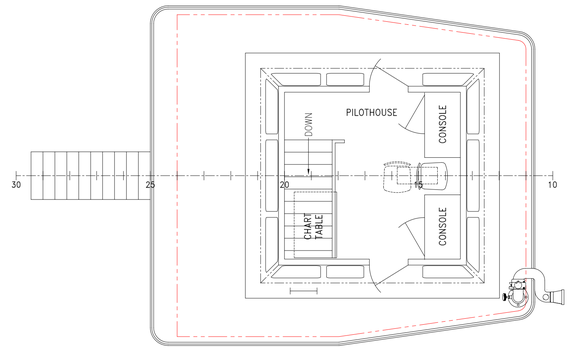
Title: 70.5'x30'x11' NCDOT TOWBOAT

GENERAL ARRANGEMENTS
HOLD & MAIN DECK

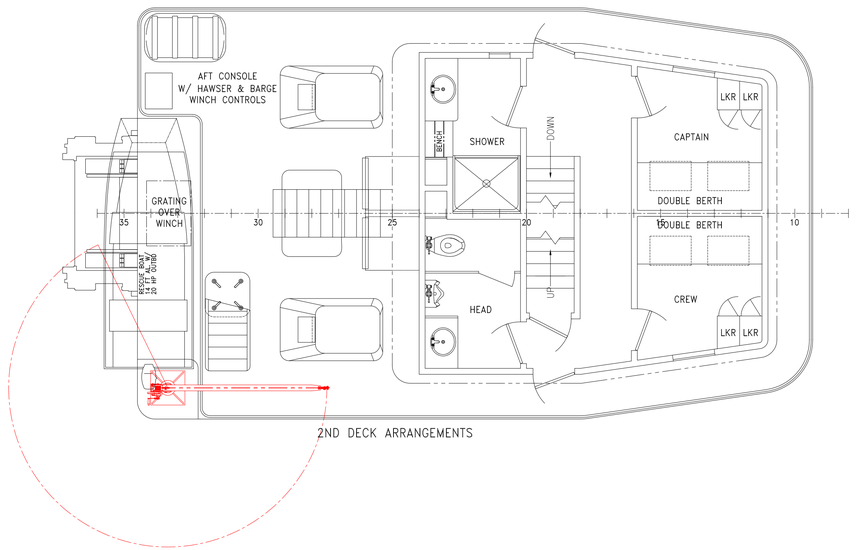
Dwg. No. 17-1372-100
Alt. No. 1
Sht. 1 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/4" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



3RD DECK ARRANGEMENTS



2ND DECK ARRANGEMENTS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

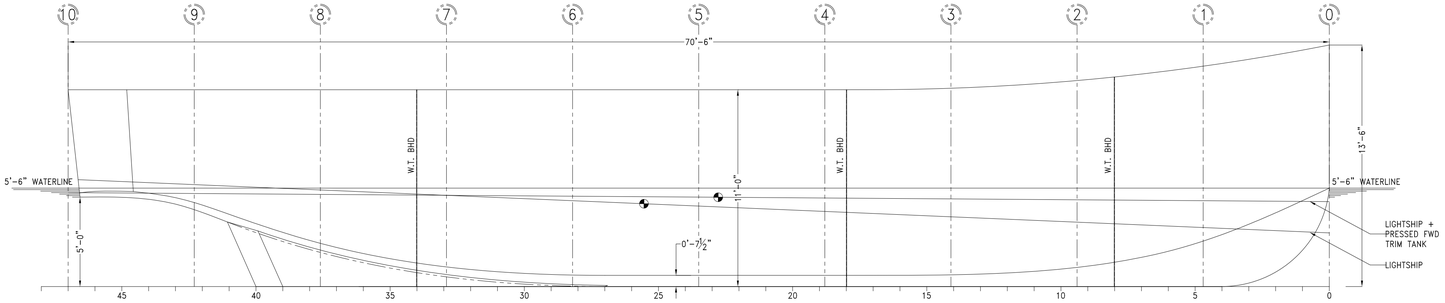
Title: 70.5'x30'x11' NCDOT TOWBOAT

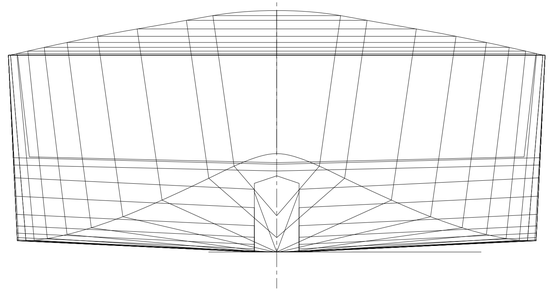
GENERAL ARRANGEMENTS
2ND & 3RD DECKS

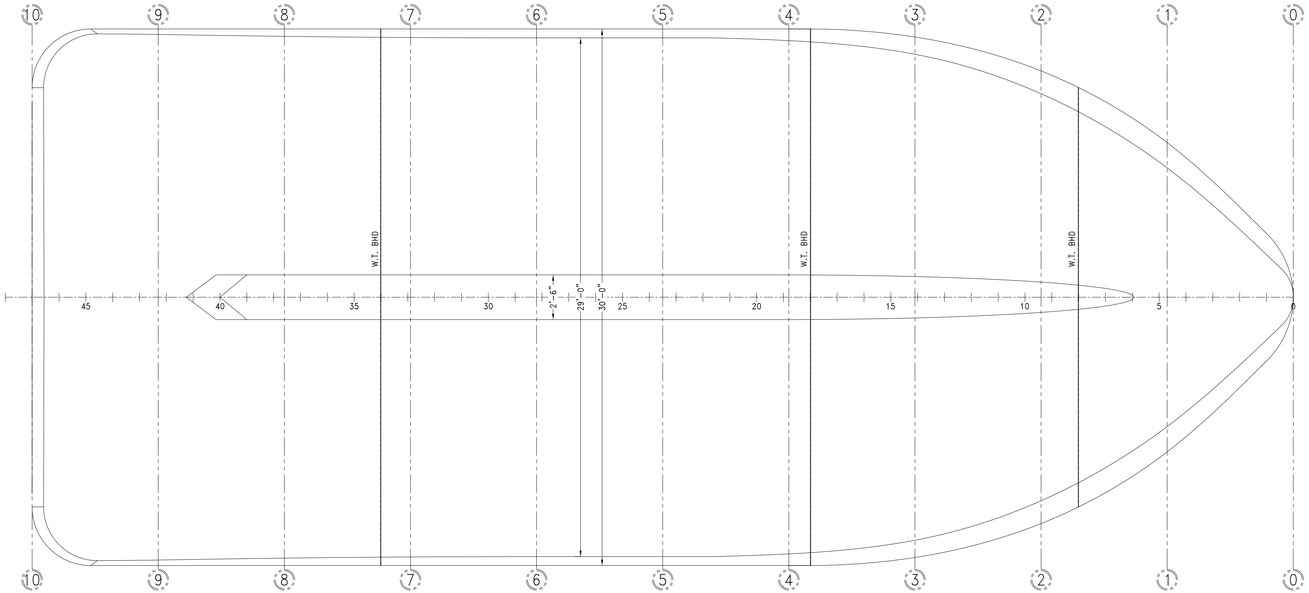
Dwg. No. 17-1372-100
Alt. No. 1
Sht. 2 of 3

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/4" = 1'-0"
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")







VESSEL PARTICULARS

LENGTH OVERALL HULL	70'–6"
BEAM – MOLDED	30'–0"
DEPTH AT SIDE	11'–0"
LIGHTSHIP DISPLACEMENT	161 LT
FULL LOAD DISPLACEMENT	215 LT

DRYDOCKING

–KEEL BLOCKS @ 6'–0" CENTERS UNDER FRAMING
–CHINE BLOCKS AT ALL XVERSE BHDS @ FRS 8, 18 & 34
–KEEL & CHINE BLOCKS SHALL BE MINIMUM 2'x2' PADS OF HARDWOOD OR COMPOSITE MATERIAL

MINIMUM AREA OF HULL BLOCKING = 48 SQ. FT

TABLE OF OFFSETS (FEET–INCHES–EIGHTHS)	POINT 1		POINT 2		POINT 3		POINT 4		POINT 5		POINT 6	
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT
FRAME 1	0–0–0	2–0–3	2–4–5	4–9–5	3–6–7	13–2–5	0–0–0	13–2–5				
FRAME 2	0–0–0	0–9–5+	3–9–4+	4–1–3+	5–0–4+	12–11–3+	0–0–0	12–11–3+				
FRAME 3	0–0–0	0–2–2+	5–1–6	3–5–6+	6–5–6	12–8–3+	0–0–0	12–8–3+				
FRAME 4	0–0–0	0–0–0	6–4–7+	2–10–6+	7–9–5	12–5–5	0–0–0	12–5–5				
FRAME 6	0–0–0	0–0–0	0–1–3+	0–0–0	8–7–1+	1–11–5+	10–0–2	12–0–6	0–0–0	12–0–6		
FRAME 8	0–0–0	0–0–0	0–8–0+	0–0–0	10–4–3	1–4–2+	11–8–5	11–8–5	0–0–0	11–8–5		
FRAME 10	0–0–0	0–0–0	0–10–7	0–0–0	11–8–5	0–11–5+	12–11–7+	11–5–2+	0–0–0	11–5–2+		
FRAME 12	0–0–0	0–0–0	1–0–5+	0–0–0	12–9–7	0–9–1	13–10–7+	11–2–6+	0–0–0	11–2–6+		
FRAME 14	0–0–0	0–0–0	1–1–7	0–0–0	13–6–5+	0–7–7	14–6–2+	11–1–0+	0–0–0	11–1–0+		
FRAME 16	0–0–0	0–0–0	1–2–5	0–0–0	14–0–1+	0–7–4	14–10–4+	11–0–1+	0–0–0	11–0–1+		
FRAME 18	0–0–0	0–0–0	1–2–7+	0–0–0	14–0–1+	0–7–4	14–10–4+	11–0–1+	0–0–0	11–0–1+		
FRAME 20	0–0–0	0–0–0	1–3–0	0–0–0	14–5–1	0–7–4	15–0–0	11–0–0	0–0–0	11–0–0		
FRAME 22	0–0–0	0–0–0	1–3–0	0–0–0	14–6–0	0–7–4	15–0–0	11–0–0	0–0–0	11–0–0		
FRAME 24	0–0–0	0–0–0	1–3–0	0–0–0	14–6–0	0–7–4	15–0–0	11–0–0	0–0–0	11–0–0		
FRAME 26	0–0–0	0–0–0	1–3–0	0–0–0	14–6–0	0–7–4	15–0–0	11–0–0	0–0–0	11–0–0		
FRAME 28	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	0–0–6+	14–6–0	0–7–4	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 30	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	0–2–2	14–6–0+	0–8–6+	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 32	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	0–5–1+	14–6–1+	0–11–3+	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 34	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	0–9–7	14–6–3	1–3–12	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 36	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	1–4–4	14–6–5+	1–10–1	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 38	0–0–0	0–0–0	1–3–0	0–0–0	1–3–0	2–1–3	14–7–1	2–6–7+	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 40	0–0–0	0–0–0	1–3–0	2–11–1+	1–3–0	3–0–5+	14–7–5+	3–6–1+	15–0–0	11–0–0	0–0–0	11–0–0
FRAME 42	0–0–0	4–1–5+	14–8–2	4–6–5+	15–0–0	11–0–0	0–0–0	11–0–0				
FRAME 44	0–0–0	4–10–4	14–8–5	5–2–4+	15–0–0	11–0–0	0–0–0	11–0–0				
FRAME 46	0–0–0	4–11–7+	13–9–7+	5–3–6+	14–5–5+	11–0–0	0–0–0	11–0–0				

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399–3673
Fax: (904) 399–1522
info@dejongandlebet.com

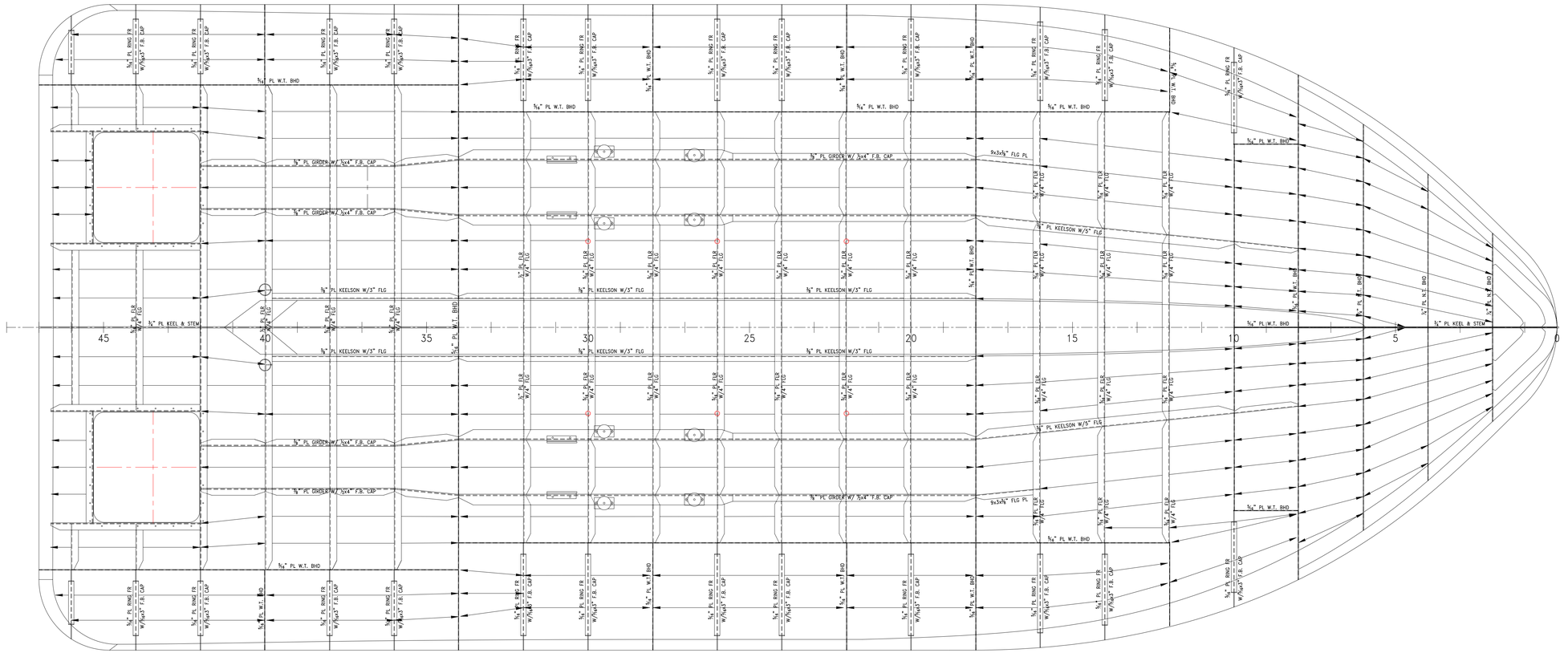
Title: 70.5'x30'x11' NCDOT TOWBOAT

LINESPLAN

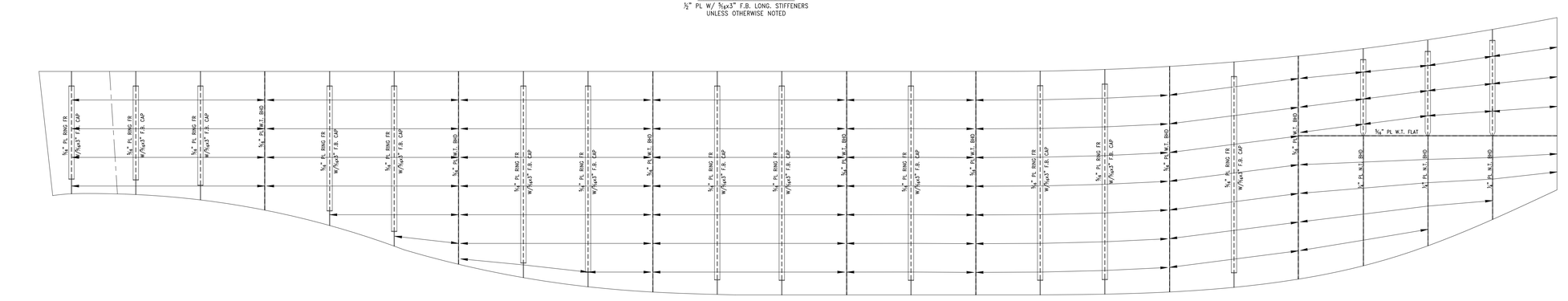
Dwg. No. 17–1372–101
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ¼" = 1'–0"
ABS App'l: USCG App'l.:

ANSI–D (24"x36")



BOTTOMSHELL STRUCTURAL PLAN
½" PL W/ 5½x3" F.B. LONG. STIFFENERS
UNLESS OTHERWISE NOTED



SIDESHELL STRUCTURAL PLAN
½" PL W/ 5½x3" F.B. LONG. STIFFENERS
UNLESS OTHERWISE NOTED
PORT SIDE SHOWN LKD OUTBD
STBD SIMILAR; OPP. HAND

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part without the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

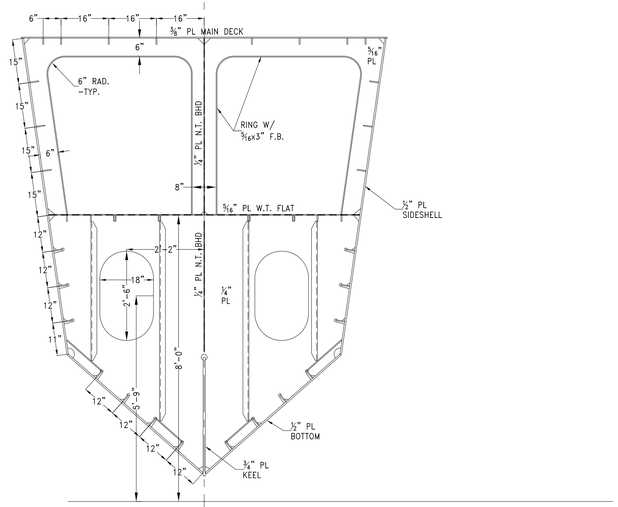
Title: 70.5'x30'x11' NCDOT TOWBOAT

BOTTOM & SIDESHELL STRUCTURAL DETAILS

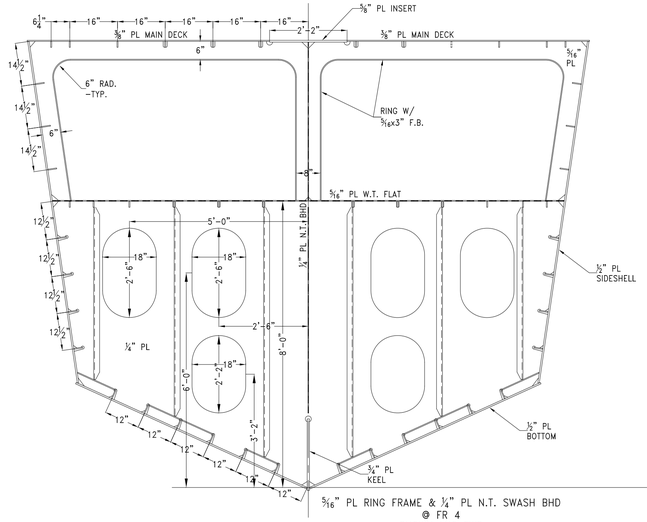
Dwg. No. 17-1372-110
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l.:
USCG App'l.:

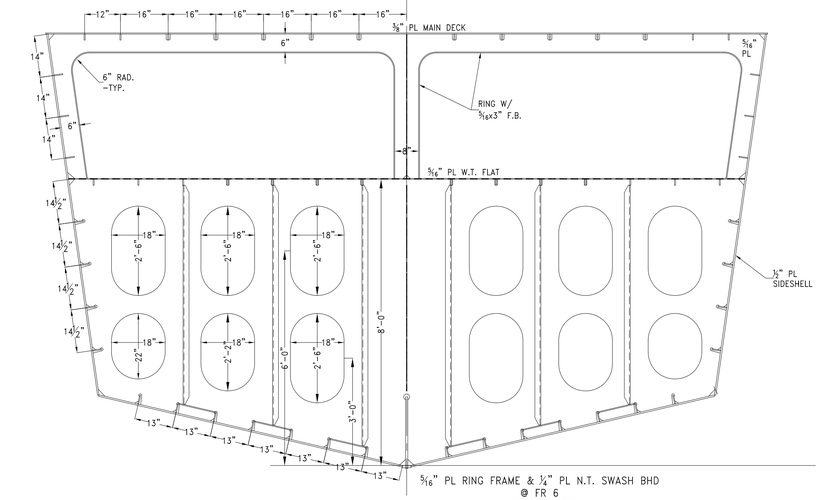
WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER



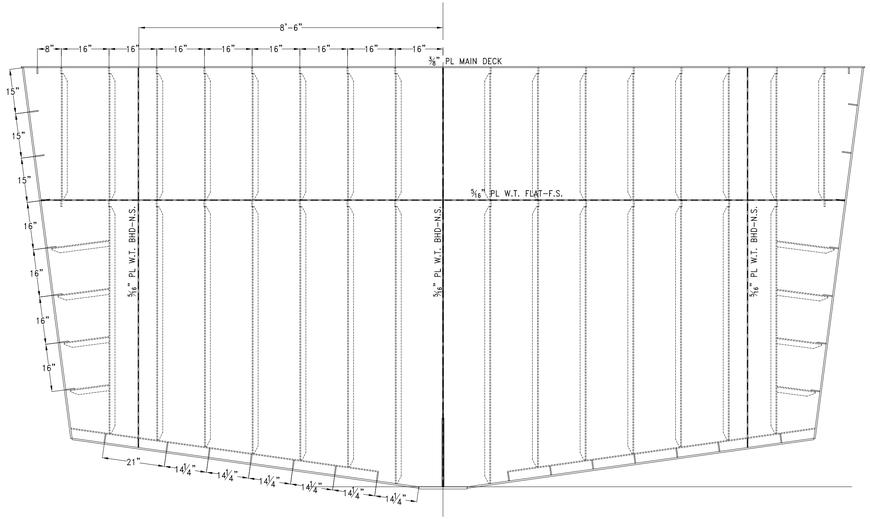
5/16" PL RING FRAME & 1/4" PL N.T. SWASH BHD
@ FR 2
SHOWN LKG FWD



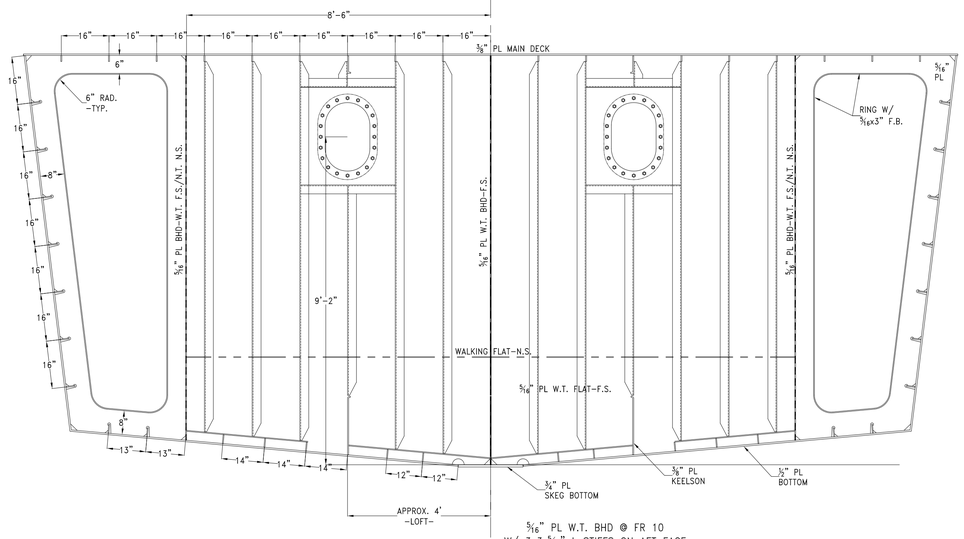
5/16" PL RING FRAME & 1/4" PL N.T. SWASH BHD
@ FR 4
SHOWN LKG FWD



5/16" PL RING FRAME & 1/4" PL N.T. SWASH BHD
@ FR 6
SHOWN LKG FWD



5/16" PL W.T. BHD @ FR 8
W/ 3x2x5/16" L STIFFS ON FWD FACE
SHOWN LKG FWD



5/16" PL W.T. BHD @ FR 10
W/ 3x3x5/16" L STIFFS ON AFT FACE
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 2 1/2 @ EACH END	1/4 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP.	3/16 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP.	1/4 3-12	LONG. STIFFENERS TO HULL
	1/4 1/4 3-12	W.T. BHDS TO SHELL PLATING
	1/4 1/4 3-10	N.T. BHDS TO SHELL PLATING
DOUBLE CONTINUOUS		ALL STRUCTURE IWO ENGINE GIRDERS FRAME 18 TO 34
WELD DBL. CONT. FOR 3 @ EACH END	1/4 3-10	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 6 @ EACH END	1/4 3-10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 6 @ EACH END	1/4 3-9	LONGITUDINAL GIRDERS TO MAIN DECK
WELD DBL. CONT. FOR 3 @ EACH END	1/4 3-12	STIFFENERS TO N.T. BHDS
	1/4 3-10	RIDER PLATES TO RING FRAMES
	1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING 3. STANCHIONS AND END PADS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE NO. 60106
STATE OF FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

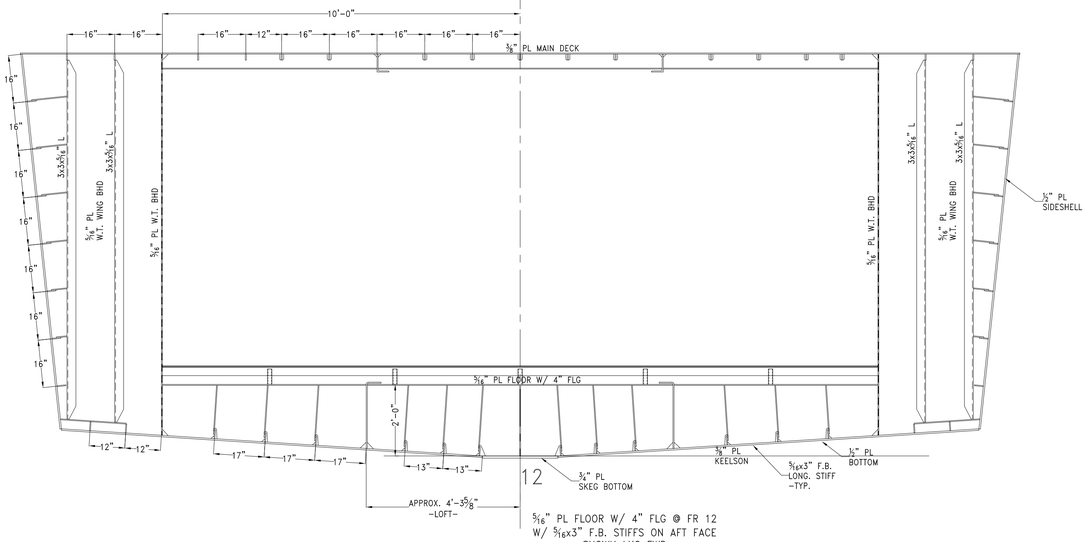
Title: 70.5'x30'x11' NCDOT TOWBOAT

TRANSVERSE HULL SECTIONS FRAMES 2 THRU 10

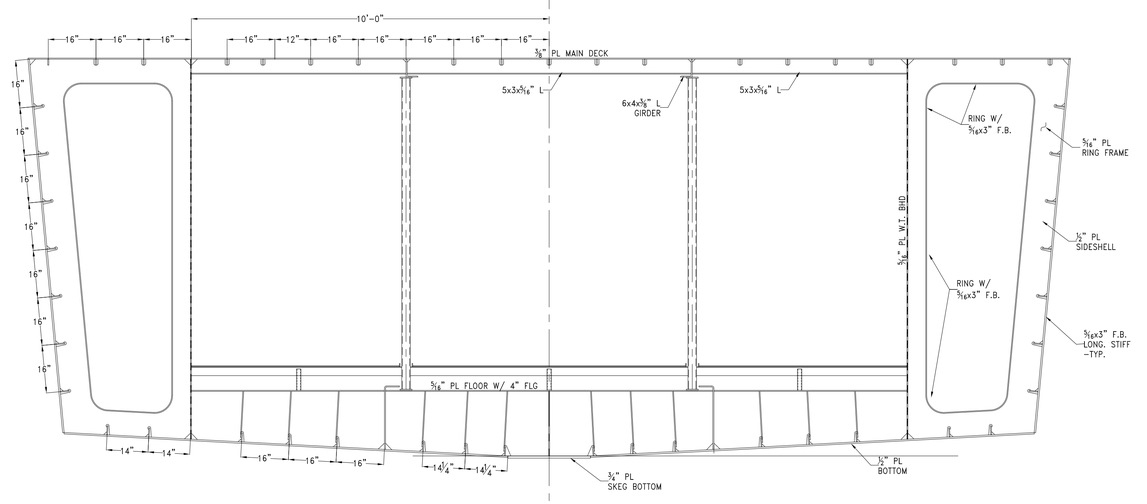
Dwg. No. 17-1372-117
Alt. No. 0
Sht. 1 of 6

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

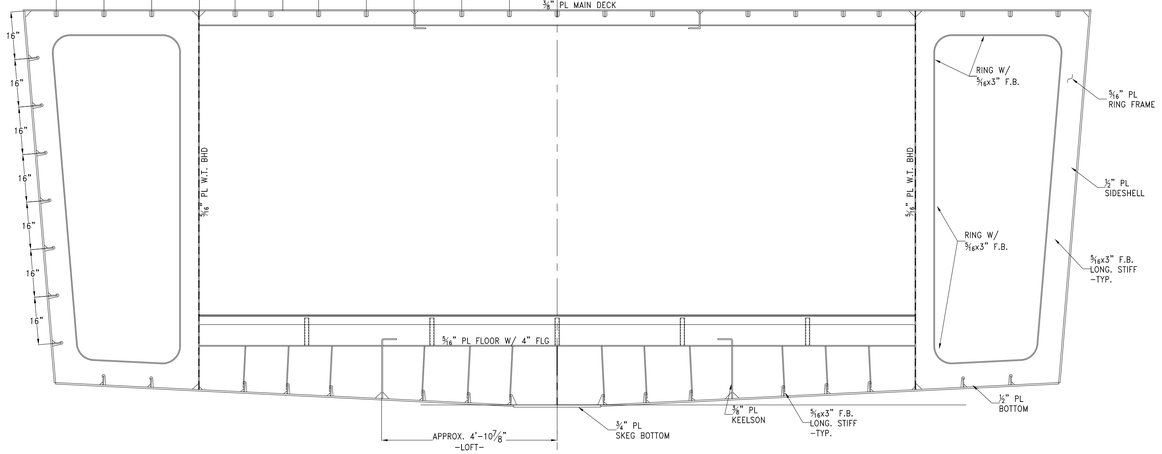
ANSI-D (24"x36")



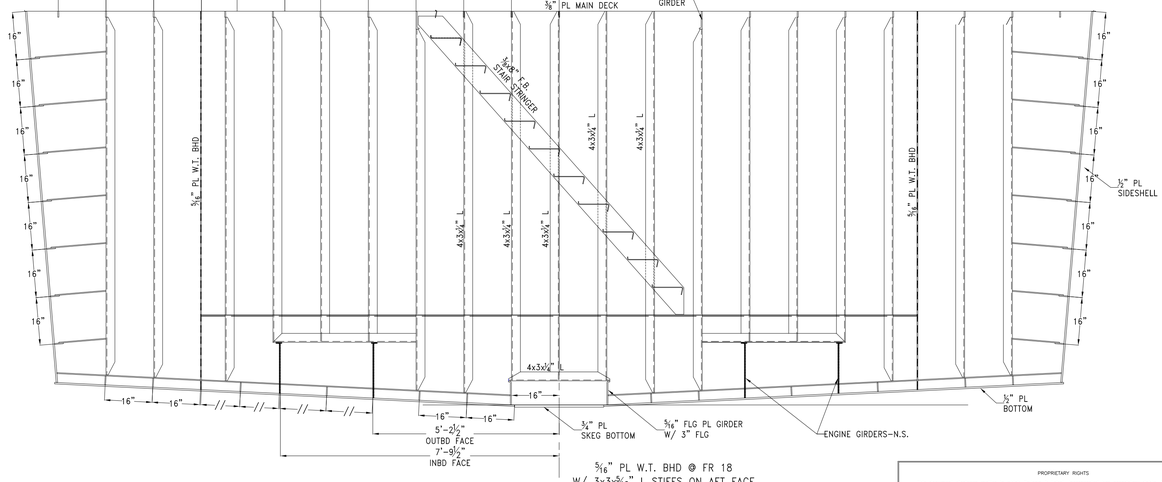
5/16" PL FLOOR W/ 4" FLG @ FR 12
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL FLOOR W/ 4" FLG @ FR 14
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL FLOOR W/ 4" FLG @ FR 16
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL W.T. BHD @ FR 18
W/ 3x3x5/16" L STIFFS ON AFT FACE
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 2 1/2" @ EACH END — 1/4 — 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 1/4 — 3-12	LONG. STIFFENERS TO HULL
1/4 — 1/4 — 3-12	W.T. BHDS TO SHELL PLATING
1/4 — 1/4 — 3-10	N.T. BHDS TO SHELL PLATING
DOUBLE CONTINUOUS	ALL STRUCTURE IWO ENGINE GIRDERS FRAME 18 TO 34
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-10	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 9" @ EACH END — 1/4 — 3-9	LONGITUDINAL GIRDERS TO MAIN DECK
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-12	STIFFENERS TO N.T. BHDS
1/4 — 3-10	RIDER PLATES TO RING FRAMES
1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING 3. STANCHIONS AND END PADS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

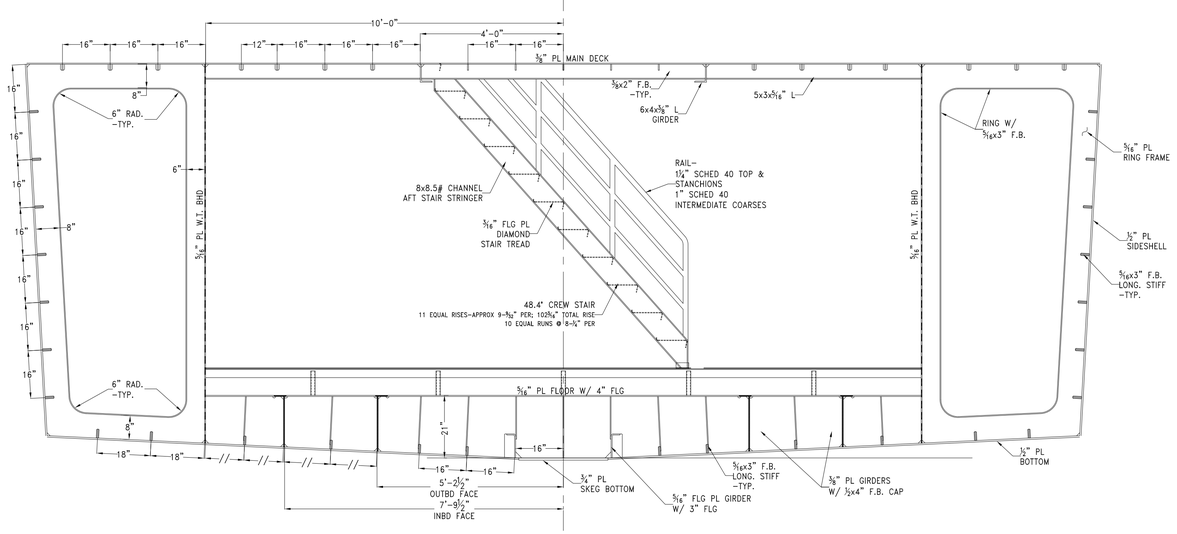
Title: 70.5'x30'x11' NCDOT TOWBOAT

TRANSVERSE HULL SECTIONS FRAMES 12 THRU 18

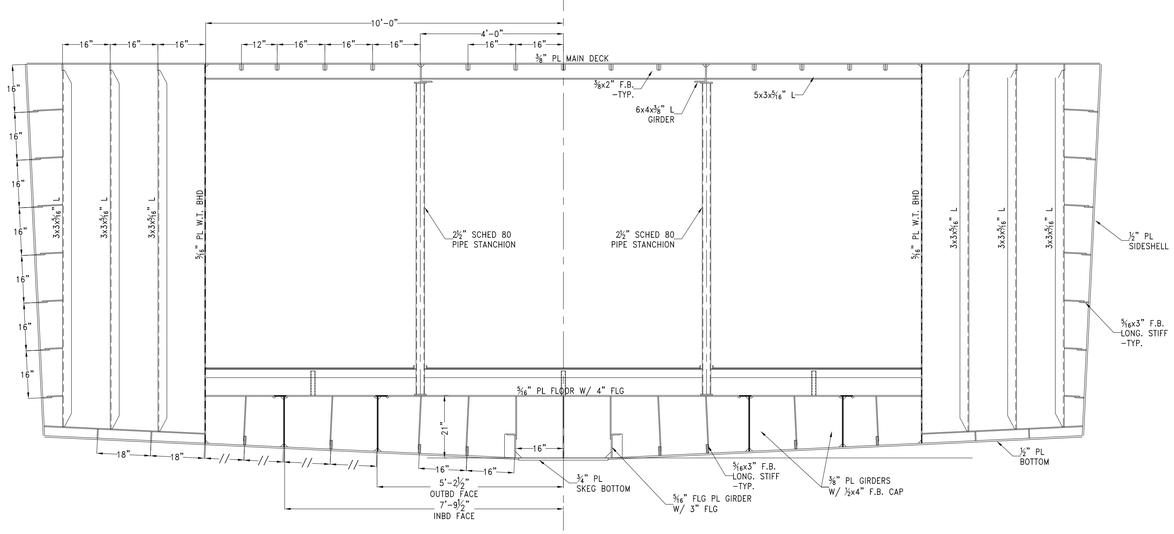
Dwg. No. 17-1372-117
Alt. No. 0
Sht. 2of 6

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: ½" = 1'-0"
ABS App'l:
USCG App'l.:

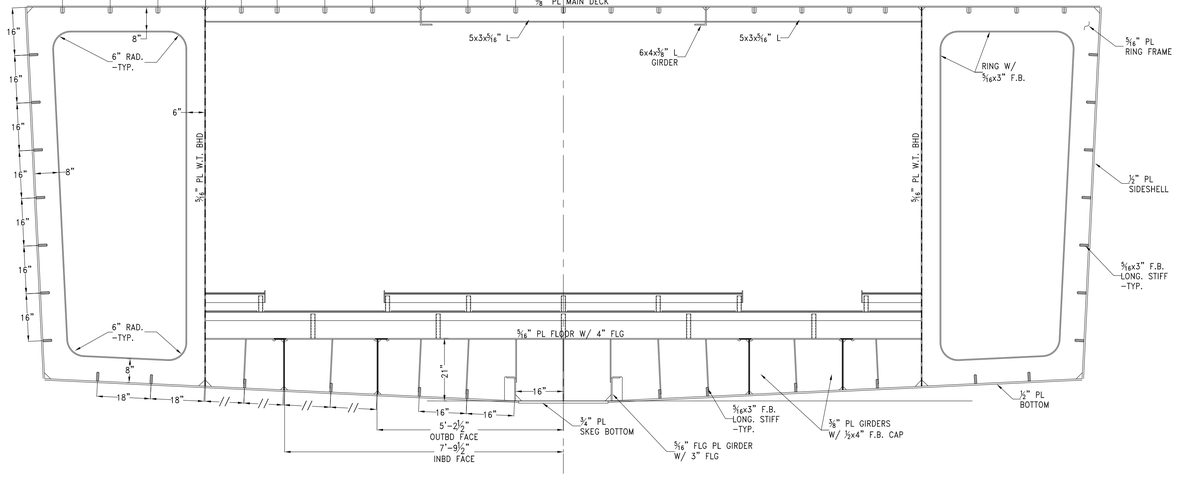
ANSI-D (24"x36")



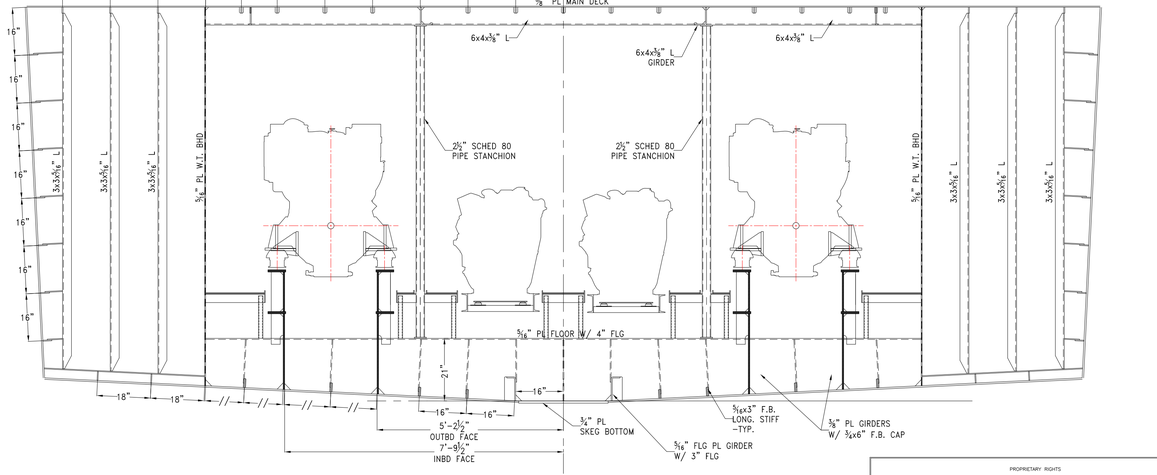
5/16" PL FLOOR W /4" FLG @ FR 20
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL FLOOR W /4" FLG @ FR 22
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL FLOOR W /4" FLG @ FR 24
W/ 5/16x3" F.B. STIFFS ON AFT FACE
SHOWN LKG FWD



5/16" PL FLOOR W /4" FLG @ FR 26
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 2 1/2" @ EACH END — 1/4 — 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 1/4 — 3-12	LONG. STIFFENERS TO HULL
1/4 — 1/4 — 3-12	W.T. BHDS TO SHELL PLATING
1/4 — 1/4 — 3-10	N.T. BHDS TO SHELL PLATING
DOUBLE CONTINUOUS	ALL STRUCTURE IWO ENGINE GIRDERS FRAME 18 TO 34
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-10	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 8" @ EACH END — 1/4 — 3-10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 8" @ EACH END — 1/4 — 3-9	LONGITUDINAL GIRDERS TO MAIN DECK
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-12	STIFFENERS TO N.T. BHDS
1/4 — 3-10	RIDER PLATES TO RING FRAMES
1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING 3. STANCHIONS AND END PADS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

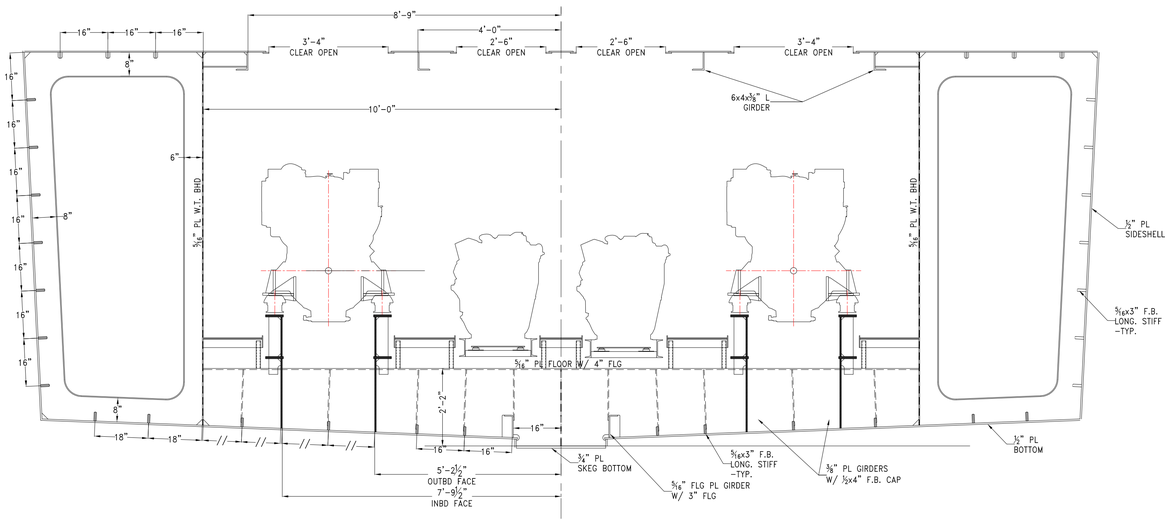
Title: 70.5'x30'x11' NCDOT TOWBOAT

TRANSVERSE HULL SECTIONS FRAMES 20 THRU 26

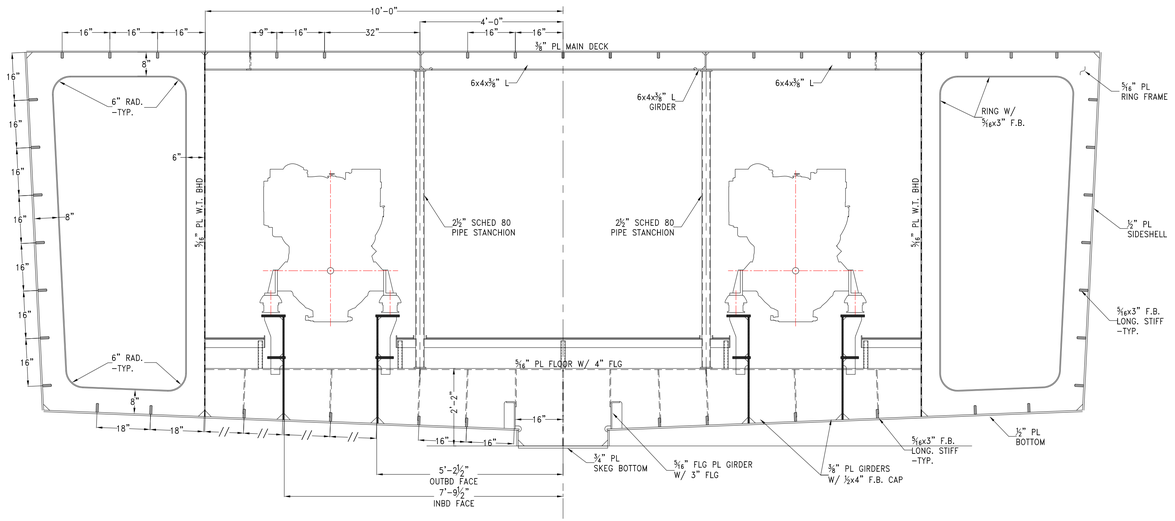
Dwg. No. 17-1372-117
Alt. No. 0
Sht. 3of 6

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l:
USCG App'l.:

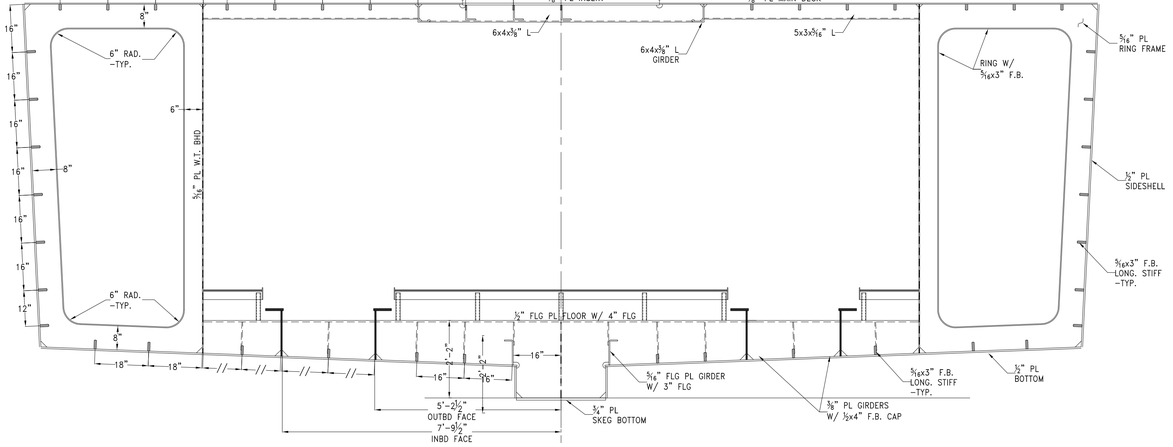
ANSI-D (24"x36")

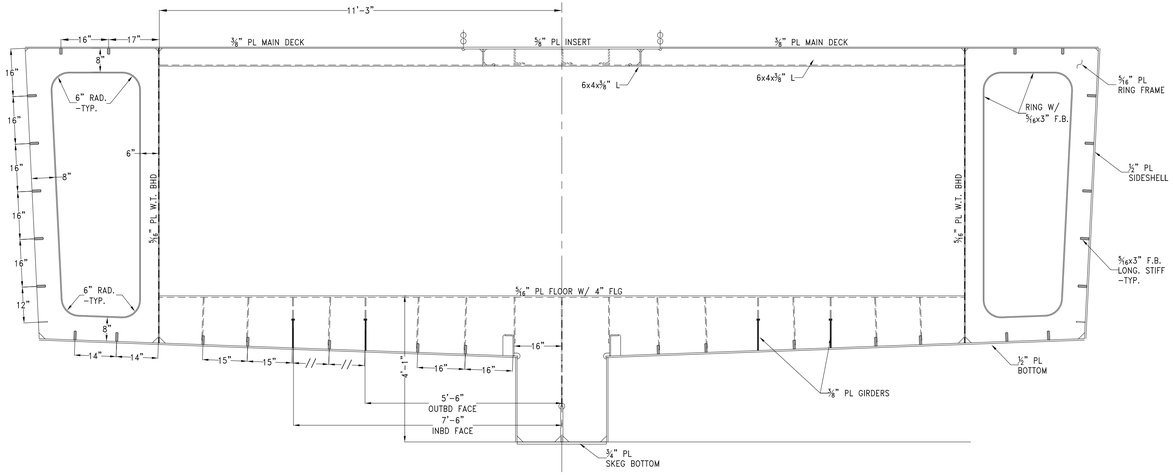


5/16" PL FLOOR W /4" FLG @ FR 28
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD

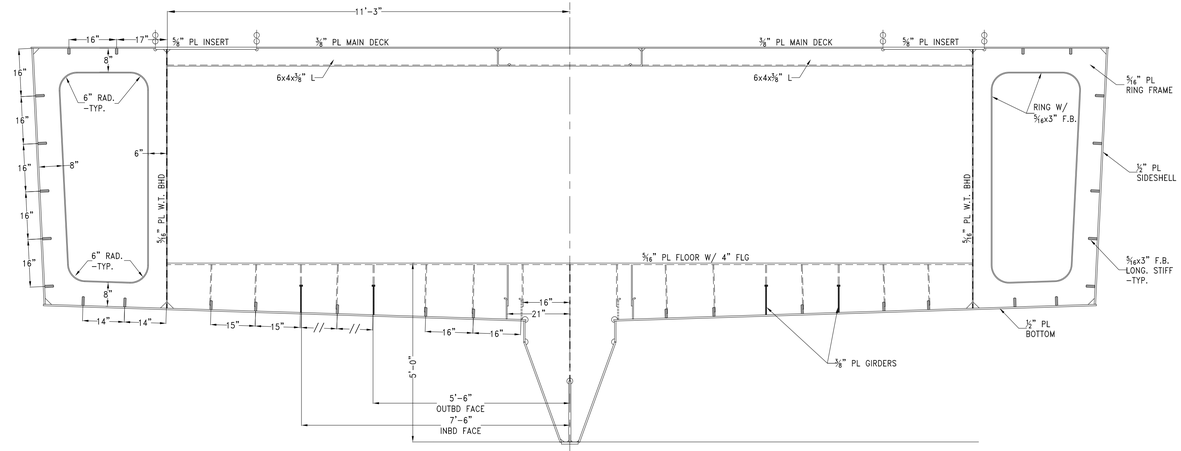


5/16" PL FLOOR W /4" FLG @ FR 30
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD

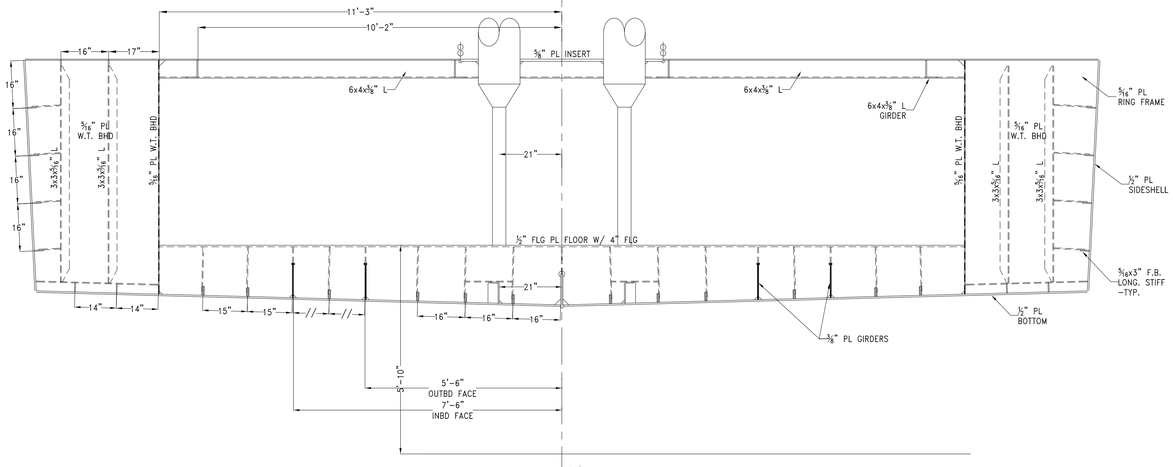

10'-0"
4'-0"
16" 16" 16"



5/16" PL FLOOR W/ 4" FLG @ FR 36
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD

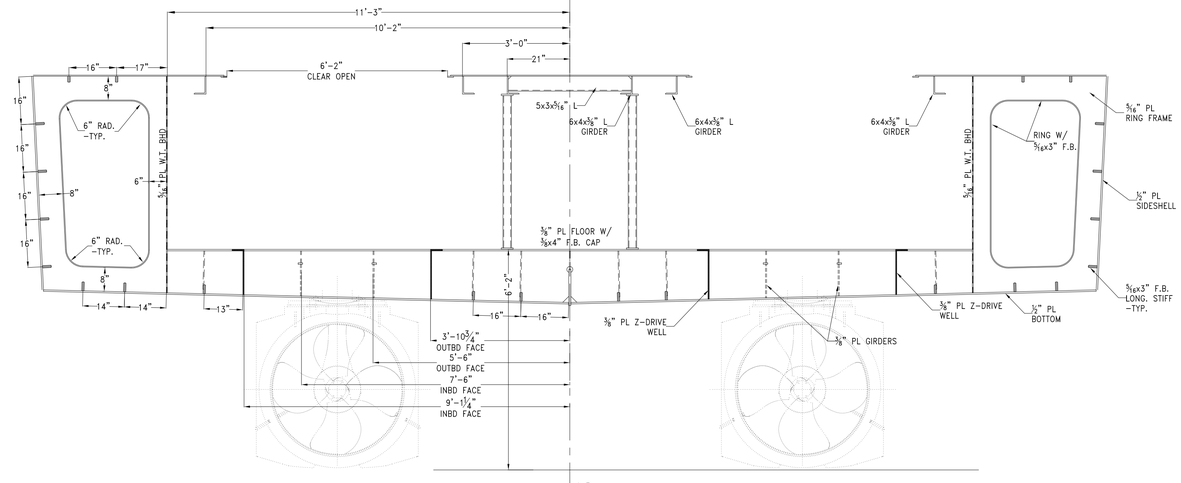


5/16" PL FLOOR W/ 4" FLG @ FR 38
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD



40

1/2" PL FLOOR @ FR 40
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD



42

3/8" PL FLOOR W/ 3/8x4" F.B. CAP @ FR 42
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 2 1/2 @ EACH END — 1/4 — 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 1/4 — 3-12	LONG. STIFFENERS TO HULL
1/4 — 1/4 — 3-12	W.T. BHDS TO SHELL PLATING
1/4 — 1/4 — 3-10	N.T. BHDS TO SHELL PLATING
DOUBLE CONTINUOUS	ALL STRUCTURE IWO ENGINE GIRDERS FRAME 18 TO 34
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-10	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-9	LONGITUDINAL GIRDERS TO MAIN DECK
WELD DBL. CONT. FOR 3" @ EACH END — 1/4 — 3-12	STIFFENERS TO N.T. BHDS
1/4 — 3-10	RIDER PLATES TO RING FRAMES
1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING 3. STANCHIONS AND END PADS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

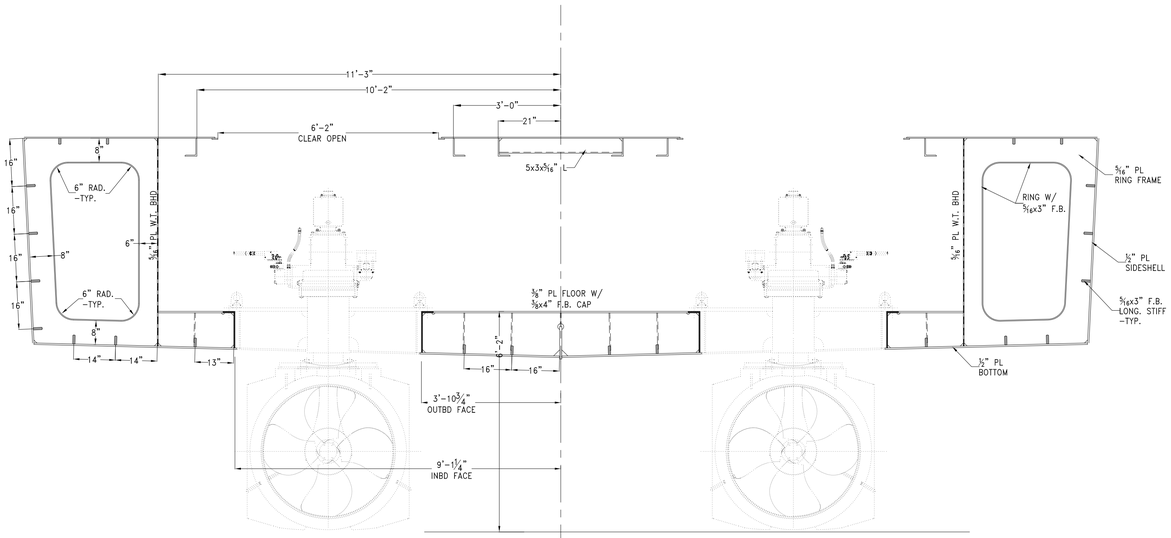
Title: 70.5'x30'x11' NCDOT TOWBOAT

TRANSVERSE HULL SECTIONS FRAMES 36 THRU 42

Dwg. No. 17-1372-117
Alt. No. 0
Sht. 5of 6

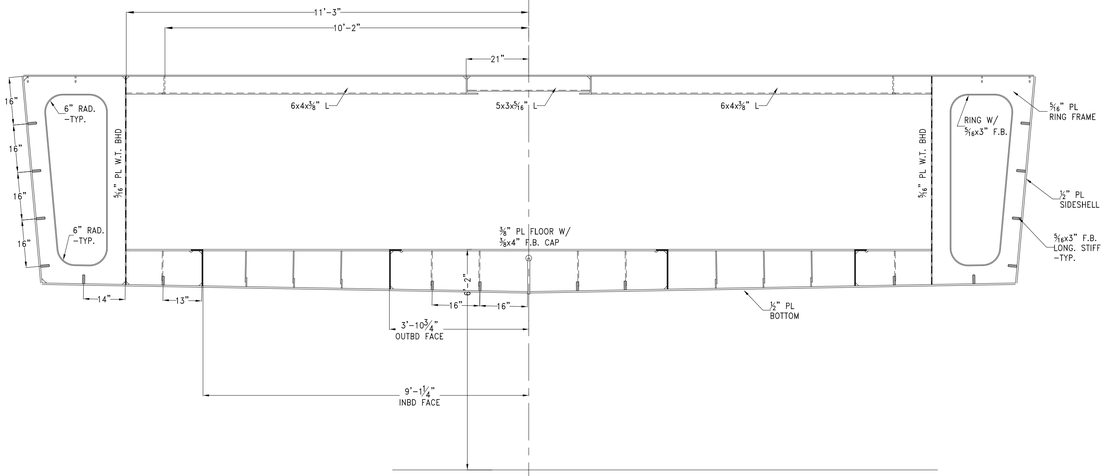
Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l:
USCG App'l:.

ANSI-D (24"x36")



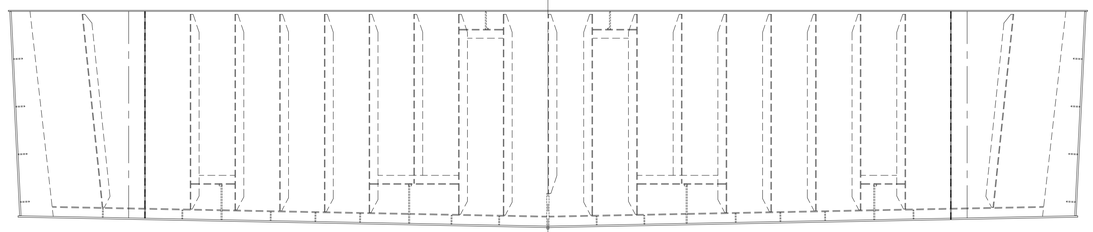
44

3/8" PL FLOOR W/ 3/8x4" F.B. CAP @ FR 44
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD



46

3/8" PL FLOOR W/ 3/8x4" F.B. CAP @ FR 46
W/ 5/16x3" F.B. STIFFS ON FWD FACE
SHOWN LKG FWD



TRANSOM

1/2" PL TRANSOM W/ 3x3x5/16" L STIFFENERS
ON FWD FACE
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 2 1/2 @ EACH END — 1/4 — 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 1/4 — 3-12	LONG. STIFFENERS TO HULL
1/4 / 1/4 — 3-12	W.T. BHDS TO SHELL PLATING
1/4 / 1/4 — 3-10	N.T. BHDS TO SHELL PLATING
DOUBLE CONTINUOUS	ALL STRUCTURE IWO ENGINE GIRDERS FRAME 18 TO 34
WELD DBL. CONT. FOR 3 @ EACH END — 1/4 — 3-10	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 6 @ EACH END — 1/4 — 3-10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 6 @ EACH END — 1/4 — 3-9	LONGITUDINAL GIRDERS TO MAIN DECK
WELD DBL. CONT. FOR 3 @ EACH END — 1/4 — 3-12	STIFFENERS TO N.T. BHDS
1/4 — 3-10	RIDER PLATES TO RING FRAMES
1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING 3. STANCHIONS AND END PADS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

TRANSVERSE HULL SECTIONS FRAMES 44 THRU TRANSOM

Dwg. No. 17-1372-117
Alt. No. 0
Sht. 6of 6

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

INBOARD STRUCTURAL PROFILE

WELD SCHEDULE–TYPICAL

WELD DBL. CONT. FOR 2 1/2 @ EACH END — 1/4 — 3–8	TRANSVERSE FRAMES TO HULL & SIDESHELL
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2–12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING
WELD DBL. CONT. FOR 10% OF STIFF L @ EACH END TYP. — 1/4 — 3–12	LONG. STIFFENERS TO HULL
1/4 / 1/4 — 3–12	W.T. BHDS TO SHELL PLATING
3/16 / 3/16 — 2 1/2–9	N.T. BHDS TO SHELL PLATING
WELD DBL. CONT. FOR 3 @ EACH END — 3/16 — 2 1/2–12	LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 5 @ EACH END — 1/4 — 3–10	TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 3 @ EACH END — 3/16 — 2 1/2–12	STIFFENERS TO N.T. BHDS
1/4 — 3–10	RIDER PLATES TO RING FRAMES
1/4	1. BOTTOM FRAME BUTT TO KEEL PLATE 2. CORNER BRACKETING

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

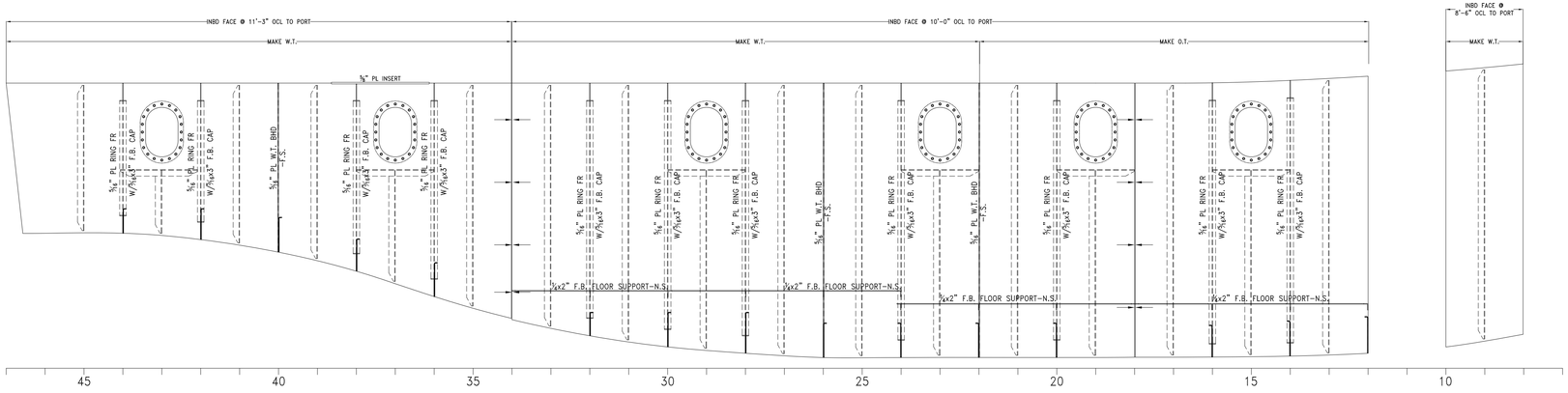
INBD STRUCTURAL PROFILE

Dwg. No. 17-1372-120

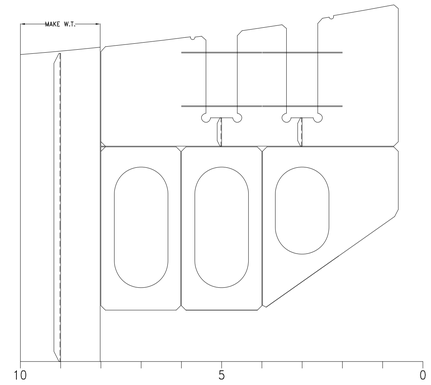
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY — Date: JUNE 05, 2018
Checked By: — Date:
App'd By: — Scale: 3/8" = 1'-0"
ABS App'l: — USCG App'l:

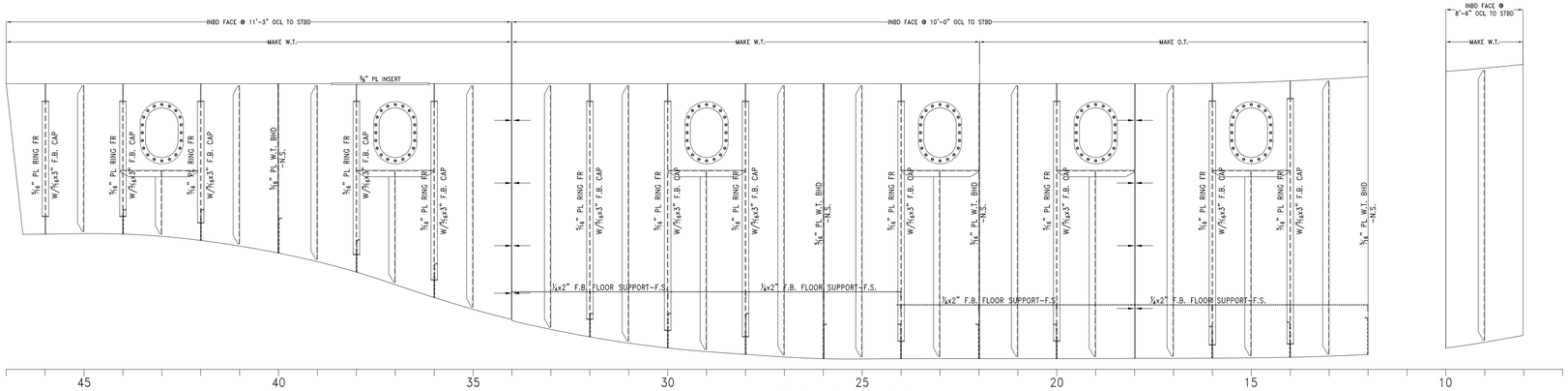
ANSI-D (24"x36")



PORT SIDE LONGITUDINAL BHD STRUCTURAL PLAN
⅝" PL W/ 5x3x⅝" L STIFFS ON OUTBD FACE
UNLESS OTHERWISE NOTED
SHOWN LKG PORT



CENTERLINE FWD BHDS STRUCTURAL DETAILS
⅝" PL W/ 5x3x⅝" L STIFFS ON STBD FACE
UNLESS OTHERWISE NOTED
SHOWN LKG PORT



STBD SIDE LONGITUDINAL BHD STRUCTURAL PLAN
⅝" PL W/ 5x3x⅝" L STIFFS ON OUTBD FACE
UNLESS OTHERWISE NOTED
SHOWN LKG PORT

W.T. BALLAST TANK TOP @ 8'-0" ABL
⅝" PL W/ ⅜x2" F.B. STIFFS
UNLESS OTHERWISE NOTED

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

HULL FLATS & BHDS STRUCTURAL DETAILS

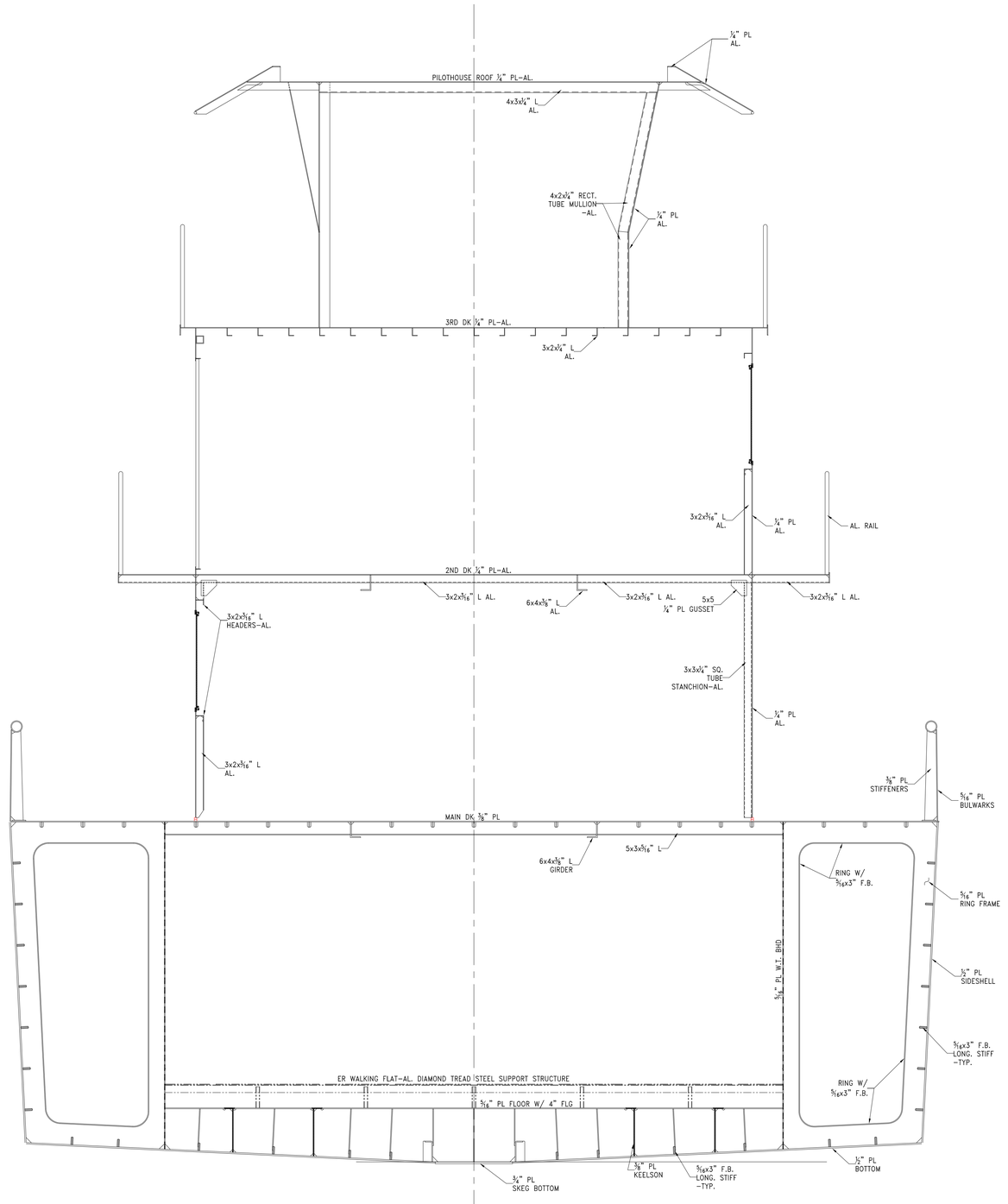
Dwg. No. 17-1372-121
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 3/8" = 1'-0"
ABS App'l:
USCG App'l.:

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-110.117.120.121.131.132.133.152.153.154.182.622.dwg, 9/19/2018 1:30:04 PM, 24x36 PDF.pc3



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

TYPICAL STRUCTURAL SECTION

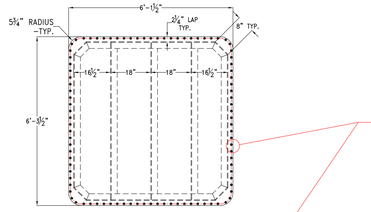
Dwg. No. 17-1372-122
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: ½" = 1'-0"
ABS App'l:
USCG App'l.:

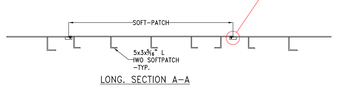
WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

ANSI-D (24"x36")

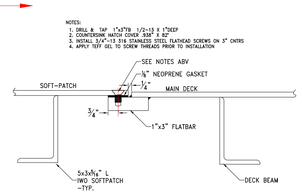
R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-110.117.120.121.131.132.133.152.153.154.182.622.dwg, 9/19/2018 1:30:38 PM, 24x36 PDF.pc3



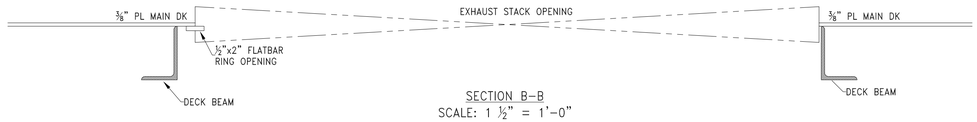
Z-DRIVE SOFT-PATCH
⅜" PL W/
5x3x5/16" L STIFFS AS SHOWN



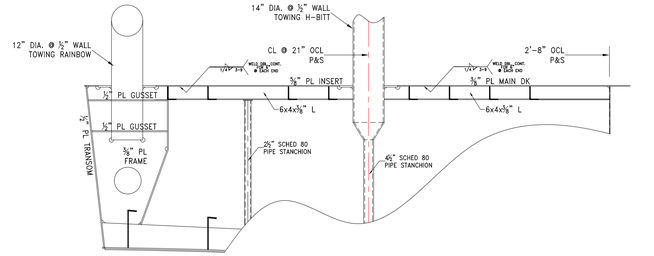
LONG. SECTION A-A



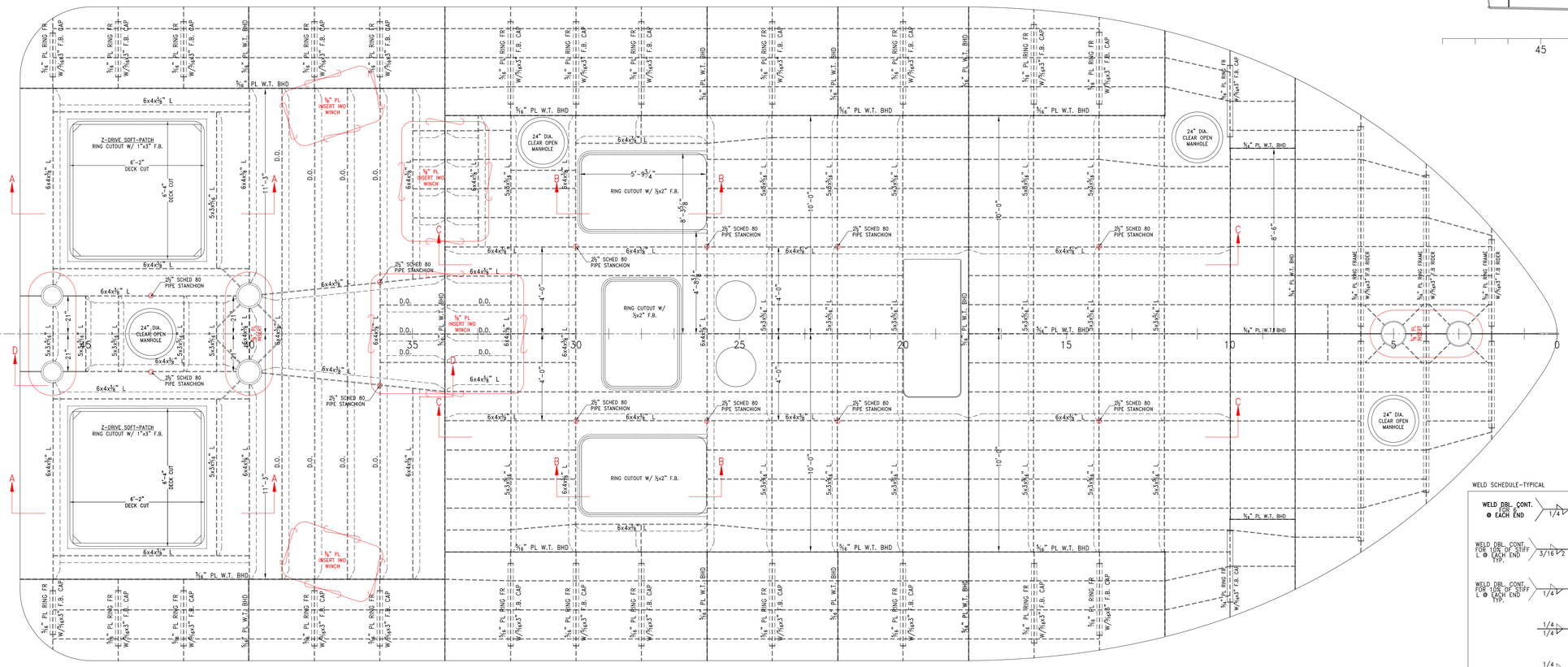
SOFTPATCH FASTENER DETAILS
-NO SCALE-



SECTION B-B
SCALE: 1 ½" = 1'-0"



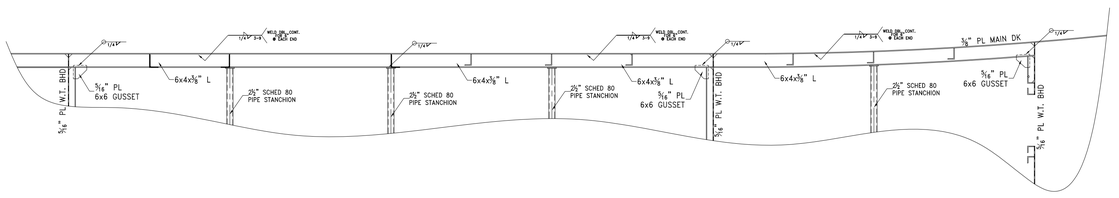
SECTION D-D
6x4x5/16" L LONGITUDINAL GIRDER @ 4'-0" OCL P&S
PORT SIDE LKG OUTBD-STBD SIM. OPP. HAND



MAIN DECK STRUCTURAL PLAN
⅜" PL W/5½"x2" F.B. LONG. STIFFENERS
UNLESS OTHERWISE NOTED

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-8	TRANSVERSE FRAMES TO HULL & SIDESHELL	WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-10 LONGITUDINAL STIFFENERS TO MAIN DECK
WELD DBL. CONT. FOR 10S OF STIFF L @ EACH END TYP. — 3/16 — 2 1/2-12	1. STIFFENERS TO W.T. BHDS 2. STIFFENERS TO SIDESHELL PLATING	WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-10 TRANSVERSE FRAMES TO MAIN DECK
WELD DBL. CONT. FOR 10S OF STIFF L @ EACH END TYP. — 1/4 — 3-12	LONG. STIFFENERS TO HULL	WELD DBL. CONT. FOR 6" @ EACH END — 1/4 — 3-9 LONGITUDINAL GIRDERS TO MAIN DECK
1/4 — 1/4 — 3-12	W.T. BHDS TO SHELL PLATING	1/4 — 3-10 RIDER PLATES TO RING FRAMES
1/4 — 1/4 — 3-10	N.T. BHDS TO SHELL PLATING	1/4 — 1. CORNER BRACKETING 2. GUSSET PLATING 2. STANCHIONS & END PADS



SECTION C-C
6x4x5/16" L LONGITUDINAL GIRDER @ 4'-0" OCL P&S
PORT SIDE LKG OUTBD-STBD SIM. OPP. HAND

PROPRIETARY RIGHTS
This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.
In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.
© 2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

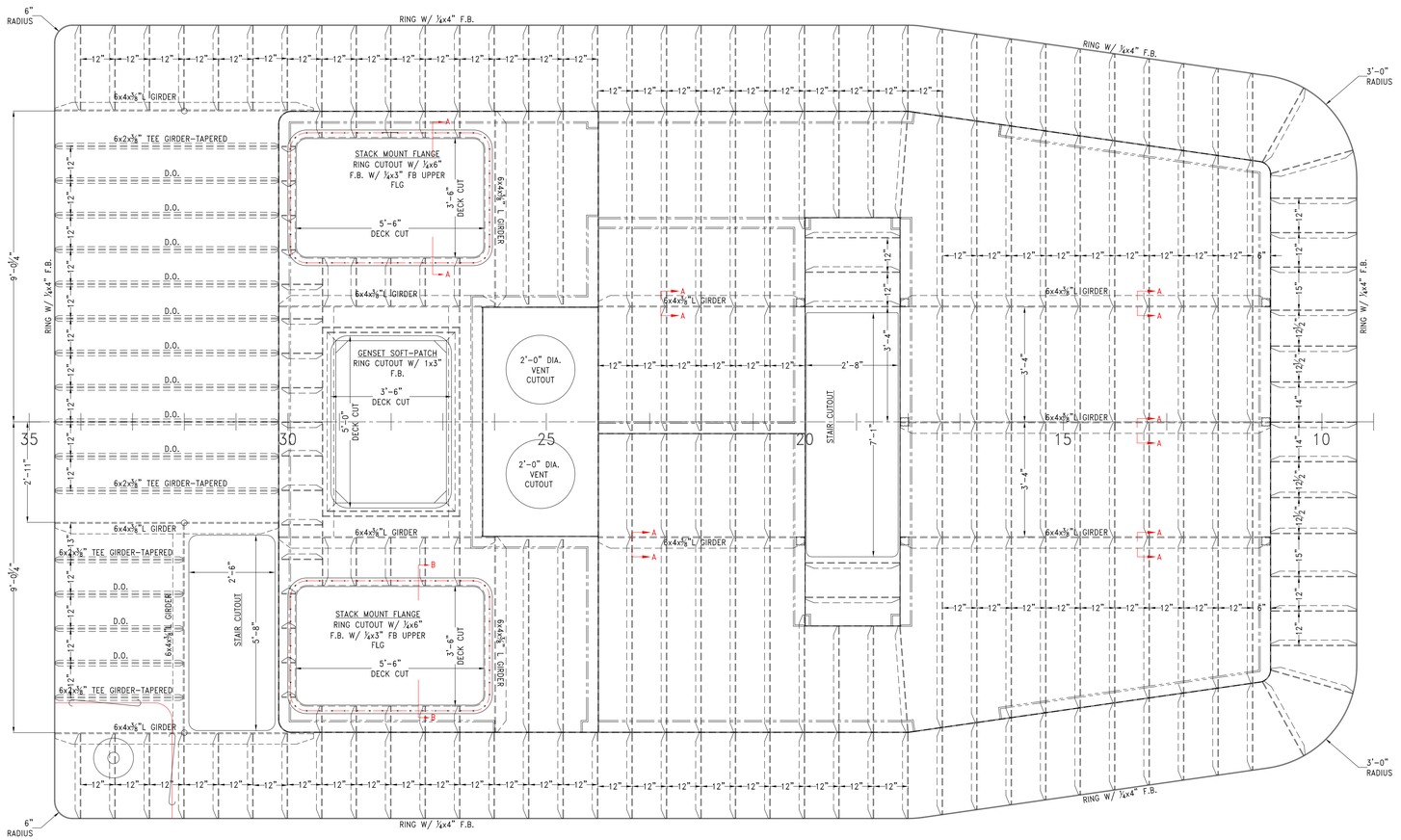
Title: 70.5'x30'x11' NCDOT TOWBOAT

MAIN DECK STRUCTURAL DETAILS

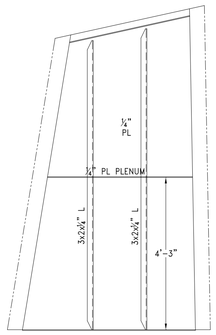
Dwg. No. 17-1372-131
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 3/8" = 1'-0"
ABS App'l: USCG App'l:

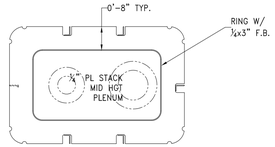
ANSI-D (24"x36")

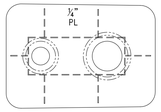


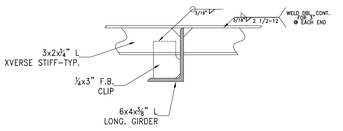
2ND DECK STRUCTURAL DETAILS
¼" PL W/ 3x2x¼" L ON 12" CNTRS
UNLESS OTHERWISE NOTED



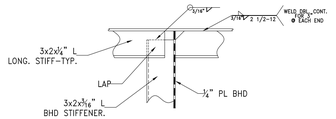
STACK SIDE BHD DETAILS







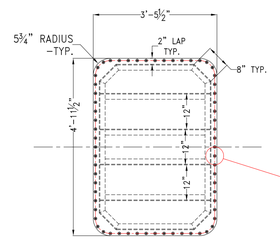
SECTION A-A
IWO LONG. GIRDER/XVERSE STIFFENER CONNECTION
SCALE: 1½" = 1'-0"



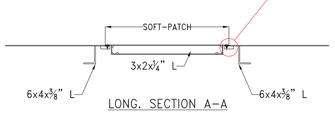
TYPICAL SECTION B-B
DECK STIFFENERS
@ BHD CONNECTION
SCALE: 1½" = 1'-0"

WELD SCHEDULE-TYPICAL

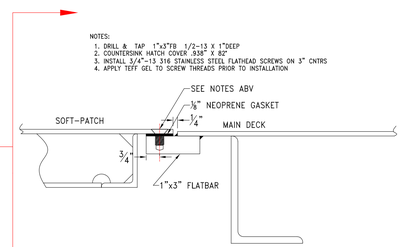
WELD DBL. CONT. FOR 6 @ EACH END — 3/16 2 1/2-10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR 3 @ EACH END — 3/16 2 1/2-12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS @ ENDS
3/16 3/16 2 1/2-12	LOWER BULKHEAD EDGE TO DECKS
3/16 2 1/2-12	UPPER BULKHEAD EDGE TO DECKS



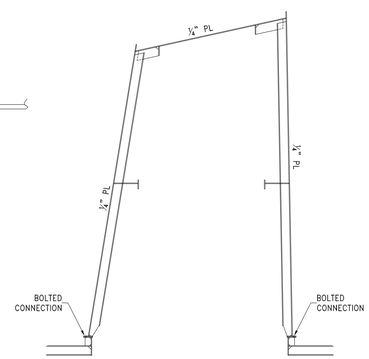
2ND DK SOFT-PATCH
⅜" PL W/
3x2x¾" L STIFFS AS SHOWN
MATERIAL: ALUMINUN, 5086-H116 PLATE, 6061-T6 SHAPES



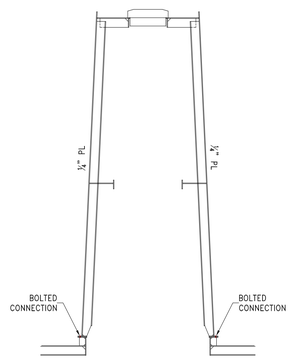
LONG. SECTION A-A



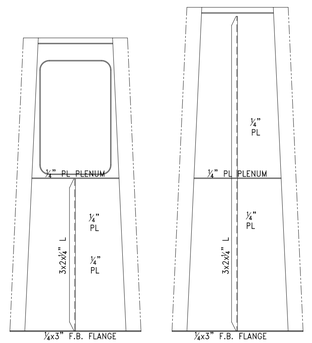
2ND DECK SOFTPATCH FASTENER DETAILS
-NO SCALE-



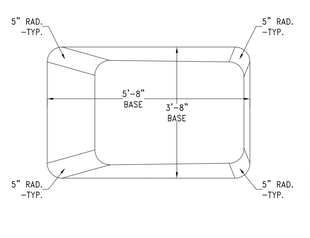
LONGITUDINAL SECTION
@ STACK CL



TYP. XVERSE STACK
STRUCTURAL SECTION



STACK FORE & AFT BHD DETAILS



ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

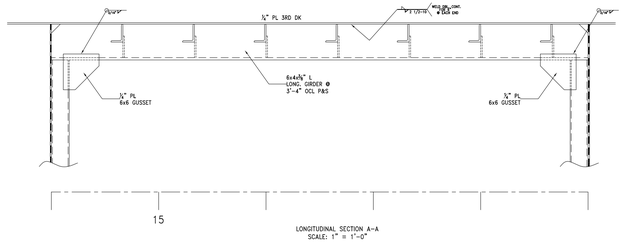
Title: 70.5'x30'x11' NCDOT TOWBOAT

2ND DECK STRUCTURAL DETAILS

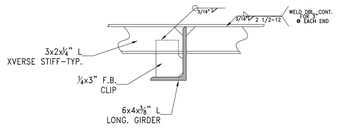
Dwg. No. 17-1372-132
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: ½" = 1'-0"
ABS App'l:
USCG App'l.:

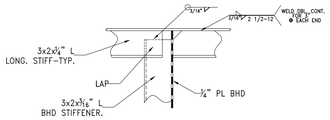
ANSI-D (24"x36")



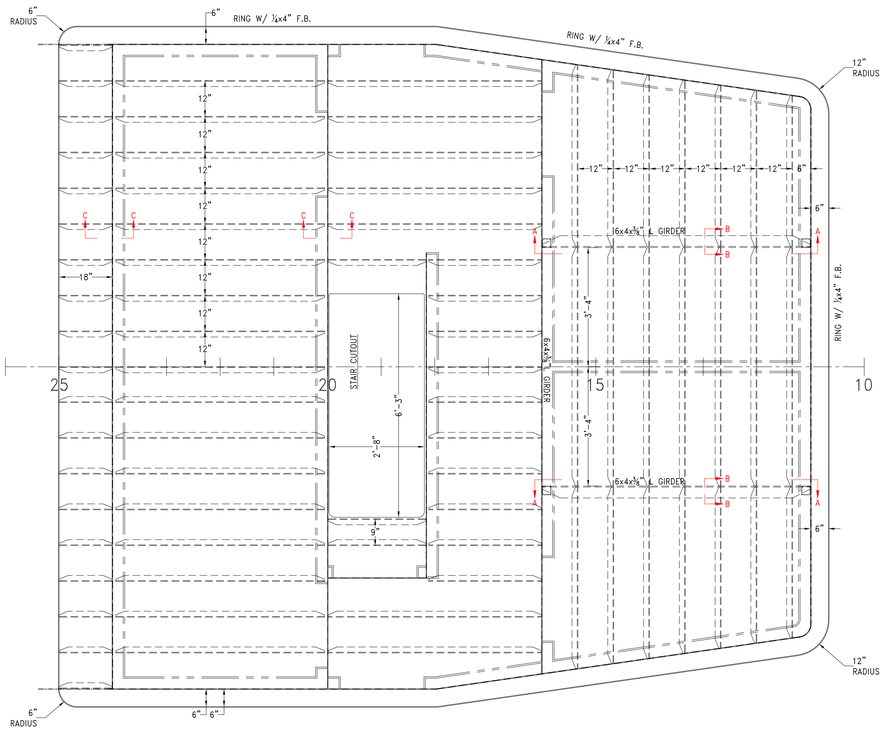
LONGITUDINAL SECTION A-A
SCALE: 1" = 1'-0"



XVERSE SECTION B-B
IWO LONG. GIRDER/XVERSE STIFFENER CONNECTION
SCALE: 1½" = 1'-0"



TYPICAL SECTION C-C
LONGITUDINAL DECK STIFFENERS
@ BHD CONNECTION
SCALE: 1½" = 1'-0"



3RD DECK STRUCTURAL DETAILS
¼" PL W/ 3x2x5/16" L ON 12" CNTRS
UNLESS OTHERWISE NOTED

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR @ EACH END — 3/16 2 1/2-10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR @ EACH END — 3/16 2 1/2-12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16 ○	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS @ ENDS
3/16 3/16 2 1/2-12	LOWER BULKHEAD EDGE TO DECKS
3/16 3/16 2 1/2-12	UPPER BULKHEAD EDGE TO DECKS

ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

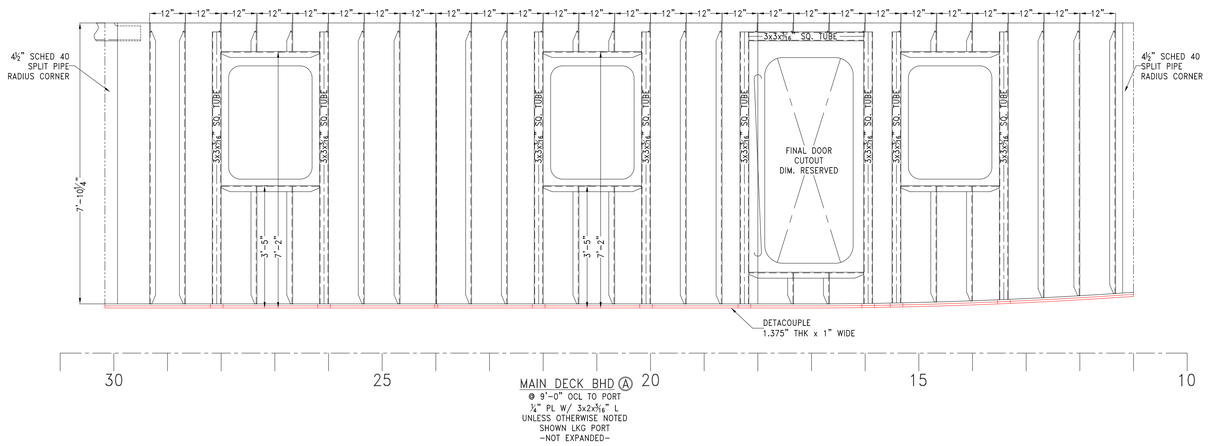
Title: 70.5'x30'x11' NCDOT TOWBOAT

3RD DECK STRUCTURAL DETAILS

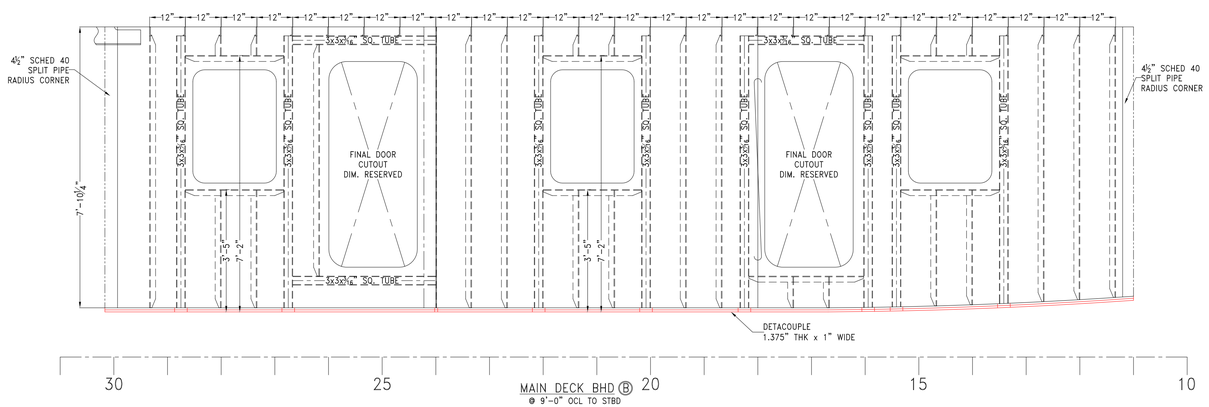
Dwg. No. 17-1372-133
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

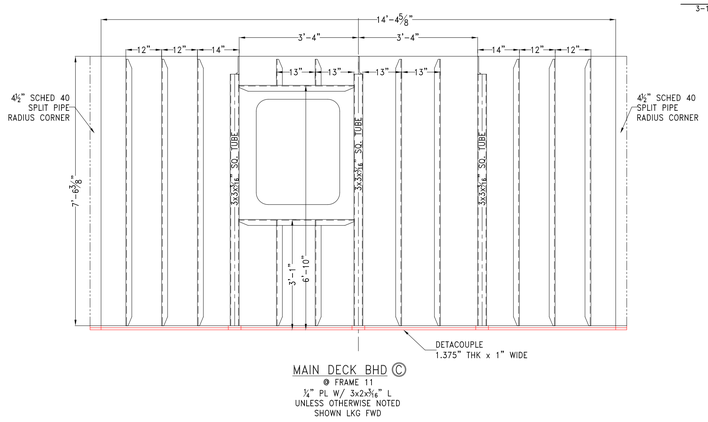
ANSI-D (24"x36")



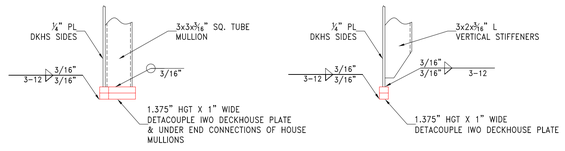
MAIN DECK BHD Ⓐ
@ 9'-0" OCL TO PORT
¼" PL W/ 3x2x3/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT
-NOT EXPANDED-



MAIN DECK BHD Ⓑ
@ 9'-0" OCL TO STBD
¼" PL W/ 3x2x3/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT
-NOT EXPANDED-



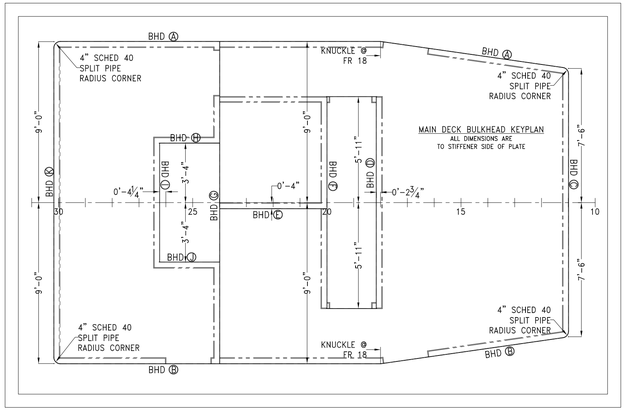
MAIN DECK BHD Ⓒ
@ FRAME 11
¼" PL W/ 3x2x3/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

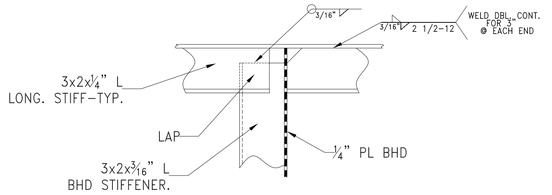


DETACOUPLE DETAILS
@ MAIN DECK

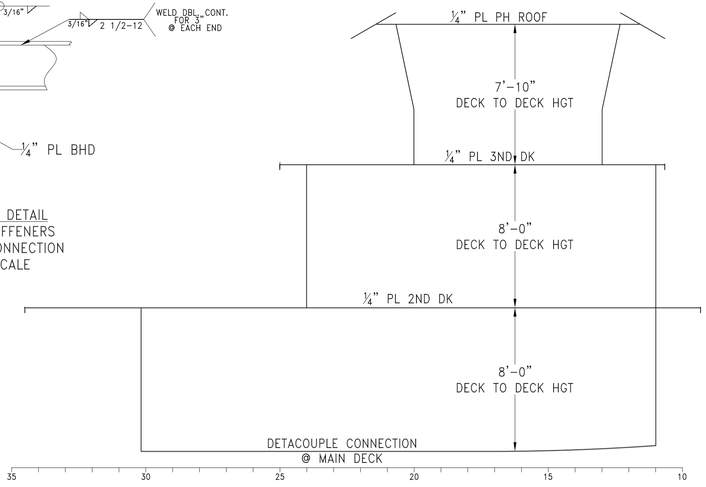
WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 3" @ EACH END — 3/16 ▷ 2 1/2-10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR 3" @ EACH END — 3/16 ▷ 2 1/2-12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16 ○	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS @ ENDS
3/16 ▷ 3/16 ▷ 2 1/2-12	LOWER BULKHEAD EDGE TO DECKS
3/16 ▷ 3/16 ▷ 2 1/2-12	UPPER BULKHEAD EDGE TO DECKS





TYPICAL DETAIL
DECK STIFFENERS
@ BHD CONNECTION
NO SCALE



DETACOUPLE CONNECTION
@ MAIN DECK

ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any of the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

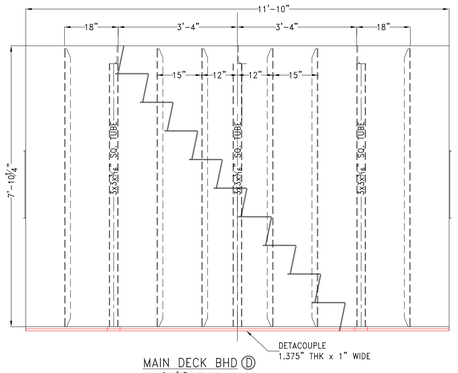
Title: 70.5'x30'x11' NCDOT TOWBOAT

MAIN DECK DECKHOUSE BHD DETAILS

Dwg. No. 17-1372-152
Alt. No. 0
Sht. 1 of 2

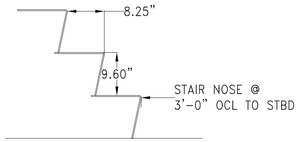
Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: ½" = 1'-0"
ABS App'l:
USCG App'l.:

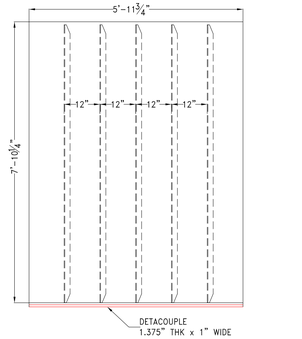
ANSI-D (24"x36")



MAIN DECK BHD Ⓓ
@ 0'-2¾" AFT FRAME 18
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

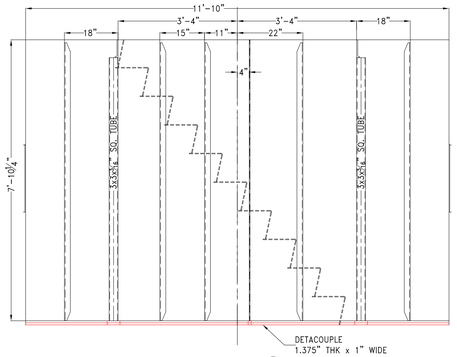
MAIN TO 2ND DK 49.3° STAIR
¼" PL TREADS
10 EQUAL RISES-APPROX. 9-5/8" PER
9 EQUAL RUNS @ 8-¼" PER



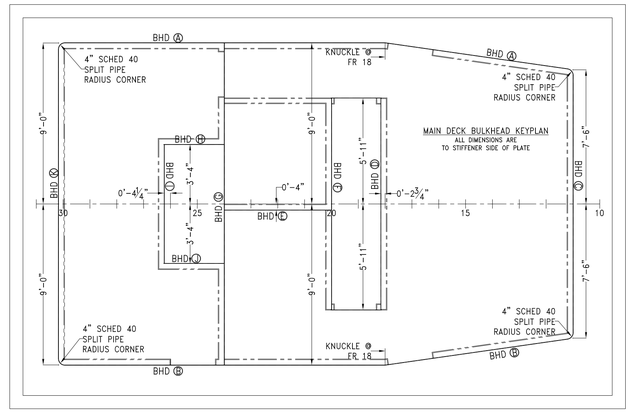


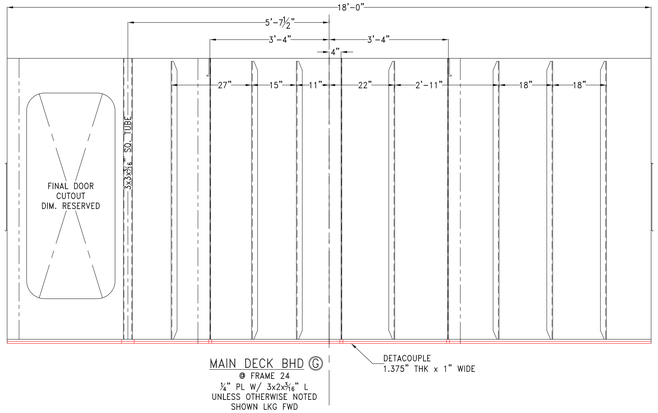
25 20

MAIN DECK BHD Ⓔ
@ 0'-4" TO STBD
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT

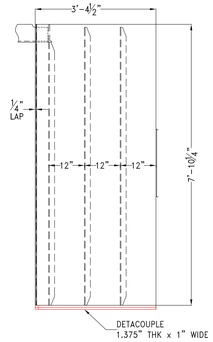


MAIN DECK BHD Ⓕ
@ FR 20
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

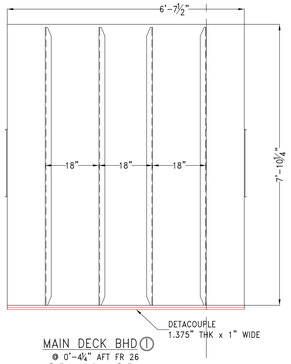




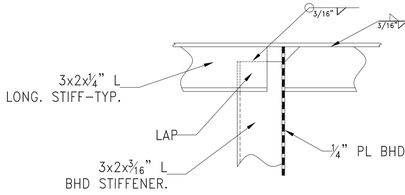
MAIN DECK BHD Ⓖ
@ FRAME 24
¼" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD



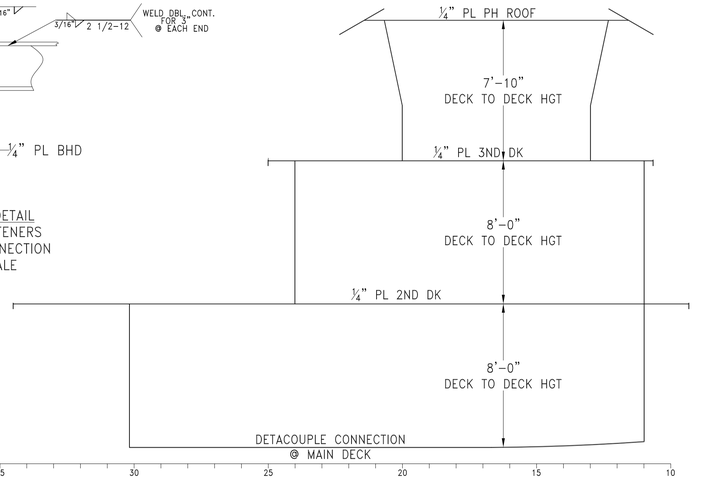
25 MAIN DECK BHD Ⓗ
@ 3'-4" OCL TO PORT
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT

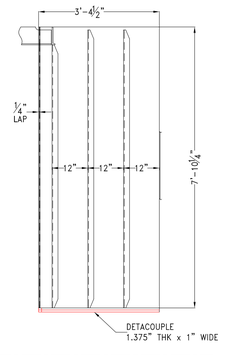


MAIN DECK BHD Ⓘ
@ 0'-4¼" AFT FR 26
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

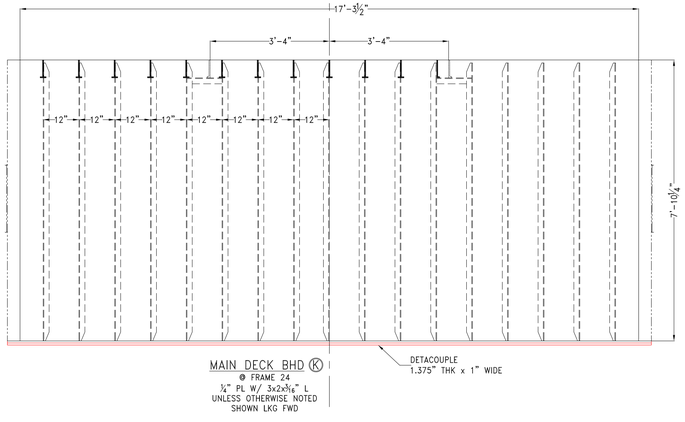


TYPICAL DETAIL
DECK STIFFENERS
@ BHD CONNECTION
NO SCALE





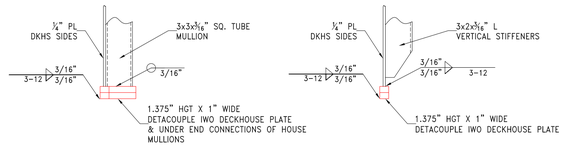
25 MAIN DECK BHD Ⓙ
@ 3'-4" OCL TO STBD
5/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT



MAIN DECK BHD Ⓚ
@ FRAME 24
¼" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR ¾ @ EACH END, 3/16, 2 1/2-10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR ¾ @ EACH END, 3/16, 2 1/2-12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS @ ENDS
3/16, 3/16, 2 1/2-12	LOWER BULKHEAD EDGE TO DECKS
3/16, 2 1/2-12	UPPER BULKHEAD EDGE TO DECKS



DETACOUPLE DETAILS
@ MAIN DECK

ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

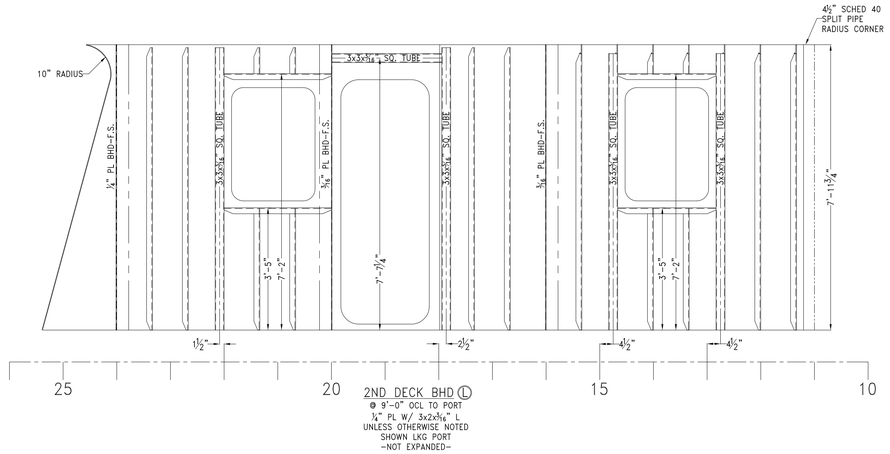
Title: 70.5'x30'x11' NCDOT TOWBOAT

MAIN DECK DECKHOUSE BHD DETAILS

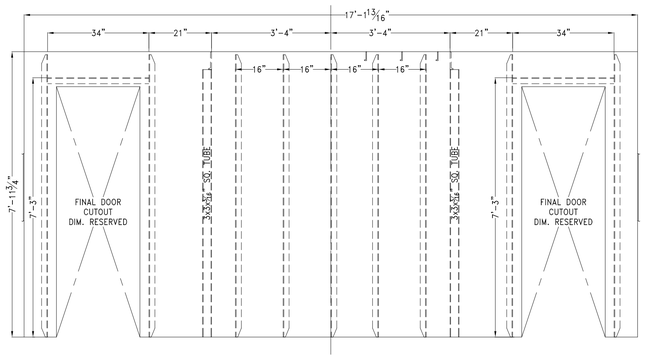
Dwg. No. 17-1372-152
Alt. No. 0
Sht. 2 of 2

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

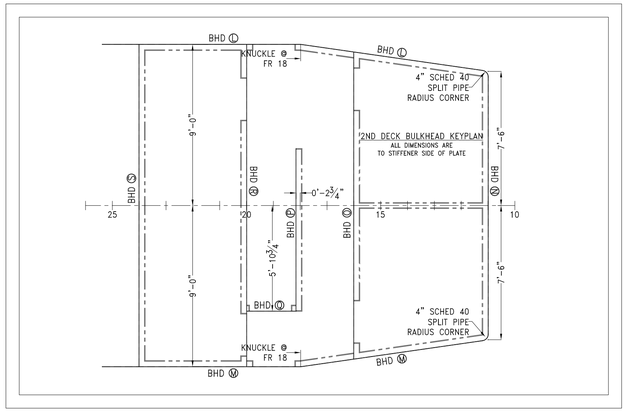
ANSI-D (24"x36")

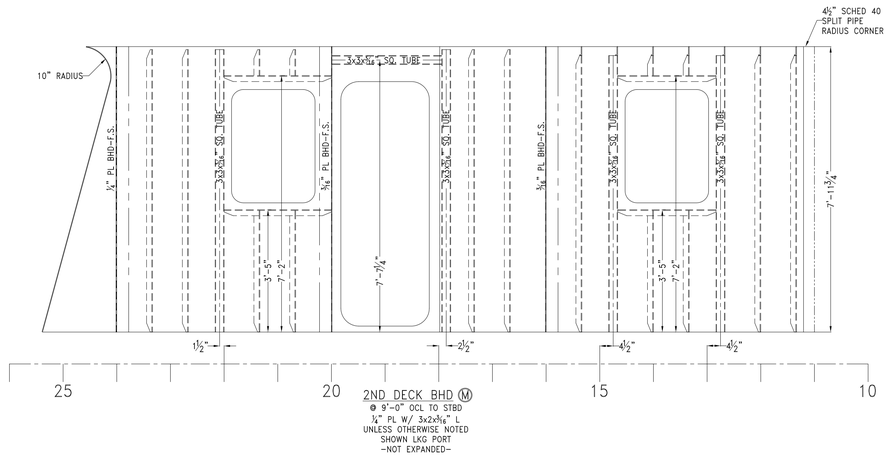


2ND DECK BHD Ⓛ
@ 9'-0" OCL TO PORT
¼" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT
-NOT EXPANDED-

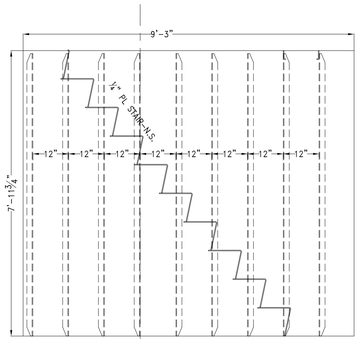


2ND DECK BHD Ⓞ
@ FRAME 16
⅜" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD



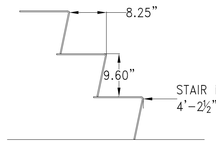


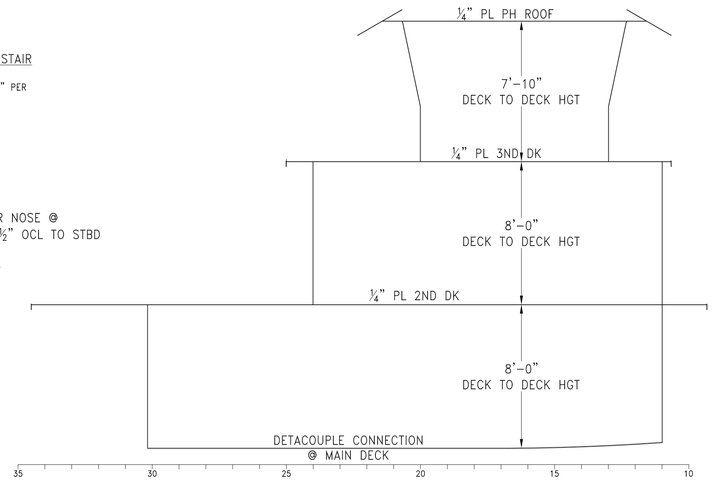
2ND DECK BHD Ⓜ
@ 9'-0" OCL TO STBD
¼" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT
-NOT EXPANDED-

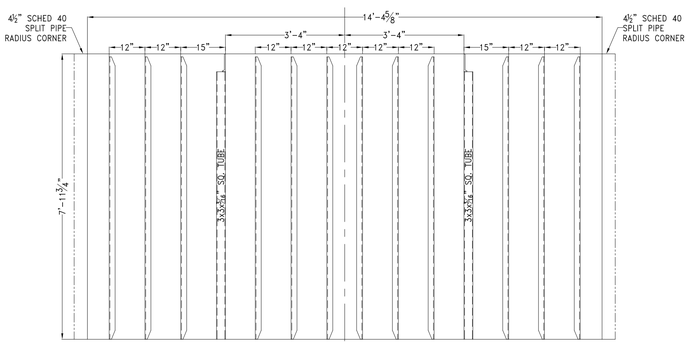


2ND DECK BHD Ⓟ
@ 0'-2¾" AFT FR 18
⅜" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

2ND TO 3RD DK 49.3° STAIR
¼" PL TREADS
10 EQUAL RISES-APPROX. 9-⅝" PER
9 EQUAL RUNS @ 8-¼" PER

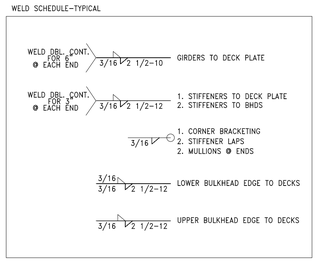






2ND DECK BHD Ⓝ
@ FRAME 11
¼" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

WELD SCHEDULE-TYPICAL



ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

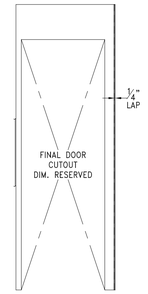
Title: 70.5'x30'x11' NCDOT TOWBOAT

2ND DECK DECKHOUSE BHD STRUCTURAL DETAILS

Dwg. No. 17-1372-153
Alt. No. 0
Sht. 1 of 2

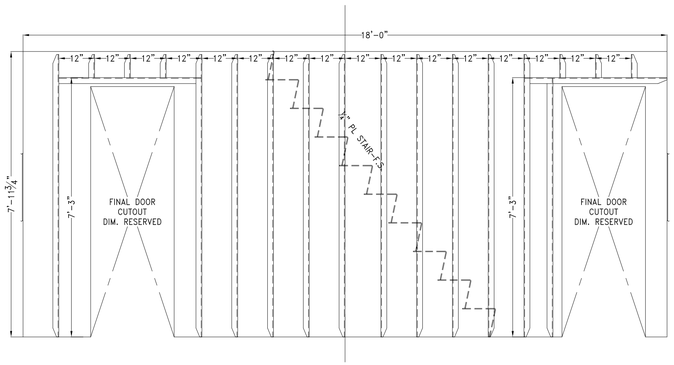
Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



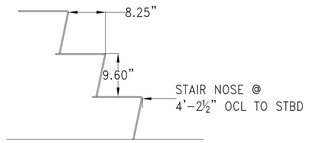
20

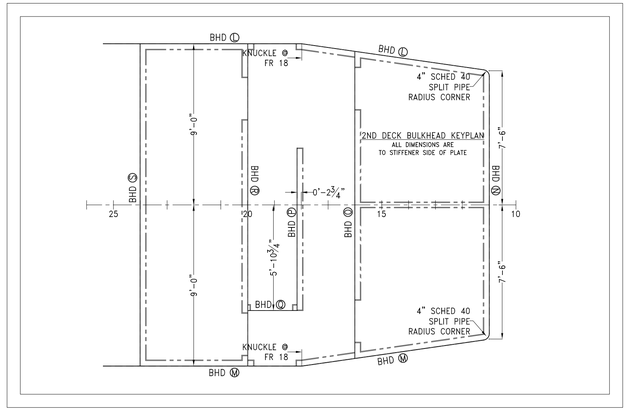
MAIN DECK BHD Ⓠ
@ 5'-10¾" OCL TO STBD
¾" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG PORT

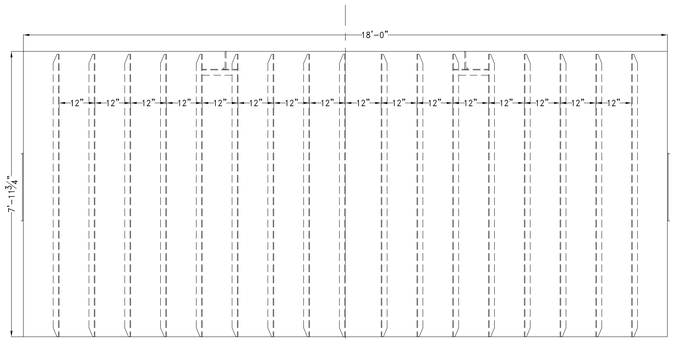


2ND DECK BHD Ⓡ
@ FRAME 20
3/16" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

2ND TO 3RD DK 49.3° STAIR
¼" PL TREADS
10 EQUAL RISES–APPROX. 9-⅝" PER
9 EQUAL RUNS @ 8-½" PER

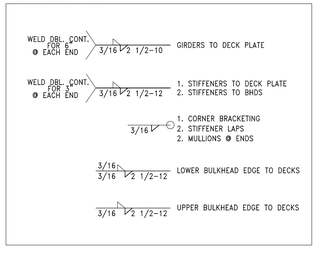


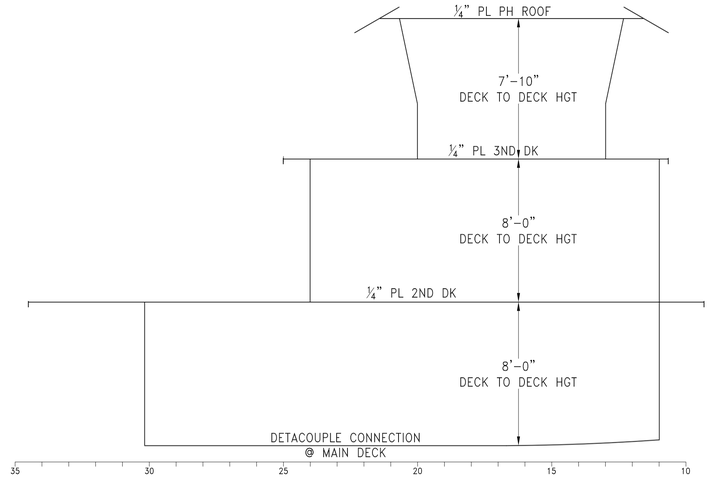




2ND DECK BHD Ⓢ
@ FRAME 24
¾" PL W/ 3x2x5/16" L
UNLESS OTHERWISE NOTED
SHOWN LKG FWD

WELD SCHEDULE–TYPICAL





ALL DECKHOUSE CONSTRUCTION
5086 H116 AL. PLATING
6061-T6 AL. EXTRUSIONS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

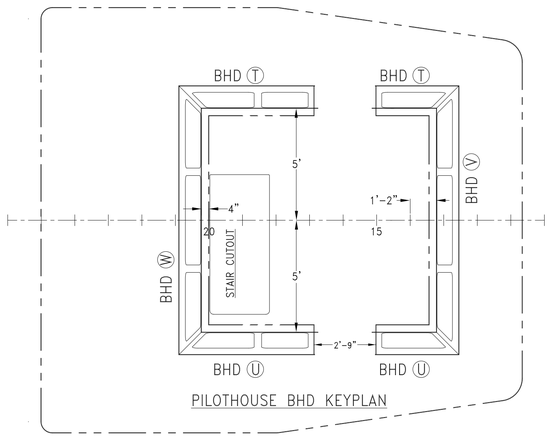
Title: 70.5'x30'x11' NCDOT TOWBOAT

2ND DECK DECKHOUSE
BHD STRUCTURAL DETAILS

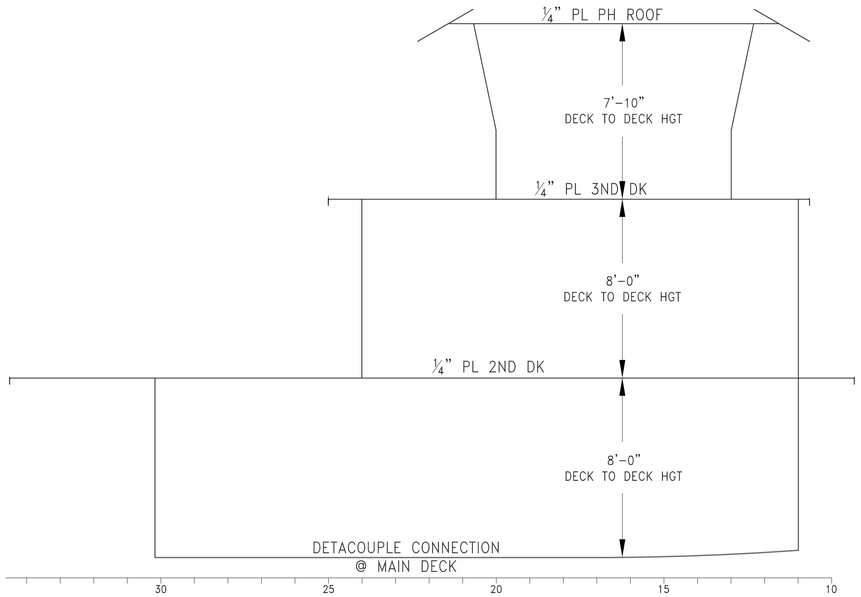
Dwg. No. 17-1372-153
Alt. No. 0
Sht. 2 of 2

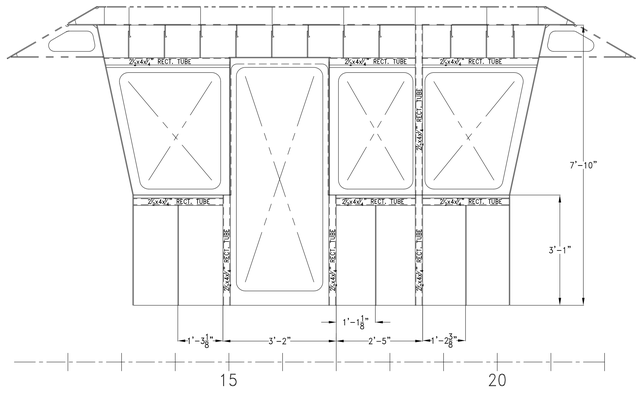
Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: ½" = 1'-0"
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")

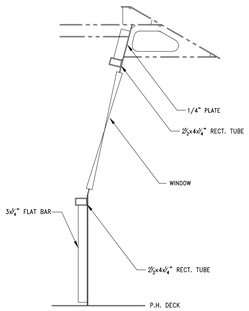


PILOTHOUSE BHD KEYPLAN

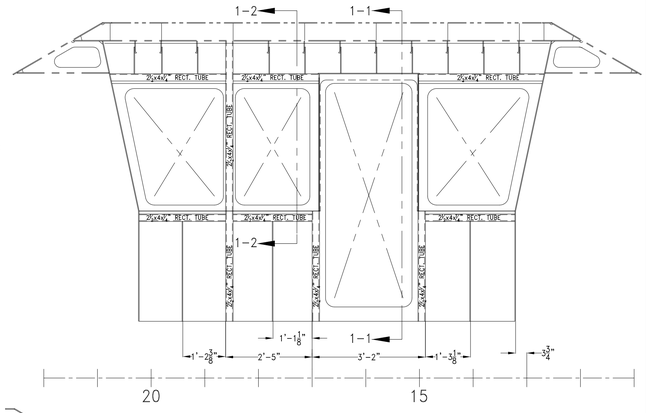




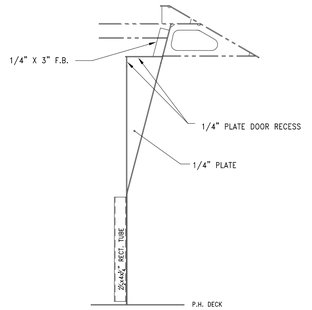
PILOTHOUSE STBD SIDE BULKHEAD (U)
¼" PL W/ ½x3" F.B. STIFFS ON 12" CNTRS
UNLESS OTHERWISE NOTED
CENTERLINE LOOKING OUTBOARD

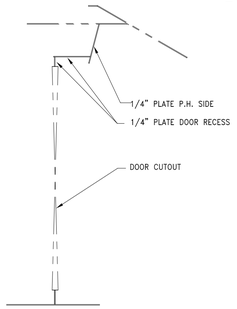


DETAIL 1-2
WINDOW SECTION

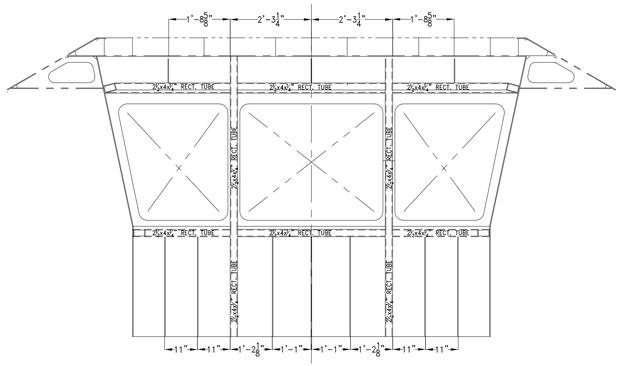


PILOTHOUSE PORT SIDE BULKHEAD (T)
¼" PL W/ ½x3" F.B. STIFFS ON 12" CNTRS
UNLESS OTHERWISE NOTED
CENTERLINE LOOKING OUTBOARD

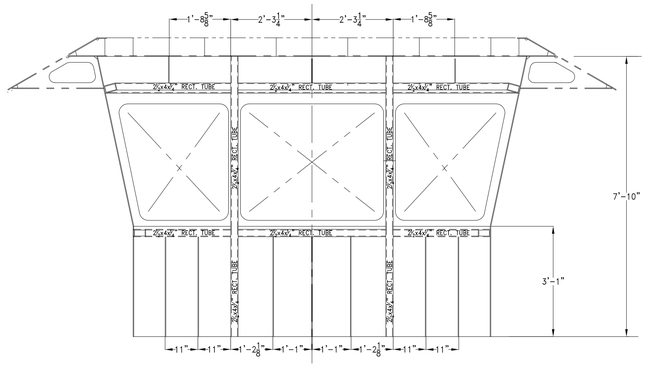




DETAIL 1-1
DOOR SECTION



PILOTHOUSE AFT BHD STRUCTURAL (W)
¼" PL W/ ½x3" F.B. STIFFS ON 12" CNTRS
UNLESS OTHERWISE NOTED
INSIDE LOOKING AFT



PILOTHOUSE FWD BULKHEAD (V)
¼" PL W/ ½x3" F.B. STIFFS ON 12" CNTRS
UNLESS OTHERWISE NOTED
INSIDE LOOKING FORWARD

WELD SCHEDULE-TYPICAL

WELD DBL. CONT. FOR 6 @ EACH END — 3/16 ◺ 2 1/2-10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR 6 @ EACH END — 3/16 ◺ 2 1/2-12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16 ◺ ○	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS @ ENDS
5/16 / 3/16 ◺ 2 1/2-12	LOWER BULKHEAD EDGE TO DECKS
3/16 ◺ 2 1/2-12	UPPER BULKHEAD EDGE TO DECKS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

PILOTHOUSE STRUCTURAL DETAILS

Dwg. No. 17-1372-154
Alt. No. 0
Sht. 1 of 2

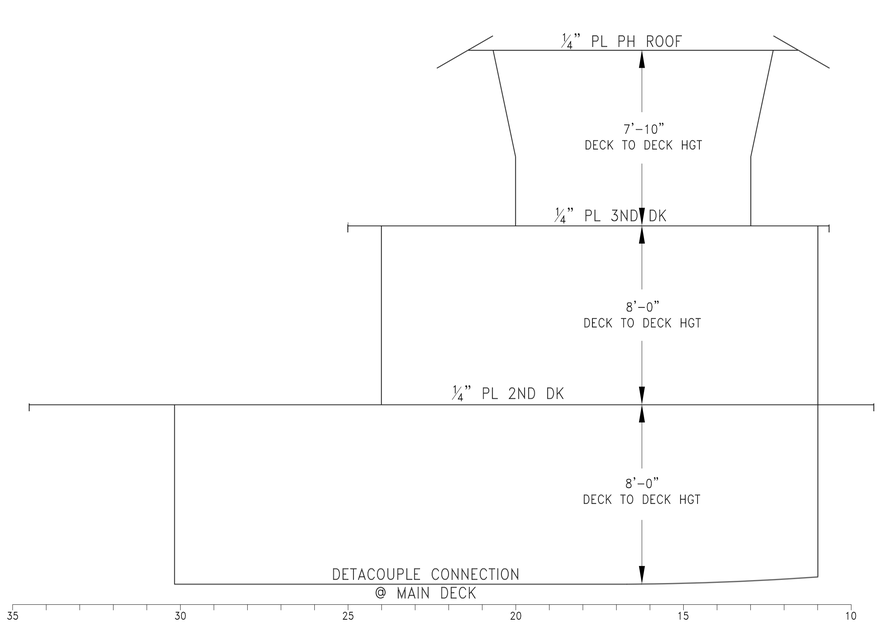
Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

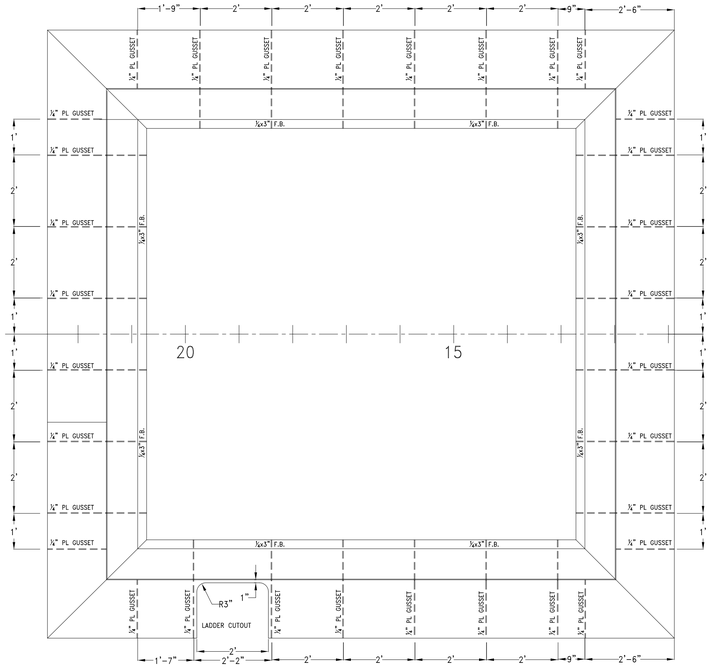
ANSI-D (24"x36")

	– GENERAL NOTES –
NO.	DESCRIPTION
1.	STRUCTURAL STEEL TO MEET ABS GRADE A. STANDARDS
2.	UNBRACKETED STIFFNERS OF SHELL, WATERTIGHT AND OILTIGHT BHDS AND HOUSE FRONTS ARE TO HAVE DOUBLE CONT. WELDS FOR 1/10 OF THEIR LENGTH AT EACH END.
3.	UNBRACKETED STIFFNERS OF NONTIGHT STRUCTURAL BHDS, DECKHOUSE SIDES AND AFTER ENDS ARE TO HAVE A PAIR OF MATCHING INTERMITTENT WELDS AT EACH END.
4.	THE WELDING OF LONGITUDINALS MAY BE AS REQ. UNDER FRAMES OR DECKS ABOVE. IN ADDITION, THEY ARE TO HAVE DOUBLE CONTINUOUS WELDS AT THE END AND IN WAY OF TRANSVERSES EQUAL IN LENGTH TO THE DEPTH OF THE LONGITUDINAL. FOR DECK LONGITUDINALS ONLY A MATCHED PAIR OF WELDS IS REQ. AT THE TRANSVERSES. FOR SLAB LONGITUDINALS THE ATTACHMENT IS TO BE MADE DOUBLE CONTINUOUS FILLET WELDS OF A SIZE w WHICH IS 0.3 TIMES THE THICKNESS OF THE THINNER PLATE BUT NEED NOT BE GREATERS THAN 5/16 IN.
5.	SHIPYARD TO PROVIDE RATHOLES, SNIPES & CUTOUTS TO ALLOW FOR . ADEQUATE DRAINAGE TO THE BILGE AT CENTERLINE.

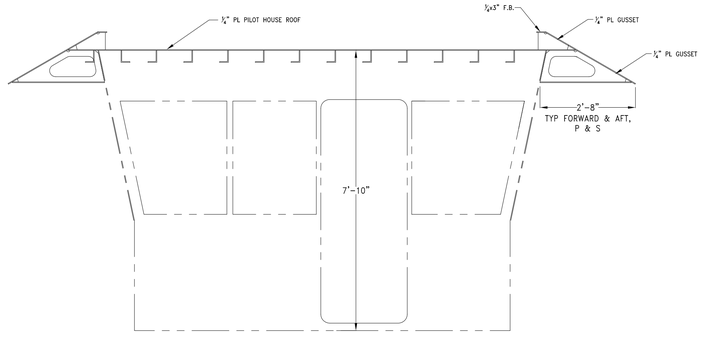
WELD SCHEDULE–TYPICAL

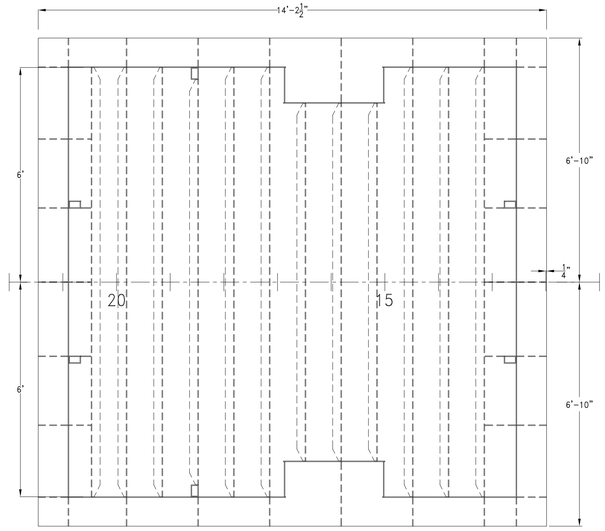
WELD DBL. CONT. FOR 3 Ø EACH END — 3/16 — 2 1/2–10	GIRDERS TO DECK PLATE
WELD DBL. CONT. FOR 3 Ø EACH END — 3/16 — 2 1/2–12	1. STIFFENERS TO DECK PLATE 2. STIFFENERS TO BHDS
3/16	1. CORNER BRACKETING 2. STIFFENER LAPS 2. MULLIONS Ø ENDS
3/16 / 3/16 — 2 1/2–12	LOWER BULKHEAD EDGE TO DECKS
3/16 — 2 1/2–12	UPPER BULKHEAD EDGE TO DECKS





PILOTHOUSE ROOF COAMING STRUCTURAL DETAILS
¼" PL STIFFENED AS SHOWN





PILOTHOUSE ROOF STRUCTURAL DETAILS
¼" PL W/ 4x3½¼" L ON 12" CNTRS
UNLESS OTHERWISE NOTED

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399–3673
Fax: (904) 399–1522
Info@DejongandLebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

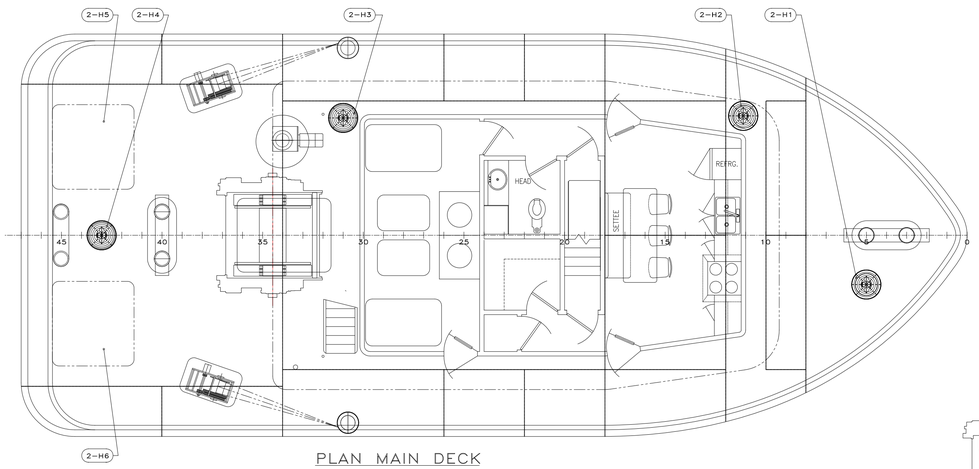
Title: 70.5'x30'x11' NCDOT TOWBOAT

PILOTHOUSE STRUCTURAL DETAILS

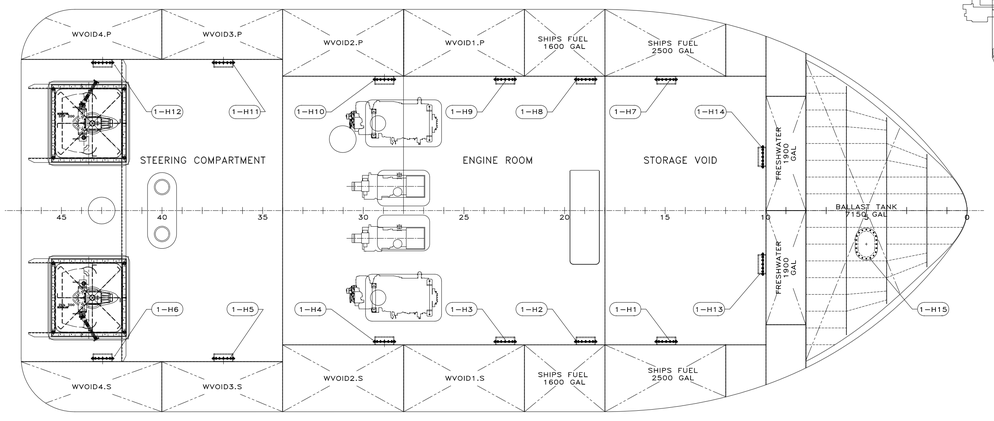
Dwg. No. 17–1372–154
Alt. No. 0
Sht. 2 of 2

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'–0"
ABS App'l: USCG App'l.:

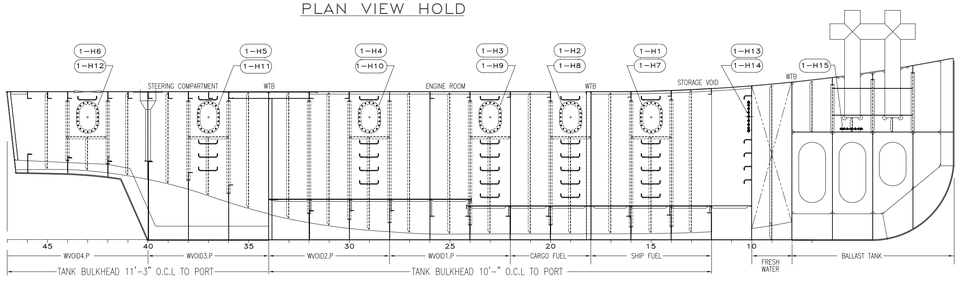
ANSI–D (24"x36")



PLAN MAIN DECK

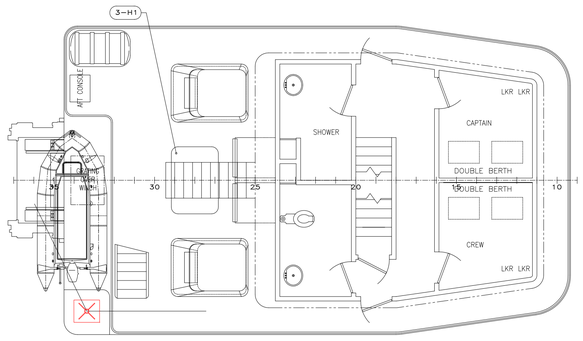


PLAN VIEW HOLD

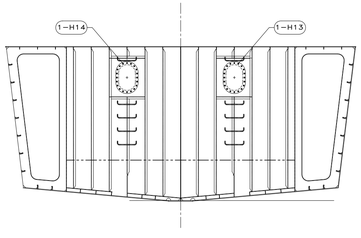


PROFILE VIEW HOLD

PORT SIDE SHOWN, STBD SIDE MIRROR IMAGE



PLAN 2ND DECK



FRAM 10 LOOKING FWD

HATCH SCHEDULE

HOLD

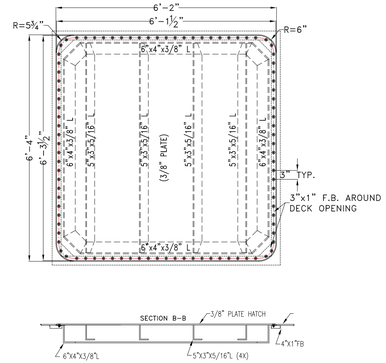
ITEM	SIZE	DESCRIPTION	COMPARTMENT	LOCATION	PART NUMBER	MANUFACTURER	MATERIAL	COAMING	REMARKS
1-H1	15"X23"	HATCH, RAISED, WJLTBOLT, OILTIGHT	STORAGE VOID	F.O. TANK, STBD			STEEL	2.5"	
1-H2	15"X23"	HATCH, RAISED, WJLTBOLT, OILTIGHT	ENGINE ROOM	CARGO F.O. TANK, STBD			STEEL	2.5"	
1-H3	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	ENGINE ROOM	WATER VOID TANK 1S			STEEL	2.5"	
1-H4	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	ENGINE ROOM	WATER VOID TANK 2S			STEEL	2.5"	
1-H5	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STEERING COMP.	WATER VOID TANK 3S			STEEL	2.5"	
1-H6	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STEERING COMP.	WATER VOID TANK 4S			STEEL	2.5"	
1-H7	15"X23"	HATCH, RAISED, WJLTBOLT, OILTIGHT	STORAGE VOID	F.O. TANK, PORT			STEEL	2.5"	
1-H8	15"X23"	HATCH, RAISED, WJLTBOLT, OILTIGHT	ENGINE ROOM	CARGO F.O. TANK, PORT			STEEL	2.5"	
1-H9	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	ENGINE ROOM	WATER VOID TANK 1P			STEEL	2.5"	
1-H10	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	ENGINE ROOM	WATER VOID TANK 2P			STEEL	2.5"	
1-H11	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STEERING COMP.	WATER VOID TANK 3P			STEEL	2.5"	
1-H12	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STEERING COMP.	WATER VOID TANK 4P			STEEL	2.5"	
1-H13	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STORAGE VOID FR10	STBD FRESH WATER TANK			STEEL	2.5"	
1-H14	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	STORAGE VOID FR10	PORT FRESH WATER TANK			STEEL	2.5"	
1-H15	15"X23"	HATCH, RAISED, WJLTBOLT, WATERTIGHT	FOREPEAK	BALLAST TANK			STEEL	2.5"	

MAIN DECK

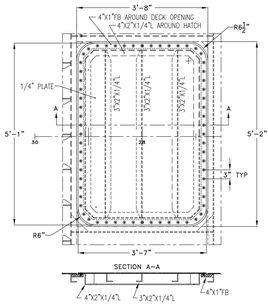
2-H1	#24"	HATCH, WATERTIGHT, O.A. , STEEL RING	FOREPEAK	MAIN DECK BOW			ALUM./STEEL		
2-H2	#24"	HATCH, WATERTIGHT, O.A. , STEEL RING	STORAGE VOID	MAIN DECK FWD PORT			ALUM./STEEL		
2-H3	#24"	HATCH, WATERTIGHT, O.A. , STEEL RING	ENGINE ROOM	MAIN DECK AFT PORT			ALUM./STEEL		
2-H4	#24"	HATCH, WATERTIGHT, O.A. , STEEL RING	STEERING COMP	MAIN DECK STERN C.L.			ALUM./STEEL		
2-H5	SEE DWG	HATCH, EQUIPMENT REMOVAL	STEERING COMP.	MAIN DECK STERN PORT			STEEL		SEE DETAIL 2-H5 & 3-H5A
2-H6	SEE DWG	HATCH, EQUIPMENT REMOVAL	STEERING COMP.	MAIN DECK STERN STBD			STEEL		SEE DETAIL 2-H5 & 3-H5A

2ND DECK

3-H1	SEE DWG	HATCH, GENERATOR REMOVAL	ENGINE ROOM	2ND DECK AFT			ALUMINUM		SEE DETAIL 3-H1 & 3-H1A

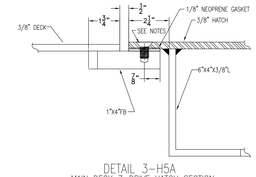


DETAIL 2-H5
MAIN DECK Z-DRIVE HATCHES (2 EA)
SCALE: 1/2" = 1'-0"
MATERIAL: A36 STEEL



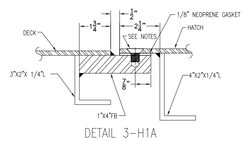
DETAIL 3H1
2ND DECK HATCH
SCALE: 1/2" = 1'-0"
MATERIAL: ALUMINUN, 5086-H116 PLATE, 6061-T6 SHAPES

NOTES:
1. DRILL & TAP 1"X4"TB 1/2-13 X 3/4"DEEP AND INSTALL 1# SS HELICAL INSERT (DO NOT BREAK THRU)
2. COUNTERSINK HATCH COVER .938" X 82°
3. INSTALL 1/2"-13 316 STAINLESS STEEL FLATHEAD SCREWS (96 PLACES)
4. APPLY TEFF GEL TO SCREW THREADS PRIOR TO INSTALLATION



DETAIL 3-H5A
MAIN DECK Z-DRIVE HATCH SECTION
SCALE: 3" = 1'-0"

NOTES:
1. DRILL & TAP 1"X4"TB 1/2-13 X 3/4"DEEP AND INSTALL 1# SS HELICAL INSERT (DO NOT BREAK THRU)
2. COUNTERSINK HATCH COVER 938" X 82°
3. INSTALL 1/2"-13 316 STAINLESS STEEL FLATHEAD SCREWS (64 PLACES)
4. APPLY TEFF GEL TO SCREW THREADS PRIOR TO INSTALLATION



DETAIL 3-H1A
2ND DECK HATCH CONNECTION SECTION
SCALE: 3" = 1'-0"

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers any right to reproduce, use or disclose this document or its contents, or any document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

HATCHES & MANHOLES

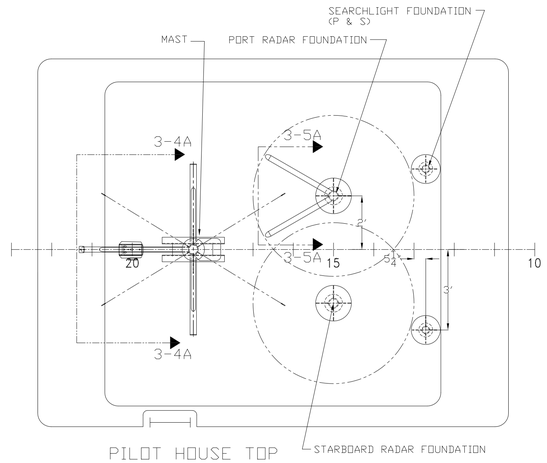
Dwg. No. 17-1372-167
Alt. No. 0
Sht. 1 of 1

Drawn By: JAH — Date: JULY 19, 2018
Checked By: _____ — Date: _____
App'd By: _____ — Scale: UNLESS NOTED OTHERWISE
ABS App'l: _____ — USCG App'l:: _____

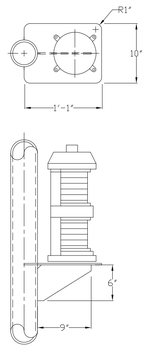
WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-167.dwg, 9/19/2018 1:43:02 PM, 24x36 PDF.pc3

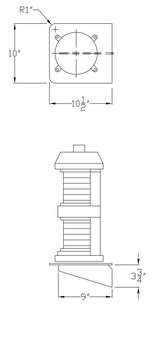


PILOT HOUSE TOP



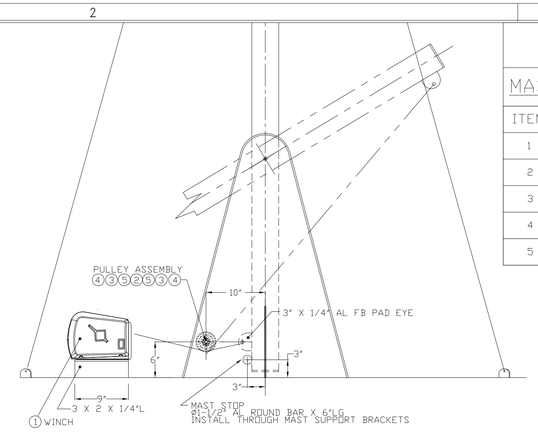
DETAIL "A"

TYP NAV LIGHT MOUNT
(UNLESS OTHERWISE NOTED)
SCALE: 1" = 1'-0"



DETAIL "B"

STERN LIGHT MOUNT
SCALE: 1" = 1'-0"



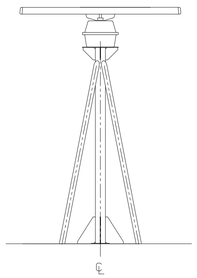
DETAIL "C"

MAST BASE ASSEMBLY
SCALE: 1" = 1'-0"

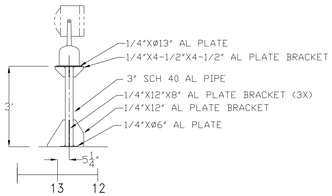
BILL OF MATERIALS

MAST ASSEMBLY SCHEDULE

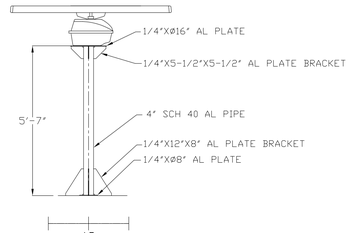
ITEM	QTY.	DESCRIPTION	MANUFACTURER #	REMARKS
1	1	WINCH, ELECTRIC, 120VAC, 1200 LB, 3/16" CABLE	DUTTON-LAINSON SA5000AC	OR EQUAL
2	1	PULLEY, WIRE ROPE, 3/16", Ø 1/2" SHAFT STAINLESS STEEL	MCMASTER-CARR 3628T22	OR EQUAL
3	2	SHAFT, ROTARY, STAINLESS STEEL W/ RETAINING RING GROOVES	MCMASTER-CARR 2025K11	OR EQUAL
4	4	RETAINING RING, 1/2", EXTERNAL,, SS	MCMASTER-CARR 95304A251	OR EQUAL
5	2	COLLAR, SHAFT, TWO- PIECE, STAINLESS STEEL	MCMASTER-CARR 6436K34	OR EQUAL



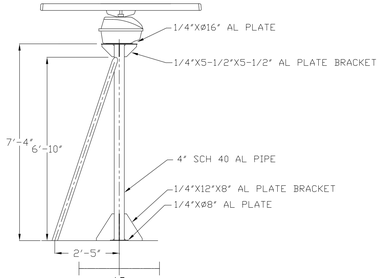
SECTION 3-5A
PORT RADAR MAST
2'-0" DCL
SCALE: 3/8"=1'-0"



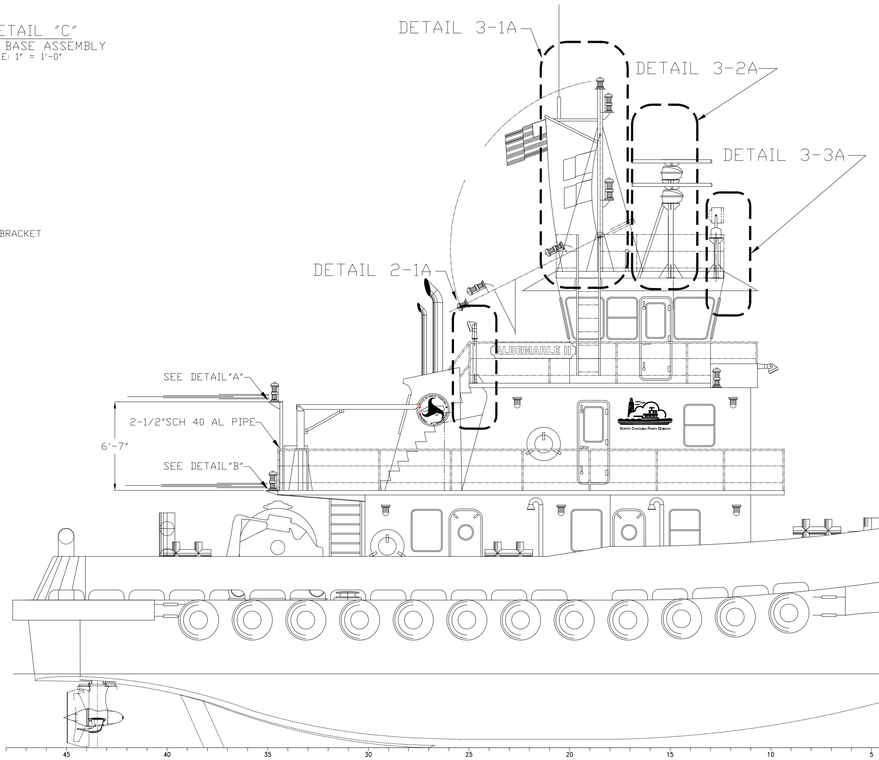
ELEVATION 3-3A
SEARCHLIGHT FOUNDATION (2 EA)
3'-0" DCL (P & S)
SCALE: 3/8"=1'-0"



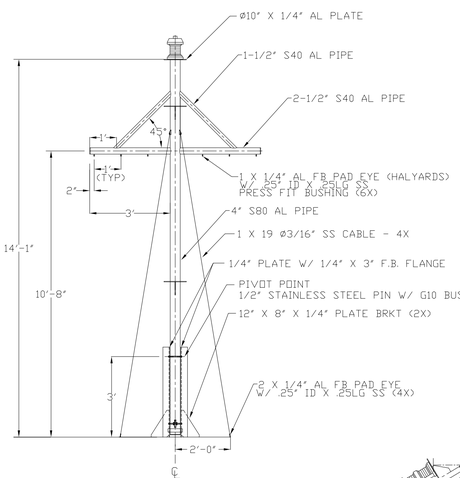
ELEVATION 3-2A
STARBOARD RADAR MAST
2'-0" DCL
SCALE: 3/8"=1'-0"



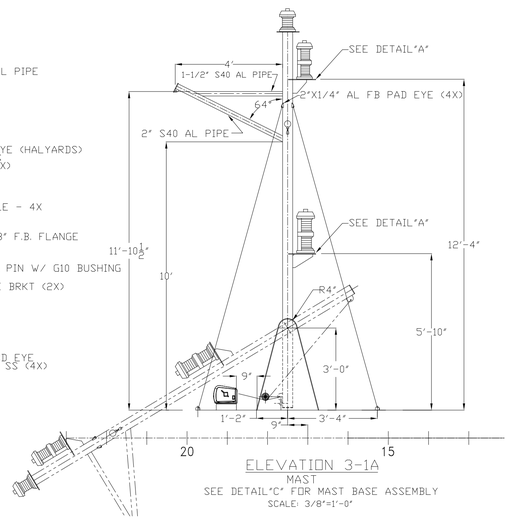
ELEVATION 3-2A
PORT RADAR MAST
2'-0" DCL
SCALE: 3/8"=1'-0"



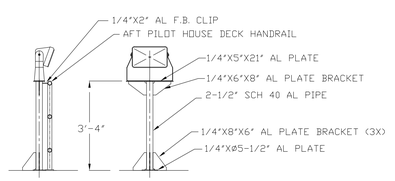
ELEVATION 1-1A
OUTBOARD PROFILE
SCALE: 3/16"=1'-0"



SECTION 3-4A
MAST
SCALE: 3/8"=1'-0"



ELEVATION 3-1A
MAST
SEE DETAIL'C' FOR MAST BASE ASSEMBLY
SCALE: 3/8"=1'-0"



ELEVATION 2-1A
FLOODLIGHT MAST (2 EA)
6'-4" DCL (P & S) PILOT HOUSE DECK AFT
SCALE: 3/8"=1'-0"

WILLIAM HAYES
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

MAST DETAILS

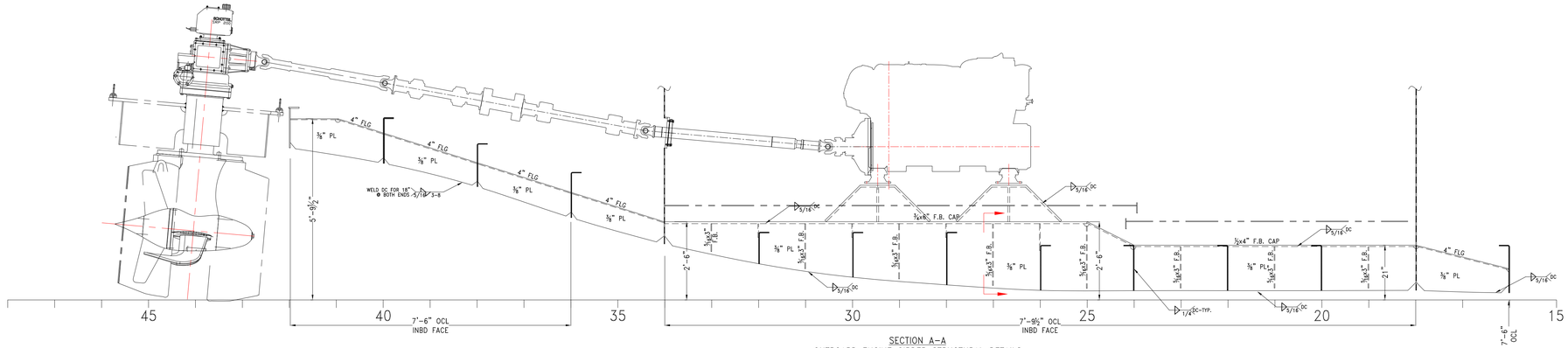
Dwg. No. 17-1372-171
Alt. No. 1
Sht. 1 of 1

Drawn By: JAH
Checked By:
App'd By:
ABS App'l:
Date: JULY 19, 2018
Date:
Scale: SEE DWG
USCG App'l.:

CODE: R - REVISED, A - RETURNED							
						9	A - APPROVED
						8	
						7	
						6	
						5	C - CERTIFIED PRELIMINARY
						4	
						3	
						2	
						1	
					s/8.3.18/e	0	
					NCDOT	ALT. NO.	

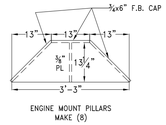
– DRAWING SUBMITTALS –

ANSI-D (24"x36")

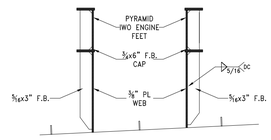


SECTION A–A
OUTBOARD ENGINE GIRDER STRUCTURAL DETAILS
PORT SIDE SHOWN LKG OUTBD
STBD SIMILAR; OPP. HAND

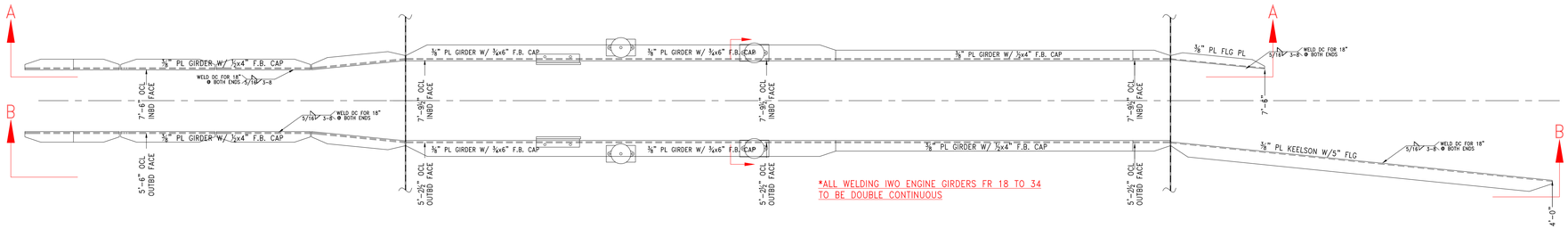
*ALL WELDING IWO ENGINE GIRDERS FR 18 TO 34 TO BE DOUBLE CONTINUOUS



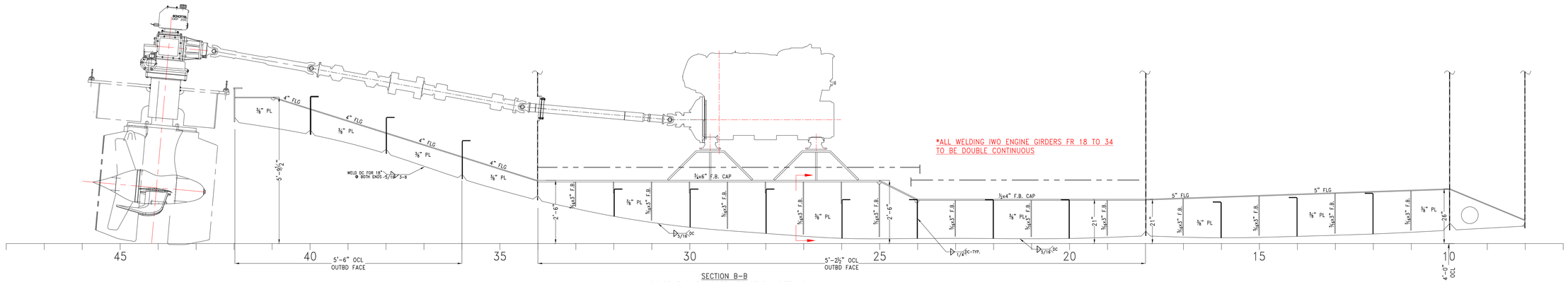
ENGINE MOUNT PILLARS
MAKE (8)



TYPICAL ENGINE GIRDER SECTION
IWO INTERMEDIATE STIFFENERS



*ALL WELDING IWO ENGINE GIRDERS FR 18 TO 34 TO BE DOUBLE CONTINUOUS



*ALL WELDING IWO ENGINE GIRDERS FR 18 TO 34 TO BE DOUBLE CONTINUOUS

SECTION B–B
INBOARD ENGINE GIRDER STRUCTURAL DETAILS
PORT SIDE SHOWN LKG OUTBD
STBD SIMILAR; OPP. HAND

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

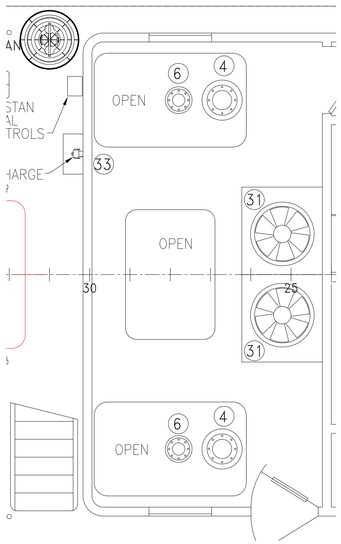
Title: 70.5'x30'x11' NCDOT TOWBOAT

LONGITUDINAL GIRDER STRUCTURAL DETAILS

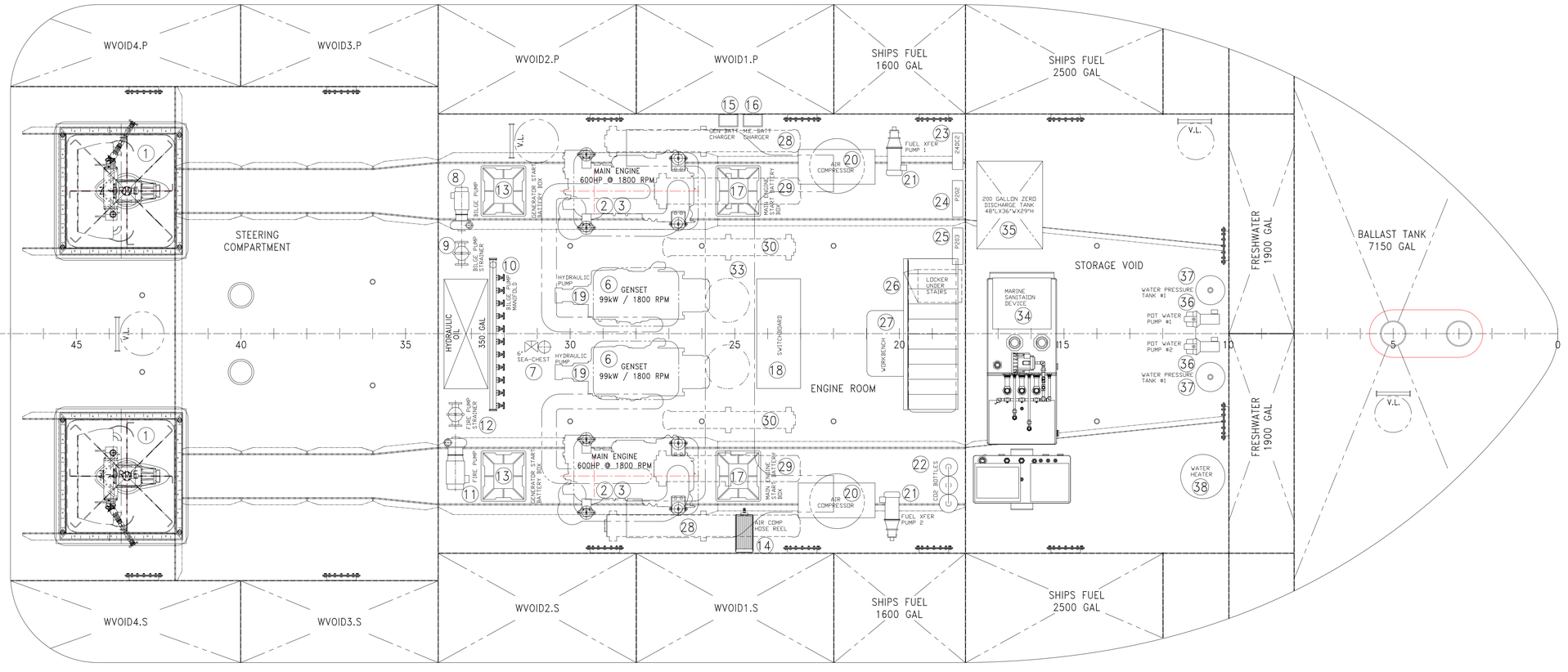
Dwg. No. 17-1372-182
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



MAIN DECK MACHINERY ARRANGEMENT



HOLD ARRANGEMENTS

EQUIPMENT LIST			
ITEM	QTY	DESCRIPTION	REMARKS
1	2	AZIMUTH DRIVE	
2	2	REDUCTION GEAR	
3	2	MAIN ENGINE	
4	2	MAIN ENGINE EXHAUST SILENCER	
5	2	GENERATOR ENGINE EXHAUST SILENCER	
6	2	120/208 VAC, 3ø GENERATOR	
7	1	SEA CHEST	
8	1	BILGE PUMP	
9	1	BILGE PUMP STRAINER	
10	1	BILGE MANIFOLD	
11	1	FIRE PUMP	
12	1	FIRE PUMP STRAINER	
13	2	GENERATOR BATTERY	
14	1	HOSE REEL	
15	1	GENERATOR BATTERY CHARGER	
16	1	MAIN ENGINE BATTERY CHARGER	
17	2	MAIN ENGINE BATTERY	
18	1	SWITCHBOARD	
19	2	HYDRAULIC PUMP	
20	2	AIR COMPRESSOR	
21	2	FUEL TRANSFER PUMP	
22	1	FIRE SUPRESSION SYSTEM	
23	1	24 VOLT DC PANEL	
24	1	120/208 ENGINE ROOM PANEL	
25	1	120/208 ENGINE ROOM PUMP PANEL	
26	1	LOCKER	
27	1	WORKBENCH	
28	2	MAIN ENGINE KEEL COOLER	FARSIDE
29	2	MAIN ENGINE KEEL COOLER	FARSIDE
30	2	GENEATOR KEEL COOLER	FARSIDE
31	2	ENGINE ROOM SUPPLY FAN	MAIN DK MACH SP.
32	1	ENGINE ROOM SUPPLY AIR DUCT	OVERHEAD
33	1	FUEL TRANSFER DISCHARGE	MAIN DK MACH SP.
34	1	MARINE SANITATION DEVICE	
35	1	200 GALLON ZERO DISCHARGE TANK	
36	2	POTABLE WATER PUMP	
37	2	POTABLE WATER PRESSURE TANK	
38	1	WATER HEATER	

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

MACHINERY ARRANGEMENT

Dwg. No. 17-1372-200

Alt. No. 1
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 3/8" = 1'-0"
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")

SYSTEM OPERATION INTENT

EACH ENGINE IS PROVIDED WITH INDEPENDENT COOLING CIRCUITS, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

SYMBOLS LIST

———	PIPE
	BUTTERFLY VALVE
	BALL VALVE
	BALL VALVE WITH THREADED PLUG
	GLOBE VALVE
	GATE VALVE
	CHECK VALVE
▷	REDUCER
	FLEXIBLE CONNECTION
P	PRESSURE GAUGE (LOCAL READING)
VP	VACUUM PRESSURE GAUGE (LOCAL READING)
	THERMOMETER
	CENTRIFUGAL PUMP
►	FLOW DIRECTION ARROW
	SIMPLEX BASKET STRAINER
FS	FLOW SWITCH
LS	LEVEL SWITCH

GENERAL MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			VALVES		FITTINGS	FLEXIBLE CONNECTIONS	COMMENTS
			MATERIAL	GASKETS	BOLTING	BODY	TRIM			
FW COOLING MAWP: 20 PSIG MAX TEMP: 200°F	2 1/2" & ABOVE	CARBON STEEL ASTM ASTM A53 OR A106, GRADE B SEAMLESS ANSI B36.10 SCH 40 SCH 80 SHALL BE USED AT HULL PENETRATIONS	FLANGE CARBON STEEL ASTM A105 ANSI B16.5 150# SLIP-ON OR WELD NECK	GARLOCK STYLE IFG 5500 OR EQUAL	BOLTS: CARBON STEEL ASTM A307 GRADE B ANSI B18.2.1 NUTS: CARBON STEEL ASTM A563 GRADE A ANSI B18.2.2	SEE B.O.M.	SEE B.O.M.	CARBON STEEL ASTM A234, GR WPB ANSI B16.9 SCH 40 BUTT WELD LONG RADIUS	SEE B.O.M.	SEE NOTE 6
	2" & UNDER		UNION CARBON STEEL ASTM A105 ANSI B16.11 SOCKET WELD	–	–	SEE B.O.M.	SEE B.O.M.	CARBON STEEL ASTM A105 ANSI B16.11 3000# SOCKET WELD	SEE B.O.M.	

EQUIPMENT LIST

ITEM #	QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE	NOTES
1	2	MAIN ENGINE SCAC & GEARBOX OIL COOLER KEEL COOLER	KEEL COOLER		6,887 BTU/MIN 84-104 GPM (97 DESIGN) (0 KNOTS)	–	SEE NOTE 10
2	2	MAIN ENGINE J/W KEEL COOLER	KEEL COOLER		16,300 BTU/MIN 52-102 GPM (78 DESIGN) (0 KNOTS)	–	SEE NOTE 10
3	2	SSDG J/W KEEL COOLER	KEEL COOLER		4,631 BTU/MIN 38.2-50 GPM (44.1 DESIGN) (0 KNOTS)	–	SEE NOTE 10

BILL OF MATERIALS

PC MK	QTY	SIZE	DESCRIPTION	MATL SPEC
1	8	2 1/2"	BUTTERFLY VALVE; 200-PSI, LUG TYPE, A395 D.I. BODY, SS DISC, BUNA-N SEATS	ASTM A395
2	1	1-1/2"	GLOBE VALVE: 150#, FLANGED, C. STEEL	ASTM A-216 GR. WCB
3	2	1 1/2"	BUTTERFLY VALVE; PN 10, LUG TYPE, D.I. BODY, SS DISC, BUNA-N SEATS	ASTM A-536 GR 65-45-12
4	A/R	1"	BALL VALVE; 1000 CWP, STD PORT, S. STEEL, NPT, S. STEEL BALL, PTFE SEATS	ASTM A-351 CF8M
5	8	1/2"	THERMOMETER W/ THERMOWELL; BRASS CONNECTION, 30°-240°F RANGE	ASME B40.200/ASTM E2511
6	6	2 1/2"	SHIELDS MARINE EXHAUST/WATER HOSE SERIES 200; HOSES SECURED WITH TWO 1/2" WIDE S. STEEL T-BOLT HOSE CLAMPS	SAE J2006 TYPE R1
7	A/R	2"	SHIELDS MARINE EXHAUST/WATER HOSE SERIES 200; HOSES SECURED WITH TWO 1/2" WIDE S. STEEL T-BOLT HOSE CLAMPS	SAE J2006 TYPE R1
8	8	2"	BUTTERFLY VALVE; 200-PSI, LUG TYPE, D.I. BODY, SS DISC, BUNA-N SEATS	ASTM A-105

- GENERAL NOTES -

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.
4.	PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.
5.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
6.	THE PIPING SYSTEM SHALL BE PRESSURE TESTED, CLEANED, AND FLUSHED PRIOR TO BEING PLACED IN SERVICE. PER MANUFACTURER, KEEL COOLERS MAY BE PRESSURE TESTED TO 20 PSI.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES. HANGERS SUPPORTING TUBING SHALL UTILIZE A RESILIENT NONMETALLIC LINER BETWEEN THE TUBING AND STEEL HANGER.
8.	KEEL COOLER INLET AND OUTLET VALVES SHALL BE LOCATED CLEAR OF OBSTRUCTIONS, AND WITHIN EASY REACH FOR OPERATION. ALL VALVES SHALL BE PROVIDED WITH VISUAL POSITION INDICATION.

- GENERAL NOTES -

NO.	DESCRIPTION
9.	THE CONTRACTOR SHALL VERIFY ENGINE REQUIREMENTS AND KEEL COOLER SELECTION PRIOR TO ORDERING KEEL COOLERS.
10.	TDH OF PUMPS FOR REQUIRED FLOW IS APPROXIMATE. THE CONTRACTOR SHALL PROVIDE PUMPS MEETING THE REQUIRED FLOW WITH THE INSTALLED PIPING SYSTEM. PUMP MOTORS SHALL BE SELECTED TO PREVENT MOTOR OVERLOAD OVER THE ENTIRE PUMP OPERATING RANGE.
11.	CONTRACTOR TO SIZE, LOCATE AND INSTALL EXPANSION TANKS IN ACCORDANCE WITH ENGINE MANUFACTURER'S RECOMMENDATIONS.
12.	PROVIDE A 1" VALVED DRAIN WITH PLUG AT THE LOWEST POINT OF EACH COOLING CIRCUIT.
13.	CONNECT SWITCHES TO SHIP'S ALARM AND MONITORING SYSTEM AND PROVIDE LOW COOLANT LEVEL ALARMS FOR EACH ENGINE.
14.	WHERE PRACTICABLE, ROUTE KEEL COOLER PIPING WITHOUT HIGH SPOTS THAT COULD TRAP AIR. A VENT SHALL BE PROVIDED AT EACH HIGH SPOT CAPABLE OF TRAPPING AIR IN THE SYSTEM.
15.	MOUNT REDUCTION GEAR COOLER AS CLOSE AS POSSIBLE TO REDUCTION GEAR. OIL FLOW MUST BE OPPOSITE OF WATER FLOW IN OIL COOLER.
16.	INTERFACE FLOW SWITCH WITH SHIPS ALARM AND MONITORING SYSTEM. LOW FLOW ALARM TO OCCUR WHEN FLOW DROPS BELOW 10 GPM.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

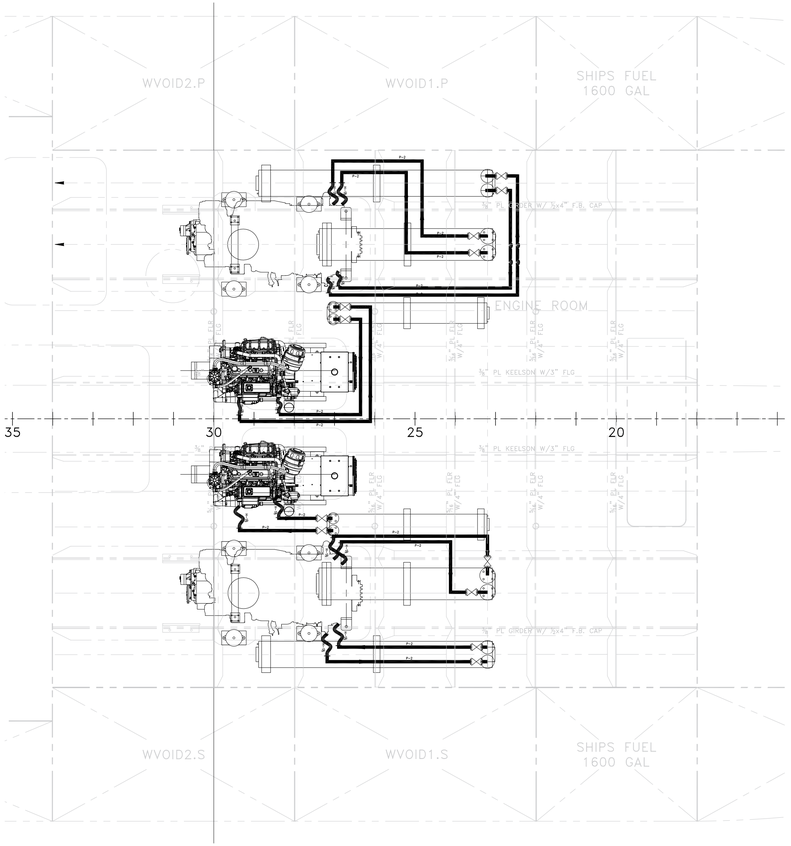
Title: 70.5'x30'x11' NCDOT TOWBOAT

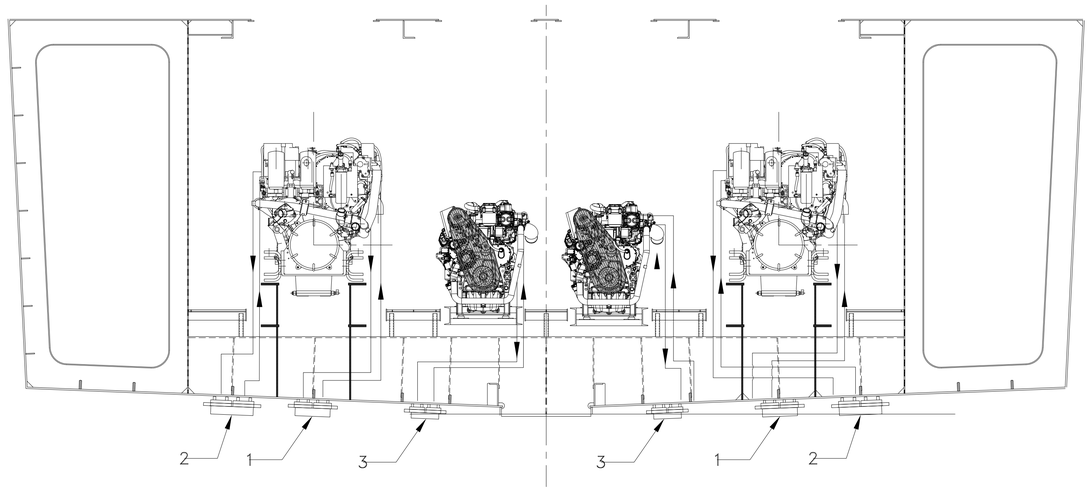
COOLING SYSTEM

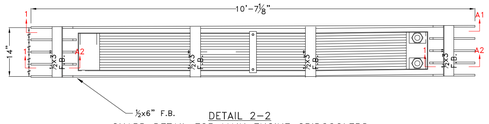
Dwg. No. 17-1372-256
Alt. No. 1
Sht. No. 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

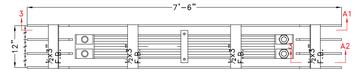
ANSI-D (24"x36")



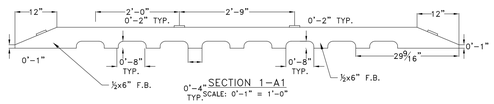




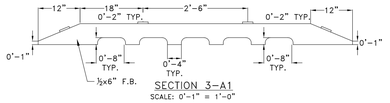
DETAIL 2–2
GUARD DETAIL FOR MAIN ENGINE GRIDCOOLERS
SCALE: 0'–1" = 1'–0"



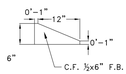
DETAIL 3–3
GUARD DETAIL FOR GENSET GRIDCOOLER
SCALE: 0'–1" = 1'–0"



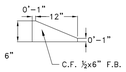
SECTION 1–A1
SCALE: 0'–1" = 1'–0"



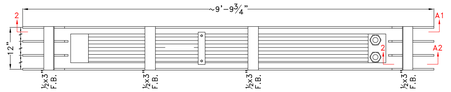
SECTION 3–A1
SCALE: 0'–1" = 1'–0"



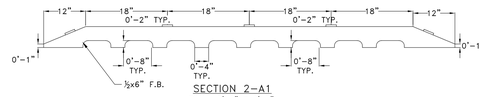
SECTION 1–A2
SCALE: 0'–1" = 1'–0"



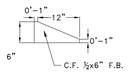
SECTION 3–A2
SCALE: 0'–1" = 1'–0"



DETAIL 1–1
GUARD DETAIL FOR AFT A/C GRIDCOOLERS
SCALE: 0'–1" = 1'–0"



SECTION 2–A1
SCALE: 0'–1" = 1'–0"



SECTION 2–A2
SCALE: 0'–1" = 1'–0"

– GENERAL NOTES –			– GENERAL NOTES –
NO.	DESCRIPTION	NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	THE CONTRACTOR SHALL VERIFY ENGINE REQUIREMENTS AND KEEL COOLER SELECTION PRIOR TO ORDERING KEEL COOLERS.
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.	11.	TDH OF PUMPS FOR REQUIRED FLOW IS APPROXIMATE. THE CONTRACTOR SHALL PROVIDE PUMPS MEETING THE REQUIRED FLOW WITH THE INSTALLED PIPING SYSTEM. PUMP MOTORS SHALL BE SELECTED TO PREVENT MOTOR OVERLOAD OVER THE ENTIRE PUMP OPERATING RANGE.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.	12.	CONTRACTOR TO SIZE, LOCATE AND INSTALL EXPANSION TANKS IN ACCORDANCE WITH ENGINE MANUFACTURER'S RECOMMENDATIONS.
4.	PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721.	13.	PROVIDE A 1" VALVED DRAIN WITH PLUG AT THE LOWEST POINT OF EACH COOLING CIRCUIT.
5.	VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.	14.	CONNECT SWITCHES TO SHIP'S ALARM AND MONITORING SYSTEM AND PROVIDE LOW COOLANT LEVEL ALARMS FOR EACH ENGINE.
6.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.	15.	WHERE PRACTICABLE, ROUTE KEEL COOLER PIPING WITHOUT HIGH SPOTS THAT COULD TRAP AIR. A VENT SHALL BE PROVIDED AT EACH HIGH SPOT CAPABLE OF TRAPPING AIR IN THE SYSTEM.
7.	THE PIPING SYSTEM SHALL BE PRESSURE TESTED, CLEANED, AND FLUSHED PRIOR TO BEING PLACED IN SERVICE. PER MANUFACTURER, KEEL COOLERS MAY BE PRESSURE TESTED TO 20 PSI.	16.	MOUNT REDUCTION GEAR COOLER AS CLOSE AS POSSIBLE TO REDUCTION GEAR. OIL FLOW MUST BE OPPOSITE OF WATER FLOW IN OIL COOLER.
8.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES. HANGERS SUPPORTING TUBING SHALL UTILIZE A RESILIENT NONMETALLIC LINER BETWEEN THE TUBING AND STEEL HANGER.	17.	INTERFACE FLOW SWITCH WITH SHIPS ALARM AND MONITORING SYSTEM. LOW FLOW ALARM TO OCCUR WHEN FLOW DROPS BELOW 10 GPM.
9.	KEEL COOLER INLET AND OUTLET VALVES SHALL BE LOCATED CLEAR OF OBSTRUCTIONS, AND WITHIN EASY REACH FOR OPERATION. ALL VALVES SHALL BE PROVIDED WITH VISUAL POSITION INDICATION.		

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

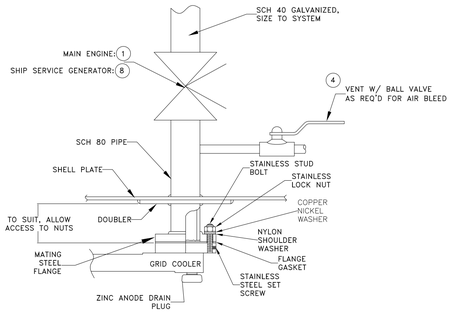
Title: 70.5'x30'x11' NCDOT TOWBOAT

COOLING SYSTEM

Dwg. No. 17-1372-256
Alt. No. 1
Sht. 1 of 1

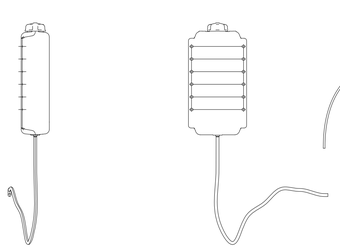
Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

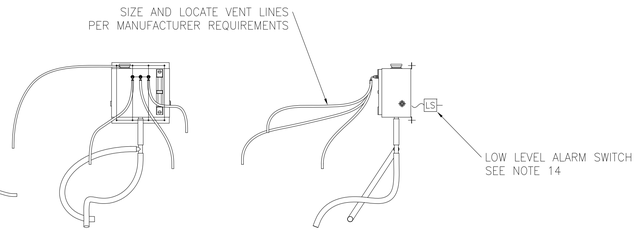


NOTE: COOLERS TO BE INSTALLED IN ACCORDANCE WITH MFG. RECOMMENDATIONS

DETAIL 2-2C
KEEL COOLER PENETRATION DETAIL
NO SCALE

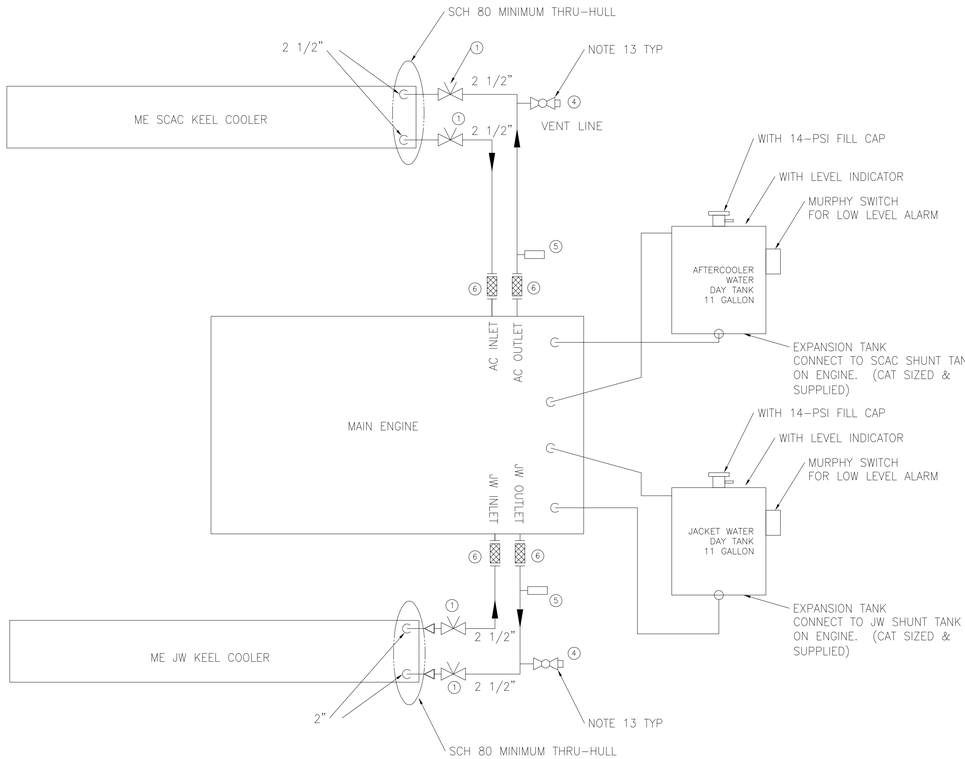


DETAIL OF COOLANT RECOVERY TANK
CAT PART #102-9220 CHG 04

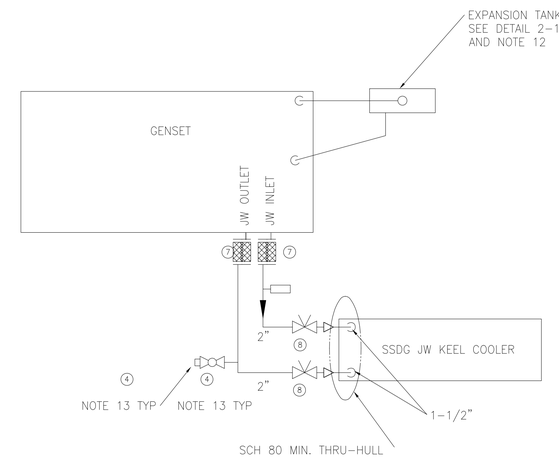


DETAIL OF KEEL COOLED EXPANSION TANK
CAT PART #432-6671 CHG 00

DETAIL 2-1C
GENSET EXPANSION & RECOVERY TANKS
NO SCALE



PLAN 2-5A
SSDG COOLING PIPING DIAGRAM
NO SCALE



PLAN 2-2A
SSDG COOLING PIPING DIAGRAM
NO SCALE

NO.	- GENERAL NOTES - DESCRIPTION	NO.	- GENERAL NOTES - DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	THE CONTRACTOR SHALL VERIFY ENGINE REQUIREMENTS AND KEEL COOLER SELECTION PRIOR TO ORDERING KEEL COOLERS.
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.	11.	TDH OF PUMPS FOR REQUIRED FLOW IS APPROXIMATE. THE CONTRACTOR SHALL PROVIDE PUMPS MEETING THE REQUIRED FLOW WITH THE INSTALLED PIPING SYSTEM. PUMP MOTORS SHALL BE SELECTED TO PREVENT MOTOR OVERLOAD OVER THE ENTIRE PUMP OPERATING RANGE.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.	12.	CONTRACTOR TO SIZE, LOCATE AND INSTALL EXPANSION TANKS IN ACCORDANCE WITH ENGINE MANUFACTURER'S RECOMMENDATIONS.
4.	PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.	13.	PROVIDE A 1" VALVED DRAIN WITH PLUG AT THE LOWEST POINT OF EACH COOLING CIRCUIT.
5.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.	14.	CONNECT SWITCHES TO SHIP'S ALARM AND MONITORING SYSTEM AND PROVIDE LOW COOLANT LEVEL ALARMS FOR EACH ENGINE.
6.	THE PIPING SYSTEM SHALL BE PRESSURE TESTED, CLEANED, AND FLUSHED PRIOR TO BEING PLACED IN SERVICE. PER MANUFACTURER, KEEL COOLERS MAY BE PRESSURE TESTED TO 20 PSI.	15.	WHERE PRACTICABLE, ROUTE KEEL COOLER PIPING WITHOUT HIGH SPOTS THAT COULD TRAP AIR. A VENT SHALL BE PROVIDED AT EACH HIGH SPOT CAPABLE OF TRAPPING AIR IN THE SYSTEM.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES. HANGERS SUPPORTING TUBING SHALL UTILIZE A RESILIENT NONMETALLIC LINER BETWEEN THE TUBING AND STEEL HANGER.	16.	MOUNT REDUCTION GEAR COOLER AS CLOSE AS POSSIBLE TO REDUCTION GEAR. OIL FLOW MUST BE OPPOSITE OF WATER FLOW IN OIL COOLER.
9.	KEEL COOLER INLET AND OUTLET VALVES SHALL BE LOCATED CLEAR OF OBSTRUCTIONS, AND WITHIN EASY REACH FOR OPERATION. ALL VALVES SHALL BE PROVIDED WITH VISUAL POSITION INDICATION.	17.	INTERFACE FLOW SWITCH WITH SHIPS ALARM AND MONITORING SYSTEM. LOW FLOW ALARM TO OCCUR WHEN FLOW DROPS BELOW 10 GPM.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession hereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

COOLING SYSTEM

Dwg. No.	17-1372-256	Alt. No.	1
		Sht. 1 of	1
Drawn By:	JACOB CONNALLY	Date:	JUNE 05, 2018
Checked By:		Date:	
App'd By:		Scale:	1/2" = 1'-0"
ABS App'l:		USCG App'l.:	

ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
GENERATOR EXHAUST PIPING (INLET SIDE OF MUFFLER) MAWP: 30" H2O MAWT: 813.2°F	ALL	S.S.321 SCH 20, SEAMLESS, ASTM A312, ANSI B36.10	FLANGES: WELD NECK OR SOCKET WELD, S.S. 321 ASTM A182, ANSI B16.5	FLANGED: ASTM SA182 F321, ANSI B16.5 BUTTWELD: S.S.321, ASTM A403/SA403, ANSI B16.9 OR B16.28;	SEE NOTE 7	FLEXITALLIC STYLE CG W/ FLEXICARD GRAPHITE OR 304L SS SPIRAL WOUND METALLIC W/ GRAPHITE FILLER	SEE NOTE 11	SEE NOTE 11	BOLTS/STUDS: CRES, ASTM A193/193M, GRADE B8T ANSI B18.2.1;	NUTS: CRES, ASTM A194/194M, GRADE B8T, ANSI B18.2.2;	–
GENERATOR EXHAUST PIPING (OUTLET SIDE OF MUFFLER) MAWP: 30" H2O MAWT: 796°F	ALL ALL	S.S.321 SCH 20, SEAMLESS, ASTM A312, ANSI B36.10	FLANGES: WELD NECK OR SOCKET WELD, S.S. 321 ASTM A182, ANSI B16.5	FLANGED: ASTM SA182 F321, ANSI B16.5 BUTTWELD: S.S.321, ASTM A403/SA403, ANSI B16.9 OR B16.28;					BOLTS/STUDS: CRES, ASTM A193/193M, GRADE B8T ANSI B18.2.1;	NUTS: CRES, ASTM A194/194M, GRADE B8T, ANSI B18.2.2;	
MAIN ENGINE EXHAUST PIPING MAWP: 27" H2O MAWT: 703°F	ALL	S.S.321 SCH 20, SEAMLESS, ASTM A312, ANSI B36.10	FLANGES: WELD NECK OR SOCKET WELD, S.S. 321 ASTM A182, ANSI B16.5	FLANGED: ASTM SA182 F321, ANSI B16.5 BUTTWELD: S.S.321, ASTM A403/SA403, ANSI B16.9 OR B16.28;							
EXHAUST PIPING EXPOSED TO WEATHER	ALL	STAINLESS STEEL ASTM A312, GR TP304L, ANSI B36.10 SCH 40 – 4" SCH 20 – 8"	–	–	–	–	–	–	–	–	–

EQUIPMENT LIST

QTY	SERVICE	TYPE	MAKE/MODEL	REMARKS
2	SSDG SILENCER	CRITICAL GRADE SPARK ARRESTING		SEE NOTE 14
2	MAIN ENGINE SILENCER	CRITICAL GRADE SPARK ARRESTING		SEE NOTE 14

SPECIFIC NOTES

SYSTEM DETAILS:
EX: EXHAUST PIPING ANCHOR, RAINCAP, AND GUIDE DETAILS SHOW PRELIMINARY CONFIGURATION AND LOCATIONS FOR PIPING SUPPORT SYSTEM. FINAL DIMENSIONING AND DETAILING ARE TO BE COMPLETED BY CONTRACTOR AND ARE SUBJECT TO OWNER APPROVAL. PIPE HANGERS SHALL BE RUBBER DESIGN OR EQUAL, SEE REF 1 FOR DETAILS.

PRELIMINARY DESIGN NOTES:
EX: EXHAUST PIPING ROUTING SHOWS PRELIMINARY CONFIGURATION AND LOCATIONS FOR PIPING SUPPORT SYSTEM. FINAL DIMENSIONING AND DETAILING ARE TO BE COMPLETED BY CONTRACTOR AND ARE SUBJECT TO OWNER APPROVAL. PIPE HANGERS SHALL BE LO-REZ OR EQUAL, SEE REF 1 FOR DETAILS.
EX: ENGINE DETAILS SHOWN ARE NOT FROM CERTIFIED VENDOR DRAWINGS. CONTRACTOR TO VERIFY ENGINE CONNECTIONS AND EXHAUST SYSTEM REQUIREMENTS.

PARTS EXPOSED TO WEATHER:
EX: TAIL PIPE, RAIN HAT, HEAT SHIELD, FASTENERS & HANGERS EXPOSED TO WEATHER AT THE NAV/BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.

17-1372-4076 Main Engine and Generator Exhaust B.O.M..

ITEM	QTY	SYMBOL	DESCRIPTION	MATERIAL SPEC	REMARKS
1	2		MAIN ENGINE DRY EXHAUST SILENCER, CRITICAL GRADE, ALUMINIZED, MIRATECH JC-08-100078 OR EQUAL	ASTM A-36 BODY, ASTM A-53 PIPES AND ENDS	END IN-END OUT
2	2		GENERATOR ENGINE DRY EXAUST SILENCER, CDRITICAL GRADE, ALUMINIZED, MIRATECH JC-05-100076 OR EQUAL	ASTM A-36 BODY, ASTM A-53 PIPES AND ENDS	END IN-END OUT
3	2		8" EXHAUST EXPANSION BELLOWS	ASTM A-240	
4	2		5" EXHAUST EXPANSION BELLOWS	ASTM A-240	
5	2		8" EXHAUST RAIN CAP	ASTM A-53	
6	2		5" EXHAUST RAIN CAP	ASTM A-240	
7	AS REQD		PIPE WRAP, TIMCO EXHAUST HEAT BALNKET OR SIMILAR		OR EQUAL
PS-#	AS REQD		8" SCH 20 STAINLESS STEEL PIPE 316L	ASTM A-312	OPTION SCH 40 SEAMLESS BLACK PIPE ASTM A-106
PS-#	AS REQD		5" SCH 20 STAINLESS STEEL PIPE 316L	ASTM A-312	OPTION SCH 40 SEAMLESS BLACK PIPE ASTM A-106
F-#	AS REQD		8" 150# FITTINGS SOCKETT WELD STAINLESS STEEL 316L	ASTM A-182	OPTION CARBON STEEL A-105, OR A-234

– GENERAL NOTES –

NO.	DESCRIPTION
1	ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER
2	PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE A SUFFICIENT NUMBER OF TAKEDOWN JOINTS TO ALLOW FOR REMOVAL & INSPECTION
3	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4	ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
5	PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGARS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. THERMAL INSULATION GASKETS SHALL BE INSTALLED BETWEEN THE EXHAUST PIPE AND THE HANGER ATTACHMENT TO THE SHIP.
6	PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. EACH EXPANSION JOINT SHALL HAVE ONE END FIXED FLANGE AND THE OTHER END WITH A FLOATING FLANGE. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7	EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BOA, OR EQUAL.
8	WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION
9	INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F683.
10	1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS.
11	TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.
12	VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE.
13	PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS.
14	WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
15	CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

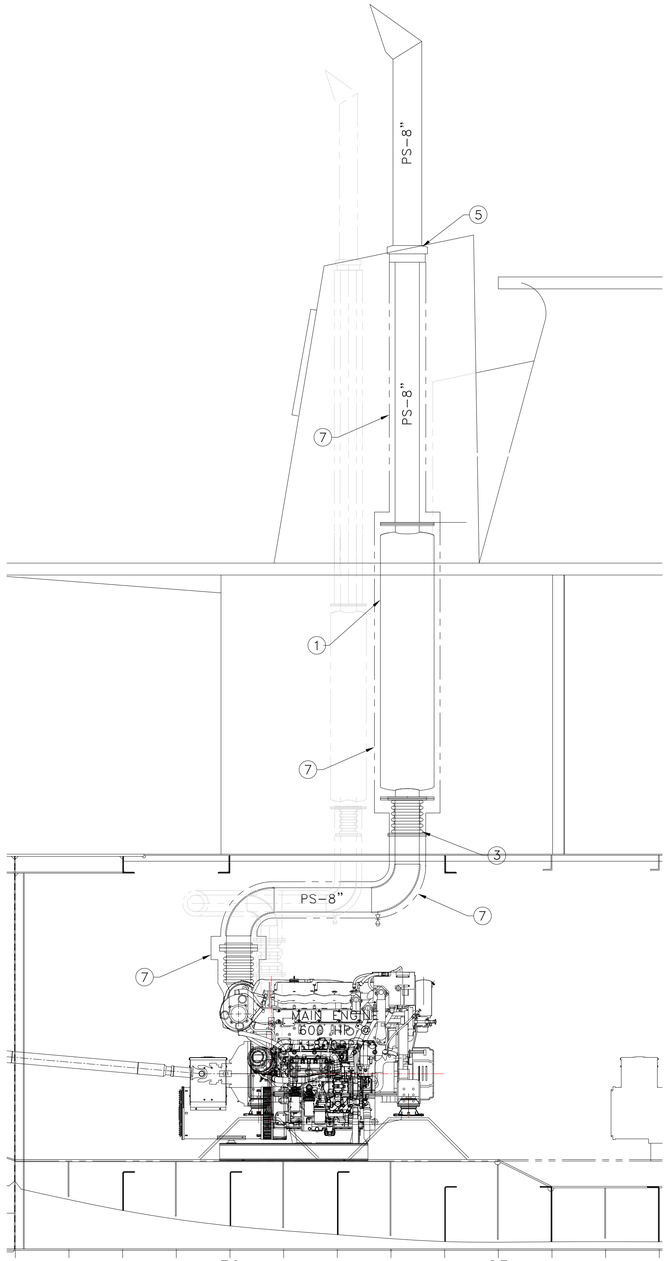
Title: 70.5'x30'x11' NCDOT TOWBOAT

ENGINE AND GENERATOR EXHAUST DETAILS

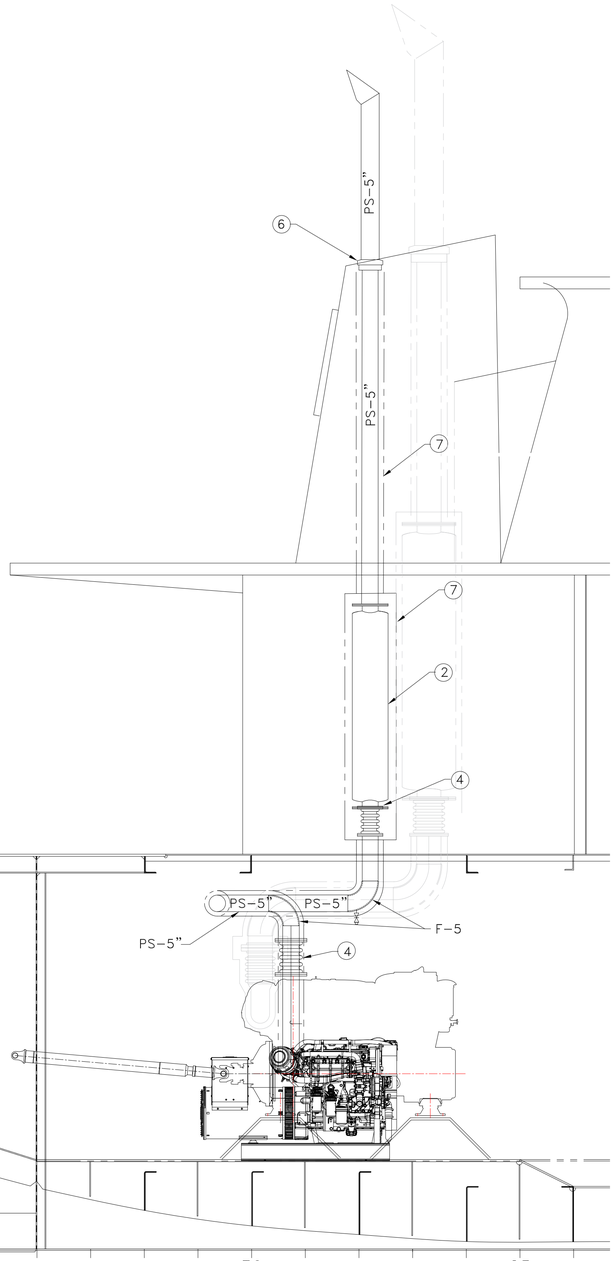
Dwg. No. 17-1372-259
Alt. No. 0
Sht. 1 of 3

Drawn By: CHRISTOPHER DUNCAN Date: JULY 16, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'-0"
ABS App'l: _____ USCG App'l.: _____

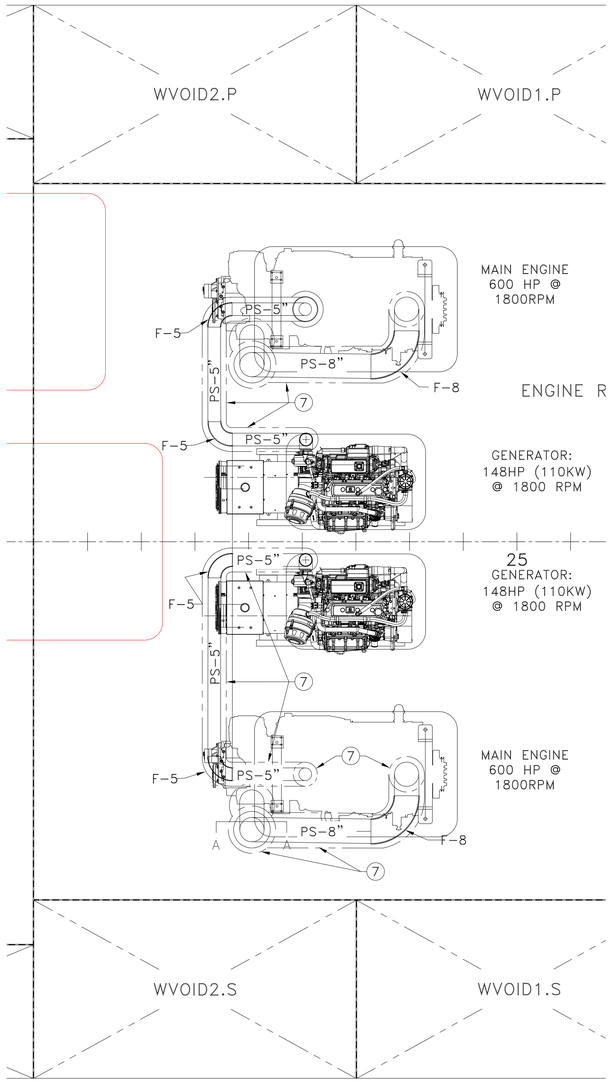
ANSI-D (24"x36")



MAIN ENGINE
600 HP @
1800RPM



GENERATOR:
148HP (110KW)
@ 1800 RPM



NO.	DESCRIPTION
1	ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER
2	PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE A SUFFICIENT NUMBER OF TAKEDOWN JOINTS TO ALLOW FOR REMOVAL & INSPECTION
3	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4	ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
5	PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGARS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. THERMAL INSULATION GASKETS SHALL BE INSTALLED BETWEEN THE EXHAUST PIPE AND THE HANGER ATTACHMENT TO THE SHIP.
6	PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. EACH EXPANSION JOINT SHALL HAVE ONE END FIXED FLANGE AND THE OTHER END WITH A FLOATING FLANGE. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7	EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BOA, OR EQUAL.
8	WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION
9	INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F683.
10	1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS.
11	TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.
12	VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE.
13	PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS.
14	WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
15	CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

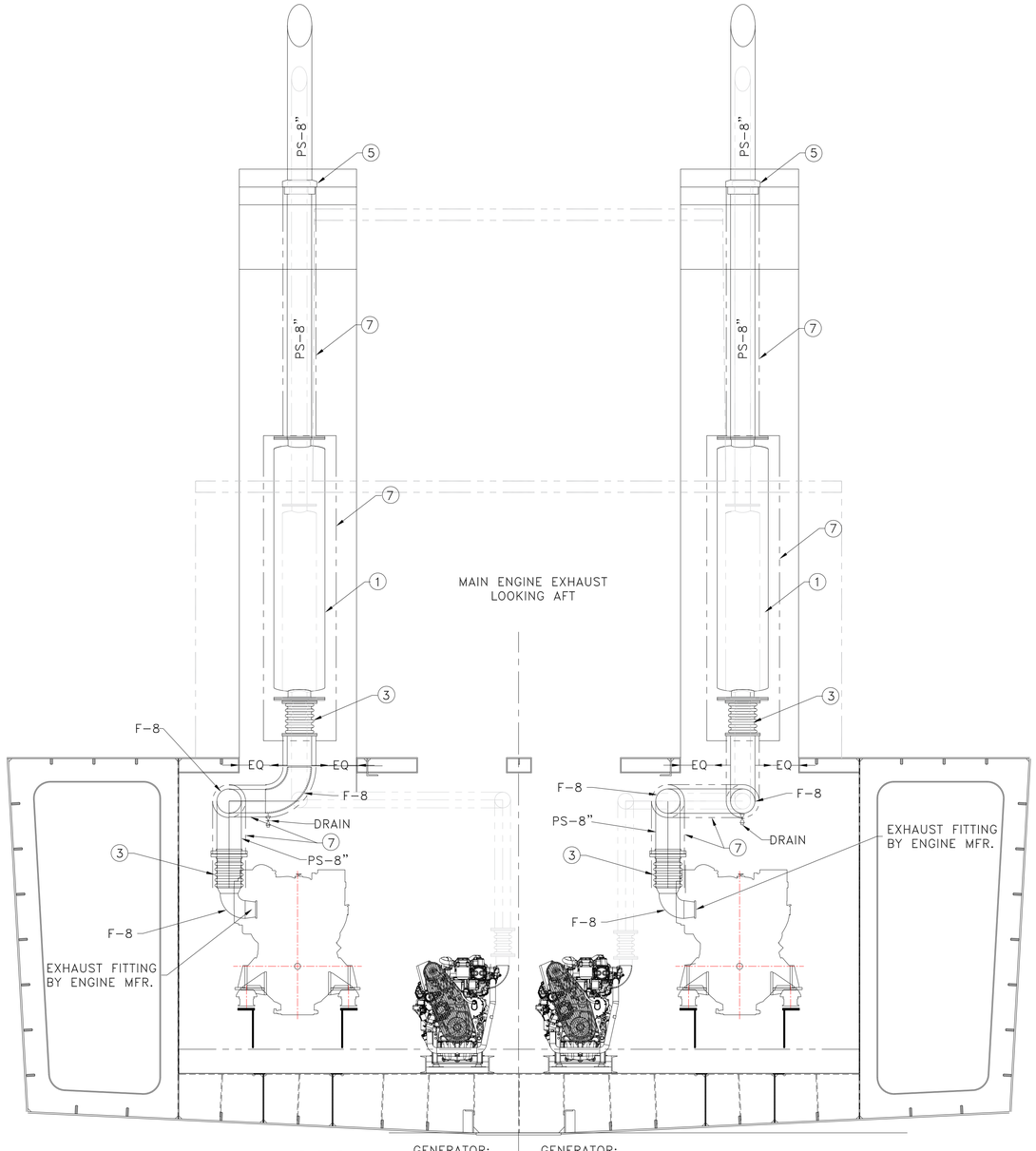
Title: 70.5'x30'x11' NCDOT TOWBOAT

ENGINE AND GENERATOR EXHAUST & DETAILS

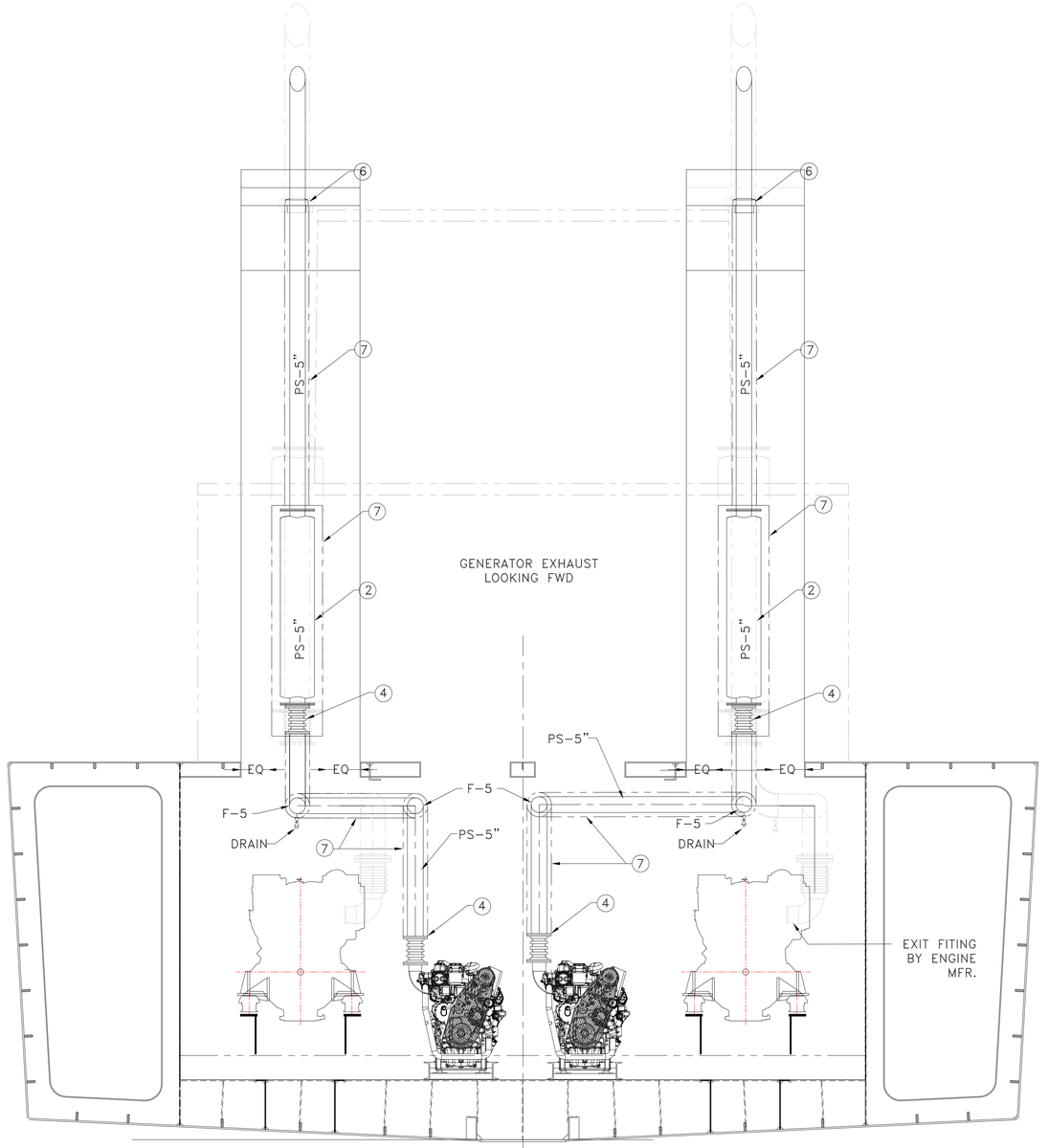
Dwg. No. 17-1372-259
Alt. No. 0
Sht. 2 of 3

Drawn By: CHRISTOPHER DUNCAN Date: JULY 16, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



MAIN ENGINE 600 HP @ 1800RPM | GENERATOR: 148HP (110KW) @ 1800 RPM | GENERATOR: 148HP (110KW) @ 1800 RPM | MAIN ENGINE 600 HP @ 1800RPM



MAIN ENGINE 600 HP @ 1800RPM | GENERATOR: 148HP (110KW) @ 1800 RPM | GENERATOR: 148HP (110KW) @ 1800 RPM | MAIN ENGINE 600 HP @ 1800RPM

NO.	DESCRIPTION
1	ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER
2	PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE A SUFFICIENT NUMBER OF TAKEDOWN JOINTS TO ALLOW FOR REMOVAL & INSPECTION
3	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4	ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
5	PIPE HANGERS SHALL MEET THE REQUIREMENTS OF ASTM F708. THE CONTRACTOR SHALL DESIGN AND INSTALL PIPE HANGARS AS NECESSARY TO ADEQUATELY SUPPORT EXHAUST SYSTEMS UNDER STATIC AND DYNAMIC LOADS IMPOSED BY VESSEL MOTIONS, VIBRATION AND THERMAL EXPANSION. THERMAL INSULATION GASKETS SHALL BE INSTALLED BETWEEN THE EXHAUST PIPE AND THE HANGER ATTACHMENT TO THE SHIP.
6	PROVIDE EXPANSION JOINTS WHERE REQUIRED TO ACCOMMODATE THERMAL GROWTH OF EXHAUST PIPES. EXPANSION JOINTS ARE TO BE STAINLESS STEEL MULTI-PLY LAMINATE TYPE MANUFACTURED TO EJMA STANDARDS. EACH EXPANSION JOINT SHALL HAVE ONE END FIXED FLANGE AND THE OTHER END WITH A FLOATING FLANGE. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7	EXHAUST ELBOW AND EXPANSION JOINT AT ENGINE TURBO OUTLET SHALL BE SUPPLIED BY THE ENGINE MANUFACTURER. ALL OTHERS SHALL BE DME, AMERICAN BOA, OR EQUAL.
8	WEIGHT TRANSMITTED TO EACH ENGINE EXHAUST OUTLET CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN ANY CONDITION
9	INSULATION FOR ENGINE EXHAUST PIPING AND SILENCERS SHALL BE REMOVABLE INSULATION BLANKETS HAVING A 2" MINIMUM THICKNESS. BLANKETS SHALL BE FASTENED WITH STAINLESS STEEL HOOKS AND INSULATION MATERIALS AND INSTALLATION DETAILS SHALL BE IN ACCORDANCE WITH ASTM F683.
10	1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING TO FACILITATE BACK PRESSURE MEASUREMENTS.
11	TAIL PIPE, TOP HAT, AND HANGERS EXPOSED TO WEATHER AT THE BRIDGE DECK LEVEL AND ABOVE SHALL BE ASTM A312 TYPE 316L STAINLESS STEEL.
12	VERTICAL EXHAUST PIPING RUNS SHALL BE FITTED WITH VALVED DRAINS LOCATED AT THE LOWEST POINT. EACH DRAIN SHALL CONSIST OF A THREADED STEEL WELDOLET OR HALF COUPLING WELDED TO THE PIPE, FITTED WITH A SCHEDULE 40 PIPE, AND CAPPED WITH A 1" INCH GATE VALVE.
13	PRIOR TO BEING PLACED INTO SERVICE THE EXHAUST PIPING SHALL BE CLEANED AND CHECKED FOR LEAKS.
14	WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
15	CONTRACTOR SHALL VERIFY ENGINE EXHAUST BACK PRESSURE REQUIREMENTS AND CONNECTION DETAILS PRIOR TO ORDERING MATERIALS.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

ENGINE AND GENERATOR EXHAUST DETAILS

Dwg. No. 17-1372-259

Alt. No. 0
Sht. 3 of 3

Drawn By: CHRISTOPHER DUNCAN
Date: JULY 16, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")

SYMBOLS LIST

1"	NPS PIPE SIZE AND FLOW DIRECTION ARROW
	REDUCER
	BULKHEAD PENETRATION (SEE DETAIL 2-5A)
	HOSE
	PIPE CAP/CAMLOCK FITTING
	DUPLEX FILTER
	TRIPLEX FILTER
	DRIP PAN (SEE NOTE 11)
	BALL VALVE
	CHECK VALVE
	GATE VALVE WITH HYDRAULIC ACTUATOR
	TANK SUCTION BELLMOUTH (SEE NOTE 10)
LS	HIGH LEVEL SWITCH
LS	LOW LEVEL SWITCH
F	FUEL FLOW METER WITH RESETABLE COUTNER
LL	LIQUID LEVEL SIGHT GAUGE WITH MAGNETIC MARKER

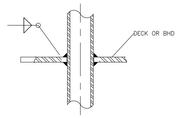


DIAGRAM 2-4A
TANK BULKHEAD PENETRATION

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
FUEL OIL SERVICE PIPING MAWP: 15 PSIG MAWT: 126°F	ALL	CARBON STEEL, SCH 80, SEAMLESS, ASTM A53 OR ASTM A106 GRADE B, ANSI B36.10	FLANGE SOCKET WELD, WELD NECK OR SLIP ON, CARBON STEEL, ASTM A105, ANSI B16.5 UNION GROUND JOINT, SOCKET WELD CARBON STEEL, ASTM A105, MSS-SP-83	SOCKET WELD CARBON STEEL, ASTM A105 OR ASTM A234 GR WPB, ANSI B16.11 BUTTWELD CARBON STEEL, ASTM A234, GR WPB, ANSI B16.9 OR B16.28	FLEX HOSE MEETING SAE J1942 AND J1475 FOR DIESEL SERVICE SEE NOTE 9	GARLOCK STYLE 3000	GATE FLANGED CARBON STEEL, ASTM A216 GR WCB OR ASTM A105 ANSI B16.34 BALL THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB CHECK THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB	GATE CRES STEM, DISC AND SEAT BALL CHROME PLATED BALL, RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	

BILL OF MATERIALS

#	QTY.	SERVICE	TYPE	MAKE/MODEL	COMMENTS
1	2	FO TANK LEVEL ALARM	SWITCH MODULE ON GEM SURESITE SIGHTGLASS		MOUNTS TO SURESITE TUBE OPPOSITE LEVEL INDICATOR FLAGS
2	2	ME FUEL FILTER	TRIPLEX COALESCING		SEE NOTE 11
3	2	SSDG FUEL FILTER	DUPLEX COALESCING		SEE NOTE 11
4	2	REMOATE SHUTDOWN FO TANK VALVES	2" 150# ANSI FLG, GLOBE VALVE, HYD. ACTUATED	ABS APPROVED. LK VALVE	
5	2	FUEL TRANSFER PUMP	BRONZE GEAR PUMP WITH RELIEF VALVE, 100GMP,50PSI,1725RPM 5HP 208VAC, 60HZ 3PH,		
6	4	CAM LOCK			
7	2	VENT GUARD	WINTEB		
P-1¼"	AS REQ'D		1¼" SCH.40 PIPE, SEAMLESS, BLACK		ASTM A-106
P-1"	AS REQ'D		1" SCH.40 PIPE, SEAMLESS, BLACK		ASTM A-106
P-¾"	AS REQ'D		¾" SCH.40 PIPE, SEAMLESS, BLACK		ASTM A-106
P-½"	AS REQ'D		½" SCH.40 PIPE, SEAMLESS, BLACK		ASTM A-106
H-1	4		¾" FUEL OIL HOSE, USCG APPROVED		SAE J-1942, SAE J-1475 (FITTINGS)
H-2	4		½" FUEL OIL HOSE, USCG APPROVED		SAE J-1942, SAE J-1475 (FITTINGS)
V-1	4		¾" FULL PORT BALL VALVE, STEEL, SCREWED, 150# WOG		ASTM A105/A234
V-2	4		½" FULL PORT BALL VALVE, STEEL, SCREWED, 150# WOG		ASTM A105/A234
V-3	2		1" FULL PORT BALL VALVE, STEEL, SCREWED 150# WOG		ASTM A105/A234
V-4	14		2" FULL PORT BALL VALVE, STEEL, SCREWED 150# WOG		ASTM A105/A234
CV-1	2		¾" LIFT CHECK VALVE, STEEL, SCREWED, 150# WOG		ASTM A105/A234
CV-2	2		½" LIFT CHECK VALVE, STEEL, SCREWED, 150# WOG		ASTM A105/A234
CV-3	1		1" LIFT CHECK VALVE, STEEL, SCREWED, 150# WOG		ASTM A105/A234

NO.	- GENERAL NOTES - DESCRIPTION	NO.	- GENERAL NOTES - DESCRIPTION
1.	PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).	10.	FUEL OIL SUPPLY SUCTION BELLSOUTH AREA SHALL BE AT LEAST 1 1/2 TIMES THE SUCTION PIPE INTERNAL AREA.
2.	THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.	11.	FUEL FILTERS SHALL BE USCG APPROVED WITH METAL BOWLS FILTERS SHALL BE FITTED WITH BALL VALVES FOR FILTER ISOLATION WHILE THE ENGINE IS RUNNING, WATER PROBES, AND DIFFERENTIAL PRESSURE GAUGES.
3.	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.	12.	DRIP PANS WITH UP-TURNED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN PORT.
4.	PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.	13.	REMOTE FUEL OIL SUPPLY SHUT OFF REACH RODS SHALL TERMINATE AT A FLUSH DECK BOX. LOCATE DECK BOXES ON THE MAIN DECK NEAR THE DECKHOUSE AND OUT OF VEHICLE LANES LOCATE A T-WRENCH ON THE DECKHOUSE BULKHEAD ADJACENT TO EACH DECK BOX. PERMANENTLY LABEL EACH DECK BOX IN ACCORDANCE WITH REF. 1
5.	DO NOT ROUTE PIPING CONTAINING FUEL OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL FUEL OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT	14.	FUEL SYSTEM PIPING SHALL BE CLEANED, FLUSHED AND HYDROSTATICALLY TESTED PRIOR TO BEING PLACED INTO SERVICE.
6.	TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.	15.	PIPE THREAD SEALING TAPE, GALVANIZED PIPE, AND GALVANIZED FITTINGS SHALL NOT BE USED.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
8.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 2-5A		
9.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR FUEL OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.		

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

FUEL OIL PIPING

Dwg. No. 17-1372-261
Alt. No. 1
Sht. 1 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

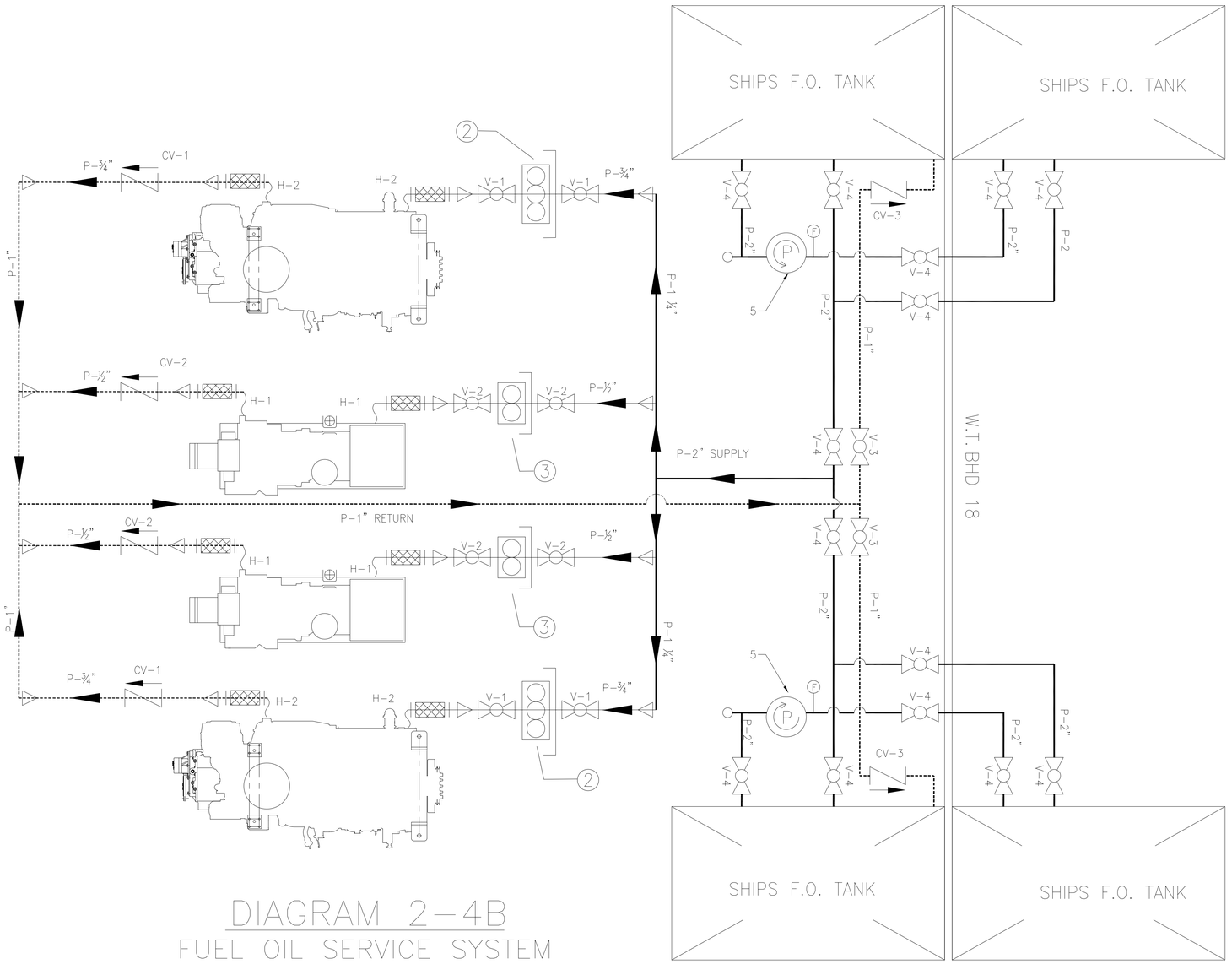


DIAGRAM 2-4B

FUEL OIL SERVICE SYSTEM

NO.	- GENERAL NOTES - DESCRIPTION	NO.	- GENERAL NOTES - DESCRIPTION
1.	PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).	10.	FUEL OIL SUPPLY SUCTION BELLSOUTH AREA SHALL BE AT LEAST 1 1/2 TIMES THE SUCTION PIPE INTERNAL AREA.
2.	THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.	11.	FUEL FILTERS SHALL BE USCG APPROVED WITH METAL BOWLS FILTERS SHALL BE FITTED WITH BALL VALVES FOR FILTER ISOLATION WHILE THE ENGINE IS RUNNING, WATER PROBES, AND DIFFERENTIAL PRESSURE GAUGES.
3.	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.	12.	DRIP PANS WITH UP-TURNED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN PORT.
4.	PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.	13.	REMOTE FUEL OIL SUPPLY SHUT OFF REACH RODS SHALL TERMINATE AT A FLUSH DECK BOX. LOCATE DECK BOXES ON THE MAIN DECK NEAR THE DECKHOUSE AND OUT OF VEHICLE LANES LOCATE A T-WRENCH ON THE DECKHOUSE BULKHEAD ADJACENT TO EACH DECK BOX. PERMANENTLY LABEL EACH DECK BOX IN ACCORDANCE WITH REF. 1
5.	DO NOT ROUTE PIPING CONTAINING FUEL OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL FUEL OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT	14.	FUEL SYSTEM PIPING SHALL BE CLEANED, FLUSHED AND HYDROSTATICALLY TESTED PRIOR TO BEING PLACED INTO SERVICE.
6.	TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.	15.	PIPE THREAD SEALING TAPE, GALVANIZED PIPE, AND GALVANIZED FITTINGS SHALL NOT BE USED.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
8.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 2-5A		
9.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR FUEL OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

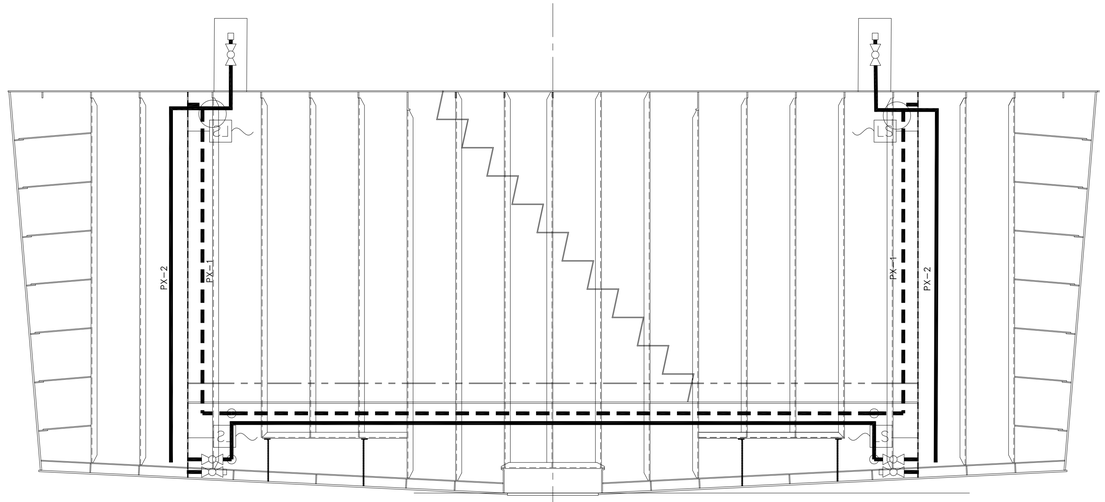
FUEL OIL PIPING

Dwg. No. 17-1372-261

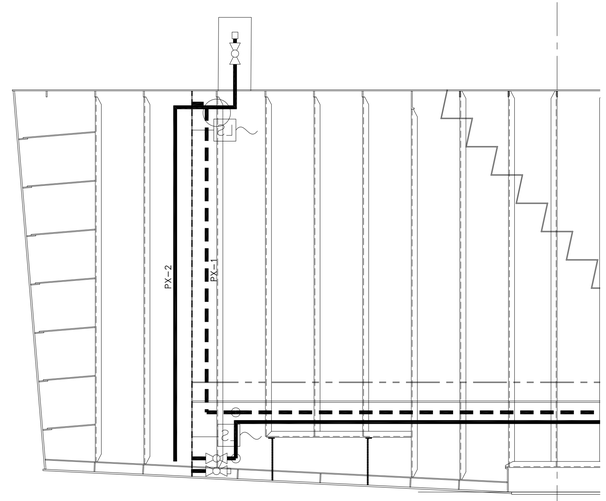
Alt. No. 1
Sht. 2 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

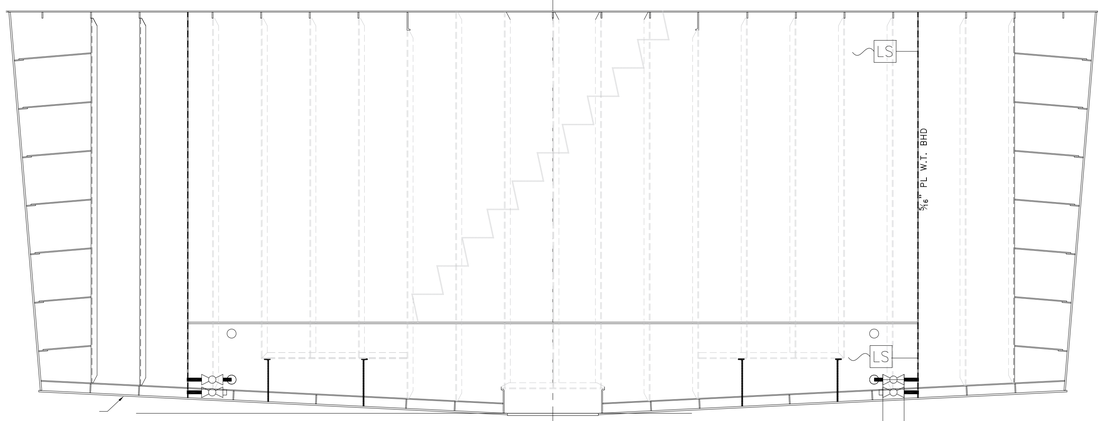
ANSI-D (24"x36")



$^{5}/_{16}$" PL W.T. BHD @ FR 18
W/ 3x2x$^{5}/_{16}$" L STIFFS ON AFT FACE
SHOWN LKG FWD



$^{5}/_{16}$"
W/ 3x2



$^{5}/_{16}$" PL W.T. BHD @ FR 18
W/ 3x2x$^{5}/_{16}$" L STIFFS ON AFT FACE
SHOWN LKG AFT

NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).	10.	FUEL OIL SUPPLY SUCTION BELLSOUTH AREA SHALL BE AT LEAST 1 1/2 TIMES THE SUCTION PIPE INTERNAL AREA.
2.	THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.	11.	FUEL FILTERS SHALL BE USCG APPROVED WITH METAL BOWLS FILTERS SHALL BE FITTED WITH BALL VALVES FOR FILTER ISOLATION WHILE THE ENGINE IS RUNNING, WATER PROBES, AND DIFFERENTIAL PRESSURE GAUGES.
3.	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.	12.	DRIP PANS WITH UP-TURNED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN PORT.
		13.	REMOTE FUEL OIL SUPPLY SHUT OFF REACH RODS SHALL TERMINATE AT A FLUSH DECK BOX. LOCATE DECK BOXES ON THE MAIN DECK NEAR THE DECKHOUSE AND OUT OF VEHICLE LANES LOCATE A T-WRENCH ON THE DECKHOUSE BULKHEAD ADJACENT TO EACH DECK BOX. PERMANENTLY LABEL EACH DECK BOX IN ACCORDANCE WITH REF. 1
4.	PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.		
5.	DO NOT ROUTE PIPING CONTAINING FUEL OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL FUEL OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT	14.	FUEL SYSTEM PIPING SHALL BE CLEANED, FLUSHED AND HYDROSTATICALLY TESTED PRIOR TO BEING PLACED INTO SERVICE.
		15.	PIPE THREAD SEALING TAPE, GALVANIZED PIPE, AND GALVANIZED FITTINGS SHALL NOT BE USED.
6.	TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.		
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
8.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 2-5A		
9.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR FUEL OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

FUEL OIL PIPING

Dwg. No. 17-1372-261

Alt. No. 1
Sht. 3 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

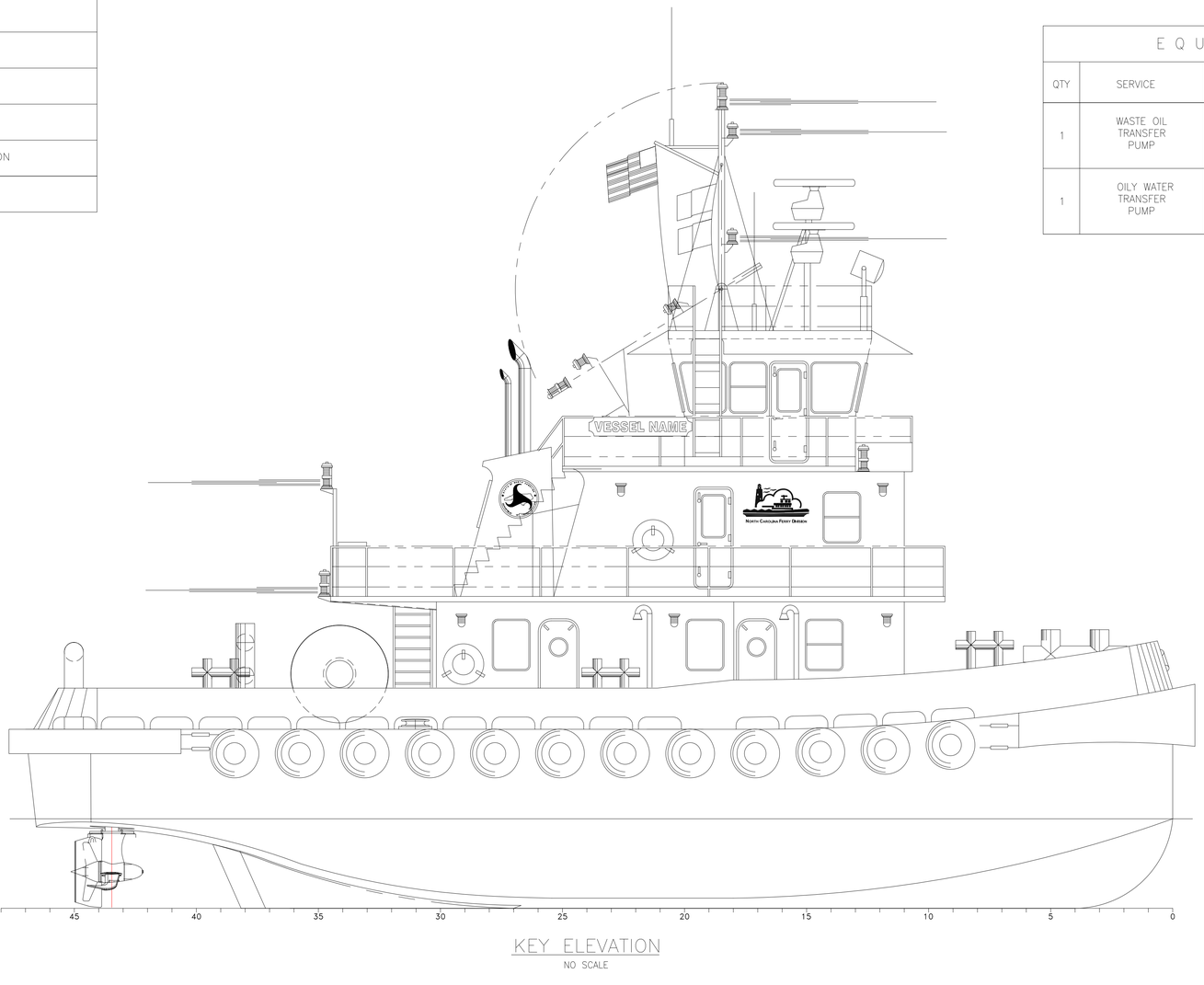
ANSI-D (24"x36")

SYMBOLS LIST

	PIPE
	REDUCER
	CHECK VALVE
	BALL VALVE
L	BALL VALVE, LOCKING
	DIAPHRAGM PUMP
	CAMLOCK
	DRIP PAN
	HOSE REEL
	SUCTION STRAINER BOX
	BULKHEAD PIPE PENETRATION
P	PRESSURE GAUGE

MATERIAL SCHEDULE

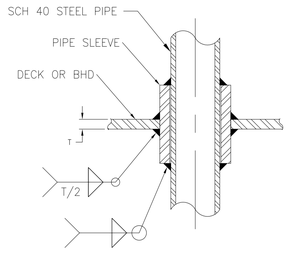
SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
WASTE OIL / OILY WATER DRAINS MAWP: 70 PSIG MAWT: 120°F	ALL	BELOW DECK CARBON STEEL, SCH 40, SEAMLESS, ASTM A53 TYPE S, OR ASTM A106, GRADE B, ANSI B36.10 ABOVE DECK 304SS, SCH 80, ASTM A312 GR304/304L	FLANGE #150, SOCKET WELD CARBON STEEL, ASTM A105, ANSI B16.5 VIEGA MEGAPRESS	BELOW DECK STEEL, VIEGA MEGAPRESS ABOVE DECK SOCKET WELD, S. STEEL, ASTM A351 GR 304/304L, ANSI B16.11	HOSE: SEE NOTE 11	GARLOCK STYLE 3000 BALL – ABV DK SW OR THREADED, 3-PIECE S. STEEL, ASTM A351 GR CF8M	BALL – BLW DK SW OR THREADED, 3-PIECE CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB CHECK – BLW DK THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB	BALL CHROME PLATED BALL, RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	



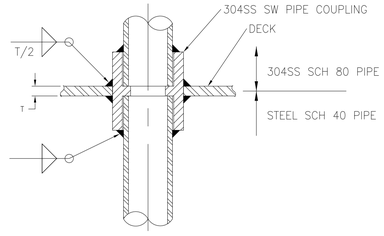
KEY ELEVATION
NO SCALE

EQUIPMENT & PUMP LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	WASTE OIL TRANSFER PUMP	DOUBLE DIAPHRAGM		35 GPM @ 35 PSI	2HP TEFC MOTOR 208V/3P/60Hz SEE NOTE 10
1	OILY WATER TRANSFER PUMP	DOUBLE DIAPHRAGM		30 GPM @ 35 PSI	2HP TEFC MOTOR 208V/3P/60Hz SEE NOTE 10



DETAIL 1–4A
TYP BHD PENETRATION



DETAIL 1–1B
TYPICAL DECK PENETRATION
SCALE: NONE

– GENERAL NOTES –

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1–4A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	GAUGE ASSEMBLIES TO BE IN ACCORDANCE WITH ASTM F721. BALL VALVES, TUBING AND FITTINGS SHALL BE 316 STAINLESS STEEL.
6.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND BE EQUIPPED WITH A LOW POINT DRAIN VALVE.
7.	LUBE OIL PIPING SHALL NOT BE ROUTED NEAR ELECTRICAL DEVICES OR EQUIPMENT. LUBE OIL PIPING SHALL BE AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER.
8.	GALVANIZED PIPE, FITTINGS, COMPONENTS, ETC. SHALL NOT BE USED.
9.	FIT DRIP PANS UNDER HOSE REELS AND PUMPS.
10.	FIT EACH MAIN ENGINE, GENERATOR, AND REDUCTION GEAR SUMP WITH A LOCKING DRAIN VALVE, 1" FEMALE CAMLOCK, AND DUST PLUG TO DRAIN LINE WITH A STAINLESS STEEL CHAIN OR CABLE.
11.	EACH DIAPHRACM PUMP SHAL BE SUPPLIED WITH ALUMINUM BODY, INTEGRATED COMPRESSOR, NPT PORTS, AND TPE SEATS, BALLS AND DIAPHRAGMS. EACH PUMP SHALL VFD CONTROLLED WITH PUSH BUTTON SPEED ADJUSTMENT.

– GENERAL NOTES –

NO.	DESCRIPTION
12.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720, AND BE SUITABLE FOR WASTE OIL AND OILY WATER SERVICE. SUCTION HOSES SHALL BE NON-COLLAPSING.
13.	LOCATE BILGE STRIPPING SUCTIONS AT THE LOWEST POINTS IN THE ENGINE ROOM, EACH END.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DIRTY OIL SYSTEM

Dwg. No. 17-1372-264
Alt. No. 0
Sht. 1 of 2

Drawn By: JACOB CONNALLY
Checked By:
App'd By:
ABS App'l:
Date: JUNE 05, 2018
Date:
Scale: 1/2" = 1'-0"
USCG App'l.:

ANSI-D (24"x36")

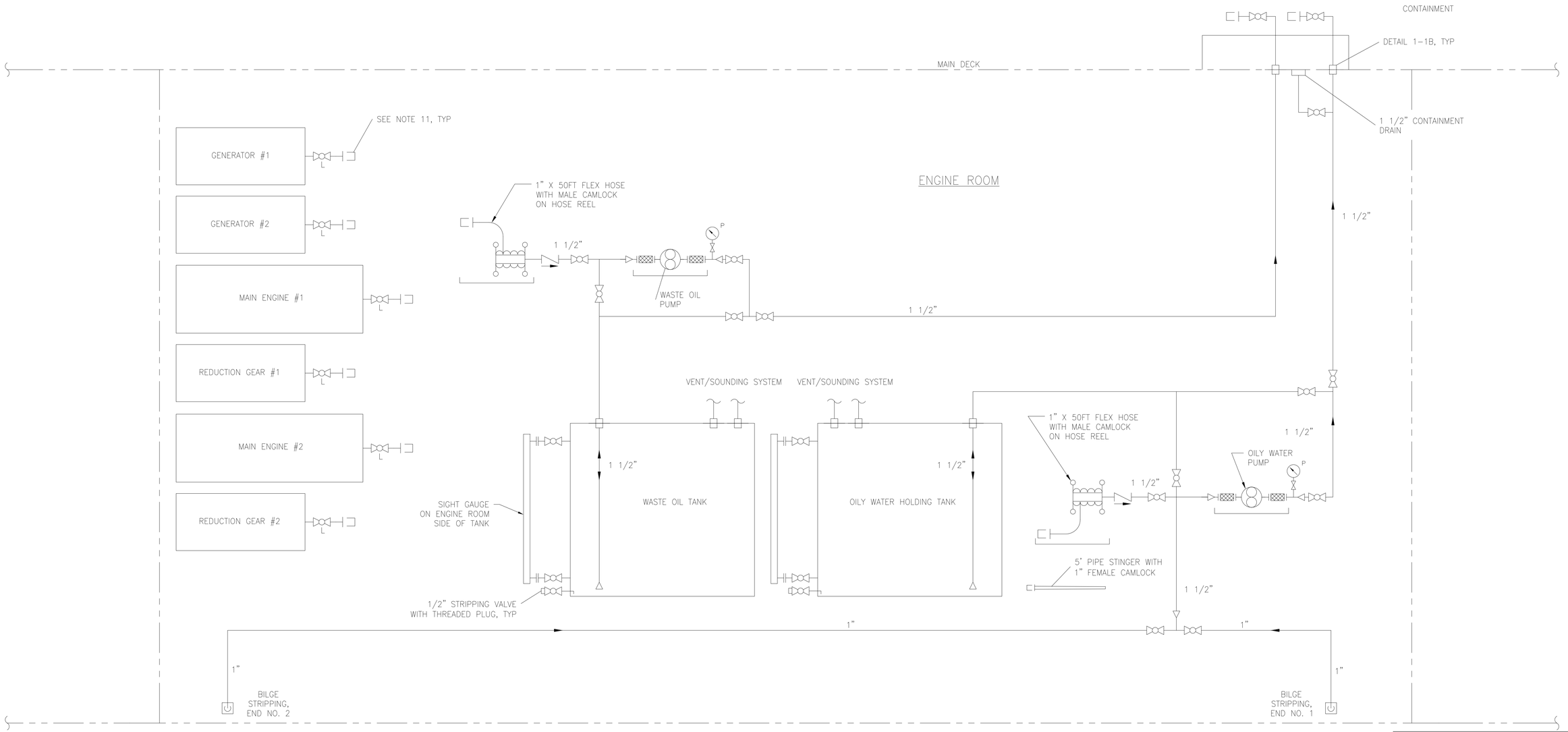


DIAGRAM 2-4A
OILY WATER COLLECTION/WASTE OIL SYSTEM

NO.	- GENERAL NOTES - DESCRIPTION	NO.	- GENERAL NOTES - DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.	12.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720, AND BE SUITABLE FOR WASTE OIL AND OILY
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.		WATER SERVICE. SUCTION HOSES SHALL BE NON-COLLAPSING.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1-4A.	13.	LOCATE BILGE STRIPPING SUCTIONS AT THE LOWEST POINTS IN THE ENGINE ROOM, EACH END.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.		
5.	GAUGE ASSEMBLIES TO BE IN ACCORDANCE WITH ASTM F721. BALL VALVES, TUBING AND FITTINGS SHALL BE 316 STAINLESS STEEL.		
6.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND BE EQUIPPED WITH A LOW POINT DRAIN VALVE.		
7.	LUBE OIL PIPING SHALL NOT BE ROUTED NEAR ELECTRICAL DEVICES OR EQUIPMENT. LUBE OIL PIPING SHALL BE AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER.		
8.	GALVANIZED PIPE, FITTINGS, COMPONENTS, ETC. SHALL NOT BE USED.		
9.	FIT DRIP PANS UNDER HOSE REELS AND PUMPS.		
10.	FIT EACH MAIN ENGINE, GENERATOR, AND REDUCTION GEAR SUMP WITH A LOCKING DRAIN VALVE, 1" FEMALE CAMLOCK, AND DUST PLUG TO DRAIN LINE WITH A STAINLESS STEEL CHAIN OR CABLE.		
11.	EACH DIAPHRAGM PUMP SHAL BE SUPPLIED WITH ALUMINUM BODY, INTEGRATED COMPRESSOR, NPT PORTS, AND TPE SEATS, BALLS AND DIAPHRAGMS. EACH PUMP SHALL VFD CONTROLLED WITH PUSH BUTTON SPEED ADJUSTMENT.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part, any of the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 398-1322
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DIRTY OIL PIPING

Dwg. No. 17-1372-264
Alt. No. 0
Sht. 2 of 2

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

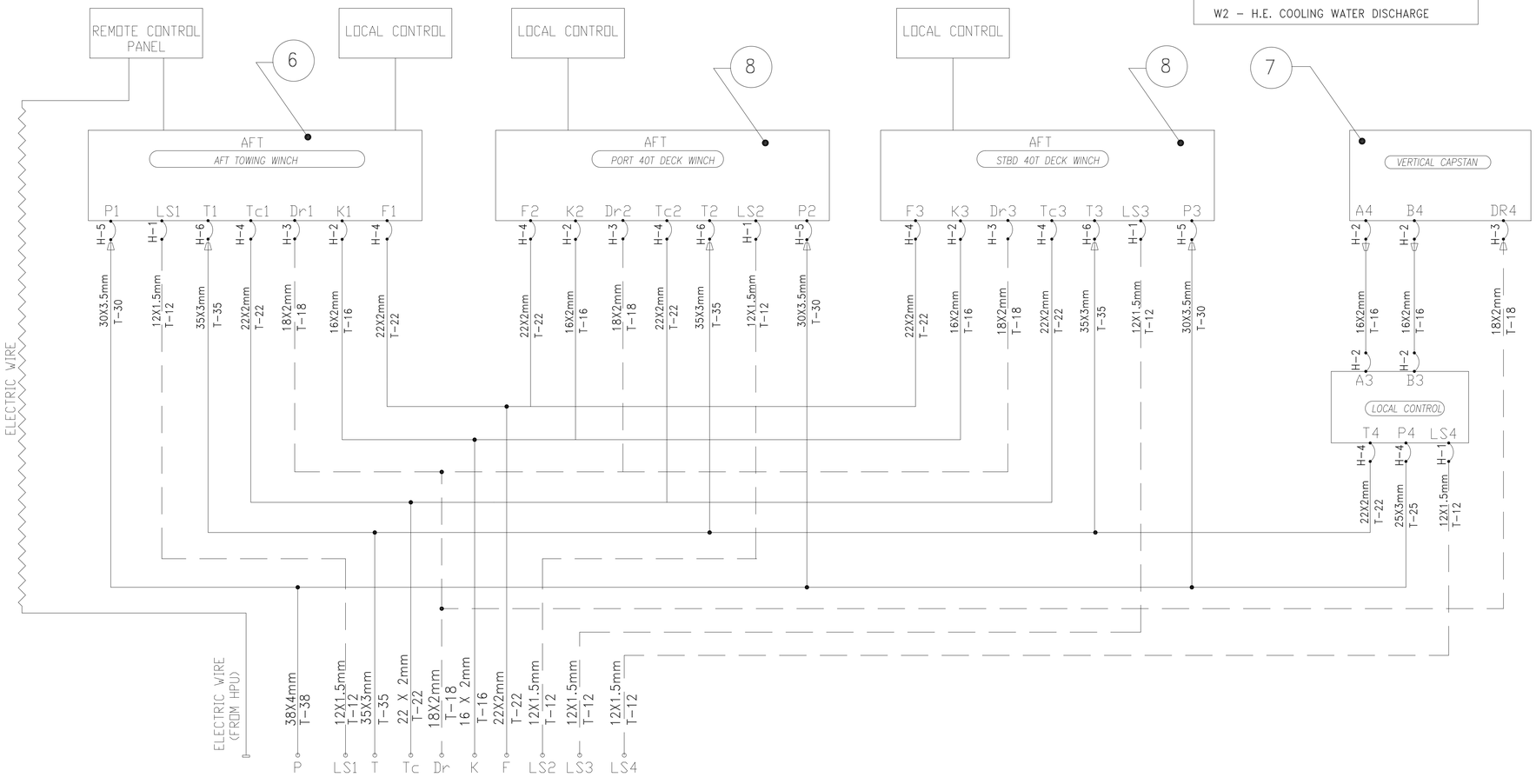
ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS			GASKETS	VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT		BODY	TRIM	BOLTS/STUDSNUTS/WASHERS		
HYRAULIC OIL SERVICE PIPING MAWP: 3000 PSIG MAWT: 150°F	ALL	STAINLESS STEELTUBING, TYPE 316L, ASTM A213 WALL THICKNESS VARIES STAINLESS STEEL PIPE, TYPE 316L, ASTM A312	FLANGE SOCKET WELD, WELD NECK OR SLIP ON, 316L STAINLESS STEEL, ASTM SA182, ANSI B16.11 UNION GROUND JOINT, SOCKET WELD CARBON STEEL, ASTM A105, MSS-SP-83	SOCKET WELD STAINLESS STEEL, TYPE 316L, ASTM A182, ANSI B16.11 BUTTWELD STAINLESS STEEL, ASTM A403, ANSI B16.9, MSS SP-43 COMPRESSION TYPE 316 STAINLESS STEEL, ASTM A276,ASTM A479, ASTM A182	FLEX HOSE MEETING SAE J1942 AND J1475 FOR HYDRAULIC SERVICE SEE NOTE 9	GARLOCK STYLE 3000	GATE FLANGED CARBON STEEL, ASTM A216 GR WCB OR ASTM A105 ANSI B16.34 BALL THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB CHECK THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB	GATE CARBON STEEL CRES STEM, DISC AND SEAT BALL CHROME PLATED BALL; RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B ANSI B18.21 HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.22		

PIPING IDENTIFICATION

P – PRESSURE
LS – LOAD SENSING
T – TANK RETURN
Tc – BRAKE TANK RETURN LINE
Dr – DRAIN
K – BRAKE PRESSURE
F – HYDRAULIC MOTOR FLUSHING
LS – LOAD SENSING
W1 – H.E. COOLING WATER SUPPLY
W2 – H.E. COOLING WATER DISCHARGE



DECK EQUIPMENT HYDRAULICS PIPING DIAGRAM FROM HPU/DISTRIBUTION BLOCK

BILL OF MATERIALS

#	QTY.	SERVICE	TYPE	MAKE/MODEL	COMMENTS
1	2	HYDRAULIC PUMP PTO	PTO 400 FOR JOHN DEERE 4045 ENGINE	LOGAN 900-8020	
2	2	HYDRAULIC PUMP PTO	FLUID ACTIVATED CLUTCH, 400 FT-LB, SAE C 14T SPLINE	LOGAN SPF400, OPTION SPF-4300-01	MAX ENGAGEMENT 1800 RPM
3	2	HYDRAULIC PUMP PTO	12x12 RIGID COUPLING	LOGAN 088-0018	
4	2	HYDRAULIC PUMP PTO	PNEUMATIC CONTROLS W/ 24VDC SOLENOID	LOGAN 610-0052	
5	2	HYDRAULIC PUMP	PUMP, VARIABLE DISPLACEMENT, 26.4 GPM, 3000 PSI, SAE "C" FLANGE, 2 BOLT	REXROTH A10VSO71DFLR/31R-VSA42N00	
6	1	HYDRAULIC TOWING WINCH	WINCH, TOWING	OIL STATES SKAGIT SMATCO, LLC OSI-HTW-SD-20B60	
7	1	HYDRAULIC VERTICAL CAPSTAN	CAPSTAN, VERTICAL	OIL STATES SKAGIT SMATCO, LLC OSI-HVC-5T	
8	2	DECK WINCH	40 TON DECK WINCH	OIL STATES SKAGIT SMATCO, LLC	
9	2	HYDRAULIC PILOT PUMP	PUMP, HYDRAULIC, PILOT PRESSURE, 870 PSI, 7 GPM, 7.5 KW ELEC MOTR, 208 VAC 3ø	REXROTH PV041	FIXED DISPLACEMENT VANE PUMP
10	1	HYDRAULIC RESERVIOR ASSY	RESERVIOR, HYDRAULIC, 1300 LITERS. 60"W X 56"H X 24"D W/ HYDRAULIC COMPONENTS & DISTRIBUTION BLOCK	HYDRADYNE	
11	1	HYDRAULIC OIL COOLING	HEAT EXCHANGER, OIL COOLING, 40 GPM SEAWATER FLOW	SEN-DURE 16867-1-7	
12	1	H.E. SEA WATER COOLING PUMP	PUMP, CENTRIFICAL, 23 GPM, 44PSI, STAINLESS STEEL, 208VAC,3ø,TEFC MOTOR	PRICE PUMP MODEL HP75SS, 5" IMPELLER	
13	AR	BULKHEAD PENETRATION	TYPE 250x210 W/ 2114 ASSEMBLY, CARBON STEEL SLEVE, DI COUPLING NUT, VITON GASKET	CBC MACHINE COMPANY TYPE 250/210 W/ 2114 ASSY	
14	1	STRAINER	1-1/2" BRONZE SIMPLEX STRAINER W/ .06 PERFORATED STAINLESS STEEL BASKET	EATON MODEL 72	24 GPM, .8 PSI PRESSURE DROP, CV = 31.5
PG-1"	AS REQ'D		1" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
PG-1-1/4"	AS REQ'D		1-1/4" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
P-2"	AS REQ'D		2" SCHEDULE 40 PIPE, 316L SS		ASTM A-312
T-12	AS REQ'D		12mm X 1.5mm 316L SS TUBING		ASTM A-312
T-16	AS REQ'D		16mm X 2mm 316L SS TUBING		ASTM A-312
T-18	AS REQ'D		18mm X 2mm 316L SS TUBING		ASTM A-312
T-22	AS REQ'D		22mm X 2mm 316L SS TUBING		ASTM A-312
T-25	AS REQ'D		25mm X 3mm WALL 316L SS TUBING		ASTM A-312
T-30	AS REQ'D		30mm X 3.5mm 316L SS TUBING		ASTM A-312
T-35	AS REQ'D		38mm X 4mm 316L SS TUBING		ASTM A-312
H-1	2		-8 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-2	2		-10 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-3	1		-12 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-4	6		-16 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-5			-20 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-6	7		-24 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-7	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED SAE CODE 61,-32 X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-8	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED 2" NPT MALE X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
V-1	2		1-1/4" GATE VALVE, 125#		ASTM A105/A234
V-2	2		2" BALL VALVE, FULL PORT		ASTM A105/A234
CV-1	2		1-1/4" LIFT CHECK VALVE, STEEL, SCREWED, 150#		ASTM A105/A234
U-1-1/4	1		1-¾" UNION, ORIFICE, 12MM, GALVANIZED		ASTM A105/A234

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DECK MACHINERY HYDRAULICS

Dwg. No. 17-1372-265 Alt. No. 1 Sht. 1 of 4

Drawn By: JAH Date: SEPTEMBER 7, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l:

– GENERAL NOTES –

NO.	DESCRIPTION
1.	PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).
2.	THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.
3.	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4.	PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.
5.	DO NOT ROUTE PIPING CONTAINING HYDRAULIC OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL HYDRAULIC OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT
6.	TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY CLAMPS OR HANGERS IN ACCORDANCE WITH APPLICATION. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
8.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED.
9.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR HYDRAULIC OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.

NO.	DESCRIPTION
10.	SUPPORT HYDRAULIC TUBING WITH VIBRATION DAMPENING CLAMPS SUPPORTED WITH THE MAXIMUM SPAN INDICATED BELOW
11.	HEAT EXCHANGER SIZE BASED ON 55 GPM OIL FLOW, INLET TERMPERATURE 65°C, OUTLET TEMPERTURE 60°C, SEA WATER FLOW 24 GPM, INLET TEMPERATURE 35°C WITH A HEAT REJECTION OF 30KW
12.	HYDRAULIC OIL PIPING MUST BE SUITABLY INSULATED TO PREVENT INJURIES AND ALLOW ACCESS FOR PIPING INSPECTION

TUBING SIZE	TUBING CLAMPS	CLAMP & UNION	CLAMP & 90 BEND
	BETWEEN	BETWEEN	BETWEEN
1/4" THRU 3/8"	36"	2"	4"
1/2" THRU 1"	60"	4"	8"
1-1/4" THRU 2"	84"	6"	12"

– ALTERATIONS –

NO.	DESCRIPTION	DATE	BY
1	UPDATE PIPING DIAGRAM	9/24/18	JH

– RESERVATIONS –

NO.	DESCRIPTION
1	40 TON DECK WINCHES TBD

– REFERENCES –

NO.	DESCRIPTION
1.	1372-551 COMPRESSED AIR PIPING
2.	1372-5000 ELECTRICAL ONE LINE

CODE: A – APPROVED; B – PRELIMINARY; C – NOT APPROVED

						9	
						8	
						7	
						6	
						5	
						4	
						3	
						2	
						1	
					NCDOT	0	ALT. NO.

– DRAWING SUBMITTALS –

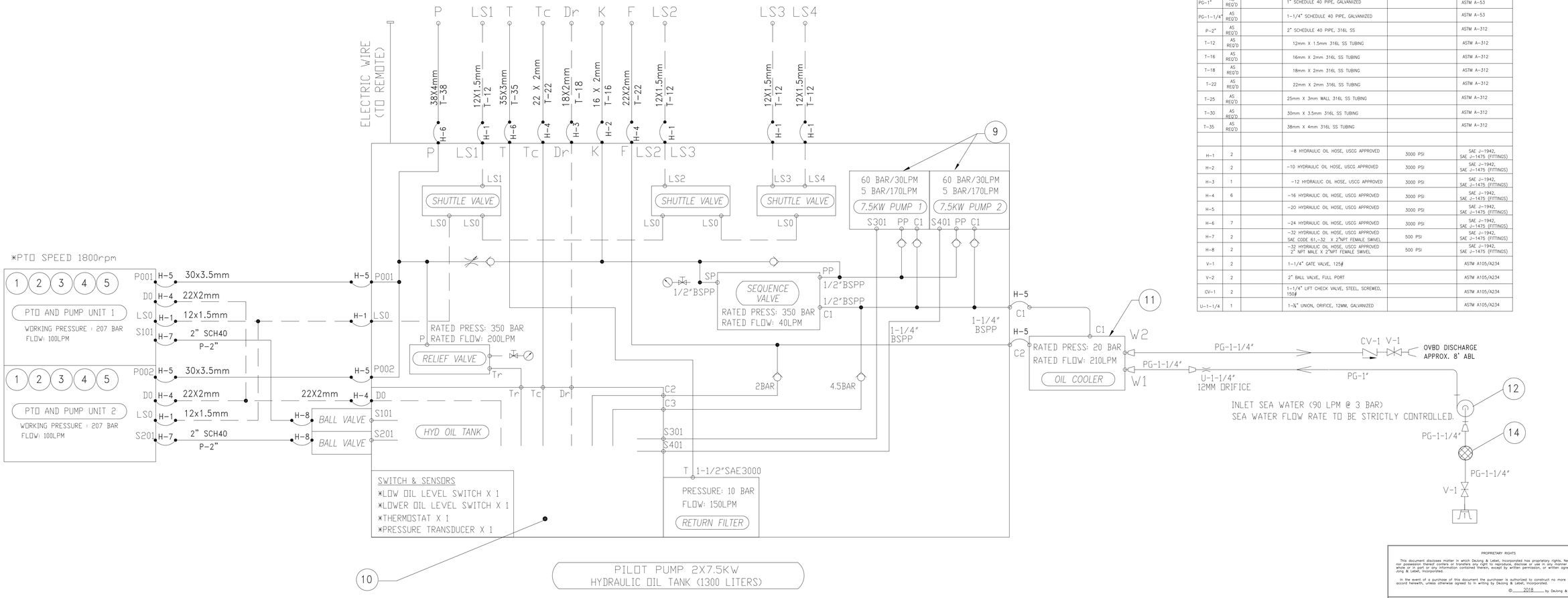
ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS			VALVES			BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
HYRAULIC OIL SERVICE PIPING MAWP: 3000 PSIG MAWT: 150°F	ALL	STAINLESS STEEL TUBING TYPE 316L, ASTM A213 WALL THICKNESS VARIES STAINLESS STEEL PIPE, TYPE 316L, ASTM A312	FLANGE SOCKET WELD, WELD NECK OR SLIP ON, 316L STAINLESS STEEL, ASTM SA182, ANSI B16.11 UNION GROUND JOINT, SOCKET WELD CARBON STEEL, ASTM A105, MSS-SP-83	SOCKET WELD STAINLESS STEEL, TYPE 316L, ASTM A182, ANSI B16.11 BUTTWELD STAINLESS STEEL, ASTM A403, ANSI B16.9, MSS SP-43 COMPRESSION TYPE 316 STAINLESS STEEL, ASTM A276,ASTM A479, ASTM A182	FLEX HOSE MEETING SAE J1942 AND J1475 FOR HYDRAULIC SERVICE SEE NOTE 9	GARLOCK STYLE 3000	GATE FLANGED CARBON STEEL, ASTM A216 GR WCB OR ASTM A105 ANSI B16.34 BALL THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB CHECK THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB	GATE CRES STEM, DISC AND SEAT BALL CHROME PLATED BALL, RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	

BILL OF MATERIALS

#	QTY.	SERVICE	TYPE	MAKE/MODEL	COMMENTS
1	2	HYDRAULIC PUMP PTO	PTO 400 FOR JOHN DEERE 4045 ENGINE	LOGAN 900-8020	
2	2	HYDRAULIC PUMP PTO	FLUID ACTIVATGED CLUTCH, 400 FT-LB, SAE C 14T SPLINE	LOGAN SPF400, OPTION SPF-4300-01	MAX ENGAGEMENT 1800 RPM
3	2	HYDRAULIC PUMP PTO	RIGID COUPLING	LOGAN 088-0018	
4	2	HYDRAULIC PUMP PTO	PNEUMATIC CONTROLS W/ 24VDC SOLENOID	LOGAN 610-0052	
5	2	HYDRAULIC PUMP	PUMP, VARIABLE DISPLACEMENT, 26.4 GPM, 3000 PSI, SAE "C" FLANGE, 2 BOLT	REXROTH A10VSO71DFLR/31R-VSA42N00	
6	1	HYDRAULIC TOWING WINCH	WINCH, TOWING	OIL STATES SKAGIT SMATCO, LLC OSI-HTW-SD-20B60	
7	1	HYDRAULIC VERTICAL CAPSTAN	CAPSTAN, VERTICAL	OIL STATES SKAGIT SMATCO, LLC OSI-HVC-ST	
8	2	DECK WINCH	40 TON DECK WINCH	OIL STATES SKAGIT SMATCO, LLC	
9	2	HYDRAULIC PILOT PUMP	PUMP, HYDRAULIC, PILOT PRESSURE, 870 PSI, 7 GPM, 7.5 KW ELEC MOTR, 208 VAC 3Ø	REXROTH PVQ41	FIXED DISPLACEMENT VANE PUMP
10	1	HYDRAULIC RESERVOR ASSY	RESERVIOR, HYDORAULIC, 1300 LITERS. 60"W X 56"H X 24"D W/ HYDRAULIC COMPONENTS & DISTRIBUTION BLOCK	HYDRADYNE	
11	1	HYDRAULIC OIL COOLING	HEAT EXCHANGER, OIL COOLING, 40 GPM SEAWATER FLOW	SEN-DURE 16867-1-7	
12	1	H.E. SEA WATER COOLING PUMP	PUMP, CENTRIFICAL, 23 GPM, 44PSI, STAINLESS STEEL, 208VAC,3Ø,TEFC MOTOR	PRICE PUMP MODEL HP755S, 5" IMPELLER	
13	AR	BULKHEAD PENETRATION	TYPE 250/210 W/ 2114 ASSEMBLY, CARBON STEEL SLEVE, SS COUPLING NUT, VITON GASKET	CBC MACHINE COMPANY TYPE 250/210 W/ 2114 ASSY	
14	1	STRAINER	1-1/2" BRONZE SIMPLEX STRAINER W/ .06 PERFORATED STAINLESS STEEL BASKET	EATON MODEL 72	24 GPM, 8 PSI PRESSURE DROP, Cv = 31.5
PG-1"	AS REQ'D		1" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
PG-1-1/4"	AS REQ'D		1-1/4" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
P-2"	AS REQ'D		2" SCHEDULE 40 PIPE, 316L SS		ASTM A-312
T-12	AS REQ'D		12mm X 1.5mm 316L SS TUBING		ASTM A-312
T-16	AS REQ'D		16mm X 2mm 316L SS TUBING		ASTM A-312
T-18	AS REQ'D		18mm X 2mm 316L SS TUBING		ASTM A-312
T-22	AS REQ'D		22mm X 2mm 316L SS TUBING		ASTM A-312
T-25	AS REQ'D		25mm X 3mm WALL 316L SS TUBING		ASTM A-312
T-30	AS REQ'D		30mm X 3.5mm 316L SS TUBING		ASTM A-312
T-35	AS REQ'D		38mm X 4mm 316L SS TUBING		ASTM A-312
H-1	2		-8 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-2	2		-10 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-3	1		-12 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-4	6		-16 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-5			-20 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-6	7		-24 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-7	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED SAE CODE 61,-32 X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-8	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED 2" NPT MALE X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
V-1	2		1-1/4" GATE VALVE, 125#		ASTM A105/A234
V-2	2		2" BALL VALVE, FULL PORT		ASTM A105/A234
CV-1	2		1-1/4" LIFT CHECK VALVE, STEEL, SCREWED, 150#		ASTM A105/A234
U-1-1/4	1		1-¼" UNION, ORIFICE, 12MM, GALVANIZED		ASTM A105/A234



HYDRAULIC POWER PIPING DIAGRAM

– GENERAL NOTES –

NO.	DESCRIPTION
1.	PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).
2.	THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.
3.	PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4.	PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.
5.	DO NOT ROUTE PIPING CONTAINING HYDRAULIC OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL HYDRAULIC OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT
6.	TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.
7.	PIPING SHALL BE ADEQUATELY SUPPORTED BY CLAMPS OR HANGERS IN ACCORDANCE WITH APPLICATION. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
8.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED.
9.	FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR HYDRAULIC OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.

– GENERAL NOTES –

NO.	DESCRIPTION
10.	SUPPORT HYDRAULIC TUBING WITH VIBRATION DAMPENING CLAMPS SUPPORTED WITH THE MAXIMUM SPAN INDICATED BELOW

TUBING SIZE	BETWEEN TUBING CLAMPS	BETWEEN CLAMP & UNION	BETWEEN CLAMP & 90 BEND
1/4" THRU 3/8"	36"	2"	4"
1/2" THRU 1"	60"	4"	8"
1-1/4" THRU 2"	84"	6"	12"

NO.	DESCRIPTION
11.	HEAT EXCHANGER SIZE BASED ON 55 GPM OIL FLOW, INLET TERMPERATURE 65°C, OUTLET TEMPERTURE 60°C, SEA WATER FLOW 24 GPM, INLET TEMPERATURE 35°C WITH A HEAT REJECTION OF 30KW
12.	HYDRAULIC OIL PIPING MUST BE SUITABLY INSULATED TO PREVENT INJURIES AND ALLOW ACCESS FOR PIPING INSPECTION

– ALTERATIONS –

NO.	DESCRIPTION	DATE	BY	NO.
1	UPDATE PIPING DIAGRAM	9/24/18	JH	1

– RESERVATIONS –

NO.	DESCRIPTION
1.	40 TON DECK WINCHES TBD

– REFERENCES –

NO.	DESCRIPTION
1.	1372-551 COMPRESSED AIR PIPING
2.	1372-5000 ELECTRICAL ONE LINE

CODE: A - APPROVED; B - PRELIMINARY; J - DELETED; K - RETURNED

						9
						8
						7
						6
						5
						4
						3
						2
						1
						0
					NCDOT	ALT. NO.

– DRAWING SUBMITTALS –

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
Phone: (904) 399-3673
Fax: (904) 399-1522
www.dejongandlebet.com
info@dejongandlebet.com

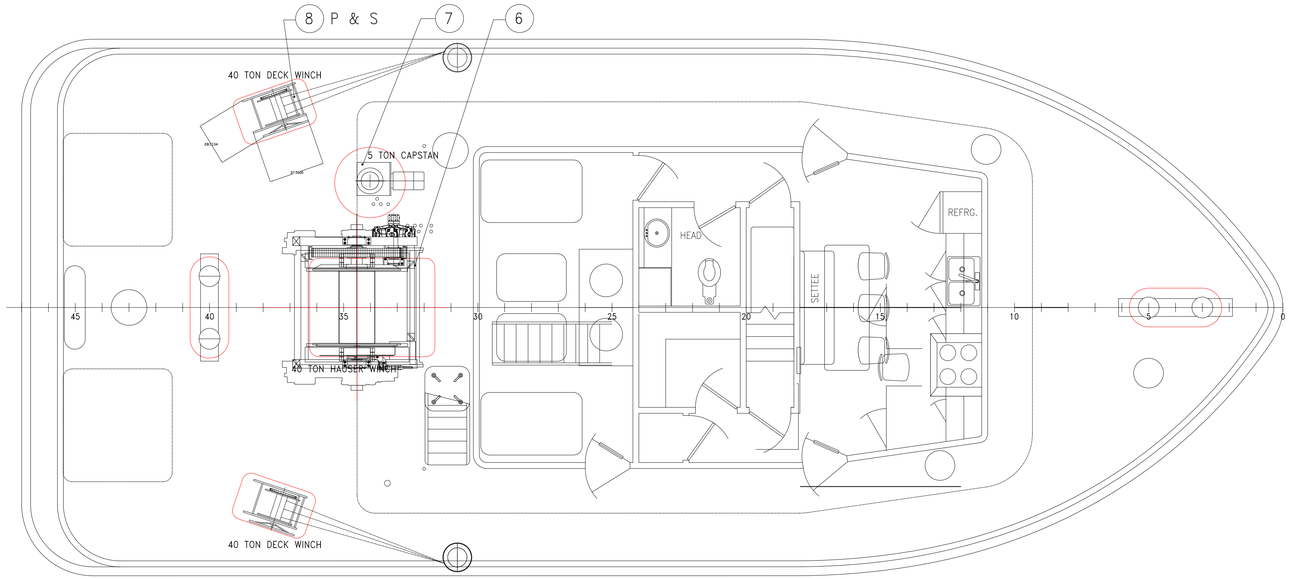
Title: 70.5'x30'x11' NCDOT TOWBOAT

DECK MACHINERY HYDRAULICS

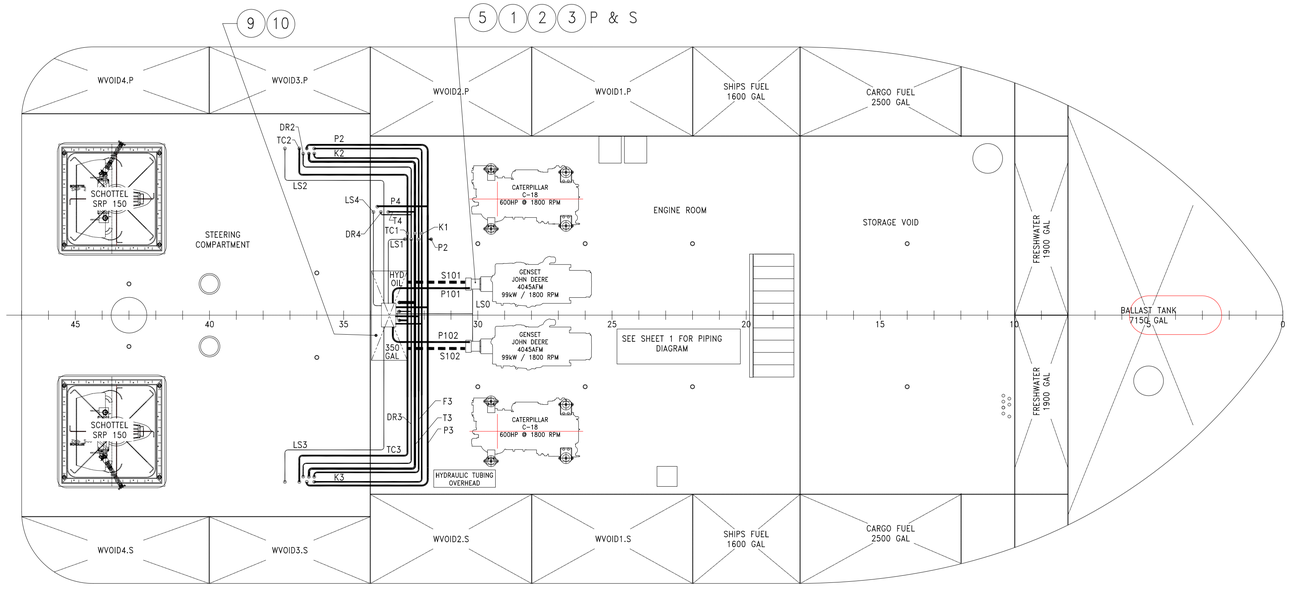
Dwg. No. 17-1372-265
Alt. No. 1
Sht. 2 of 3

Drawn By: JAH — Date: SEPT 7, 2018
Checked By: — Date:
App'd By: — Scale: NONE
ABS App'l: — USCG App'l:

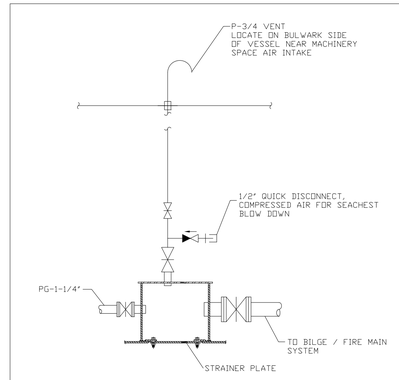
ANSI-D (24"x36")



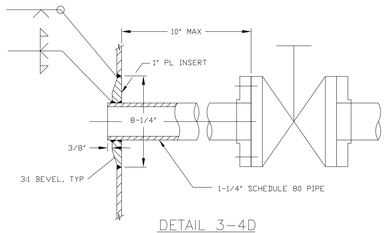
MAIN DECK ARRANGEMENTS



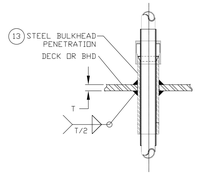
HOLD ARRANGEMENTS



SEE DRAWING 17-1372-521
FOR SEA CHEST
DETAILS



DETAIL 3-4D
OVERBOARD DISCHARGE
NO SCALE



DETAIL 3-1C
TYP. DECK OR BULKHEAD PENETRATION
NO SCALE

BILL OF MATERIALS

#	QTY.	SERVICE	TYPE	MAKE/MODEL	COMMENTS
1	2	HYDRAULIC PUMP PTO	PTO 400 FOR JOHN DEERE 4045 ENGINE	LOGAN 900-8020	
2	2	HYDRAULIC PUMP PTO	FLUID ACTIVATGED CLUTCH, 400 FT-LB, SAE C 14T SPLINE 12/24DP	LOGAN SPF400, OPTION SPF-4300-01	MAX ENGAGEMENT 1800 RPM
3	2	HYDRAULIC PUMP PTO	RIGID COUPLING	LOGAN 088-0018	
4	2	HYDRAULIC PUMP PTO	PNEUMATIC CONTROLS W/ 24VDC SOLENOID	LOGAN 610-0052	
5	2	HYDRAULIC PUMP	PUMP, VARIABLE DISPLACEMENT, 26.4 GPM, 3000 PSI, SAE "C" FLANGE, 2 BOLT	REXROTH A10VSO71DFLR/31R-VSA42N00	
6	1	HYDRAULIC TOWING WINCH	WINCH, TOWING	OIL STATES SKAGIT SMATCO, LLC OSI-HTW-SD-20B60	
7	1	HYDRAULIC VERTICAL CAPSTAN	CAPSTAN, VERTICAL	OIL STATES SKAGIT SMATCO, LLC OSI-HVC-5T	
8	2	DECK WINCH	40 TON DECK WINCH	OIL STATES SKAGIT SMATCO, LLC	
9	2	HYDRAULIC PILOT PUMP	PUMP, HYDRAULIC, PILOT PRESSURE, 870 PSI, 7 GPM, 7.5 KW ELEC MOTR, 208 VAC 3ø	REXROTH PVQ41	FIXED DISPLACEMENT VANE PUMP
10	1	HYDRAULIC RESERVOIR ASSY	RESERVIOR, HYDDRAULIC, 1300 LITERS, 60"W X 56"H X 247D W/ HYDRAULIC COMPONENTS & DISTRIBUTION BLOCK	HYDRADYNE	
11	1	HYDRAULIC OIL COOLING	HEAT EXCHANGER, OIL COOLING, 40 GPM SEAWATER FLOW	SEN-DURE 16867-1-7	
12	1	H.E. SEA WATER COOLING PUMP	PUMP, CENTRIFICAL, 23 GPM, 44PSI, STAINLESS STEEL, 208VAC,3ø,TEFC MOTOR	PRICE PUMP MODEL HP75SS, 5" IMPELLER	
13	AR	BULKHEAD PENETRATION	TYPE 250/210 W/ 2114 ASSEMBLY, CARBON STEEL SLEVE, DI COUPLING NUT, VITON GASKET	CBC MACHINE COMPANY TYPE 250/210 W/ 2114 ASSY	
14	1	STRAINER	1-1/2" BRONZE SIMPLEX STRAINER W/ .06 PERFORATED STAINLESS STEEL BASKET	EATON MODEL 72	24 GPM, .8 PSI PRESSURE DROP, CV = 31.5
PG-1"	AS REQ'D		1" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
PG-1-1/4"	AS REQ'D		1-1/4" SCHEDULE 40 PIPE, GALVANIZED		ASTM A-53
P-2"	AS REQ'D		2" SCHEDULE 40 PIPE, 316L SS		ASTM A-312
T-12	AS REQ'D		12mm X 1.5mm 316L SS TUBING		ASTM A-312
T-16	AS REQ'D		16mm X 2mm 316L SS TUBING		ASTM A-312
T-18	AS REQ'D		18mm X 2mm 316L SS TUBING		ASTM A-312
T-22	AS REQ'D		22mm X 2mm 316L SS TUBING		ASTM A-312
T-25	AS REQ'D		25mm X 3mm WALL 316L SS TUBING		ASTM A-312
T-30	AS REQ'D		30mm X 3.5mm 316L SS TUBING		ASTM A-312
T-35	AS REQ'D		38mm X 4mm 316L SS TUBING		ASTM A-312
H-1	2		-8 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-2	2		-10 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-3	1		-12 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-4	6		-16 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-5			-20 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-6	7		-24 HYDRAULIC OIL HOSE, USCG APPROVED	3000 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-7	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED SAE CODE 61,-32 X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
H-8	2		-32 HYDRAULIC OIL HOSE, USCG APPROVED 2" NPT MALE X 2"NPT FEMALE SWIVEL	500 PSI	SAE J-1942, SAE J-1475 (FITTINGS)
V-1	2		1-1/4" GATE VALVE, 125#		ASTM A105/A234
V-2	2		2" BALL VALVE, FULL PORT		ASTM A105/A234
CV-1	2		1-1/4" LIFT CHECK VALVE, STEEL, SCREWED, 150#		ASTM A105/A234
U-1-1/4	1		1-¼" UNION, ORIFICE, 12MM, GALVANIZED		ASTM A105/A234

– GENERAL NOTES –

1. PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).
2. THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.
3. PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4. PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.
5. DO NOT ROUTE PIPING CONTAINING HYDRAULIC OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL HYDRAULIC OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT
6. TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.
7. PIPING SHALL BE ADEQUATELY SUPPORTED BY CLAMPS OR HANGERS IN ACCORDANCE WITH APPLICATION. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
8. WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED.
9. FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR HYDRAULIC OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.
10. SUPPORT HYDRAULIC TUBING WITH VIBRATION DAMPENING CLAMPS SUPPORTED WITH THE MAXIMUM SPAN INDICATED BELOW

TUBING SIZE	BETWEEN TUBING CLAMPS	BETWEEN CLAMP & UNION	BETWEEN CLAMP & 90 BEND
1/4" THRU 3/8"	36"	2"	4"
1/2" THRU 1"	60"	4"	8"
1-1/4" THRU 2"	84"	6"	12"

11. HEAT EXCHANGER SIZE BASED ON 55 GPM OIL FLOW, INLET TERMPERATURE 65°C, OUTLET TEMPERTURE 60°C, SEA WATER FLOW 24 GPM, INLET TEMPERATURE 35°C WITH A HEAT REJECTION OF 30KW
12. HYDRAULIC OIL PIPING MUST BE SUITABLY INSULATED TO PREVENT INJURIES AND ALLOW ACCESS FOR PIPING INSPECTION

– ALTERATIONS –

NO.	DESCRIPTION	DATE	BY
1	UPDATE PIPING DIAGRAM	9/24/18	JH

– RESERVATIONS –

NO.	DESCRIPTION
1	40 TON DECK WINCHES TBD

– REFERENCES –

NO.	DESCRIPTION
1.	1372-551 COMPRESSED AIR PIPING
2.	1372-5000 ELECTRICAL ONE LINE

CODE: A - APPROVED; B - DISAPPROVED; C - PRELIMINARY; D - RETURNED

– DRAWING SUBMITTALS –

						NO.	ALT. NO.
						9	
						8	
						7	
						6	
						5	
						4	
						3	
						2	
						1	
					NCDOT	0	

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DECK MACHINERY HYDRAULICS

Dwg. No. 17-1372-265
Alt. No. 1
Sht. 3 of 4

Drawn By: JAH — Date: SEPT 07, 2018
Checked By: — Date:
App'd By: — Scale: 1/4" = 1'-0"
ABS App'l: — USCG App'l:

3 2 1 ANSI-D (24"x36")

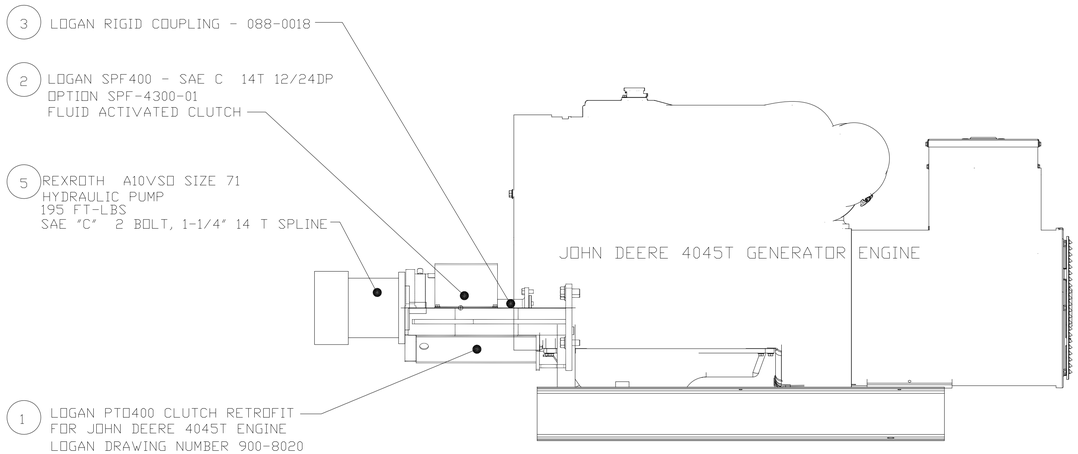
POWER TAKE-OFF DETAILS

BILL OF MATERIALS

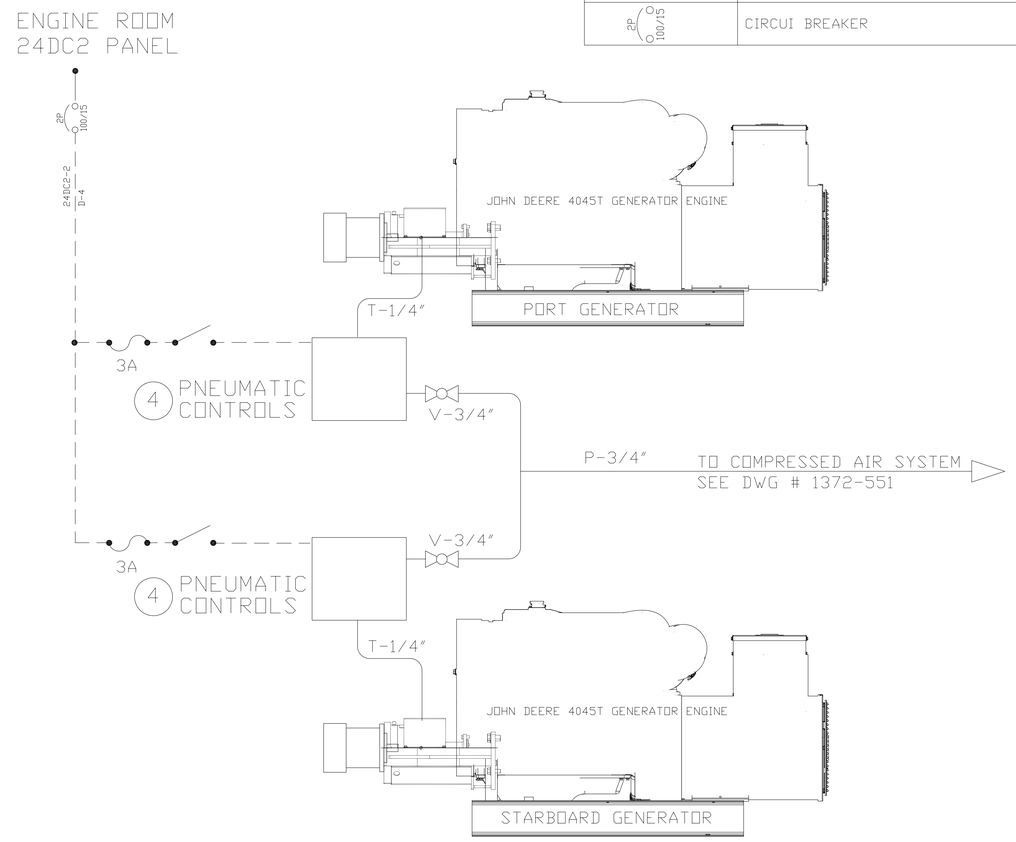
#	QTY.	SERVICE	TYPE	MAKE/MODEL	COMMENTS
1	2	HYDRAULIC PUMP PTO	PTO 400 FOR JOHN DEERE 4045 ENGINE	LOGAN 900-8020	
2	2	HYDRAULIC PUMP PTO	FLUID ACTIVATGED CLUTCH, 400 FT-LB, SAE C 14T SPLINE 12/24DP	LOGAN SPF400, OPTION SPF-4300-01	MAX ENGAGEMENT 1800 RPM
3	2	HYDRAULIC PUMP PTO	RIGID COUPLING	LOGAN 088-0018	
4	2	HYDRAULIC PUMP PTO	PNEUMATIC CONTROLS W/ 24VDC SOLENOID	LOGAN 610-0052	
5	2	HYDRAULIC PUMP	PUMP, VARIABLE DISPLACEMENT, 26.4 GPM, 3000 PSI, SAE "C" FLANGE, 2 BOLT	REXROTH A10VSO71DFLR/31R-VSA42N00	

SYMBOLS LIST

P-3/4"	NPS PIPE SIZE
T-1/4"	TUBING SIZE
D-4	ELECTRICAL CABLE
	HOSE
	BALL VALVE
	FUSE
	SWITCH
2P 100/15	CIRCUI BREAKER



GENERATOR PTO CLUTCH ASSEMBLY



24VDC/PNEUMATIC CLUTCH CONTROL

– GENERAL NOTES –

1. PIPING SYSTEM MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE 46 CFR SUBCHAPTER M (TOWING VESSELS).
2. THIS DRAWING IS DIAGRAMMATIC ONLY AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP FULLY A DETAILED DESIGN THAT PROVIDES A FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.
3. PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
4. PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.
5. DO NOT ROUTE PIPING CONTAINING HYDRAULIC OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL HYDRAULIC OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER EQUIPMENT
6. TAKEDOWN JOINTS SHALL BE PROVIDED AT INTERVALS WHICH ALLOW DISASSEMBLY AND REMOVAL OF PIPING AND EQUIPMENT WITHOUT REQUIRING REMOVAL OR MODIFICATION OF PERMANENT STRUCTURE.
7. PIPING SHALL BE ADEQUATELY SUPPORTED BY CLAMPS OR HANGERS IN ACCORDANCE WITH APPLICATION. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
8. WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED.
9. FLEXIBLE HOSE ASSEMBLIES SHALL MEET THE REQUIREMENTS OF 46 CFR 182.720 AND BE APPROVED FOR HYDRAULIC OIL SERVICE. END FITTINGS SHALL MEET SAE J1475. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH.
10. SUPPORT HYDRAULIC TUBING WITH VIBRATION DAMPENING CLAMPS SUPPORTED WITH THE MAXIMUM SPAN INDICATED BELOW

TUBING SIZE	BETWEEN TUBING CLAMPS	BETWEEN CLAMP & UNION	BETWEEN CLAMP & 90 BEND
1/4" THRU 3/8"	36"	2"	4"
1/2" THRU 1"	60"	4"	8"
1-1/4" THRU 2"	84"	6"	12"

11. HEAT EXCHANGER SIZE BASED ON 55 GPM OIL FLOW, INLET TERMPERATURE 65°C, OUTLET TEMPERTURE 60°C, SEA WATER FLOW 24 GPM, INLET TEMPERATURE 35°C WITH A HEAT REJECTION OF 30KW
12. HYDRAULIC OIL PIPING MUST BE SUITABLY INSULATED TO PREVENT INJURIES AND ALLOW ACCESS FOR PIPING INSPECTION

– ALTERATIONS –

NO.	DESCRIPTION	DATE	BY
1	UPDATE PIPING DIAGRAM	9/24/18	JH

– RESERVATIONS –

NO.	DESCRIPTION
1	40 TON DECK WINCHES TBD

– REFERENCES –

NO.	DESCRIPTION
1.	1372-551 COMPRESSED AIR PIPING
2.	1372-5000 ELECTRICAL ONE LINE

CODE: A = APPROVED, C = CLASSIFY, P = PRELIMINARY, R = RETURNED

– DRAWING SUBMITTALS –

NCDOT	ALT. NO.
	9
	8
	7
	6
	5
	4
	3
	2
	1
	0

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DECK MACHINERY HYDRAULICS

Dwg. No. 17-1372-265

Alt. No. 1
Sht. 4 of 4

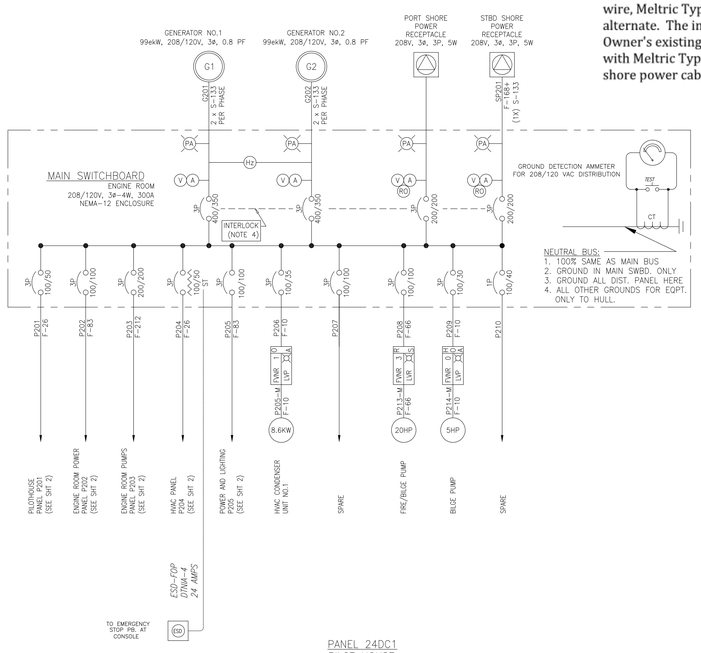
Drawn By: JAH
Checked By:
App'd By:
ABS App'r:

Date: SEPTEMBER 7, 2018
Date:
Scale: NONE
USCG App'r.:

ANSI-D (24"x36")

SYMBOLS LIST	
X / Y/Z	CIRCUIT BREAKER X – POLES Y – FRAME SIZE Z – TRIP RATING
Yp Ys X Vp Vs	TRANSFORMER X – SIZE kVA Vp – PRIMARY VOLTAGE Vs – SECONDARY VOLTAGE Yp – PRIMARY CONNECTION Ys – SECONDARY CONNECTION
_kW	EQUIPMENT
	RECEPTACLE
	LIGHTING
HP/kW	MOTOR
G1	GENERATOR
	SHORE POWER RECEPTACLE
X	INSTRUMENTATION V – VOLT, A – AMPERES, kW – KILOWATTS, Hz – FREQUENCY PA – POWER AVAILABLE RO – PHASE ROTATION
W X Y Z	MOTOR CONTROLLER W – R S, RUN STOP, H O A, HAND OFF AUTO X – SSNR, SOFT START NON REVERSING, FVNR, FULL VOLTAGE NON REVERSING Y – NEMA SIZE Z – LVP OR LVR
XX	CONTROL DEVICES/FUNCTIONS PB – PUSH–BUTTON PB/IL – PUSH–BUTTON, ILLUMINATED PS – PRESSURE SWITCH LS – LEVEL SWITCH FR – FIRE SHUTDOWN FS – FLOW SWITCH DS – DISCONNECT SWITCH TH – THERMOSTAT
	FUSE
C	VENDOR PROVIDED MOTOR CONTROLLER
	50A 120/240V RANGE RECEPTACLE

The Contractor shall provide and install a watertight 60 amp, 208-volt, 3 phase, 3 pole/4 wire, Meltric Type DB/DSM, Model 89-60143-080, shore power inlet, or Owner directed alternate. The inlet shall be situated on the deck house generally as situated on the Owner's existing vessels. The Contractor shall make up and provide a shore power cable with Meltric Type DB/DSM Male Plugs, Model 89-61143, sized and fashioned after the shore power cables on the Owner's existing vessels.



PANEL 24DC1
PILOT HOUSE

24VDC, 2W, 100A, 5WIC
42 POLE, NEMA-1 ENCLOSURE

VHF RADIO w/ AIS NO.1	50W	24DC1-1 D-4	100/15	24DC1-2 D-4	50W VHF RADIO W/ AIS NO.2
RAI END NO.1	30W	24DC1-3 D-4	100/15	24DC1-4 D-4	50W PH CONSOLE ILLUMINATION&COMPASS LGT
RADAR AND REMOTE DISPLAY	400W	24DC1-5 D-6	100/30	24DC1-6 D-4	20W ANEMOMETER/WIND DIRECTION INDICATOR
RADAR AND REMOTE DISPLAY	400W	24DC1-7 D-6	100/15	24DC1-8 D-4	200W PA/GA SYSTEM
NAV LIGHTING PANEL	300W	24DC1-9 D-6	100/20	24DC1-10 D-4	200W NMEA 2000 NETWORK POWER SUPPLY
AIR HORN SOLENOIDS	100W	24DC1-11 D-4	100/15	24DC1-12	SPARE
BRIDGE DECK/LADDER EMERG LIGHTING	120W	24DC1-13 D-4	100/15	24DC1-14	SPARE
PROPULSION CONTROLS (ALT SUPPLY)	200W	24DC1-15 D-4	100/15	24DC1-16	SPARE
AIS / GPS / CHART PLOTTER	50W	24DC1-17 D-4	100/15	24DC1-18 D-4	1W COMPASS LIGHT
BLANK		24DC1-19		24DC1-20	BLANK

Yp Ys X 24 12

24DC1–BAT BANK
(2) NORTHSTAR NSB–92FT RED
92AH, 10 HOUR RATE

BATTERY DISCONNECT W/ FUSE
100A
D–66
D–66
24DC1 D–66
AC INPUT P201–1 — TO P201 (SHT 2)
REMOTE MONITOR — TO VESSEL MONITORING SYSTEM
CHARGER 24DC1–BC
NEWMAR PT–24–95U
(2.3kW)

PANEL 24DC2
ENGINE ROOM

24VDC, 2W, 100A, 5WIC
30 POLE, NEMA–12 ENCLOSURE

INTEGRATED ALARM SYSTEM	5A	24DC2–1 D–4	100/15	24DC2–2	SPARE
ME NO. 1 CONTROL POWER	4A	24DC2–3 D–4	100/15	24DC2–4 D–16	2.5A GENSET NO. 1 CONTROL POWER
PORT SHOTTEL STEERING CONTROLS	1.5A	24DC2–5 D–4	100/15	24DC2–6 D–4	STBD SHOTTEL STEERING CONTROLS
SHAFT TACHOMETERS	2.5A	24DC2–7 D–4	100/15	24DC2–8	SPARE
SHOTTEL PROPULSION CONTROLS	200W	24DC2–9 D–4	100/20	24DC2–10	2.5A GENSET NO. 2 CONTROL POWER
ME NO. 2 CONTROL POWER	4A	24DC2–11 D–4	100/20	24DC2–12	SPARE
FIRE DAMPER, MAIN DECK	7W RUNNING 3.5W HOLDING	24DC2–13 D–4	100/15	24DC2–14 D–4	RUNNING 14W HOLDING 7W FIRE DAMPERS ENGINE ROOM
SPARE		24DC2–15	100/15	24DC2–16	SPARE

24DC2–BAT BANK
(2) NORTHSTAR NSB–92FT RED
53AH, 30 MIN RATE

BATTERY DISCONNECT W/ FUSE
70A
D–41
D–41
24DC2 D–41
AC INPUT P219 — TO MAIN SWITCHBOARD (P213)
REMOTE MONITOR — TO VESSEL MONITORING SYSTEM
CHARGER 24DC2–BC
NEWMAR PTMS–24–67
(1.6kW)

MAY ADD A SECOND BATTERY BANK FOR FURTHER REDUNDANCY

– GENERAL NOTES –			– GENERAL NOTES –
NO.	DESCRIPTION	NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR BUILDING AND CLASSING STEEL VESSELS FOR SERVICE ON RIVERS AND INTRACOASTAL WATERWAYS WITH NOTATION 'A1, PASSENGER VESSEL, RIVER SERVICE.	11	METAL USED FOR TERMINAL STUDS, LUGS, NUTS, AND WASHERS SHALL BE CORROSION RESISTANT AND GALVANICALLY COMPATIBLE WITH THE WIRE AND TERMINAL LUGS.
2.	SHIP SERVICE SWITCHBOARD IS A 3 PHASE 4 WIRE SYSTEM, 208/120V, 60 Hz, WITH GROUNDED NEUTRAL. SEE REFERENCE 1 FOR SWITCHBOARD LOCATION.	12	WIRES TERMINATING IN EQUIPMENT SHALL BE ARRANGED TO PROVIDE A SURPLUS LENGTH OF WIRE SUFFICIENT TO ALLOW FOR DISCONNECTION, AND TO PERMIT MULTIPLE WIRES TO BE FORMED AT TERMINAL STUDS.
3.	ALL PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL HAVE METAL ENCLOSURES PROPERLY GROUNDED PER ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE, UNLESS NOTED OTHERWISE.	13	CABLE PENETRATIONS OF STRUCTURAL FIRE PROTECTION SHALL UTILIZE FIRE STOPS WHICH MAINTAIN THE FIRE PROTECTION LEVEL GRADE A, B, ETC.) ASSOCIATED WITH THE FIRE ZONE PENETRATED.
4.	THE SHIP SERVICE AND SHORE POWER SUPPLIES SHALL BE INTERLOCKED SO THAT ONLY ONE CAN SUPPLY THE SHIP SERVICE SWITCHBOARD AT ANY TIME.	14	CABLE PENETRATIONS THROUGH BULKHEADS AND DECKS, BOTH WATERTIGHT AND NON–WATERTIGHT, SHALL COMPLY WITH REGULATORY BODY REQUIREMENTS. MULTI–CABLE TRANSIT TYPE PENETRATIONS MAY BE SUBSTITUTED FOR STUFFING TUBES FOR ALL PENETRATIONS EXCEPT THROUGH OPEN DECKS. EXTRA HEAVY, LOW ALLOY KICK PIPES WITH STUFFING TUBES, OR EQUIVALENT, SHALL BE WELDED INTO ALL OPEN DECKS AND SHALL BE NINE INCHES HIGH TO TOP OF THE STUFFING TUBE. BUILT–IN WATERTIGHT BOXES MAY BE USED IN LIEU OF KICK PIPES. POURED SEALERS SHALL NOT BE ALLOWED.
5.	CIRCUIT BREAKERS FOR STEERING GEAR HYDRAULIC PUMPS REQUIRE INSTANTANEOUS TRIP ONLY AND SHALL BE SIZED PER 46 CFR 58.25–55(a)(2). CONTRACTOR SHALL VERIFY TRIP RATING AGAINST ACTUAL MOTOR NAMEPLATE DATA.		
6	ALL POWER CABLE SHALL COMPLY WITH THE REQUIREMENTS OF IEEE 1580. ALL CABLE SHALL BE LOW SMOKE, ZERO HALOGEN TYPE, TRICAB OR EQUAL.		
7	NYLON OR BRASS STUFFING TUBES SHALL BE USED WHEN PENETRATING ELECTRICAL ENCLOSURES OR JUNCTION BOXES.		
8	FAULT CURRENT AT THE SHIP SERVICE SWITCHBOARD IS CONSERVATIVELY ESTIMATED AT 3,668A.		
9	ALL CABLES SHALL BE RATED AT 90°C CONDUCTOR TEMPERATURE IN ACCORDANCE WITH IEEE STANDARD NO. 45 2002 TABLE 25.		
10	EACH CABLE SHALL BE TAGGED WITH ITS UNIQUE CIRCUIT DESIGNATION USING EMBOSSED ALUMINUM TAGS ON EACH SIDE OF PENETRATIONS AND INTO CONNECTION BOXES AND/OR EQUIPMENT.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399–3673
Fax: (904) 399–1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

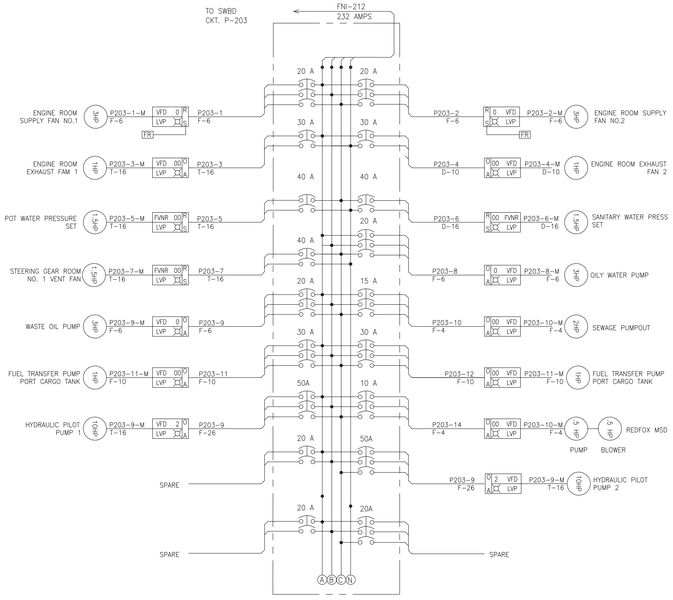
Title: 70.5'x30'x11' NCDOT TOWBOAT

ELECTRICAL ONE–LINE DIAGRAM

Dwg. No. 17–1372–320
Alt. No. 1
Sht. 1 of 2

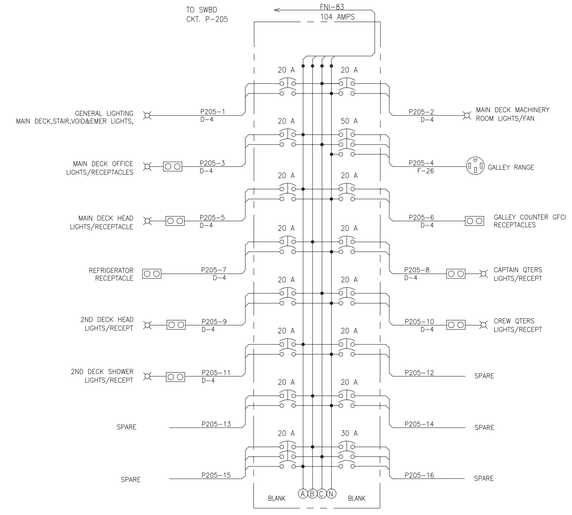
Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

ANSI–D (24"x36")



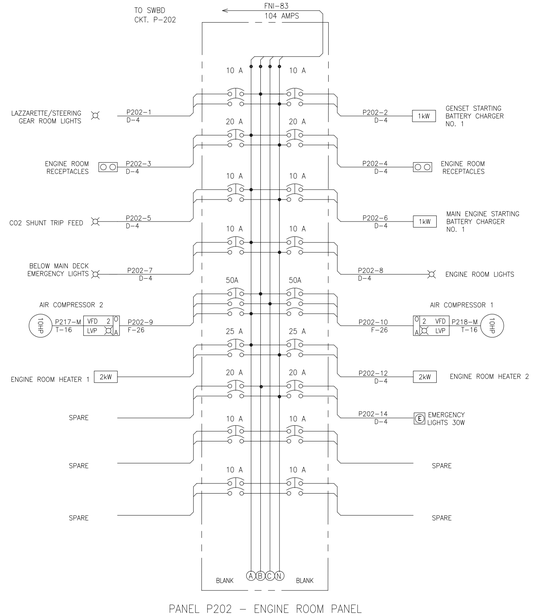
PANEL P203 – ENGINE ROOM PUMP PANEL

208/120V, 3ø-4W, 225A, 10kAIC, MLO
42 POLE, NEMA-12 ENCLOSURE



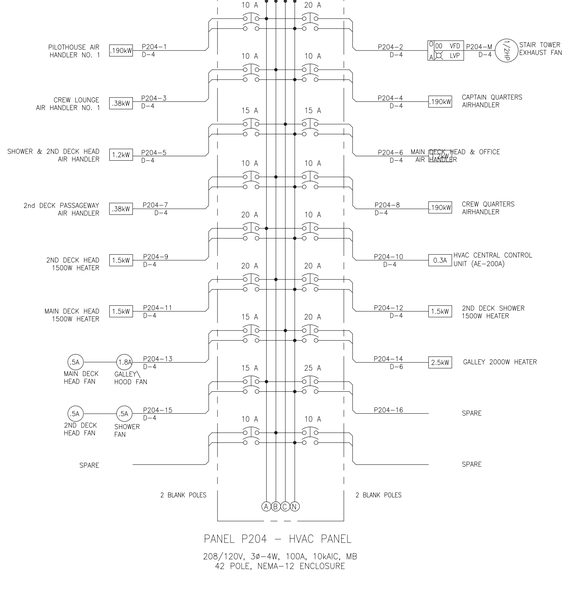
PANEL P205 – POWER AND LIGHTING PANEL

208/120V, 3ø-4W, 100A, 10kAIC, MLO
36 POLE, NEMA-12 ENCLOSURE



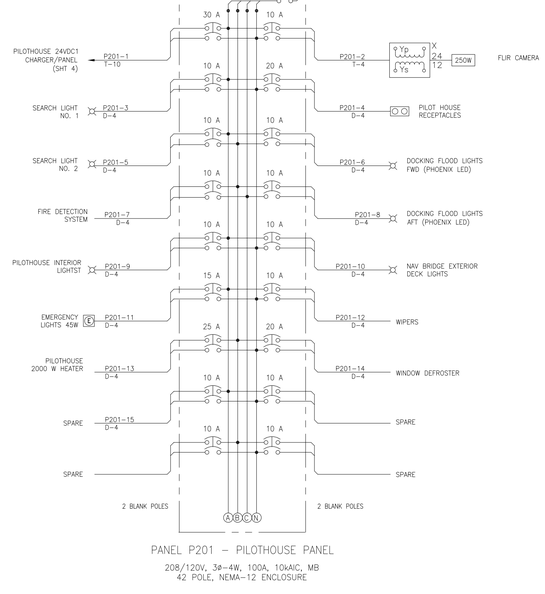
PANEL P202 – ENGINE ROOM PANEL

208/120V, 3ø-4W, 225A, 10kAIC, MLO
36 POLE, NEMA-12 ENCLOSURE



PANEL P204 – HVAC PANEL

208/120V, 3ø-4W, 100A, 10kAIC, MB
42 POLE, NEMA-12 ENCLOSURE



PANEL P201 – PILOTHOUSE PANEL

208/120V, 3ø-4W, 100A, 10kAIC, MB
42 POLE, NEMA-12 ENCLOSURE

NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "W" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR BUILDING AND CLASSING STEEL VESSELS FOR SERVICE ON RIVERS AND INTRACOASTAL WATERWAYS WITH NOTATION 'A1, PASSENGER VESSEL, RIVER SERVICE.	11	METAL USED FOR TERMINAL STUDS, LUGS, NUTS, AND WASHERS SHALL BE CORROSION RESISTANT AND GALVANICALLY COMPATIBLE WITH THE WIRE AND TERMINAL LUGS.
2.	SHIP SERVICE SWITCHBOARD IS A 3 PHASE 4 WIRE SYSTEM, 208/120V, 60 Hz, WITH GROUNDED NEUTRAL. SEE REFERENCE 1 FOR SWITCHBOARD LOCATION.	12	WIRES TERMINATING IN EQUIPMENT SHALL BE ARRANGED TO PROVIDE A SURPLUS LENGTH OF WIRE SUFFICIENT TO ALLOW FOR DISCONNECTION, AND TO PERMIT MULTIPLE WIRES TO BE FORMED AT TERMINAL STUDS.
3.	ALL PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL HAVE METAL ENCLOSURES PROPERLY GROUNDED PER ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE, UNLESS NOTED OTHERWISE.	13	CABLE PENETRATIONS OF STRUCTURAL FIRE PROTECTION SHALL UTILIZE FIRE STOPS WHICH MAINTAIN THE FIRE PROTECTION LEVEL (GRADE A, B, ETC.) ASSOCIATED WITH THE FIRE ZONE PENETRATED.
4.	THE SHIP SERVICE AND SHORE POWER SUPPLIES SHALL BE INTERLOCKED SO THAT ONLY ONE CAN SUPPLY THE SHIP SERVICE SWITCHBOARD AT ANY TIME.	14	CABLE PENETRATIONS THROUGH BULKHEADS AND DECKS, BOTH WATERTIGHT AND NON-WATERTIGHT, SHALL COMPLY WITH REGULATORY BODY REQUIREMENTS. MULTI-CABLE TRANSIT TYPE PENETRATIONS MAY BE SUBSTITUTED FOR STUFFING TUBES FOR ALL PENETRATIONS EXCEPT THROUGH OPEN DECKS. EXTRA HEAVY, LOW ALLOY KICK PIPES WITH STUFFING TUBES, OR EQUIVALENT, SHALL BE WELDED INTO ALL OPEN DECKS AND SHALL BE NINE INCHES HIGH TO TOP OF THE STUFFING TUBE. BUILT-IN WATERTIGHT BOXES MAY BE USED IN LIEU OF KICK PIPES. POURED SEALERS SHALL NOT BE ALLOWED.
5.	CIRCUIT BREAKERS FOR STEERING GEAR HYDRAULIC PUMPS REQUIRE INSTANTANEOUS TRIP ONLY AND SHALL BE SIZED PER 46 CFR 58.25-55(a)(2). CONTRACTOR SHALL VERIFY TRIP RATING AGAINST ACTUAL MOTOR NAMEPLATE DATA.		
6	ALL POWER CABLE SHALL COMPLY WITH THE REQUIREMENTS OF IEEE 1580. ALL CABLE SHALL BE LOW SMOKE, ZERO HALOGEN TYPE, TRICAB OR EQUAL.		
7	NYLON OR BRASS STUFFING TUBES SHALL BE USED WHEN PENETRATING ELECTRICAL ENCLOSURES OR JUNCTION BOXES.		
8	FAULT CURRENT AT THE SHIP SERVICE SWITCHBOARD IS CONSERVATIVELY ESTIMATED AT 3,668A.		
9	ALL CABLES SHALL BE RATED AT 90°C CONDUCTOR TEMPERATURE IN ACCORDANCE WITH IEEE STANDARD NO. 45 2002 TABLE 25.		
10	EACH CABLE SHALL BE TAGGED WITH ITS UNIQUE CIRCUIT DESIGNATION USING EMBOSSED ALUMINUM TAGS ON EACH SIDE OF PENETRATIONS AND INTO CONNECTION BOXES AND/OR EQUIPMENT.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce or disclose the document, or any part thereof, or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

ELECTRICAL ONE-LINE DIAGRAM

Dwg. No. 17-1372-320

Alt. No. 1
Sht. 2 of 2

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

SYMBOLS LIST

	PANEL FEEDERS
	CIRCUIT FEEDERS
REDI-LED 19W	
	CUBE LIGHT 13W
	METALLIC LED VP 17W
	RED/WHITE LED 13W
	ARIES FLOOD 16W
ECOMOD 2 280W	
	DECK LIGHT LED 5W
	BUNK AND MIRROR LIGHT 12W
	RECEPTACLE GFCI 108VAC 20A
	RECEPTACLE 108VAC 20A
	CENTRIFUGAL PUMP
	GEAR PUMP
	RECEPTACLE 208VAC 20A
	LIGHT SWITCH
	MOTOR CONTROLER HOA
	MOTOR CONTROLER R/S
	DISCONNECT
200A	SHOREPOWER INLET
	SEARCHLIGHT
	FLIR CAMERA
	RECEPTACLE, RANGE 50A
	BULKHEAD MOUNT EMERGENCY LIGHTS

SYSTEM OPERATION INTENT

TO PROVIDE 120/208 3 PHASE AC POWER FROM EITHER OF THE TWO 99KW ONBOARD GENERATORS OR THROUGH A DEDICATED SHORE-POWER CONNECTION THROUGH THE SWITCHBOARD TO THE INDIVIDUAL SUB PANELS IN ORDER TO PROVIDE BASIC VESSEL FUNCTIONALITY WHILE PERFORMING ITS MISSION AS A TOWING VESSEL.

MATERIAL SCHEDULE

SYSTEM	SIZE	WIRE	PANEL ENCLOSURES	JUCTION BOXES	CIRCUIT DISCONNECTS	MOTOR CONTROLERS	CIRCUIT BREAKERS	FUSES	CABLE HANGERS
PANEL FEEDER WIRING	ALL	ALL ELECTRIC WIRE SHALL BE UL LISTED SHIPBOARD CABLE, SIZED AT 80 PERCENT MANUFATURERS LISTED AMPACITY AT 75 DEG C	ALL PANELS SHALL HAVE SOLID COPPER BUS BARS				EACH CIRCUIT BREAKER MUST MEET UL 489 "MOLDED CASE CIRCUIT BREAKERS AND CIRCUIT BREAKER ENCLOSURES" OR OTHER STANDARD SPECIFIED BY THE COMMANDANT AND BE OF THE MANUALLY RESET TYPE DESIGNED FOR: (1) INVERSE TIME DELAY (2) INSTANTANEOUS SHORT CIRCUIT PROTECTION AND: (3) SWITCHING DUTY IF THE BREAKER IS USED AS A SWITCH. EACH CIRCUIT BREAKER MUST INDICATE WHETHER IT IS IN THE OPEN OR CLOSED POSITION.	FUSES SHALL BE OF THE UL CARTRIDGE TYPE ONLY	CABLE HANGERS FOR OVERHEAD AND VERTICAL RUNS MUST BE INSTALLED WITH METAL SUPPORTS AND RETENTION DEVICES AT LEAST EVERY 48 INCHES.
CIRCUIT FEEDER WIRING	ALL								

17-1372-5005.1 Electrical and Lighting B.O.M.

ITEM	QTY	SYMBOL	DESCRIPTION	MATERIAL SPEC	REMARKS
1	26	REDI-LED 19W	PHOENIX REDI LIGHT 42" LED 19W		
2	6		PHOENIX CUBE LIGHT WHITE 13W		
3	11		PHOENIX METALLIC LED VP 17W	UL1598A, UL 844	
4	5		RED/WHITE BI COLOR, SWITCHABLE, DIMMABLE, L.E.D. DOME LIGHT 13W		
5	5		PHEONIX ARIES FLOOD LIGHT 16W		
6	6		PHEONIX BERTH AND MIRROR LIGHT 12W		
7	3	ECOMOD 2 280W	PHEONIX ECMOD 2 280 W LED FLOOD LIGHT		
8	10		DECK LIGHT LED DIMMABLE 5W		
9	8		RECEPTACLE GFCI 108VAC 20A		
10	23		RECEPTACLE 108VAC 3 PRONG 20A		
11	1		RECEPTACLE 208VAC 20A		
12	19		LIGHT SWITCH		
13	8		MOTOR CONTROLER H.O.A.		
14	6		DISCONNECT		
15	1	200A	SHORE POWER INLET 4 WIRE 200A MALE		
16	1		FLIR CAMERA M500 ULTRA HIGH PERFORMANCE MULTI SENSOR CAMERA SYSTEM		
17	1		HVAC MINI SPLIT REVERSE CYCLE UNIT AIR COOLED PURY-72TLMU-A		
18	1		HVAC MINI SPLIT REVERSE CYCLE AIR HANDLER PKFY-P06NBMU-E2R1 (PILOT HOUSE)		
19	1		HVAC MINI SPLIT REVERSE CYCLE AIR HANDLER PKFY-P12NHMU-E2 (PASSEGEWAY)		
20	2		HVAC MINI SPLIT REVERSE CYCLE AIR HANDLER PKFY-P06NBMU-E2R1 (CAPTAIN & CREW QTRS)		
21	3		HVAC MINI SPLIT REVERSE CYCLE AIR HANDLER PEFY-P12NMAU-E3 (SHOWER & HEADS)		
22	1		HVAC MINI SPLIT REVERSE CYCLE AIR HANDLER PKFY-P18NHMU-E2 (GALLEY)		
23	1		POTABLE WATER PRESSURE PUMP 1.5HP, 115 OR 208 VAC, 60 HZ, 1PH, 50 DEGREE CELCIUS		
24	1		SANITARY WATER PRESSURE PUMP 1.5HP, 115 OR 208 VAC, 60HZ, 1PH, 50 DEGREE CELCIUS		
25	1		BILGE PUMP 5HP 208 VAC 60 HZ 3 PH 50 DEGREE CELCIUS		
26	1		FIRE PUMP 20HP, 208 VAC, 60 HZ, 3PH, 50 DEGREE CELCIUS		
27	1		SEWAGE PUMP 2HP, 208 VAC, 60HZ, 3PH, 50 DEGREE CELCIUS		
28	1		FUEL TRANSFER PUMP 1HP 115 OR 208 VAC, 60 HZ, 1 PH, 50 DEGREE CELCIUS		
30	2		SEARCH LIGHT CARLISLE AND FITCH 15" DIA, 3 MILLION CANDLE POWER, 1000W		
31	5		LAMP, BULKHEAD, LED, RELAY RECHARGEABLE LANTERN NSN 6230-01-580-6268	MIL-DTL-16377/53 JAY MOULDING #101.2L(W)	EMERGENCY LIGHTS
32					

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

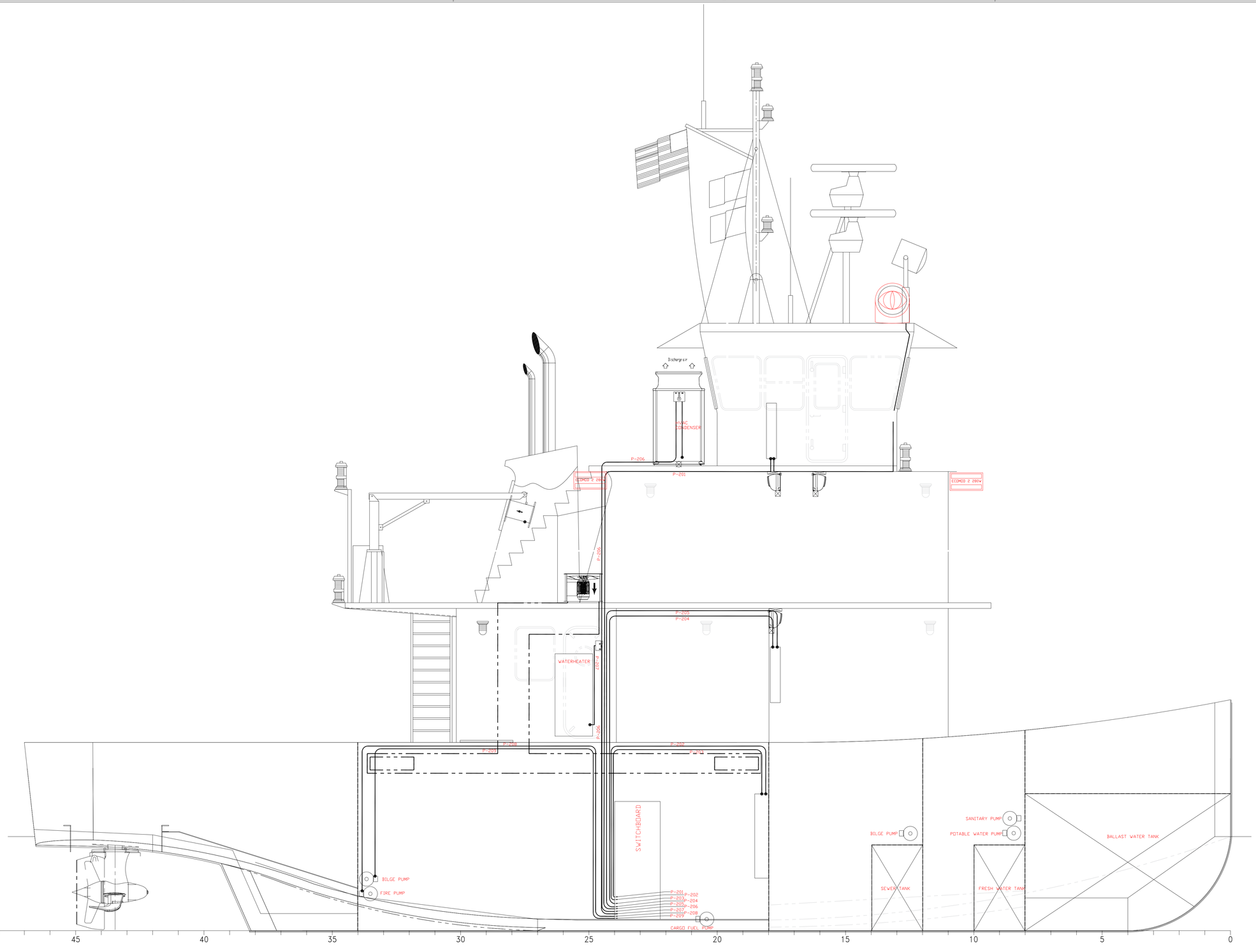
POWERDECK WIRING

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 1 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

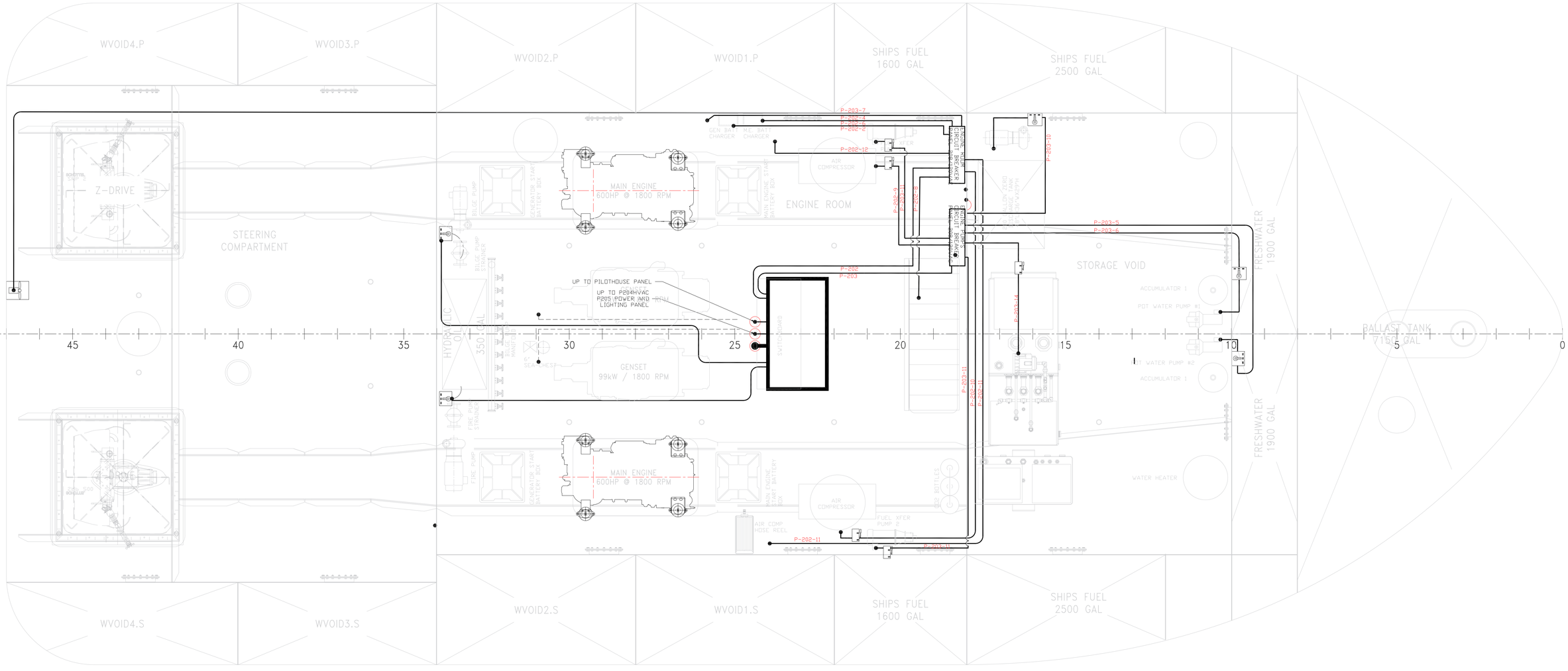
POWERDECK WIRING

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 2 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



HOLD ARRANGEMENTS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

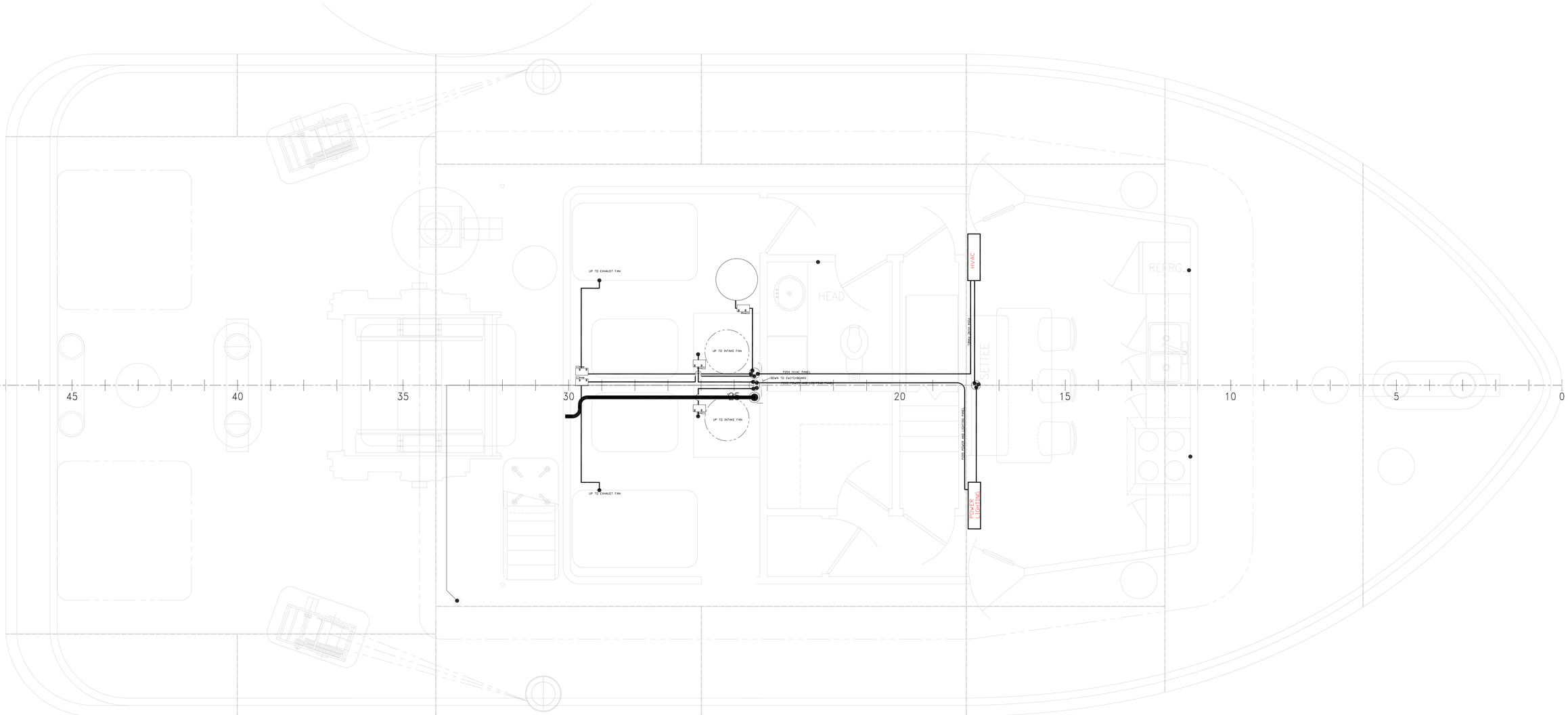
POWERDECK WIRING
HOLD 208

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 3 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

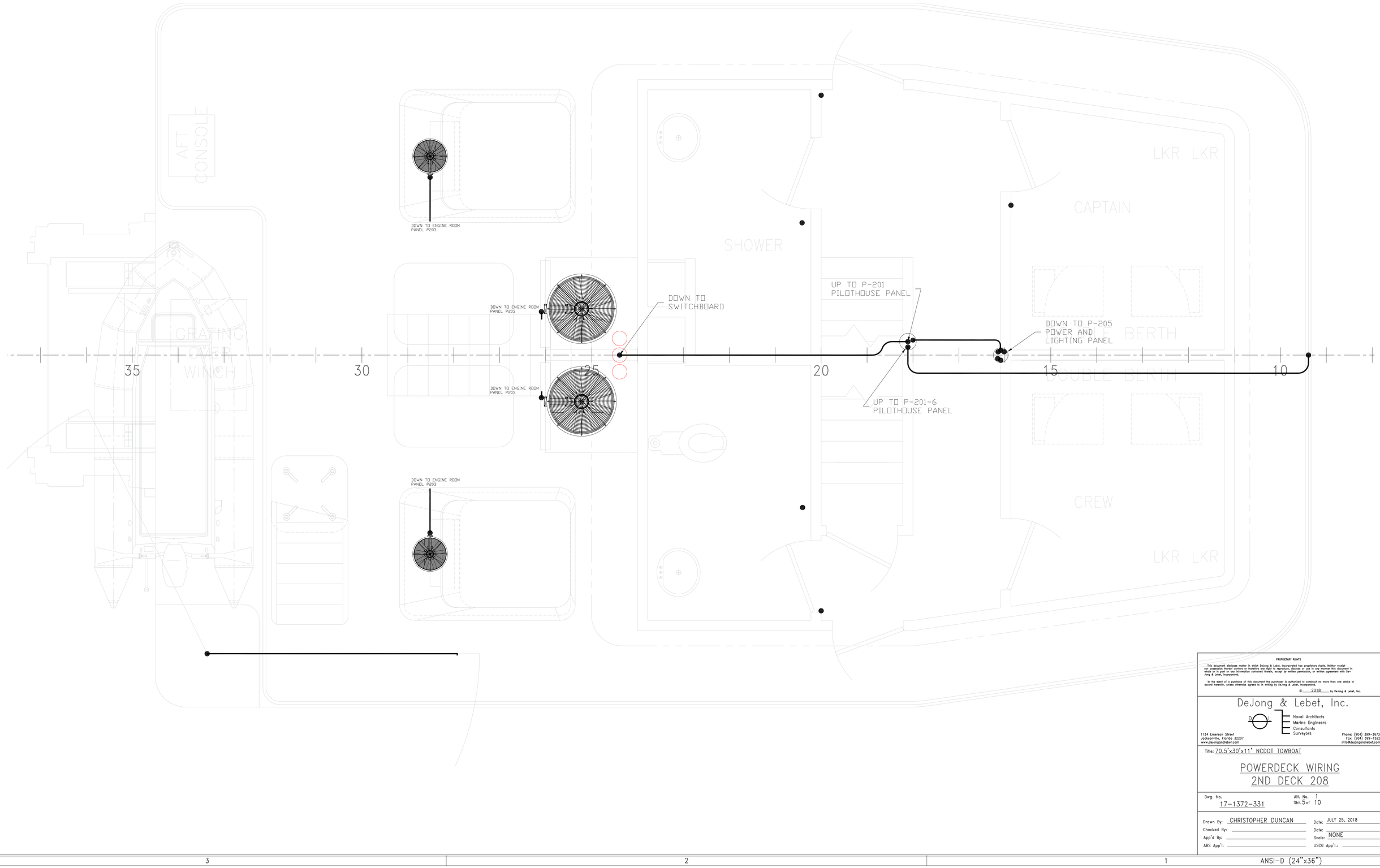
POWERDECK WIRING
MAIN DECK 208

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 4 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

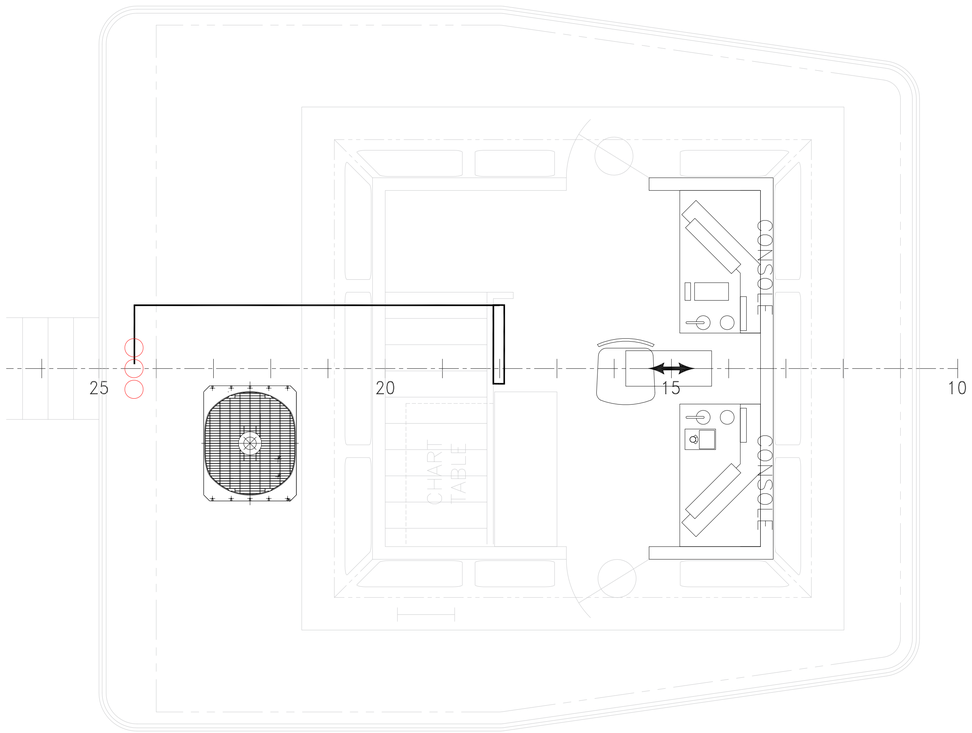
POWERDECK WIRING
2ND DECK 208

Dwg. No. 17-1372-331

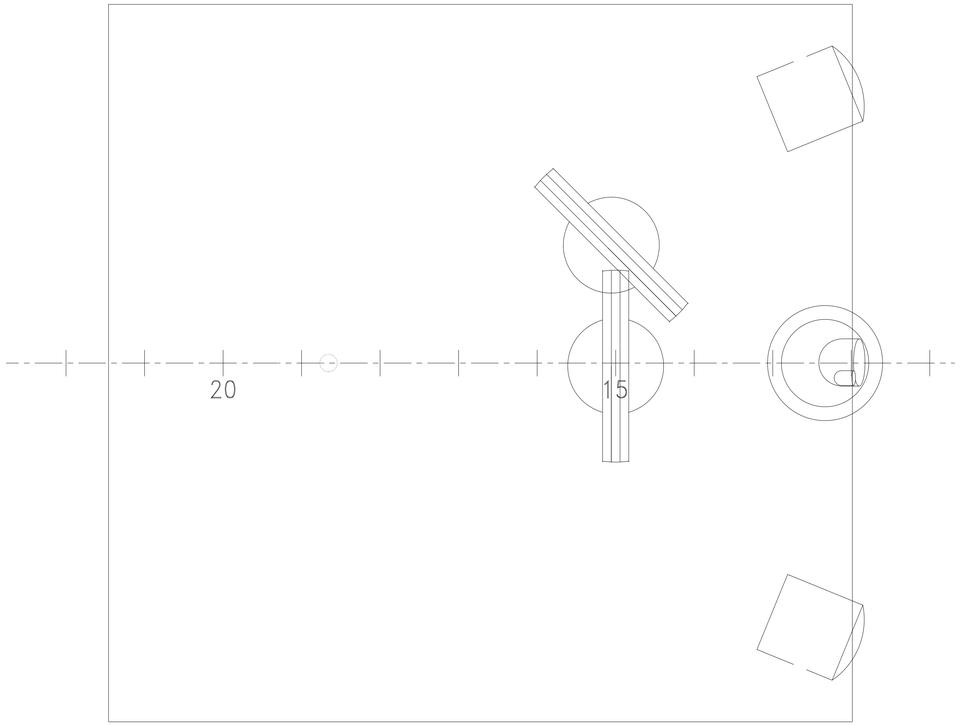
Alt. No. 1
Sht. 5 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

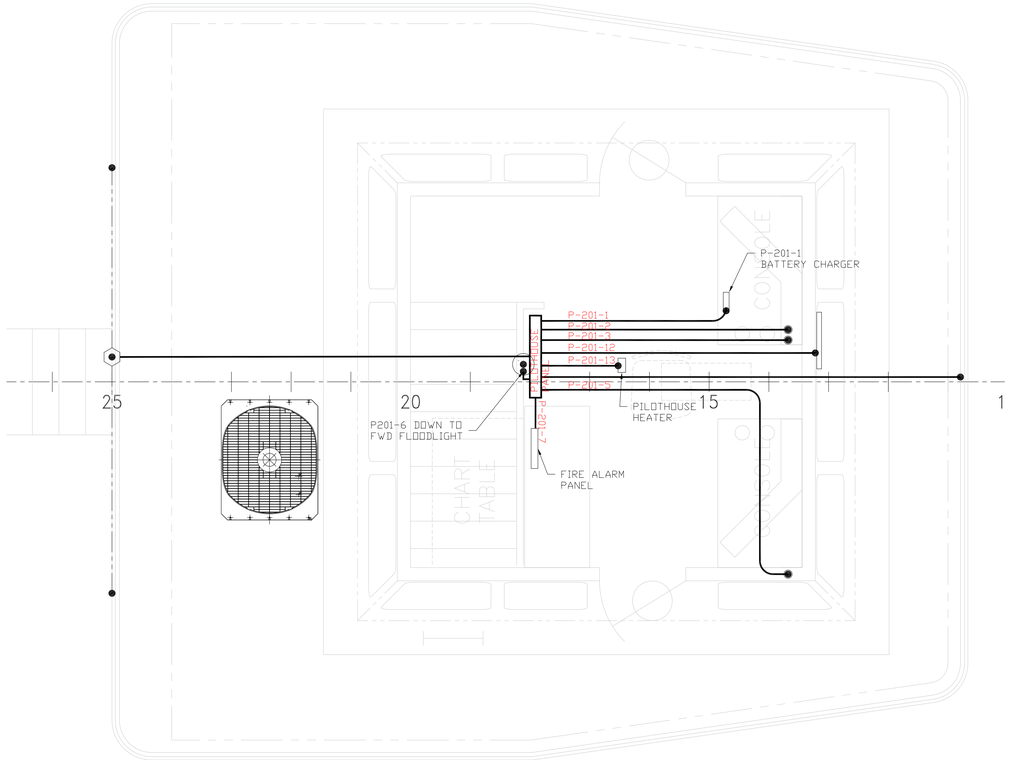
ANSI-D (24"x36")



PILOTHOUSE CONSOLE



PILOTHOUSE ROOF ARRAY



PILOTHOUSE POWERDECK WIRING

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

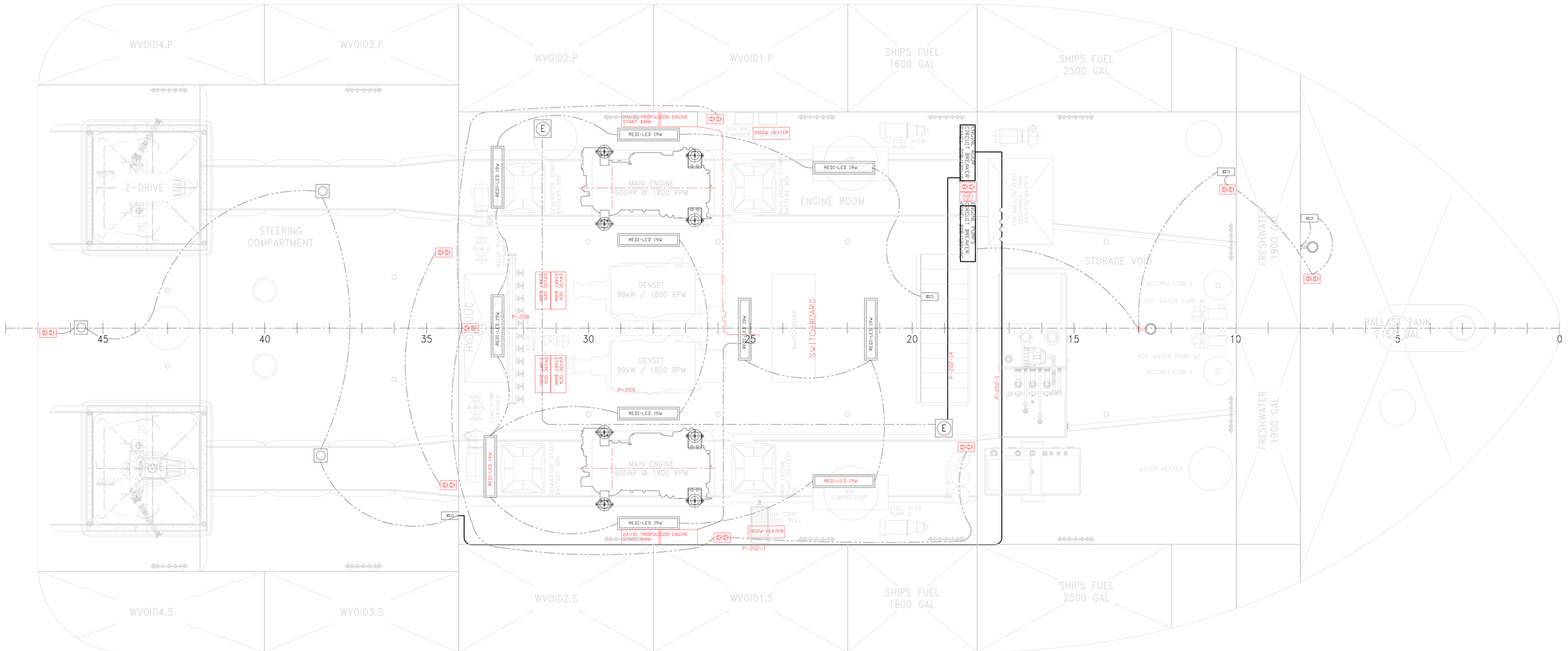
POWERDECK WIRING
PILOTHOUSE 208

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 6 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



HOLD ARRANGEMENTS

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

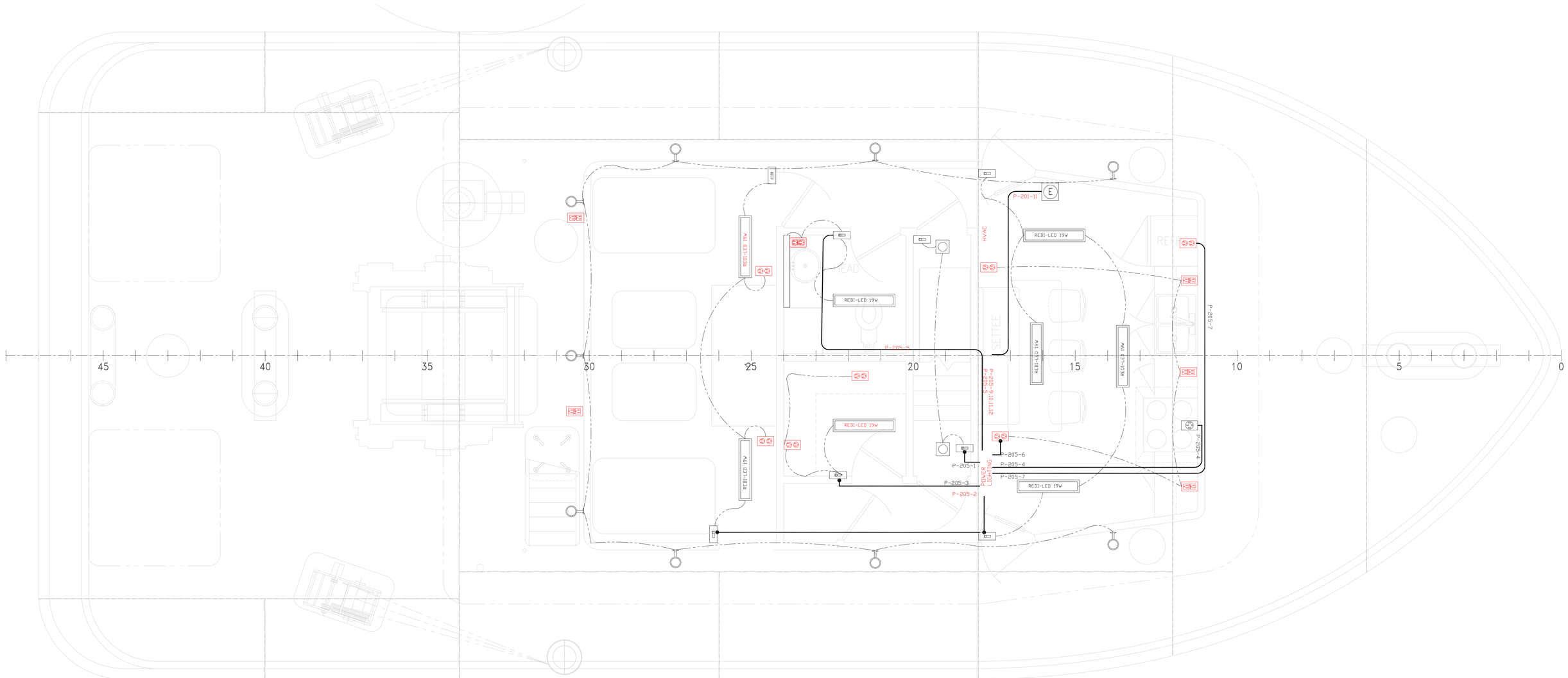
POWERDECK WIRING
HULL LIGHTING

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 7 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

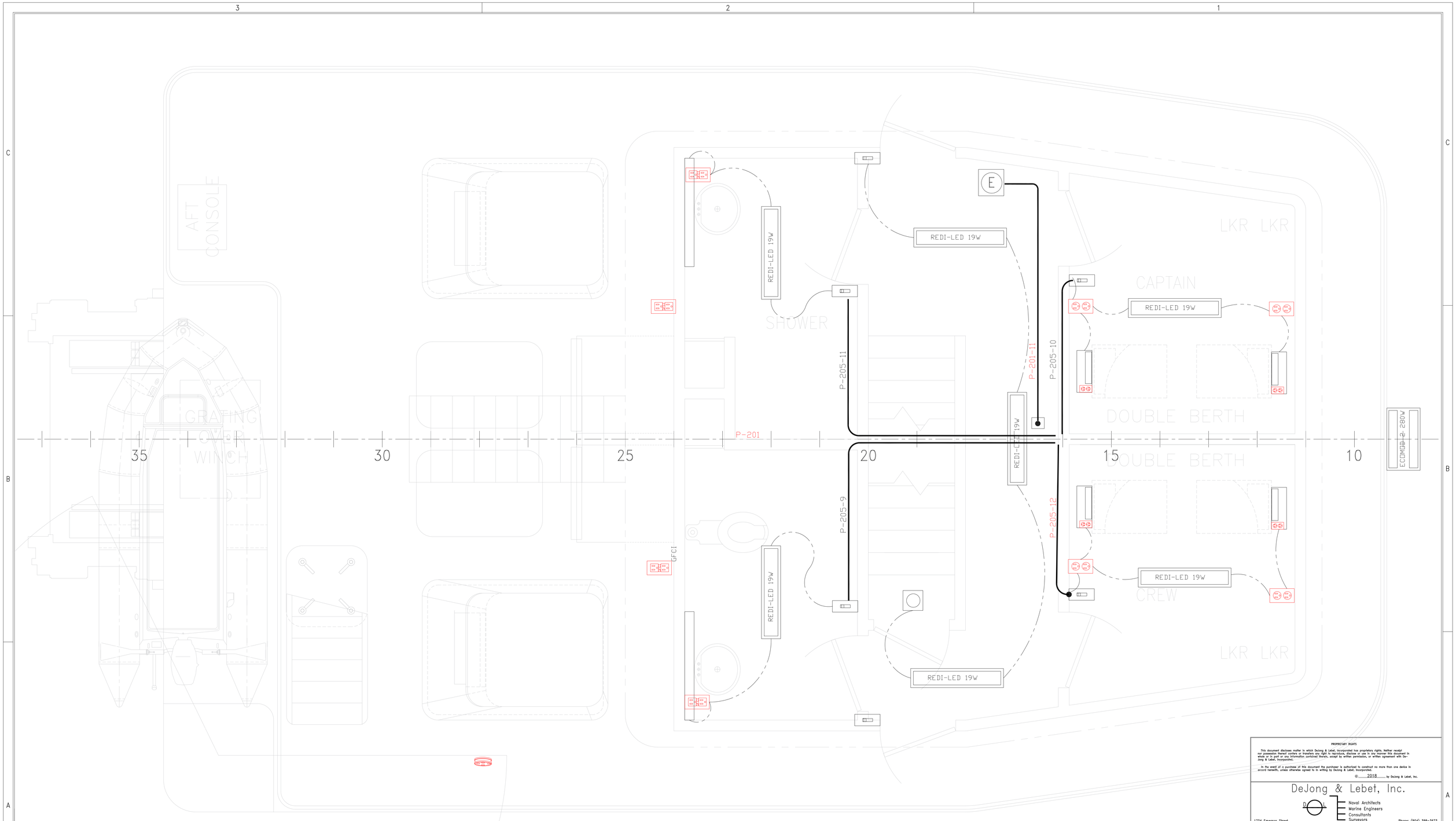
POWERDECK WIRING
MAIN DECK LIGHTING

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 8 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")



PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©___2018___ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

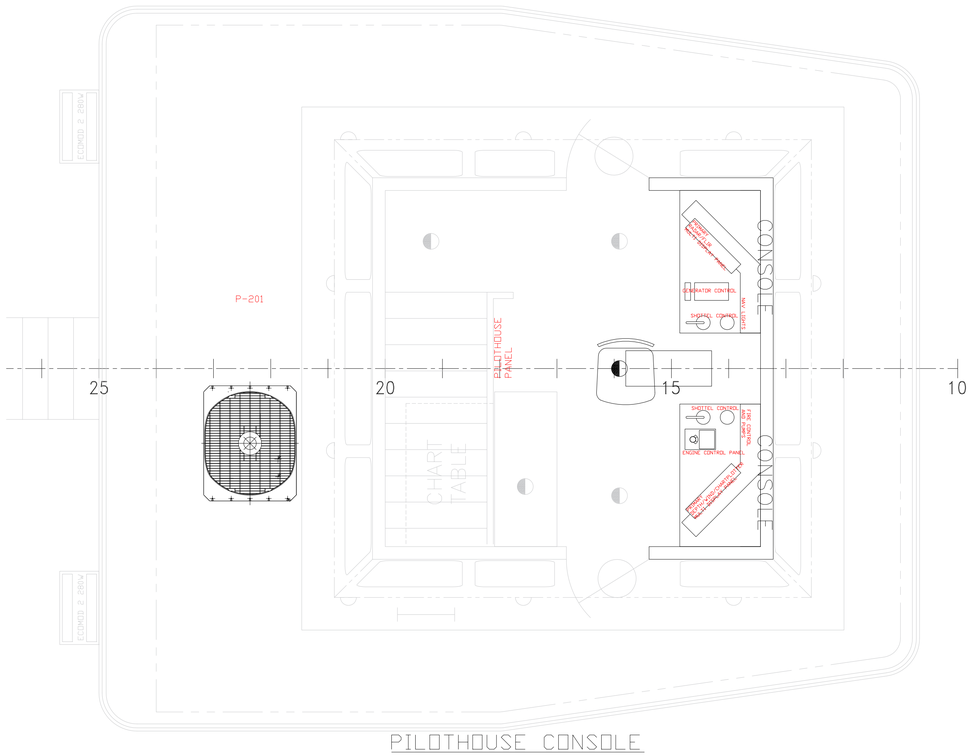
POWERDECK WIRING
2ND DECK LIGHTING

Dwg. No. 17-1372-331

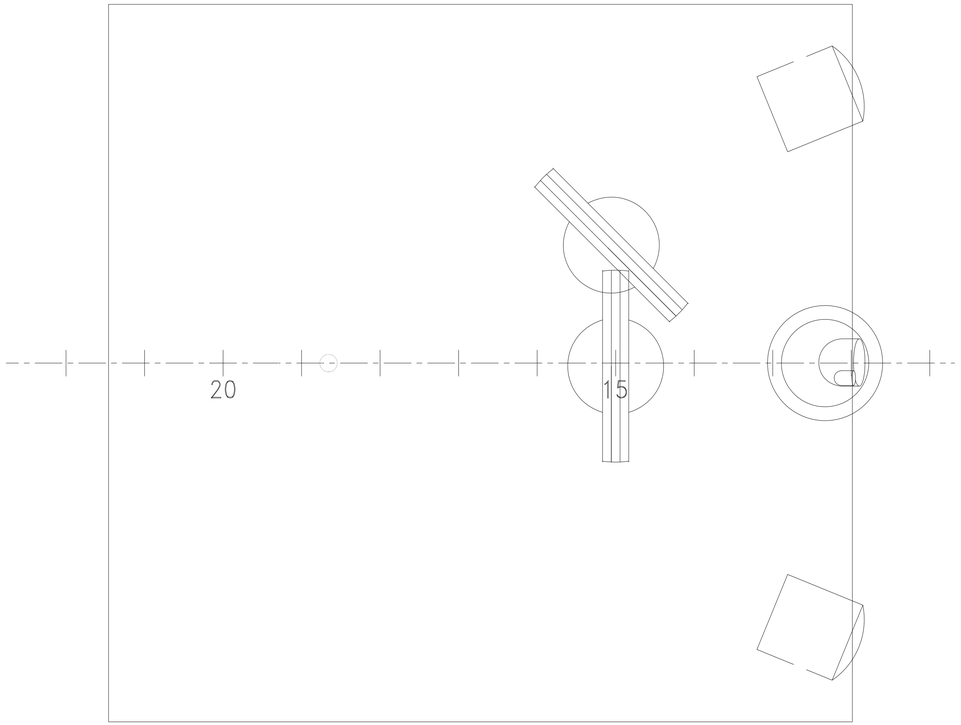
Alt. No. 1
Sht. 9 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

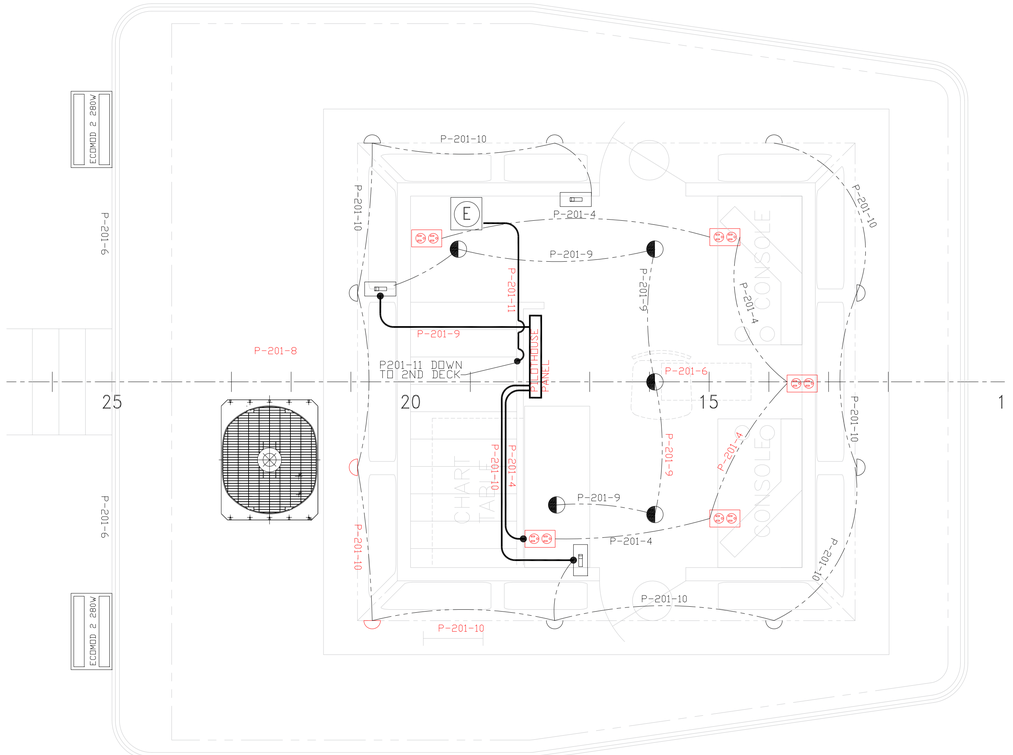
ANSI-D (24"x36")



PILOTHOUSE CONSOLE



PILOTHOUSE ROOF ARRAY



PILOTHOUSE LIGHTING WIRING

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

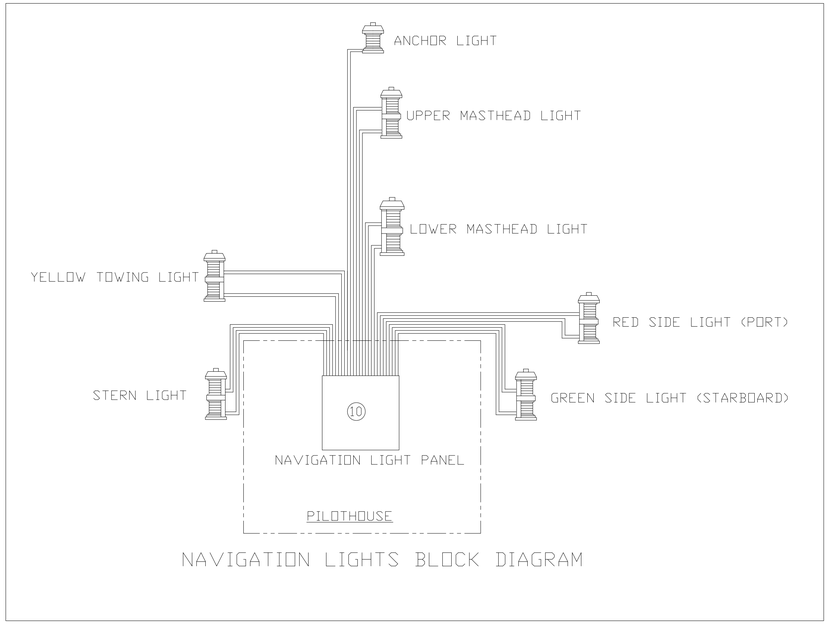
POWERDECK WIRING
PILOTHOUSE LIGHTING

Dwg. No. 17-1372-331

Alt. No. 1
Sht. 10 of 10

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")

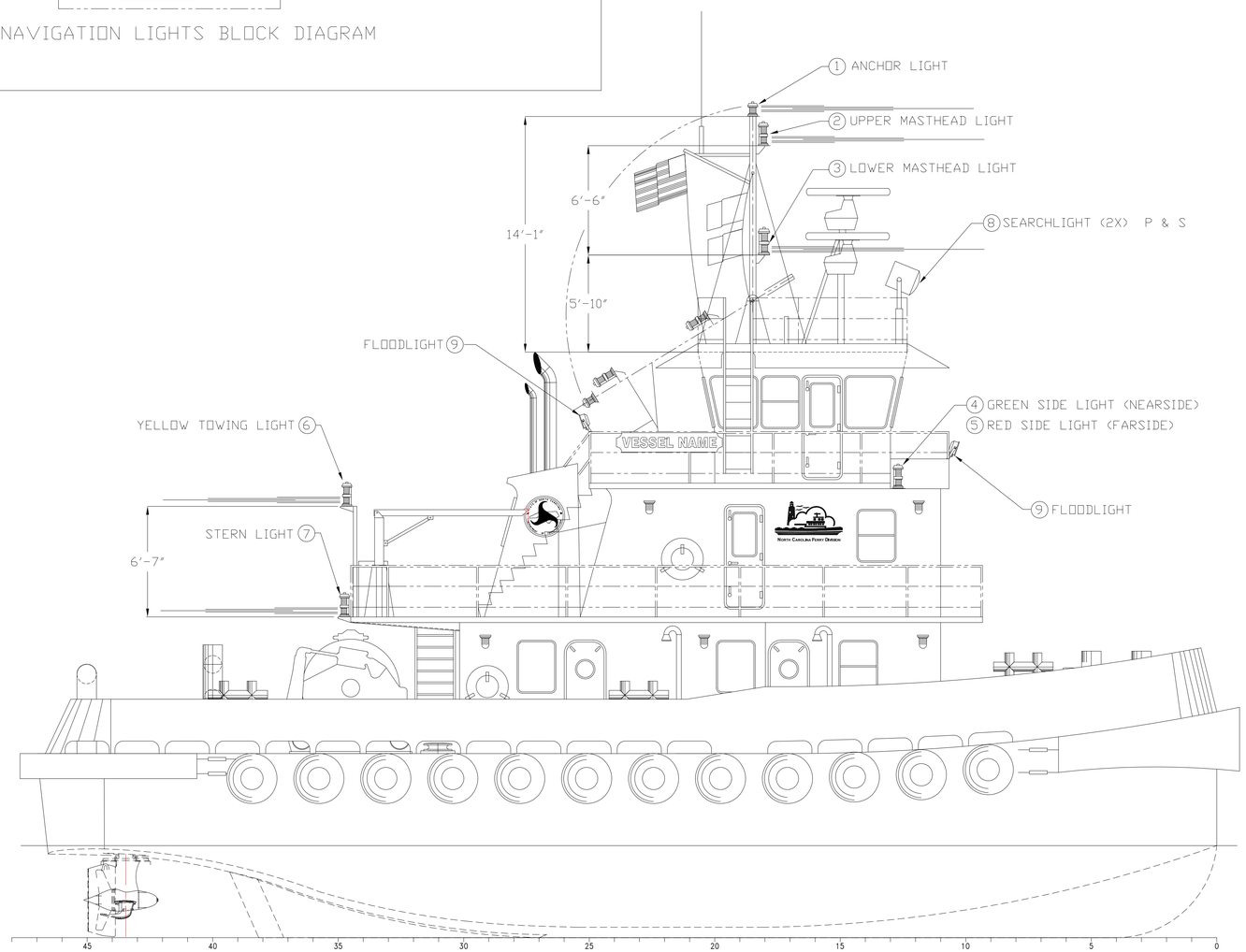


NAVIGATION LIGHTS BLOCK DIAGRAM

BILL OF MATERIALS

LIGHTING FIXTURE SCHEDULE

ITEM	QTY.	DESCRIPTION	MANUFACTURER #	ARC	VISIBILITY	REMARKS
1	1	ANCHOR LIGHT - WHT ALL AROUND CAST BRONZE		360°	3 MILES	OR EQUAL
2	1	UPPER MASTHEAD LIGHT, DOUBLE LENS CAST BRONZE		225°	6 MILES	OR EQUAL
3	1	UPPER MASTHEAD LIGHT, DOUBLE LENS CAST BRONZE		225°	6 MILES	OR EQUAL
4	1	GREEN SIDE LIGHT, DOUBLE LENS CAST BRONZE		112.5°	3 MILES	OR EQUAL
5	1	RED SIDE LIGHT, DOUBLE LENS CAST BRONZE		112.5°	3 MILES	OR EQUAL
6	1	YELLOW TOWING LIGHT, DOUBLE LENS CAST BRONZE		135°	3 MILES	OR EQUAL
7	1	WHITE STERN LIGHT, DOUBLE LENS CAST BRONZE		135°	3 MILES	OR EQUAL
8	2	SEARCHLIGHT, 12", ELECTRIC REMOTE CON. VENTED, ALUMINUM, ENAMEL FINISH				1000 WATT HALOGEN 120 VOLT, T7 BULB
9	2	FLOODLIGHT, 500 WATT, HALOGEN, 316 SS				OR EQUAL
10	1	NAVIGATION LIGHT PANEL, 6 DUAL LAMP CIRCUITS, 1 SINGLE LAMP CIRCUIT				OR EQUAL
11	20	WATERTIGHT RECEPTACLE, 16A, 2P				OR EQUAL,SEE NOTE 1
12	20	BACK BOX, RECEPTACLE				OR EQUAL,SEE NOTE 1
13	20	WATERTIGHT PLUG, 16A, 2P				OR EQUAL,SEE NOTE 1



NO.	– GENERAL NOTES – DESCRIPTION
1	ELECTRICAL CABLES ON THE NAVIGATION LIGHT MASTS SHALL BE PROVIDED WITH WATERTIGHT RECEPTACLES (ITEMS 11,12 & 13) AT EACH LIGHT FIXTURE AND ADJACENT TO THE MAST BASE.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

NAVIGATION/SEARCH/FLOODLIGHTS & NAV. LTS. BLOCK DIAGRAM

Dwg. No. 17-1372-422
Alt. No. 0
Sht. 1 of 1

Drawn By: JAH — Date: JULY 19, 2018
Checked By: — Date:
App'd By: — Scale: SEE DWG
ABS App'l: — USCG App'l.:

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

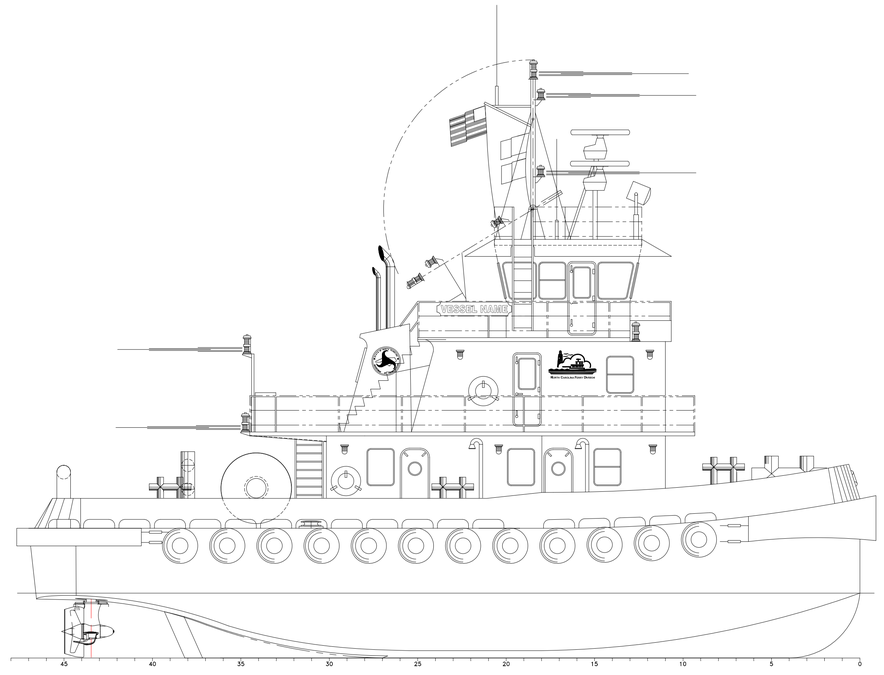
ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-422.dwg, 9/19/2018 2:10:11 PM, 24x36 PDF.pc3

SYMBOLS LIST	
	PIPE – FILL/DISCHARGE
	PIPE – VENT
	PIPE UP
	PIPE DOWN
	HOSE CAMLOCK
	SOUNDING TUBE TERMINAL
	VENT TERMINAL
	BULKHEAD PENETRATION

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
VENTS FILLS, AND SOUNDING TUBES MAWP: 100 PSIG MAWT: 120°F	ALL	CARBON STEEL, SCH 80, SEAMLESS, ASTM A53 OR ASTM A106, GRADE B, ANSI B36.10 (BELOW DECK) S. STEEL, SCH 80, SEAMLESS, ASTM A312 GR 304/304L (ABV DECK)	FLANGE SLIP ON, CARBON STEEL, ASTM A105, ANSI B16.5, 150# (BELOW DECK) SLIP ON, S. STEEL, ASTM A182 GR 304/304L, ANSI B16.5, 150# (ABOVE DECK)	SOCKET WELD CARBON STEEL, ASTM A105 OR ASTM A234 GR WPB, ANSI B16.11 (BELOW DECK) SOCKET WELD S. STEEL, ASTM A351 GR 304/304L, ANSI B16.11 (ABOVE DECK)	–	GARLOCK IFG 5500	BALL THREADED, SW, OR FLANGED STAINLESS STEEL, ASTM A351 CF8M	BALL S. STEEL BALL, RPTFE OR VITON SEATS	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	



– GENERAL NOTES –

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLED FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AN AND INTERFERENCES. DIMENSIONS SHALL BE. VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL AND INSPECTION.
4.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
5.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
6.	SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.
7.	SOUNDING TUBES SHALL HAVE FLUSH SOUNDING TUBE CAPS, STAINLESS STEEL COMMERCIAL WELD-IN TYPE (NOT A PIPE COUPLING) WITH A BRONZE PLUG. TANK IDENTIFICATION SHALL BE ENGRAVED IN THE TUBE SOCKETS AND CAPS.
8.	SOUNDING TUBE TERMINALS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS, GENERALLY AS SHOWN IN PLAN 2-3A & 2-3C.
9.	FUEL TANKS SHALL BE FITTED WITH HIGH LEVEL AND LOW LEVEL ALARMS AND CONTINUOUS LEVEL TRANSDUCERS PER REFS 1 AND 4. SENSORS SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM.

– GENERAL NOTES –

NO.	DESCRIPTION
10.	TANK AND VOID VENT TERMINALS SHALL BE WINTEB WIN2000 HIAS OR EQUAL. THE FUEL OIL, WASTE OIL, & OILY WATER TANKS SHALL BE FURNISHED WITH SS FLAME SCREENS.
11.	EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.
12.	WHERE PIPING PENETRATES TANK BOUNDARIES, BULKHEADS OR DECKS, SEE DETAIL 2-1A OR 2-2A.
13.	PROVIDE 24" HIGH SPILL CONTAINMENTS SURROUNDING THE WASTE OIL AND OILY WATER VENTS. EACH CONTAINMENT SHALL BE FITTED WITH A 1" SS DRAIN PLUG NEAR THE BOTTOM.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

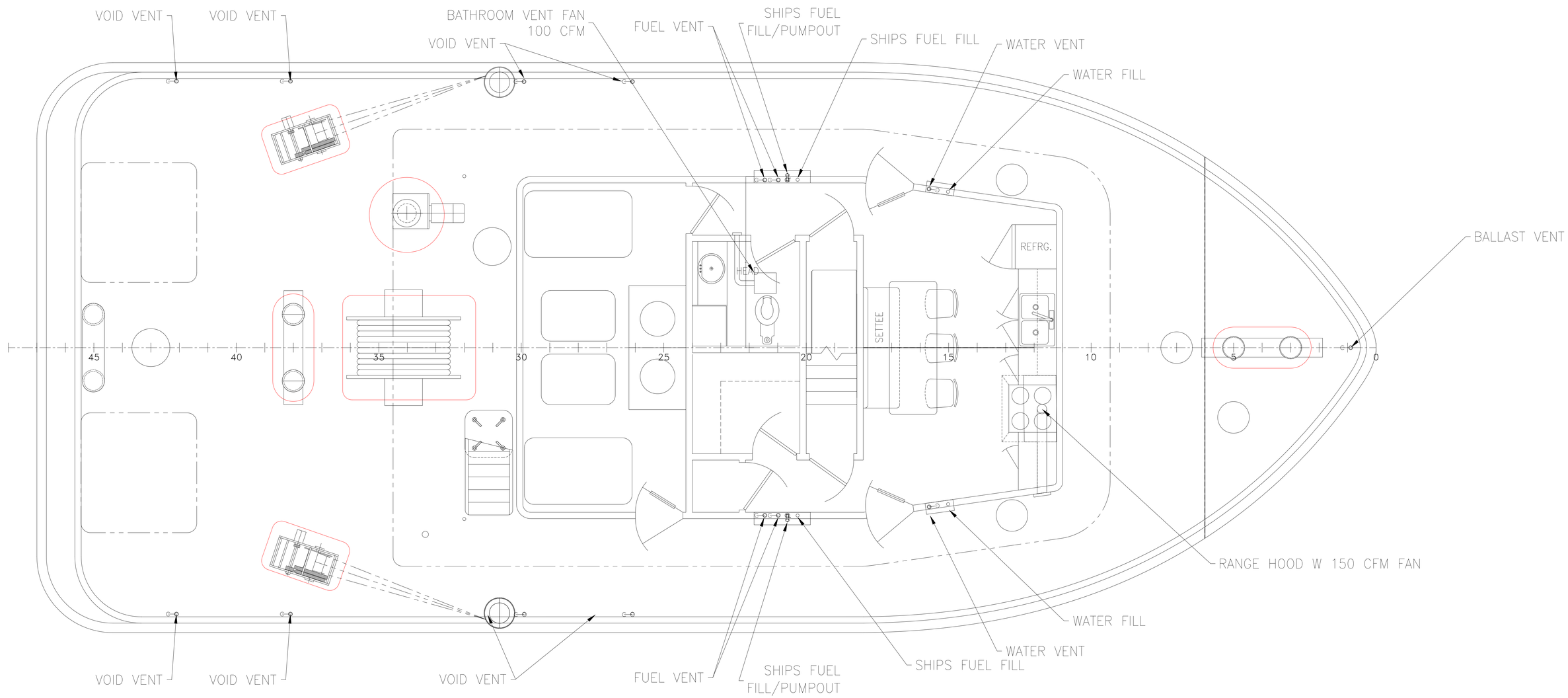
VENTS & FILLS

Dwg. No. 17-1372-506

Alt. No. 1
Sht. 1 of 5

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'-0"
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")



NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS	10.	TANK AND VOID VENT TERMINALS SHALL BE WINTEB WIN2000 HIAS OR EQUAL. THE FUEL OIL, WASTE OIL, & OILY WATER TANKS
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLED FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AN AND INTERFERENCES. DIMENSIONS SHALL BE. VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE		SHALL BE FURNISHED WITH SS FLAME SCREENS.
		11.	EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.
		12.	WHERE PIPING PENETRATES TANK BOUNDARIES, BULKHEADS OR DECKS, SEE DETAIL 2–1A OR 2–2A.
		13.	PROVIDE 24" HIGH SPILL CONTAINMENTS SURROUNDING THE WASTE OIL AND OILY WATER VENTS. EACH CONTAINMENT SHALL BE FITTED WITH A 1" SS DRAIN PLUG NEAR THE BOTTOM.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL AND INSPECTION.		
4.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.		
5.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
6.	SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.		
7.	SOUNDING TUBES SHALL HAVE FLUSH SOUNDING TUBE CAPS, STAINLESS STEEL COMMERCIAL WELD–IN TYPE (NOT A PIPE COUPLING) WITH A BRONZE PLUG. TANK IDENTIFICATION SHALL BE ENGRAVED IN THE TUBE SOCKETS AND CAPS.		
8.	SOUNDING TUBE TERMINALS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS, GENERALLY AS SHOWN IN PLAN 2–3A & 2–3C.		
9.	FUEL TANKS SHALL BE FITTED WITH HIGH LEVEL AND LOW LEVEL ALARMS AND CONTINUOUS LEVEL TRANSDUCERS PER REFS 1 AND 4. SENSORS SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399–3673
Fax: (904) 399–1522
Info@dejongandlebet.com

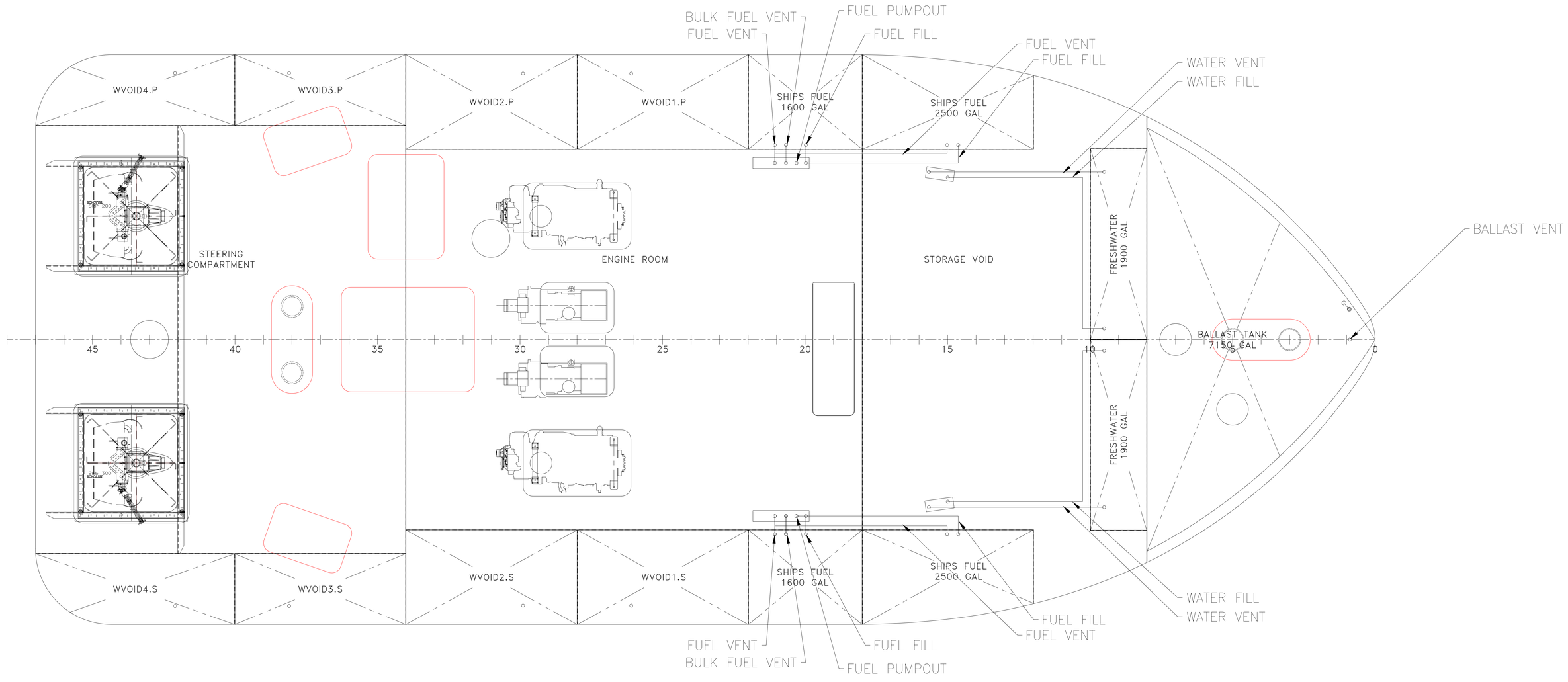
Title: 70.5'x30'x11' NCDOT TOWBOAT

VENT & FILLS

Dwg. No. 17–1372–506
Alt. No. 1
Sht. 2 of 5

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'–0"
ABS App'l: _____ USCG App'l.: _____

ANSI–D (24"x36")



NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS	10.	TANK AND VOID VENT TERMINALS SHALL BE WINTEB WIN2000 HIAS OR EQUAL. THE FUEL OIL, WASTE OIL, & OILY WATER TANKS
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLED FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AN AND INTERFERENCES. DIMENSIONS SHALL BE. VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE		SHALL BE FURNISHED WITH SS FLAME SCREENS.
		11.	EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.
		12.	WHERE PIPING PENETRATES TANK BOUNDARIES, BULKHEADS OR DECKS, SEE DETAIL 2–1A OR 2–2A.
		13.	PROVIDE 24" HIGH SPILL CONTAINMENTS SURROUNDING THE WASTE OIL AND OILY WATER VENTS. EACH CONTAINMENT SHALL BE
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL AND INSPECTION.		FITTED WITH A 1" SS DRAIN PLUG NEAR THE BOTTOM.
4.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.		
5.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
6.	SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.		
7.	SOUNDING TUBES SHALL HAVE FLUSH SOUNDING TUBE CAPS, STAINLESS STEEL COMMERCIAL WELD–IN TYPE (NOT A PIPE COUPLING) WITH A BRONZE PLUG. TANK IDENTIFICATION SHALL BE ENGRAVED IN THE TUBE SOCKETS AND CAPS.		
8.	SOUNDING TUBE TERMINALS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS, GENERALLY AS SHOWN IN PLAN 2–3A & 2–3C.		
9.	FUEL TANKS SHALL BE FITTED WITH HIGH LEVEL AND LOW LEVEL ALARMS AND CONTINUOUS LEVEL TRANSDUCERS PER REFS 1 AND 4. SENSORS SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord therewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399–3673
Fax: (904) 399–1522
Info@dejongandlebet.com

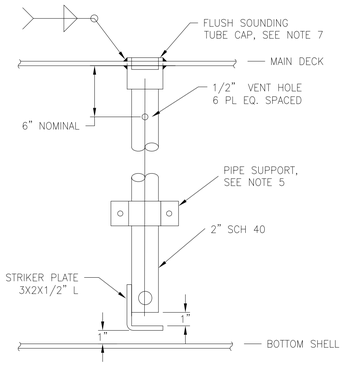
Title: 70.5'x30'x11' NCDOT TOWBOAT

VENT & FILLS

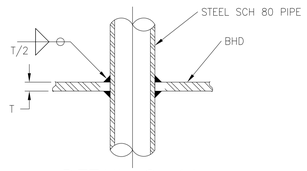
Dwg. No. 17–1372–506
Alt. No. 1
Sht. 3 of 5

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'–0"
ABS App't: _____ USCG App't.: _____

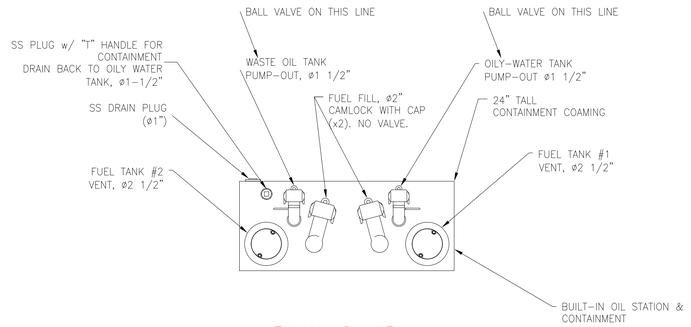
ANSI–D (24"x36")



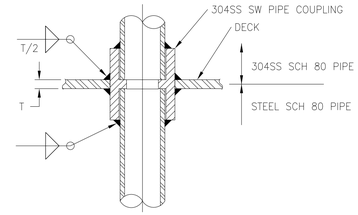
DETAIL 2-1B
TYPICAL SOUNDING TUBE
SCALE: NONE



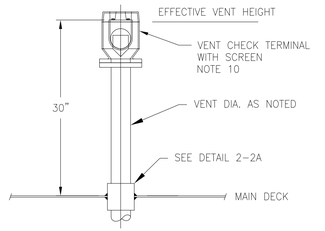
DETAIL 2-1A
TYPICAL BULKHEAD PENETRATION
SCALE: NONE



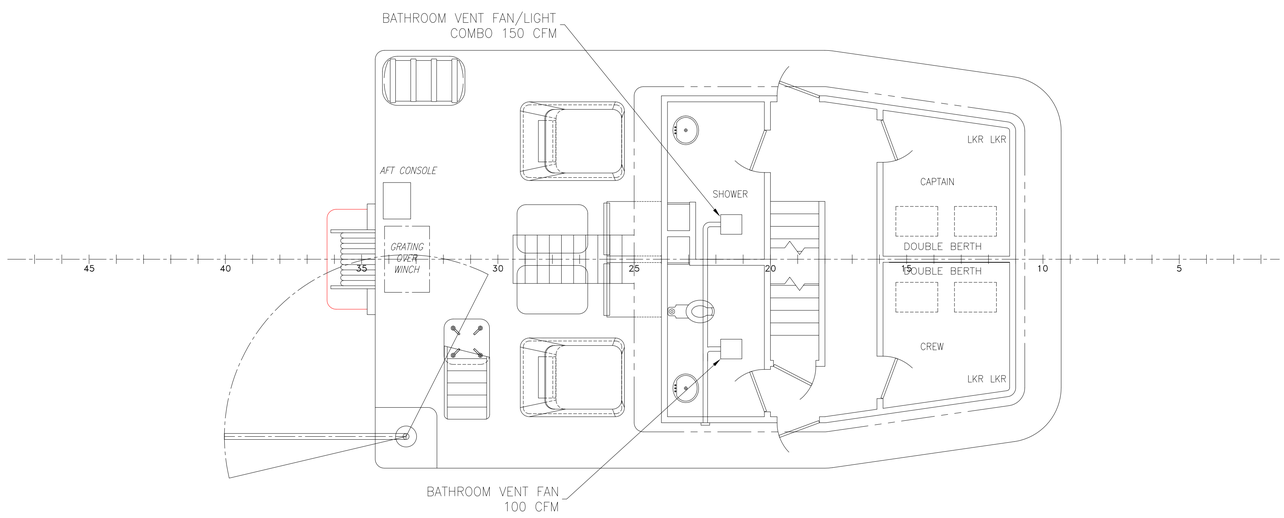
PLAN 2-1D
OIL TRANSFER STATION
SCALE: NONE



DETAIL 2-2A
TYPICAL DECK PENETRATION
SCALE: NONE



DETAIL 2-1C
TYPICAL VENT HEAD
SCALE: NONE



	– GENERAL NOTES –		– GENERAL NOTES –
NO.	DESCRIPTION	NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	TANK AND VOID VENT TERMINALS SHALL BE WINTEB WIN2000 HIAS OR EQUAL. THE FUEL OIL, WASTE OIL, & OILY WATER TANKS
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLED FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AN AND INTERFERENCES. DIMENSIONS SHALL BE. VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.		SHALL BE FURNISHED WITH SS FLAME SCREENS.
		11.	EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.
		12.	WHERE PIPING PENETRATES TANK BOUNDARIES, BULKHEADS OR DECKS, SEE DETAIL 2-1A OR 2-2A.
		13.	PROVIDE 24" HIGH SPILL CONTAINMENTS SURROUNDING THE WASTE OIL AND OILY WATER VENTS. EACH CONTAINMENT SHALL BE
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL AND INSPECTION.		FITTED WITH A 1" SS DRAIN PLUG NEAR THE BOTTOM.
4.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.		
5.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
6.	SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.		
7.	SOUNDING TUBES SHALL HAVE FLUSH SOUNDING TUBE CAPS, STAINLESS STEEL COMMERCIAL WELD-IN TYPE (NOT A PIPE COUPLING) WITH A BRONZE PLUG. TANK IDENTIFICATION SHALL BE ENGRAVED IN THE TUBE SOCKETS AND CAPS.		
8.	SOUNDING TUBE TERMINALS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS, GENERALLY AS SHOWN IN PLAN 2-3A & 2-3C.		
9.	FUEL TANKS SHALL BE FITTED WITH HIGH LEVEL AND LOW LEVEL ALARMS AND CONTINUOUS LEVEL TRANSDUCERS PER REFS 1 AND 4. SENSORS SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord therewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

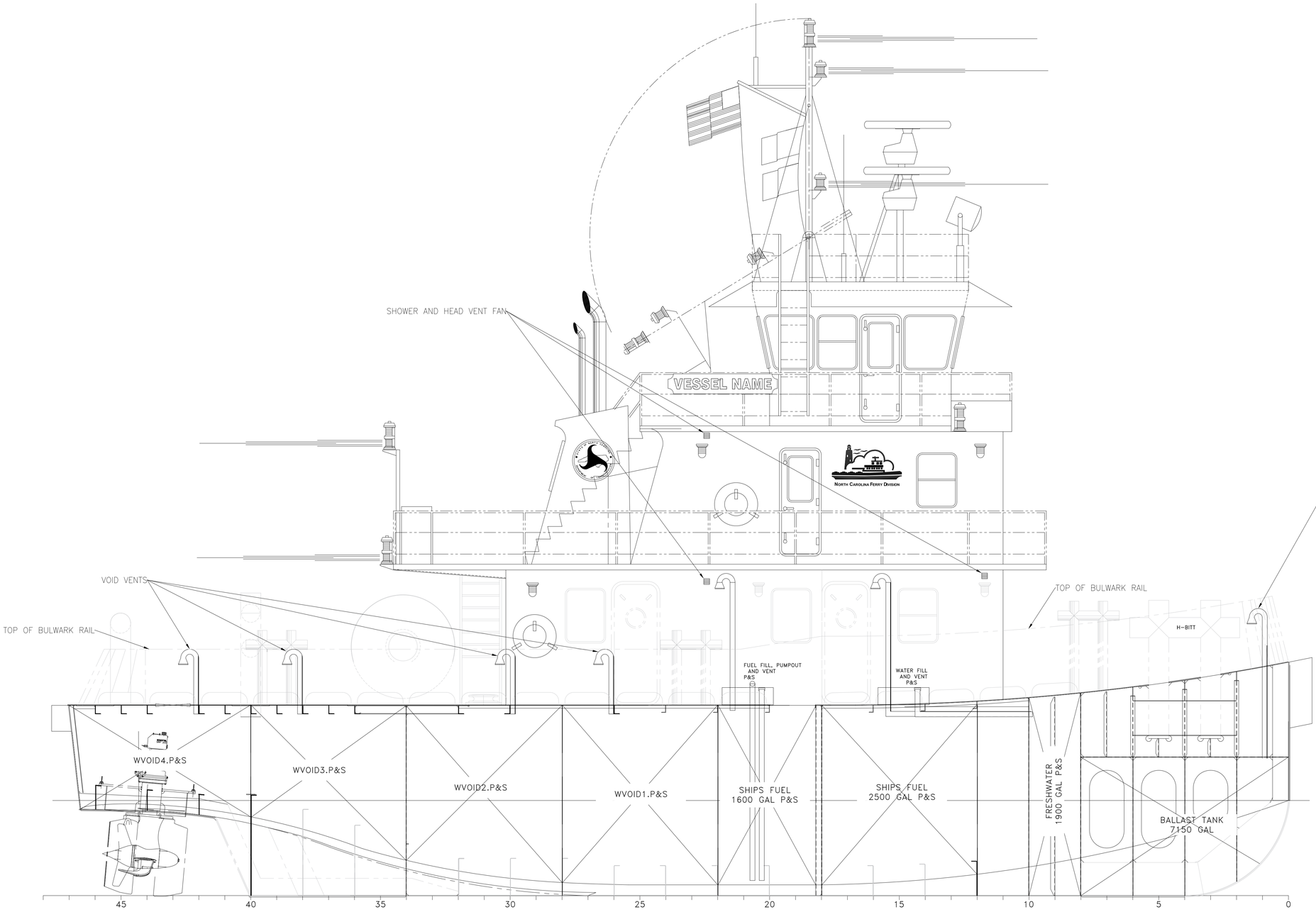
Title: 70.5'x30'x11' NCDOT TOWBOAT

VENT & FILLS

Dwg. No. 17-1372-506
Alt. No. 1
Sht. 4 of 5

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")



INBOARD STRUCTURAL PROFILE

NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS	10.	TANK AND VOID VENT TERMINALS SHALL BE WINTEB WIN2000 HIAS OR EQUAL. THE FUEL OIL, WASTE OIL, & OILY WATER TANKS
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLED FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AN AND INTERFERENCES. DIMENSIONS SHALL BE. VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE		SHALL BE FURNISHED WITH SS FLAME SCREENS.
		11.	EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.
		12.	WHERE PIPING PENETRATES TANK BOUNDARIES, BULKHEADS OR DECKS, SEE DETAIL 2-1A OR 2-2A.
		13.	PROVIDE 24" HIGH SPILL CONTAINMENTS SURROUNDING THE WASTE OIL AND OILY WATER VENTS. EACH CONTAINMENT SHALL BE
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL AND INSPECTION.		FITTED WITH A 1" SS DRAIN PLUG NEAR THE BOTTOM.
4.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.		
5.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.		
6.	SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.		
7.	SOUNDING TUBES SHALL HAVE FLUSH SOUNDING TUBE CAPS, STAINLESS STEEL COMMERCIAL WELD-IN TYPE (NOT A PIPE COUPLING) WITH A BRONZE PLUG. TANK IDENTIFICATION SHALL BE ENGRAVED IN THE TUBE SOCKETS AND CAPS.		
8.	SOUNDING TUBE TERMINALS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS, GENERALLY AS SHOWN IN PLAN 2-3A & 2-3C.		
9.	FUEL TANKS SHALL BE FITTED WITH HIGH LEVEL AND LOW LEVEL ALARMS AND CONTINUOUS LEVEL TRANSDUCERS PER REFS 1 AND 4. SENSORS SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

VENT & FILLS

Dwg. No. 17-1372-506

Alt. No. 1
Sht. 5 of 5

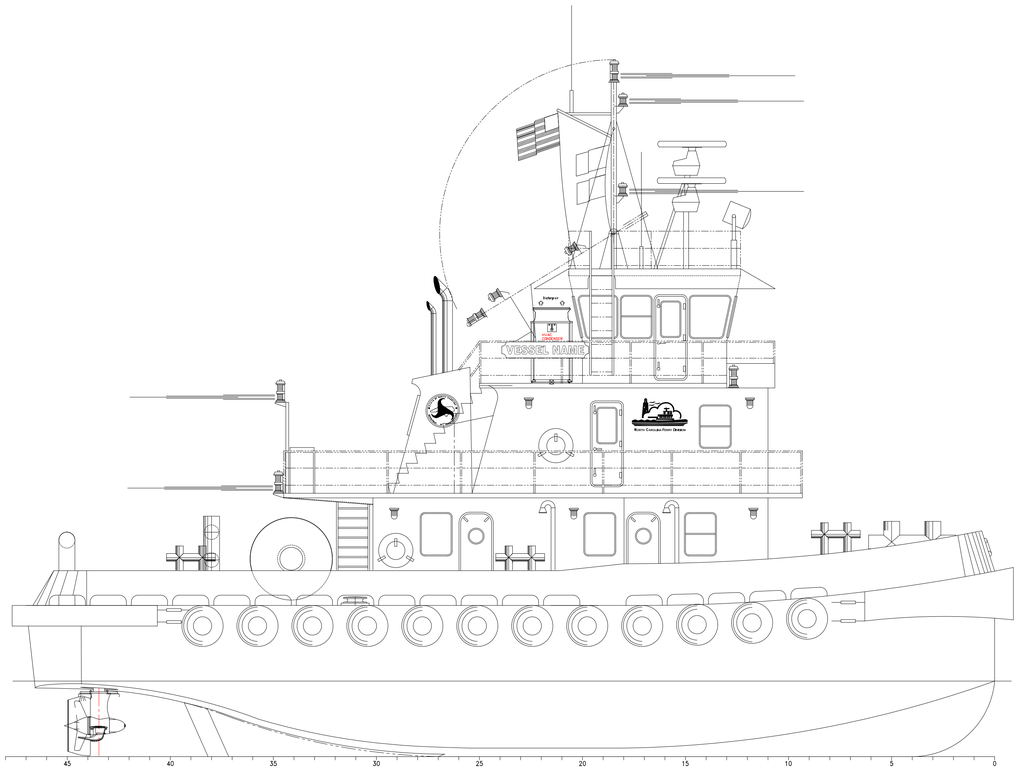
Drawn By: JACOB CONNALLY
Checked By:
App'd By:
ABS App'l:

Date: JUNE 05, 2018
Date:
Scale: 1/2" = 1'-0"
USCG App'l.:

ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS	
COOLING WATER PIPING MAWP: 30 PSIG MAWT: 120°F	2" & BELOW	COPPER TUBE, SEAMLESS, TYPE K OR L, ASTM B88	UNIONS: BRAZED, BRONZE, ASME SB861 OR SB862, MIL-F-1183 FLANGES: SILBRAZE, BRONZE, ASME SB862, ANSI B16.24	SILBRAZE: COPPER, ASME SB88, TYPE K OR L, ANSI B16.22		GASKET: GARLOCK STYLE BG3000 OR EQUAL	BALL: BRONZE, FLANGED OR THREADED, ASTM B61 OR B62, MSS-SP-72 CHECK VALVE: THREADED OR BRAZED, BRONZE, ASME SB61 OR SB62, MSS-SP-80 GATE DUCTILE IRON ASTM A395 FLANGED, 150#	BALL: BRONZE OR CHROME PLATED BALL PTFE SEATS SEAT INTEGRAL: MATERIAL SAME AS VALVE BODY STAINLESS STEEL TRIM	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	CARBON STEEL ASTM A563 GR A ANSI B18.2.2	



EQUIPNENT LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE	REMARKS
1	CONDENSER UNIT	SPLIT HEAT PUMP CONDENSER		72,000 BTU/h COOLING (NOMINAL)	208V/3ø/60HZ 4.57 KW	MULTI-ZONE VARIABLE REFRIGERANT FLOW HEAT PUMP
3	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		6,000 BTU/h COOLING (NOMINAL)	208V/3ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
1	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		12,000 BTU/h COOLING (NOMINAL)	208V/3ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
2	CEILING CONCEALED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		12,000 BTU/h COOLING (NOMINAL)	208V/3ø/60HZ 0.09 KW	SERVED BY CONDENSER UNIT
1	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		18,000 BTU/h COOLING (NOMINAL)	208V/3ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
1	BC CONTROLLER SINGLE				208V/3ø/60HZ 0.112 KW	
7	SIMPLE MA CONTROLLER				-	
1	SYSTEM REMOTE CONTROLLER				-	

MATERIAL LIST

ITEM	QUANTITY	SYMBOL	DESCRIPTION	MATERIAL SPEC.	REMARKS
PG-¾		———	¾" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-⅝		— — —	⅝" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-½		———	½" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-¼		— — —	¼" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	

NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	PROVIDE A COMPLETE CONTROL SYSTEM FOR THE HVAC EQUIPMENT. EACH SPACE SHALL BE A SEPARATE ZONE, WITH INDEPENDENT THERMOSTATIC CONTROL. PROVIDE CENTRALIZED HVAC CONTROL AND SHUTDOWN IN THE PILOT HOUSE.
2.	THIS DRAWING IS A CONTRACT GUIDANCE DRAWING IN DIAGRAMMATIC FORM. SYSTEMS SHALL BE DEVELOPED BY THE CONTRACTOR AS NECESSARY TO EFFECT A COMPLETE AND FUNCTIONAL INSTALLATION WITH REGULATORY AND OWNER APPROVAL.	11.	INSTALL AND COMMISSION HVAC EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
3.	DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED STEEL SHEET METAL THICKNESS AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS OR APPLICABLE CFR AND ABS REGULATIONS, WHICHEVER IS GREATER. BURNED OFF OR DAMAGED GALVANIZING SHALL BE REPLACED WITH A SPRAY-ON TYPE GALVANIZING COATING.	12.	PUMP INTERLOCKS AND FLOW SWITCHES SHALL BE PROVIDED TO PREVENT HEAT PUMP CONDENSERS FROM OPERATING WITH INSUFFICIENT COOLING WATER FLOW.
4.	PRELIMINARY DUCT DIMENSIONS SHOWN ARE FOR ROUND DUCTS EXCEPT AS NOTED. RECTANGULAR DUCT OF EQUAL FRICTION LOSS MAY BE SUBSTITUTED AS REQUIRED FOR INSTALLATION.	13.	THE CONTRACTOR SHALL VERIFY KEEL COOLER SIZING BASED ON FINAL HVAC EQUIPMENT SELECTION PRIOR TO ORDERING.
5.	FAN SELECTIONS AND MOTOR RATINGS ARE BASED ON ESTIMATED DUCT ROUTING, FITTING SELECTION, AND CONSTRUCTION. DUCT ROUTING MAY NOT ACCOUNT FOR ALL INTERFERENCES. THE CONTRACTOR SHALL FINALIZE DUCT ROUTING AND SIZING BASED ON HIS OWN CALCULATIONS AND SELECT FANS TO SUIT THE INSTALLED DUCTING SYSTEM.	14.	INSTALL A KEEL COOLER GUARD TO PROTECT THE KEEL COOLER FROM FLOATING DEBRIS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
6.	DUCTS AND PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.	15.	MATERIAL TRANSITIONS SHALL BE ACCOMPLISHED WITH FLANGED JOINTS. FIT JOINTS WITH GALVANIC ISOLATION KITS TO PREVENT DIRECT METAL TO METAL CONTACT.
7.	WEATHER TERMINALS SHALL BE FITTED WITH REMOVABLE INSECT SCREENS AND WEATHER TIGHT CLOSURES.		
8.	PROVIDE A CONDENSATE DRAIN FOR EACH INDOOR UNIT. CONTINUOUSLY SLOPE AC SYSTEM CONDENSATE DRAIN PIPING WITH NO HIGH OR LOW POINTS TO A DECK DRAIN OR OTHER SAFE EXTERIOR LOCATION. CONDENSATE DRAINS SHALL NOT DISCHARGE ONTO PASSENGER DECKS.		
9.	PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.		

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any of the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

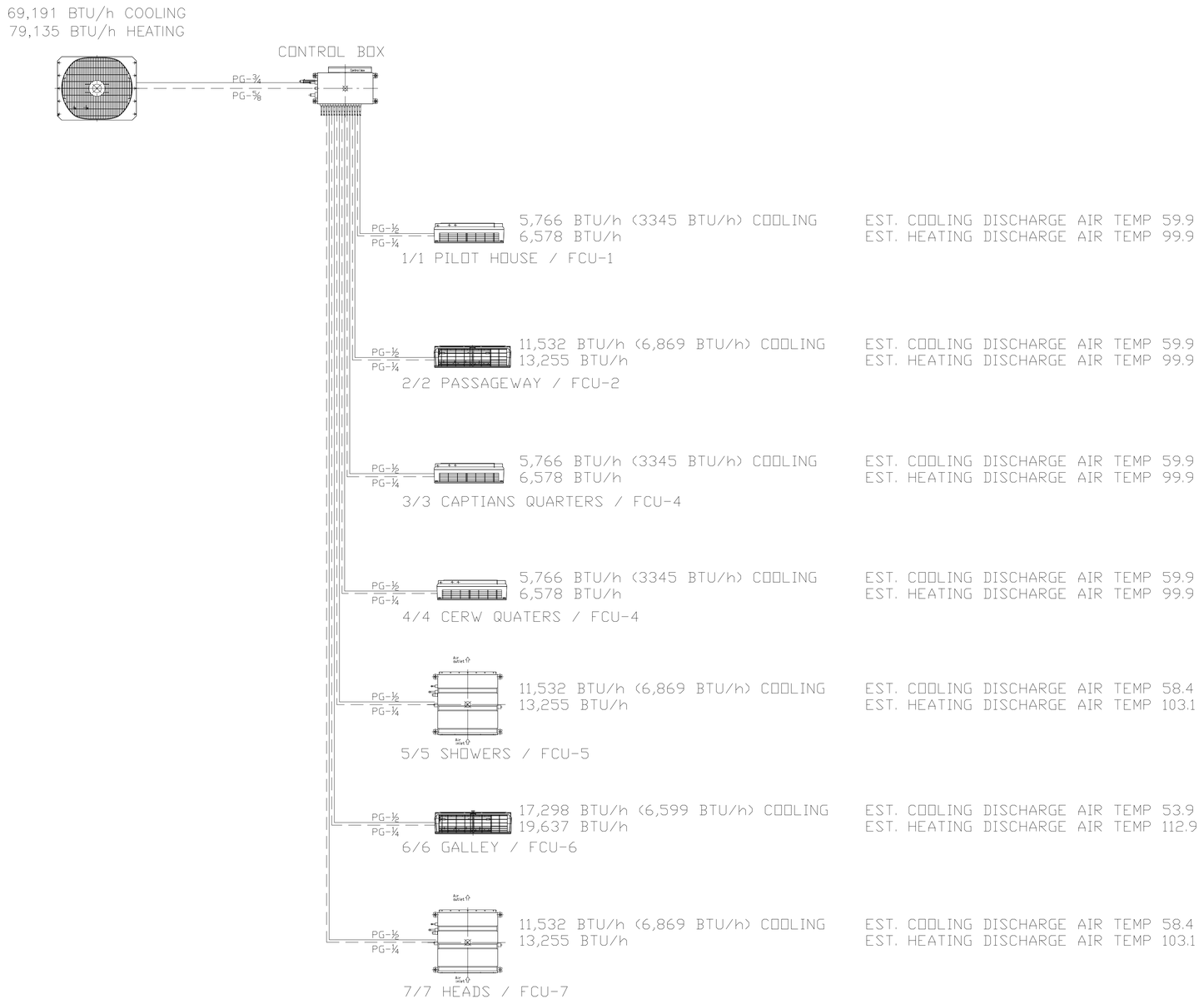
HVAC SYSTEM

Dwg. No. 17-1372-514

Alt. No. 0
Sht. 1 of 3

Drawn By: JACOB CONNALLY — Date: JUNE 05, 2018
Checked By: — Date:
App'd By: — Scale: 1/2" = 1'-0"
ABS App'l: — USCG App'l.:

ANSI-D (24"x36")



NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	PROVIDE A COMPLETE CONTROL SYSTEM FOR THE HVAC EQUIPMENT. EACH SPACE SHALL BE A SEPARATE ZONE, WITH INDEPENDENT THERMOSTATIC CONTROL. PROVIDE CENTRALIZED HVAC CONTROL AND SHUTDOWN IN THE PILOT HOUSE.
2.	THIS DRAWING IS A CONTRACT GUIDANCE DRAWING IN DIAGRAMMATIC FORM. SYSTEMS SHALL BE DEVELOPED BY THE CONTRACTOR AS NECESSARY TO EFFECT A COMPLETE AND FUNCTIONAL INSTALLATION WITH REGULATORY AND OWNER APPROVAL.	11.	INSTALL AND COMMISSION HVAC EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
3.	DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED STEEL SHEET METAL THICKNESS AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS OR APPLICABLE CFR AND ABS REGULATIONS, WHICHEVER IS GREATER. BURNED OFF OR DAMAGED GALVANIZING SHALL BE REPLACED WITH A SPRAY-ON TYPE GALVANIZING COATING.	12.	PUMP INTERLOCKS AND FLOW SWITCHES SHALL BE PROVIDED TO PREVENT HEAT PUMP CONDENSERS FROM OPERATING WITH INSUFFICIENT COOLING WATER FLOW.
4.	PRELIMINARY DUCT DIMENSIONS SHOWN ARE FOR ROUND DUCTS EXCEPT AS NOTED. RECTANGULAR DUCT OF EQUAL FRICTION LOSS MAY BE SUBSTITUTED AS REQUIRED FOR INSTALLATION.	13.	THE CONTRACTOR SHALL VERIFY KEEL COOLER SIZING BASED ON FINAL HVAC EQUIPMENT SELECTION PRIOR TO ORDERING.
5.	FAN SELECTIONS AND MOTOR RATINGS ARE BASED ON ESTIMATED DUCT ROUTING, FITTING SELECTION, AND CONSTRUCTION. DUCT ROUTING MAY NOT ACCOUNT FOR ALL INTERFERENCES. THE CONTRACTOR SHALL FINALIZE DUCT ROUTING AND SIZING BASED ON HIS OWN CALCULATIONS AND SELECT FANS TO SUIT THE INSTALLED DUCTING SYSTEM.	14.	INSTALL A KEEL COOLER GUARD TO PROTECT THE KEEL COOLER FROM FLOATING DEBRIS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
6.	DUCTS AND PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.	15.	MATERIAL TRANSITIONS SHALL BE ACCOMPLISHED WITH FLANGED JOINTS. FIT JOINTS WITH GALVANIC ISOLATION KITS TO PREVENT DIRECT METAL TO METAL CONTACT.
7.	WEATHER TERMINALS SHALL BE FITTED WITH REMOVABLE INSECT SCREENS AND WEATHER TIGHT CLOSURES.		
8.	PROVIDE A CONDENSATE DRAIN FOR EACH INDOOR UNIT. CONTINUOUSLY SLOPE AC SYSTEM CONDENSATE DRAIN PIPING WITH NO HIGH OR LOW POINTS TO A DECK DRAIN OR OTHER SAFE EXTERIOR LOCATION. CONDENSATE DRAINS SHALL NOT DISCHARGE ONTO PASSENGER DECKS.		
9.	PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

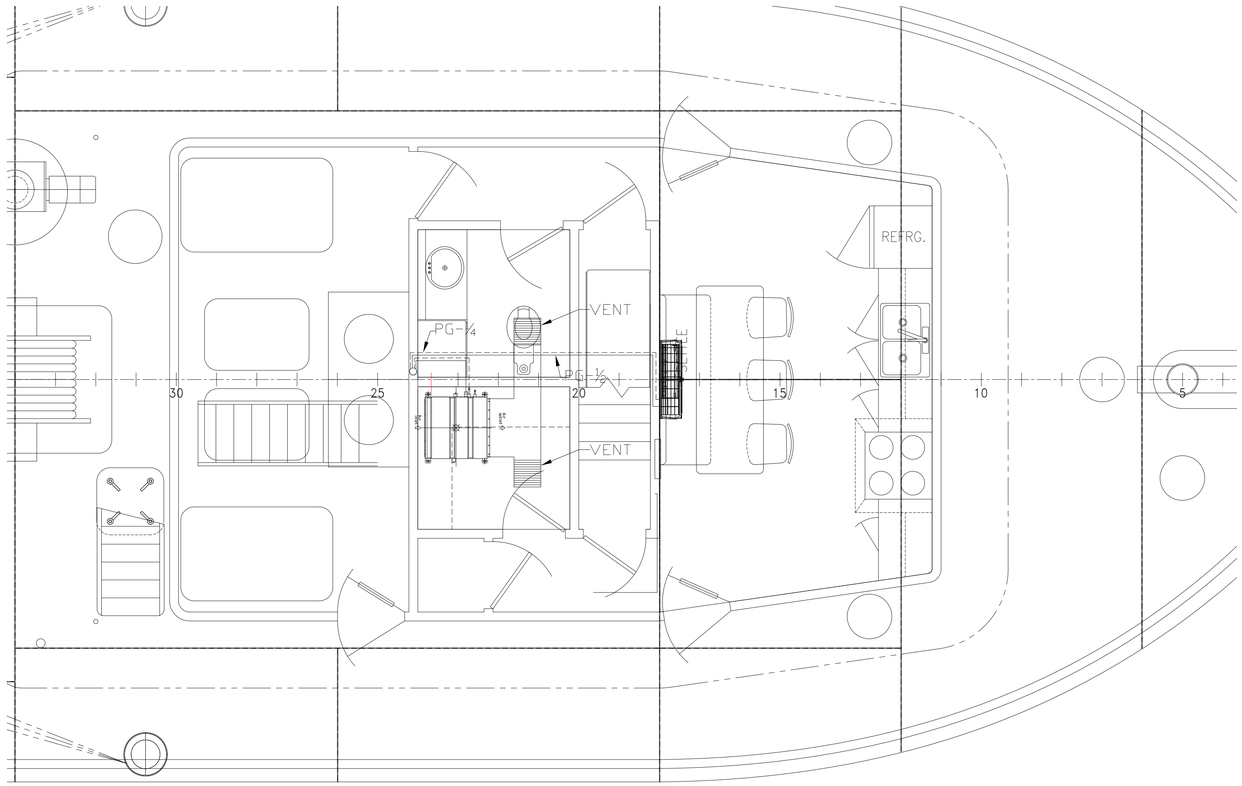
HVAC SYSTEM

Dwg. No. 17-1372-514

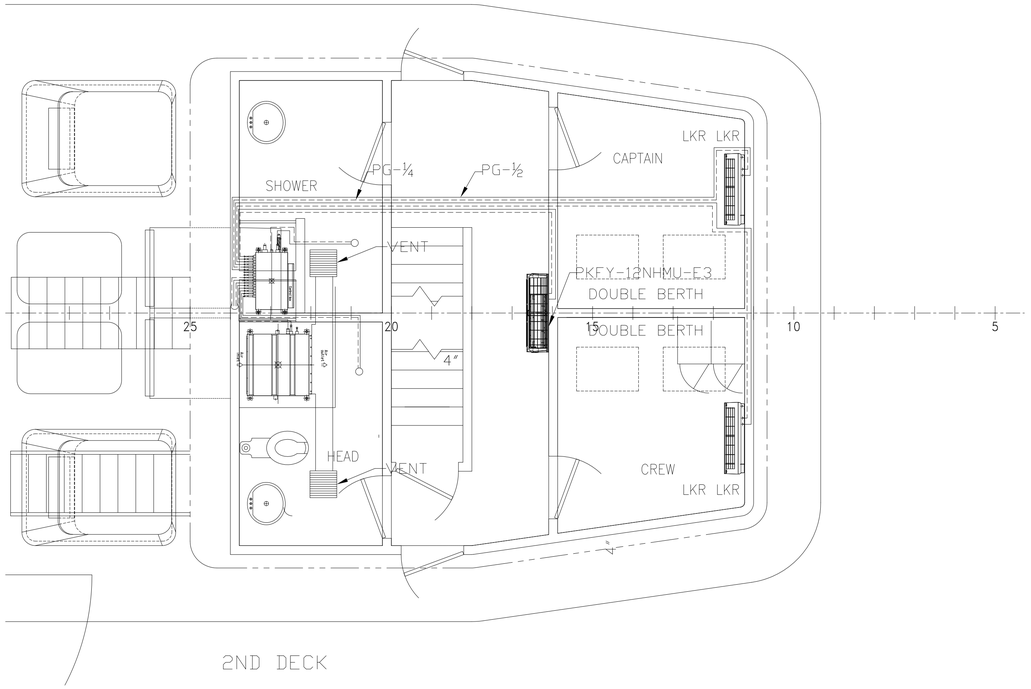
Alt. No. 0
Sht. 2 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

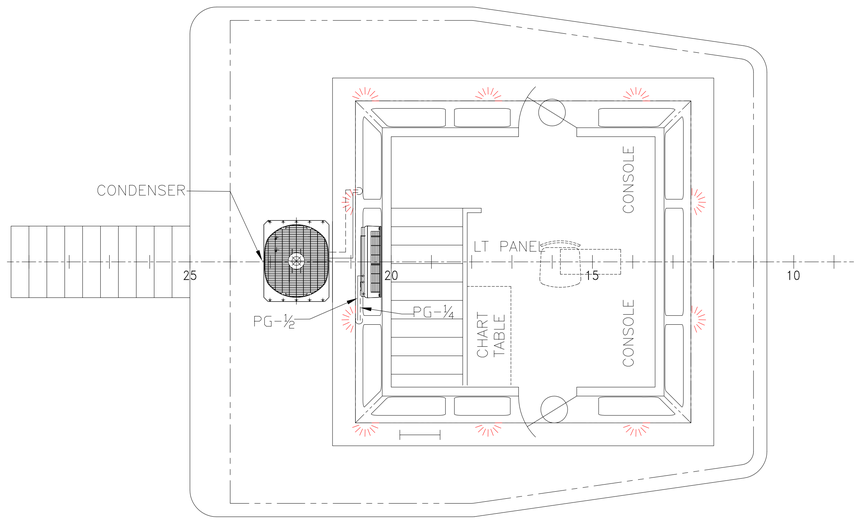
ANSI-D (24"x36")



MAIN DECK



2ND DECK



PILOTHOUSE

NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	PROVIDE A COMPLETE CONTROL SYSTEM FOR THE HVAC EQUIPMENT. EACH SPACE SHALL BE A SEPARATE ZONE, WITH INDEPENDENT THERMOSTATIC CONTROL. PROVIDE CENTRALIZED HVAC CONTROL AND SHUTDOWN IN THE PILOT HOUSE.
2.	THIS DRAWING IS A CONTRACT GUIDANCE DRAWING IN DIAGRAMMATIC FORM. SYSTEMS SHALL BE DEVELOPED BY THE CONTRACTOR AS NECESSARY TO EFFECT A COMPLETE AND FUNCTIONAL INSTALLATION WITH REGULATORY AND OWNER APPROVAL.	11.	INSTALL AND COMMISSION HVAC EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
3.	DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED STEEL SHEET METAL THICKNESS AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS OR APPLICABLE CFR AND ABS REGULATIONS, WHICHEVER IS GREATER. BURNED OFF OR DAMAGED GALVANIZING SHALL BE REPLACED WITH A SPRAY-ON TYPE GALVANIZING COATING.	12.	PUMP INTERLOCKS AND FLOW SWITCHES SHALL BE PROVIDED TO PREVENT HEAT PUMP CONDENSERS FROM OPERATING WITH INSUFFICIENT COOLING WATER FLOW.
4.	PRELIMINARY DUCT DIMENSIONS SHOWN ARE FOR ROUND DUCTS EXCEPT AS NOTED. RECTANGULAR DUCT OF EQUAL FRICTION LOSS MAY BE SUBSTITUTED AS REQUIRED FOR INSTALLATION.	13.	THE CONTRACTOR SHALL VERIFY KEEL COOLER SIZING BASED ON FINAL HVAC EQUIPMENT SELECTION PRIOR TO ORDERING.
5.	FAN SELECTIONS AND MOTOR RATINGS ARE BASED ON ESTIMATED DUCT ROUTING, FITTING SELECTION, AND CONSTRUCTION. DUCT ROUTING MAY NOT ACCOUNT FOR ALL INTERFERENCES. THE CONTRACTOR SHALL FINALIZE DUCT ROUTING AND SIZING BASED ON HIS OWN CALCULATIONS AND SELECT FANS TO SUIT THE INSTALLED DUCTING SYSTEM.	14.	INSTALL A KEEL COOLER GUARD TO PROTECT THE KEEL COOLER FROM FLOATING DEBRIS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
6.	DUCTS AND PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.	15.	MATERIAL TRANSITIONS SHALL BE ACCOMPLISHED WITH FLANGED JOINTS. FIT JOINTS WITH GALVANIC ISOLATION KITS TO PREVENT DIRECT METAL TO METAL CONTACT.
7.	WEATHER TERMINALS SHALL BE FITTED WITH REMOVABLE INSECT SCREENS AND WEATHER TIGHT CLOSURES.		
8.	PROVIDE A CONDENSATE DRAIN FOR EACH INDOOR UNIT. CONTINUOUSLY SLOPE AC SYSTEM CONDENSATE DRAIN PIPING WITH NO HIGH OR LOW POINTS TO A DECK DRAIN OR OTHER SAFE EXTERIOR LOCATION. CONDENSATE DRAINS SHALL NOT DISCHARGE ONTO PASSENGER DECKS.		
9.	PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

WILLIAM HOWARD CONNALLY
LICENSE NO. 60106
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

HVAC SYSTEM

Dwg. No.	17-1372-514
Alt. No.	0
Sht.	3 of 3
Drawn By:	JACOB CONNALLY
Date:	JUNE 05, 2018
Checked By:	
Date:	
App'd By:	
Scale:	1/2" = 1'-0"
ABS App'l:	
USCG App'l.:	

ANSI-D (24"x36")

SYMBOLS LIST

	FIREMAIN PIPING
	BILGE SYSTEM PIPING
	MATERIAL TRANSITION
	REDUCER
	BHD PENETRATION
	GATE VALVE
	SWING CHECK VALVE
	BUTTERFLY VALVE
	BALL VALVE
	HYDRANT VALVE
P	PRESSURE GAUGE
VP	VACUUM/PRESSURE GAUGE
	FIRE STATION, SEE NOTE 9
	CENTRIFUGAL PUMP
	OVERBOARD DISCHARGE
	SEA CHEST
	SIMPLEX STRAINER
C	BILGE SUCTION STRAINER BOX

MATERIAL SCHEDULE

SYSTEM	SIZE	PIPE	TAKEDOWN JOINTS	VALVE BODY	VALVE TRIM	FITTINGS	BOLTS/ BOLT STUDS	NUTS	GASKETS
BILGE MAWP: 125 PSIG MAX TEMP: 120 °F	ALL	GALVANIZED STEEL SCH 40 ASTM A106 GR B ANSI B36.10	FLANGE SLIP-ON OR WELD NECK ASTM A105 150#, ANSI B16.5	GATE, GLOBE, CHECK DUCTILE IRON FLANGED, 125# ASTM A395 ANSI B16.10 B16.34	BRONZE TRIM RENEWABLE DISC & SEAT	STEEL BUTTWELD SCH 80 ASTM A234 ANSI B16.9	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	GARLOCK STYLE 3000
FIRE MAWP: 200 PSIG MAX TEMP: 120 °F	ALL	GALVANIZED STEEL SCH 40 ASTM A106 GR B ANSI B36.10 STAINLESS STEEL (ABOVE DECK) SCH 40 ASTM A312 316L	FLANGE SLIP-ON OR WELD NECK ASTM A105 150#, ANSI B16.5 STAINLESS STEEL (ABOVE DECK) ASTM A403 316L	GATE, GLOBE, CHECK, BUTTERFLY, 3WAY DUCTILE IRON FLANGED, 125# ASTM A395 ANSI B16.10 B16.34 GATE, GLOBE, CHECK, BUTTERFLY, 3 WAY STAINLESS STEEL(ABOVE DECK) FLANGED, 150# ASTM A351	BRONZE TRIM RENEWABLE DISC & SEAT	STEEL BUTTWELD SCH 80 ASTM A234 ANSI B16.9 STAILESS STEEL (ABOVE DECK) BUTTWELD SCH 80 ASTM A403	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	GARLOCK STYLE 3000

EQUIPMENT LIST

QTY.	SERVICE	TYPE	MAKE/MODEL	CAPACITY	DRIVE	REMARKS
1	FIRE/BILGE PUMP	STRAIGHT CENTRIFUGAL HIGH HEAD PUMP		235 PSI 200 FT TDH	20 HP TEFC MOTOR 208V/3PH/60HZ 3500RPM	2000 GPM@200PSI AT FIRE MONITOR USCG REQUIRED 80 GPM AT TWO HIGHEST FIRE STATIONS
1	BILGE PUMP	SELF-PRIMING CENTRIFUGAL		175 GPM 125 FT TDH	7.5 HP TEFC MOTOR 208/3PH/60HZ	
1	FIRE PUMP STRAINER	SIMPLEX BASKET		2000 GPM 1 PSID		BRONZE BODY SS PERFORATED BASKET
1	BILGE PUMP STRAINER	SIMPLEX BASKET		73 GPM 1 PSID		BRONZE BODY SS PERFORATED BASKET
3	FIRE STATION	1½" HOSE, VALVE, NOZZLE UNIT; 50'x1-1/2" UL19, FIRE HOSE W/ BRASS FITTINGS (NFPA 1963), 1-1/2" SHIPBOARD VARI-NOZZLE (AKRON BRASS CO. MODEL 3022) OR (USCG EQUIPMENT CLASS 162.027)				
1	FIRE MONITOR	2000 GPM @200PSI CAPABLE, ELECTRIC OR MANUAL CONTROL, 4" INET, 2-½" NOZZLE				

- GENERAL NOTES -

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL FROM THE SHIP AND NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF EQUIPMENT.
4.	PROVIDE GAUGE ASSEMBLIES TO BE IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.
5.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
6.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
7.	WHERE PIPING PENETRATES BULKHEADS OR DECKS, THE PENETRATION SHALL MAINTAIN THE WATERTIGHT INTEGRITY OF THE SPACE. PIPE PENETRATIONS SHALL BE IN ACCORDANCE WITH DETAIL 3-1C.
8.	BOTH PUMPS SHALL BE CAPABLE OF REMOTE STARTING FROM THE BRIDGE.
	316 STAINLESS STEEL.

- GENERAL NOTES -

NO.	DESCRIPTION
9.	EACH FIRE STATION SHALL HAVE A STAINLESS STEEL ENCLOSURE CONTAINING A 1 1/2" HYDRANT VALVE, 50 FEET OF 1 1/2" LINED COMMERCIAL FIRE HOSE CONFORMING TO UL19, A HOSE WRENCH, AND A USCG APPROVED COMBINATION FIRE NOZZLE. THE HOSE SHALL BE CONNECTED AND STOWED IN AN APPROVED HOSE RACK.
10.	THE FIRE/BILE PUMP IS SIZED TO EXCEED THE MINIMUM REQUIREMENTS OF ABS . THE PUMP CAPACITY SHALL MEET THE FLOW DEMANDS OF THE FOLLOWING SCENARIOS: 1) WATER FLOW SHALL BE AT LEAST 80 GPM FROM THE HIGHEST TWO FIRE STATIONS OPERATING SIMULTANEOUSLY, 2) THREE FIRE STATIONS OPERATING SIMULTANEOUSLY, EACH PROVIDING WATER SPRAY TO A DIFFERENT LOCATION ON DECK.
11.	VALVE HANDWHEELS AND CONTROLS TO BE FITTED WITH LABEL PLATES INDICATING FUNCTION.
12.	BILGE SUCTION STRAINER BOXES SHALL BE IN ACCORDANCE WITH ASTM F986, TYPE I, HOT DIP GALVANIZED AFTER FABRICATION. STRAINER OPEN AREA SHALL BE GREATER THAN THREE TIMES THE AREA OF THE BILGE PIPE.
13.	A REMOTE PRESSURE GAUGE FOR THE FIREMAIN SHALL BE LOCATED IN THE PILOT HOUSE.
14.	FIREMAIN PIPING SHALL BE TIG WELDED.
15.	PIPING SHALL BE THOROUGHLY CLEANED BEFORE TESTING.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

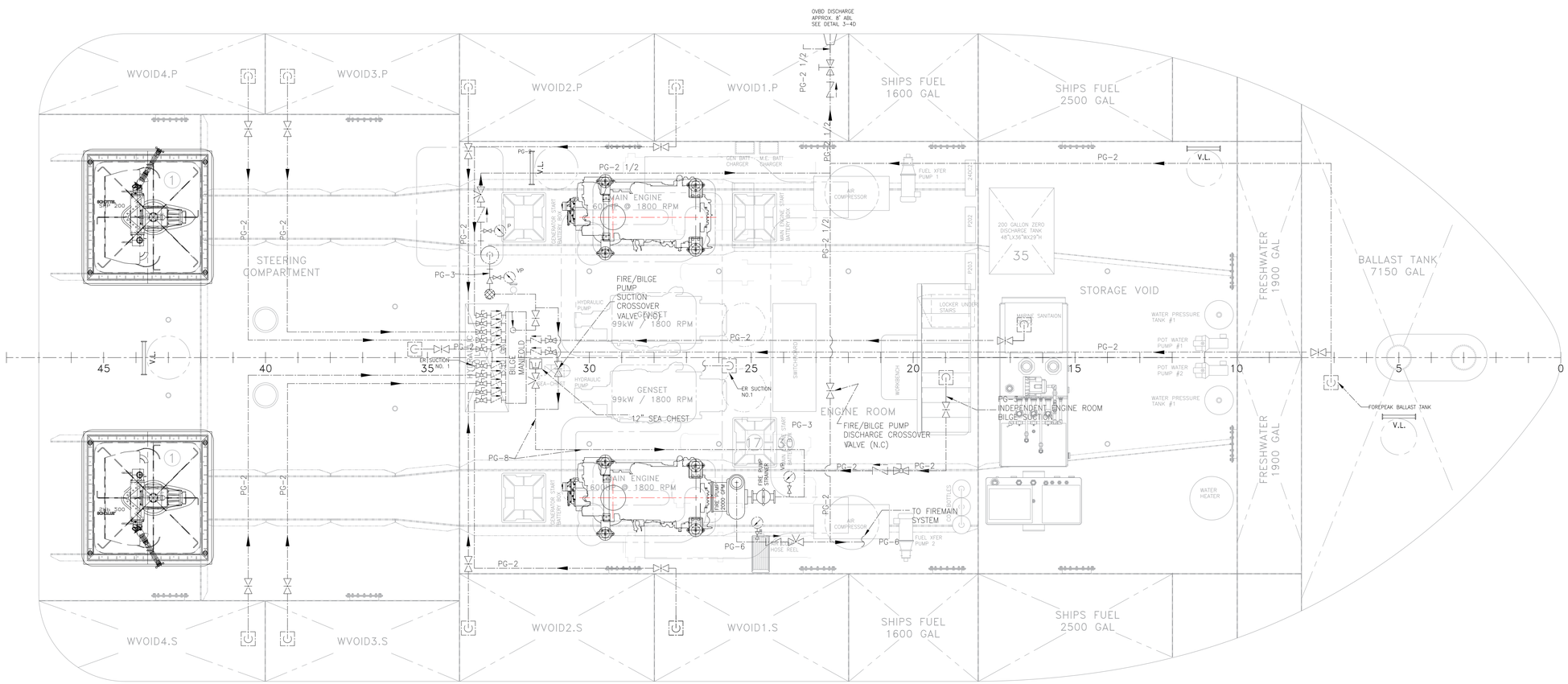
BILGE & FIREMAIN SYSTEM

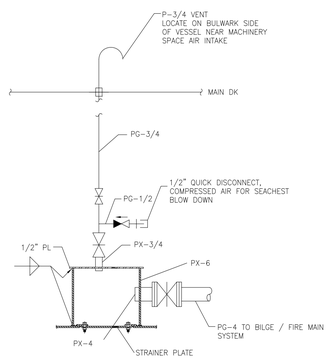
Dwg. No. 17-1372-521

Alt. No. 1
Sht. 1 of 3

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By:
Date:
App'd By:
Scale: 1/2" = 1'-0"
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")





DETAIL 2-6A
SEA CHEST

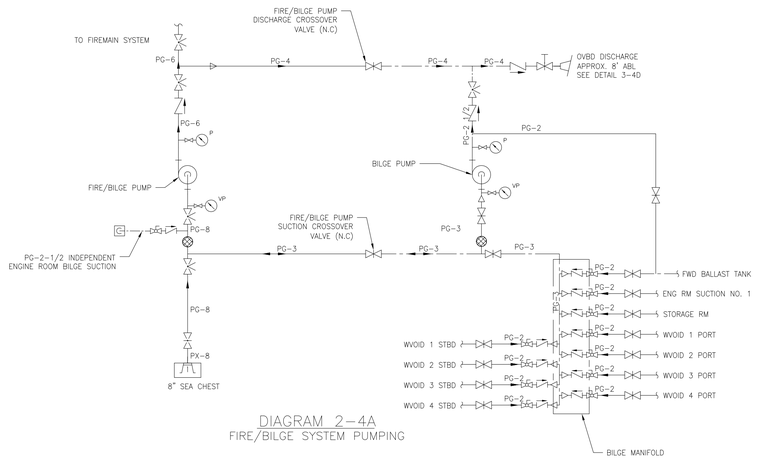


DIAGRAM 2-4A
FIRE/BILGE SYSTEM PUMPING

NO.	- GENERAL NOTES - DESCRIPTION	NO.	- GENERAL NOTES - DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.	9.	EACH FIRE STATION SHALL HAVE A STAINLESS STEEL ENCLOSURE CONTAINING A 1 1/2" HYDRANT VALVE, 50 FEET OF 1 1/2"
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL FROM THE SHIP AND NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.		LINED COMMERCIAL FIRE HOSE CONFORMING TO UL19, A HOSE WRENCH, AND A USCG APPROVED COMBINATION FIRE NOZZLE. THE HOSE SHALL BE CONNECTED AND STOWED IN AN APPROVED HOSE RACK.
		10.	THE FIRE/BILE PUMP IS SIZED TO EXCEED THE MINIMUM REQUIREMENTS OF ABS . THE PUMP CAPACITY SHALL MEET THE FLOW DEMANDS OF THE FOLLOWING SCENARIOS: 1) WATER FLOW SHALL BE AT LEAST 80 GPM FROM THE HIGHEST TWO FIRE STATIONS OPERATING SIMULTANEOUSLY, 2) THREE FIRE STATIONS OPERATING SIMULTANEOUSLY, EACH PROVIDING WATER SPRAY TO A DIFFERENT LOCATION ON DECK.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF EQUIPMENT.		
4.	PROVIDE GAUGE ASSEMBLIES TO BE IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.	11.	VALVE HANDWHEELS AND CONTROLS TO BE FITTED WITH LABEL PLATES INDICATING FUNCTION.
		12.	BILGE SUCTION STRAINER BOXES SHALL BE IN ACCORDANCE WITH ASTM F986, TYPE I, HOT DIP GALVANIZED AFTER FABRICATION.
5.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.		STRAINER OPEN AREA SHALL BE GREATER THAN THREE TIMES THE AREA OF THE BILGE PIPE.
		13.	A REMOTE PRESSURE GAUGE FOR THE FIREMAIN SHALL BE LOCATED IN THE PILOT HOUSE.
6.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES. HANGERS SUPPORTING CU-NI TUBING SHALL UTILIZE A RESILIENT NONMETALLIC LINER BETWEEN THE TUBING AND STEEL HANGER.	14.	FIREMAIN PIPING SHALL BE TIG WELDED.
		15.	PIPING SHALL BE THOROUGHLY CLEANED BEFORE TESTING.
7.	WHERE PIPING PENETRATES BULKHEADS OR DECKS, THE PENETRATION SHALL MAINTAIN THE WATERTIGHT INTEGRITY OF THE SPACE. PIPE PENETRATIONS SHALL BE IN ACCORDANCE WITH DETAIL 3-1C.		
8.	BOTH PUMPS SHALL BE CAPABLE OF REMOTE STARTING FROM THE BRIDGE. 316 STAINLESS STEEL.		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

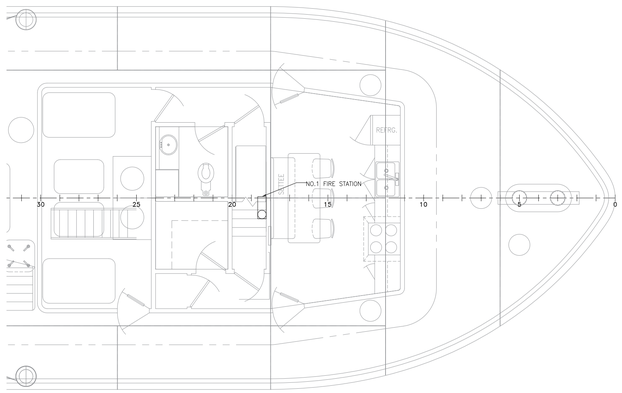
Title: 70.5'x30'x11' NCDOT TOWBOAT

BILGE & FIREMAIN SYSTEM

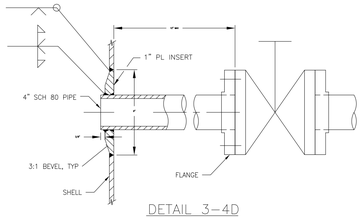
Dwg. No. 17-1372-521
Alt. No. 1
Sht. 2 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

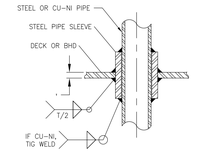
ANSI-D (24"x36")



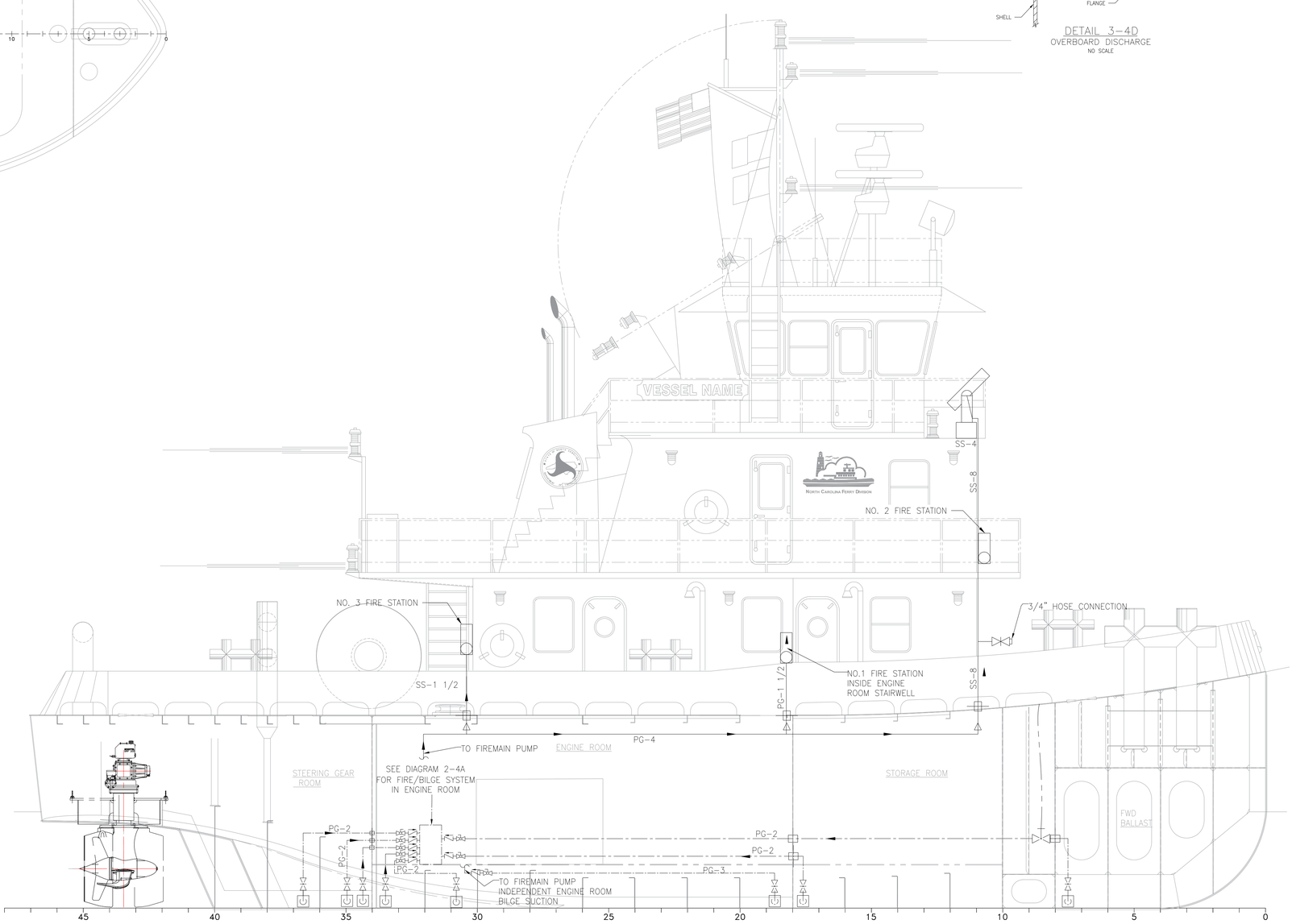
MAIN DECK



DETAIL 3-4D
OVERBOARD DISCHARGE
NO SCALE



DETAIL 3-1C
TYP. DECK OR BULKHEAD PENETRATION
NO SCALE



NO.	– GENERAL NOTES – DESCRIPTION	NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.	9.	EACH FIRE STATION SHALL HAVE A STAINLESS STEEL ENCLOSURE CONTAINING A 1 1/2" HYDRANT VALVE, 50 FEET OF 1 1/2" LINED COMMERCIAL FIRE HOSE CONFORMING TO UL19, A HOSE WRENCH, AND A USCG APPROVED COMBINATION FIRE NOZZLE. THE HOSE SHALL BE CONNECTED AND STOWED IN AN APPROVED HOSE RACK.
2.	THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL FROM THE SHIP AND NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.	10.	THE FIRE/BILE PUMP IS SIZED TO EXCEED THE MINIMUM REQUIREMENTS OF ABS . THE PUMP CAPACITY SHALL MEET THE FLOW DEMANDS OF THE FOLLOWING SCENARIOS: 1) WATER FLOW SHALL BE AT LEAST 80 GPM FROM THE HIGHEST TWO FIRE STATIONS OPERATING SIMULTANEOUSLY, 2) THREE FIRE STATIONS OPERATING SIMULTANEOUSLY, EACH PROVIDING WATER SPRAY TO A DIFFERENT LOCATION ON DECK.
3.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF EQUIPMENT.	11.	VALVE HANDWHEELS AND CONTROLS TO BE FITTED WITH LABEL PLATES INDICATING FUNCTION.
4.	PROVIDE GAUGE ASSEMBLIES TO BE IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.	12.	BILGE SUCTION STRAINER BOXES SHALL BE IN ACCORDANCE WITH ASTM F986, TYPE I, HOT DIP GALVANIZED AFTER FABRICATION. STRAINER OPEN AREA SHALL BE GREATER THAN THREE TIMES THE AREA OF THE BILGE PIPE.
5.	AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.	13.	A REMOTE PRESSURE GAUGE FOR THE FIREMAIN SHALL BE LOCATED IN THE PILOT HOUSE.
6.	PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES. HANGERS SUPPORTING CU-NI TUBING SHALL UTILIZE A RESILIENT NONMETALLIC LINER BETWEEN THE TUBING AND STEEL HANGER.	14.	FIREMAIN PIPING SHALL BE TIG WELDED.
7.	WHERE PIPING PENETRATES BULKHEADS OR DECKS, THE PENETRATION SHALL MAINTAIN THE WATERTIGHT INTEGRITY OF THE SPACE. PIPE PENETRATIONS SHALL BE IN ACCORDANCE WITH DETAIL 3-1C.	15.	PIPING SHALL BE THOROUGHLY CLEANED BEFORE TESTING.
8.	BOTH PUMPS SHALL BE CAPABLE OF REMOTE STARTING FROM THE BRIDGE. 316 STAINLESS STEEL.		

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

BILGE & FIREMAIN SYSTEM

Dwg. No. 17-1372-521
Alt. No. 1
Sht. 3 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
CENTRIFUGAL SEWAGE WATER PUMP 2HP@30 PSI	ALL	BELOW DECK CARBON STEEL GALVANIZED, SCH 40, SEAMLESS, ASTM A53 TYPE S, OR ASTM A106, GRADE B, ANSI B36.10 FIXTURE FEED COPPER TYPE-K TUBING STANDARD WALL	FLANGE #150, SOCKET WELD CARBON STEEL, ASTM A105, ANSI B16.5	BELOW DECK STEEL GALVANIZED THREADED,	HOSE: SEE NOTE 11	GARLOCK STYLE 3000 GATE - ABV DK SW OR THREADED, 3-PIECE S. STEEL, ASTM A351 GR CF8M		BALL CHROME PLATED BALL, RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	

EQUIPMENT & PUMP LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	SEWAGE OVERBOARD PUMP	CENTRIFUGAL	CROWN P03LA 3'NPT IN/3" NPT OUT	100GPM@60FT HEAD 1750 RPM	5HP TEFC MOTOR 120/208/3P/60Hz

SYMBOLS LIST

	PIPE
	REDUCER
	CHECK VALVE
	BALL VALVE
L	BALL VALVE, LOCKING
	CENTRIFUGAL PUMP
	CAMLOCK
	DRIP PAN
	HOSE REEL
	SUCTION STRAINER BOX
	BULKHEAD PIPE PENETRATION
P	PRESSURE GAUGE

17-1372-4008 GENERATOR COOLING PIPING B.O.M..

ITEM		QTY	DESCRIPTION	MATERIAL SPEC	REMARKS
1		AS REQ'D	HOSE CLAMP S.S. 2" ROLLED EDGES		DOUBLE CLAMP ALL HOSE CONNECTIONS
2		2	REDFOX TYPE II MSD		REMOTE MOUNTED CONTROL PANEL REQ'D OR EQUAL,
3		4	TOILET WITH SLOAN FLUSH HEAD		OPEN FRONT WHITE SEAT, NO TOP
4		2	DECK PUMPOUT FITTING, GALV, CAM LOCK QUICK COUPLING,		OR EQUAL, VERIFY WITH OWNER
5		AS REQ'D	NO-FIRE, RISE TYPE BHD PENETRATIONS AT A CLASS DECK PENETRATIONS		ROXTEC A CLASS DECK PENETRATIONS MAY BE SUBSITUTED
DWV-#		AS REQ'D	MISC, DWV FITTINGS FOR DRAIN LINES		OR EQUAL
CPVC-#		AS REQ'D	PIPE CPVC, SCH 80	ASTM A-53	FOR APPLIANCE TAIL PIECE CONNECTIONS TO SEWAGE DRAINS
PX-#		AS REQ'D	PIPE BLACK IRON, SCH 80	ASTM A-53	
PXX-#		AS REQ'D	PIPE BLACK IRON, SCH 120	ASTM A-53	
F-		AS REQ'D	MISC STEEL BUTT WELD FITTINGS	ASTM A-234	
H-1		AS REQ'D	SHIELDS CORRUGATED SEWAGE HOSE 1-7/8" ID SMOOTH INSIDE DOUBLE CLAMPED	ASTM J1475	MISC CONNECTIONS TO FIXED PIPING AT MSD TANK OR PUMP
V-1		2	GATE VALVE, BRONZE, 1-1/4"	ASTM B-62	OR EQUAL
V-2		8	GATE VALVE, 3", BRONZE	ASTM B-62	
CV-1		AS REQ'D	BRONZE, 1-1/4"CHECK VALVE, SCH 40, VERTICAL	ASTM B-62	OR EQUAL, ON PUMPOUT LINES FROM GALLEY GREY TANK AND LIBERTY LIFT STATION
CV-2		AS REQ'D	BRONZE, 3"CHECK VALVE, SCH 40, VERTICAL	ASTM B-62	OR EQUAL, ON PUMPOUT LINES FROM GALLEY GREY TANK AND LIBERTY LIFT STATION

- GENERAL NOTES -

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1-4A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND BE EQUIPPED WITH A LOW POINT DRAIN VALVE.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession hereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 398-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

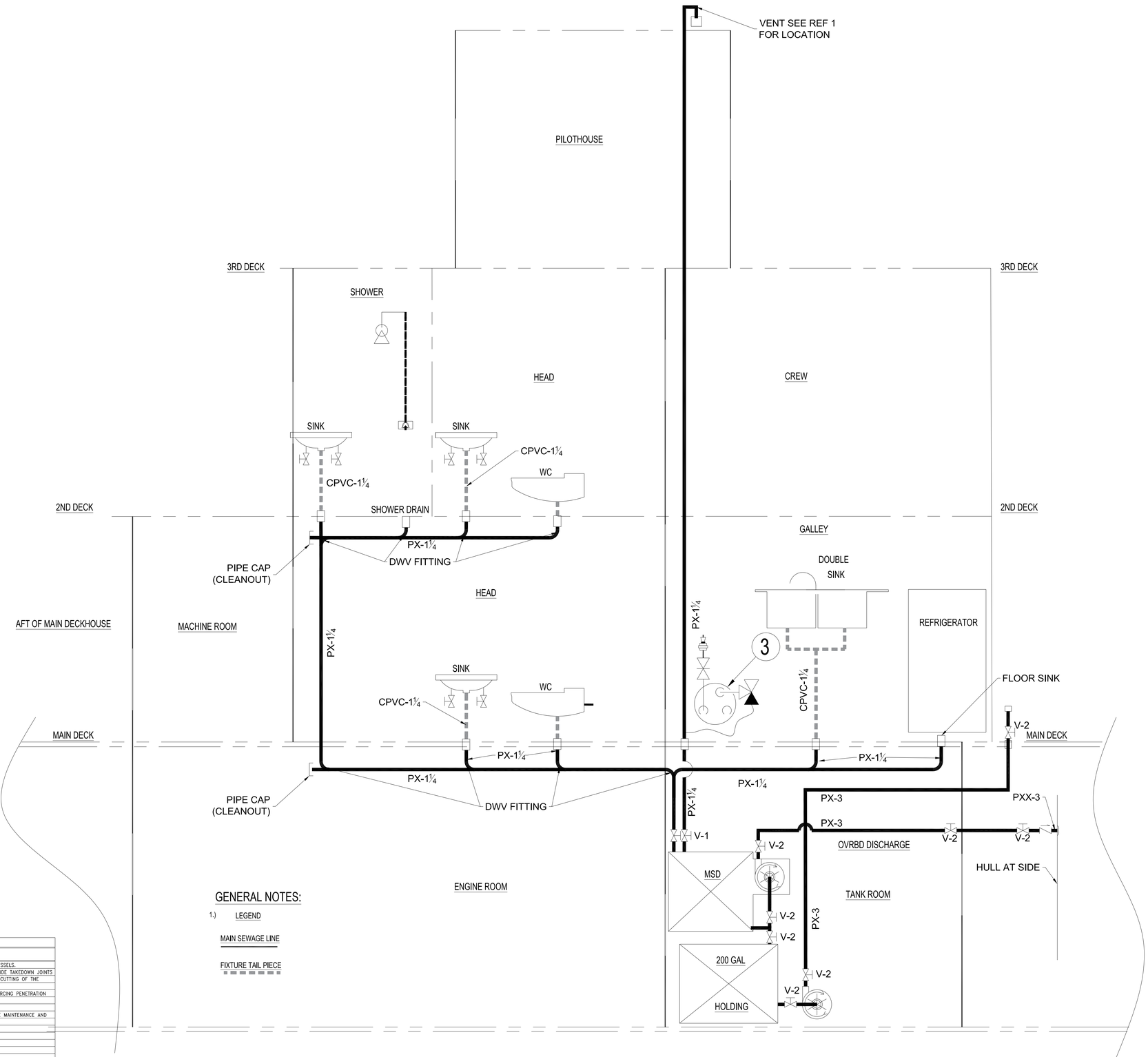
SEWAGE PIPING

Dwg. No. 17-1372-528

Alt. No. 1
Sht. 1 of 2

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

ANSI-D (24"x36")



GENERAL NOTES:

1.) LEGEND

MAIN SEWAGE LINE

FIXTURE TAIL PIECE

– GENERAL NOTES –

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1–4A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND BE EQUIPPED WITH A LOW POINT DRAIN VALVE.

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

SEWAGE PIPING

Dwg. No. 17-1372-528

All. No. 1
Sht. 2 of 2

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS/WASHERS	
POTABLE WATER PUMP 45GMP@40 PSI	ALL	BELOW DECK CARBON STEEL GALVANIZED, SCH 40, SEAMLESS, ASTM A53 TYPE S, OR ASTM A106, GRADE B, ANSI B36.10 FIXTURE FEED COPPER TYPE-K TUBING STANDARD WALL	FLANGE #150, SOCKET WELD CARBON STEEL, ASTM A105, ANSI B16.5	BELOW DECK STEEL GALVANIZED THREADED,	HOSE: SEE NOTE 11	GARLOCK STYLE 3000 BALL - ABV DK SW OR THREADED, 3-PIECE S. STEEL, ASTM A351 GR CF8M		BALL CHROME PLATED BALL, RPTFE OR VITON SEATS CHECK CRES DISC	CARBON STEEL ASTM A307 GR B ANSI B18.2.1	HEX-HEAD CARBON STEEL ASTM A563 GR A ANSI B18.2.2	

EQUIPMENT & PUMP LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	FRESH WATER PRESSURE PUMP	CENTRIFUGAL		35 GPM @ 35 PSI	2HP TEFC MOTOR 208V/3P/60Hz SEE NOTE 10

SYMBOLS LIST

	PIPE
	REDUCER
	CHECK VALVE
	BALL VALVE
L	BALL VALVE, LOCKING
	DIAPHRAGM PUMP
	CAMLOCK
	DRIP PAN
	HOSE REEL
	SUCTION STRAINER BOX
	BULKHEAD PIPE PENETRATION
P	PRESSURE GAUGE

17-1372-4008 GENERATOR COOLING PIPING B.O.M..

ITEM		QTY	DESCRIPTION	MATERIAL SPEC	REMARKS
1		2	PUMP 1-1/2 HP SHALLOW WELL PUMP, 120/208VAC 3PH, 45GPM @ 40 PSI WITH PRESSURE SWITCH 35-55 PSI SETTING		1-1/2" NPT IN 1-1/2"NPT OUT OR EQUAL
2		2	BLADDER TANK, 20 GALLON, #3GVT6, VERTICAL PRE CHARGED, 16" DIA		1" (F) IN - 1" (F) OUT OR EQUAL
3		1	WATERHEATER, 50 GAL, WITH USCG APPROVED PRESSURE-TEMP RELIEF VALVE	UL 174, UL 1453	VERIFY WITH OWNER PRIOR TO PURCHASE
5		4	TOILET FLUSHING VALVE, SLOAN OR EQUAL		
PG-#		AS REQ'D	PIPE GALVANIZED, SCH 40	ASTM A-53	
F-		AS REQ'D	MISC FITTINGS, MALL IRON,150#,	ASTM A-197	OR EQUAL
FG-2		AS REQ'D	MISC FITTINGS, GALV, MALEABLE IRON, 150#	ASTM A-197	
CV-2		1	CHECK VALVE, BRONZE, 125 lb., SCREWED 2"	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-1		4	1- 1/2" BRONZE BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-2		6	3/4" HOSE BIB, BRONZE, 125LB, SCREWED	ASTM B-62	FULL PORT
V-3		0	1- 1/4" BRONZE BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-4		3	2" BRONZE BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-5		7	3/8" BRONZE BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
** V-6		28	1/2" SHUTOFF VALVE, BRONZE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-7		2	3/4" BRONZEC BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351
V-8		4	1" BRONZE BALL VALVE	ASTM B-62	OPTION: DUCTILE IRON A-395, CARBON STEEL A-216, 316 STAINLESS STEEL A-351

** MAY BE PROVIDED WITH FIXTURES

- GENERAL NOTES -

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "W" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1-4A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND
6.	BE EQUIPPED WITH A LOW POINT DRAIN VALVE.
	FIT DRIP PANS UNDER HOSE REELS AND PUMPS.
7.	FLEXIBLE POTABLE WATER HOSE SHALL BE USDA APPROVED DRINKING WATER HOSE
8.	
9.	
10.	
11.	

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce or disclose the document, or any part thereof, in whole or in part or any information contained therein, except by written permission, or written agreement with De-Jong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

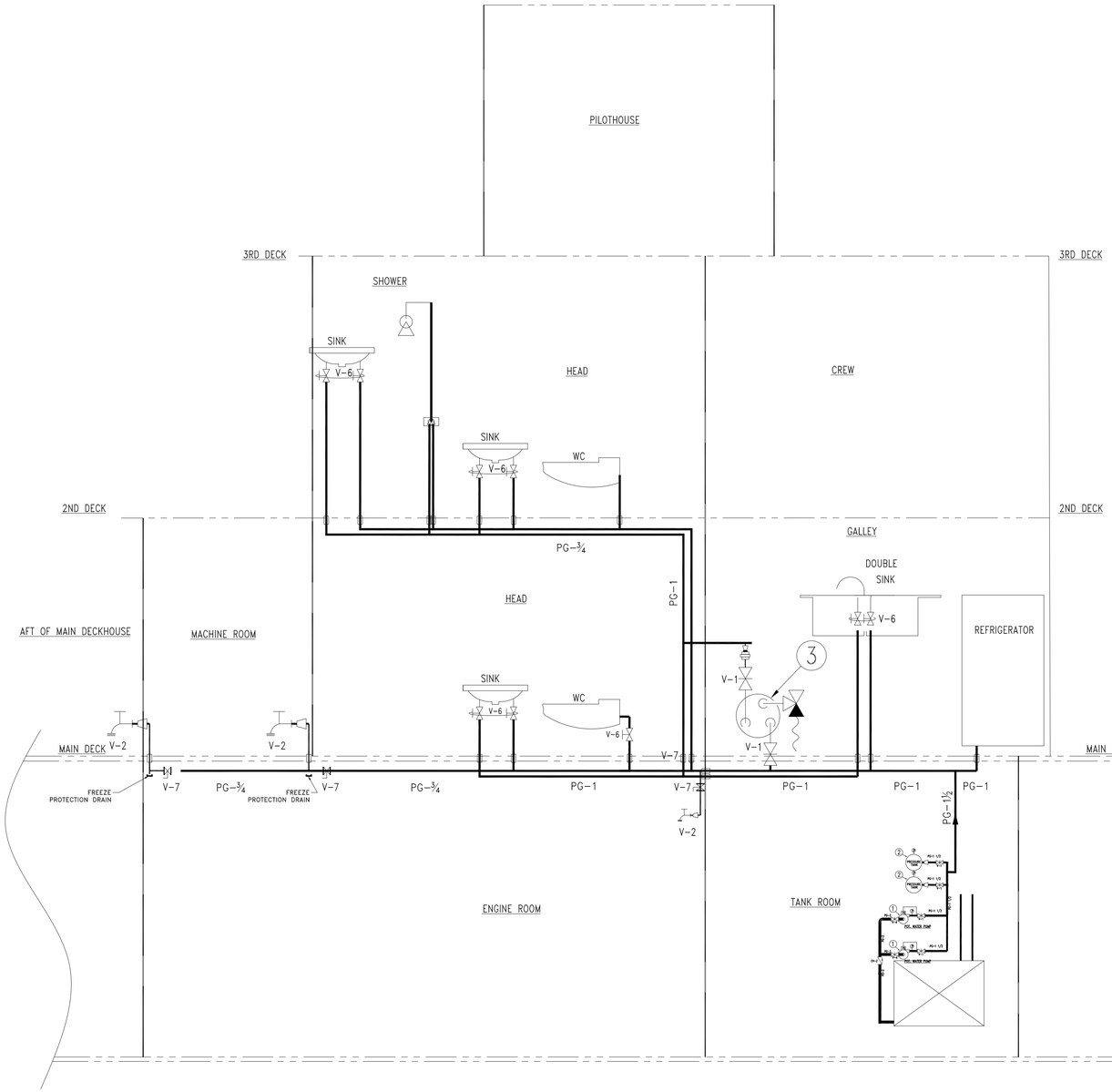
Title: 70.5'x30'x11' NCDOT TOWBOAT

POTABLE WATER PIPING

Dwg. No. 17-1372-533
Alt. No. 0
Sht. 1 of 2

Drawn By: CHRISTOPHER DUNCAN Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: 1/2" = 1'-0"
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



GENERAL NOTES:

1.) LEGEND:

——— = POTABLE WATER (COLD)
——— = POTABLE WATER (HOT)
▷ = REDUCTION IN PIPE SIZE
► = DIRECTION OF FLOW

1.) HOSE BIBS TO BE FIELD LOCATED BY OWNERS REP.

2.) THERMAL INSULATION ON HOT WATER PIPES TO MEET CG164.009.

COLD WATER

HOT WATER

LEGEND

– GENERAL NOTES –	
NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1-4A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	DRIP PANS SHALL BE PROVIDED BENEATH ALL PUMPS, STRAINERS, & FILTERS THAT WILL LEAK DURING ROUTINE MAINTENANCE AND BE EQUIPPED WITH A LOW POINT DRAIN VALVE.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

POTABLE WATER PIPING

Dwg. No. 17-1372-533
Alt. No. 0
Sht. 2 of 2

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	
DOMPRESSED AIR SERVICE PIPING MAWP: 200 PSIG	ALL	CARBON STEEL, SCH 80, SEAMLESS, ASTM A53 OR ASTM A106 GRADE B, ANSI B36.10	UNION GROUND JOINT, SOCKET WELD CARBON STEEL, ASTM A105, 3000# MSS-SP-83	SOCKET WELD CARBON STEEL, ASTM A105, 3000#, ANSI B16.11	FLEX HOSE MEETING SAE J1942 AND J1475 FOR DIESEL SERVICE SEE NOTE 9	–	GATE CARBON STEEL, ASTM A105 SOCKET WELD OR THREADED, ANSI B16.34 BALL THREADED, CARBON STEEL, ASTM A105, SOCKET WELD OR THREADED CHECK CARBON STEEL, ASTM A105, SOCKET WELD OR THREADED, ANSI B16.34	GATE STAINLESS STEEL STEM, DISC AND SEAT BALL STAINLESS STEEL BALL, PTFE SEATS & SEALS CHECK STAINLESS STEEL DISC	

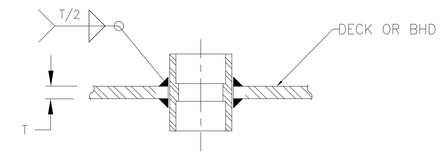


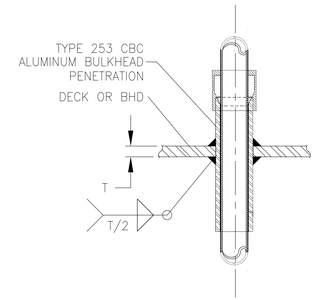
DIAGRAM 1-1A
STEEL DECK AND BULKHEAD PENETRATION

EQUEMINTMENT LIST

ITEM	QTY	DESCRIPTION	MATERIAL SPEC.	REMARKS
1	2	AIR COMPRESSOR, 2 STAGE, 175 PSI @ 35 CFM, 208V, 3ø ELEC MOTOR DRIVEN		SEE NOTE 7
2	2	RECEIVER, VERTICAL, 120 GALLONS, 200 PSI MAWP		SEE NOTES 6 & 7
3	1	AIR FILTER, COALESCING, 45 CFM		
4	1	AIR DRYER, 30 CFM		
5	1	HORN COMBINATION MANAUL/SOLENOID VALVE		
6	1	HORN, 29 CFM @100 PSI, 250 PSI MAX, ⅜" NPT		
7	1	½", 50 FT. SPRING RETURN HOSE REEL, 300 PSi		
8	AS REQ'D	¾" QUICK DISCONNECT, MALE/FEMALE		
9	AS REQ'D	½" QUICK DISCONNECT, MALE/FEMALE		
10	1	AIR REGULATOR W/ GAGE, 1-¼"		
11	1	AIR REGULATOR W/ GAGE, 3/4"		
P-¼"	AS REQ'D	¼" SCHDED 80 PIPE	ASTM A53 OR A106 SMLS	
P-3/8"	AS REQ'D	¼" SCHDED 80 PIPE	ASTM A53 OR A106 SMLS	
P-½"	AS REQ'D	1/2" SCHDED 80 PIPE	ASTM A53 OR A106 SMLS	
P-3/4"	AS REQ'D	3/4" SCHDED 80 PIPE	ASTM A53 OR A106 SMLS	
P-1-1/4"	AS REQ'D	1-1/4" SCHDED 80 PIPE	ASTM A53 OR A106 SMLS	
V-1	1	1/4" BALL VALVE	ASTM A105	
V-2	1	3/8" BALL VALVE	ASTM A105	
V-3	4	1/2" BALL VALVE	ASTM A105	
V-4	1	3/4" BALL VALVE	ASTM A105	
V-5	1	1-1/4" BALL VALVE	ASTM A105	

SYMBOLS LIST

	PIPE
	REDUCER
	CHECK VALVE
	BALL VALVE
PT	PRESSURE TRANSDUCER
P	PRESSURE GAUGE
	HOSE REEL
	BULKHEAD PIPE PENETRATION
	AIR COMPRESSOR
	SAFETY RELIEF VALVE
	COMBINATION MANUAL/SOLENOID VALVE
	PRESSURE REGULATING VALVE
	QUICK DISCONNECT
P	PRESSURE REGULATING VALVE
F	FILTER
	AIR DRYER



DETAIL 1-2A
ALUMINUM DECK OR BULKHEAD PENETRATION
NO SCALE

- GENERAL NOTES -

NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "W" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE BULKHEADS, OR DECKS, USE SOCKET WELD COUPLINGS FOR STEEL DECKS & BULKHEADS AND CSD STUFFING BOXES FOR ALUMINUN DECKS & BULKLHEADS, SEE DETAIL 1-1A & 1-2A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	BURSTING PRESSURE OF FLEX CONNECTIONS SHALL BE AT LEAST 5 TIMES THE WORKING PRESSURE OR 4 TIMES THE RELIEF VALVE SETTING
6.	AIR RECIEVERS SHALL BE ASME AND USCG APPROVED & STAMPED
7.	COMPRESSORS SHALL BE SUPPLIED MOUNTED ON THE VERTICAL AIR RECEIVER

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part, any of the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

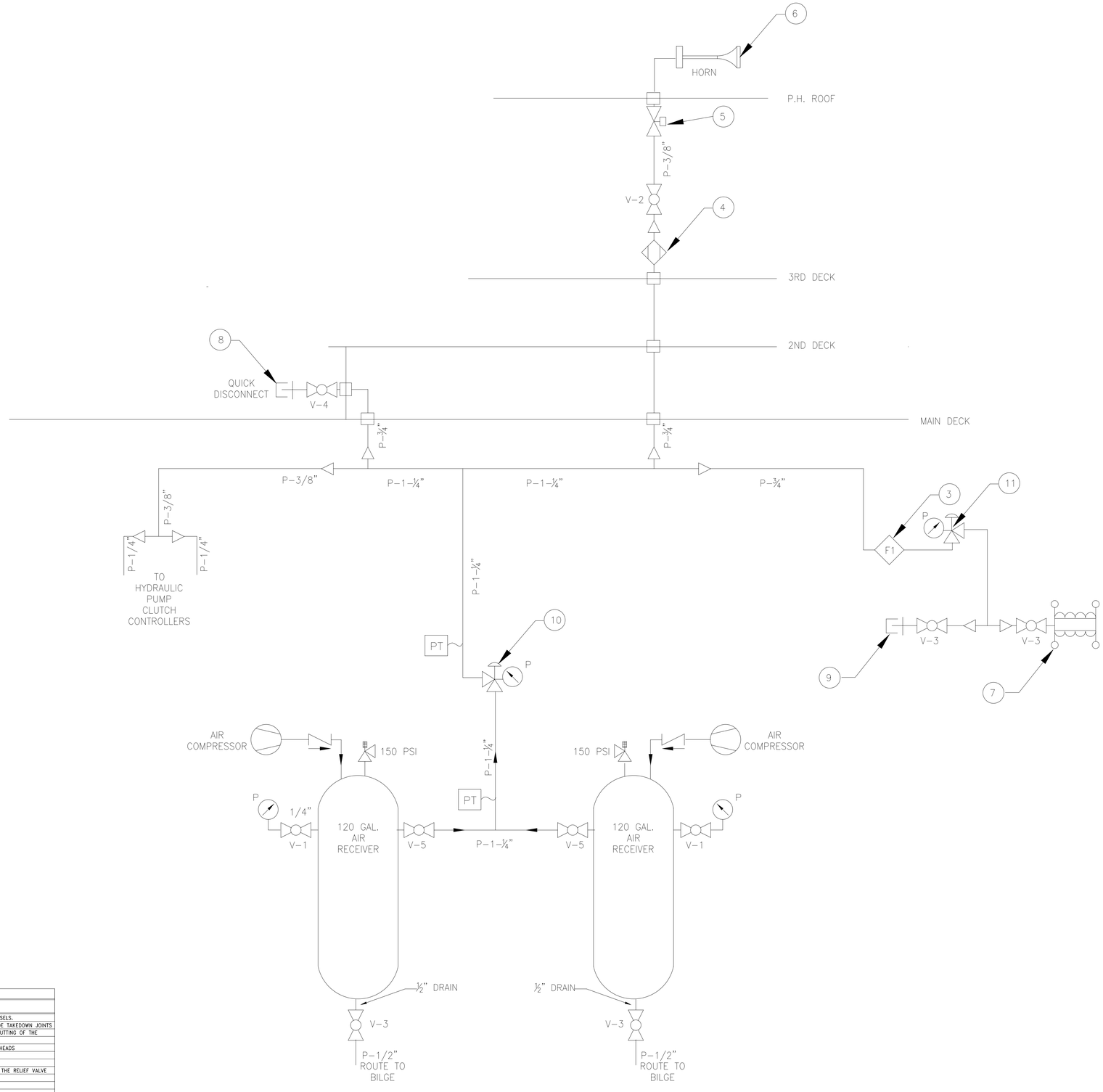
Title: 70.5'x30'x11' NCDOT TOWBOAT

COMPRESSED AIR PIPING

Dwg. No. 17-1372-551
Alt. No. 1
Sht. 1 of 3

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: Date:
App'd By: Scale: NONE
ABS App'l: USCG App'l.:

ANSI-D (24"x36")



COMPRESSED AIR SCHEMATIC

NO.	– GENERAL NOTES – DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE BULKHEADS, OR DECKS, USE SOCKET WELD COUPLINGS FOR STEEL DECKS & BULKHEADS AND CSD STUFFING BOXES FOR ALUMINUM DECKS & BULKHEADS, SEE DETAIL 1-1A & 1-2A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	BURSTING PRESSURE OF FLEX CONNECTIONS SHALL BE AT LEAST 5 TIMES THE WORKING PRESSURE OR 4 TIMES THE RELIEF VALVE SETTING.
6.	AIR RECIEVERS SHALL BE ASME AND USCG APPROVED & STAMPED
7.	COMPRESSORS SHALL BE SUPPLIED MOUNTED ON THE VERTICAL AIR RECEIVER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Title: 70.5'x30'x11' NCDOT TOWBOAT

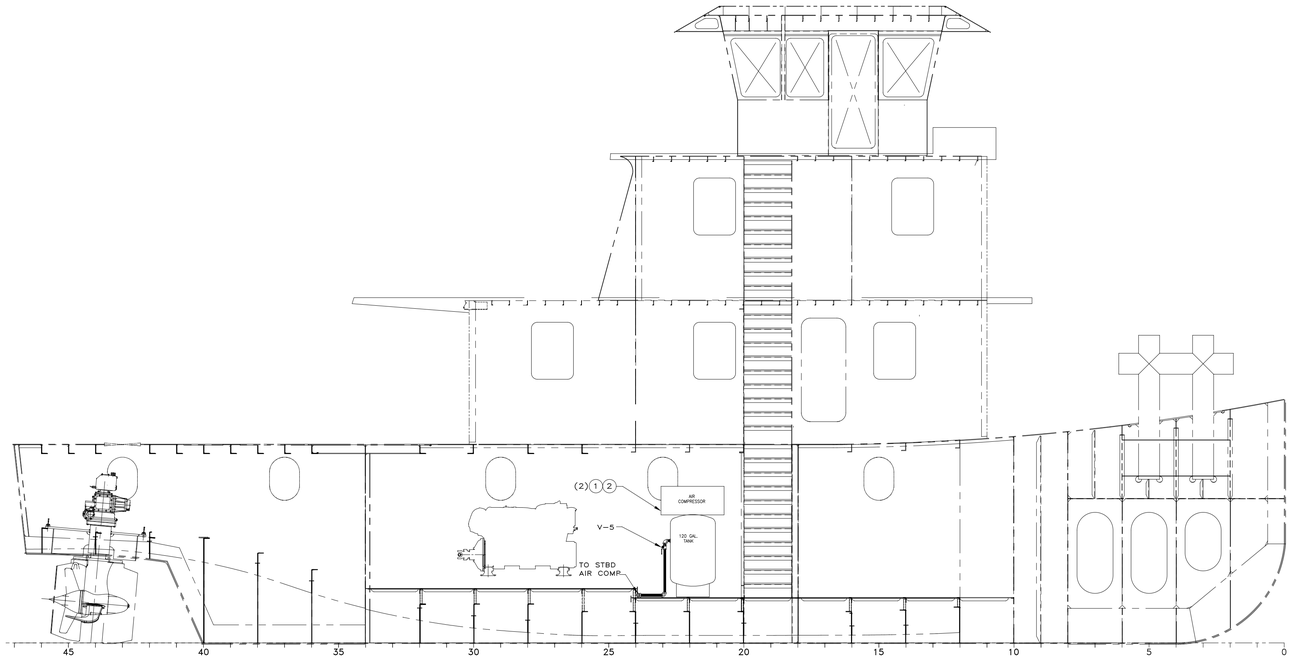
COMPRESSED AIR PIPING

Dwg. No. 17-1372-551

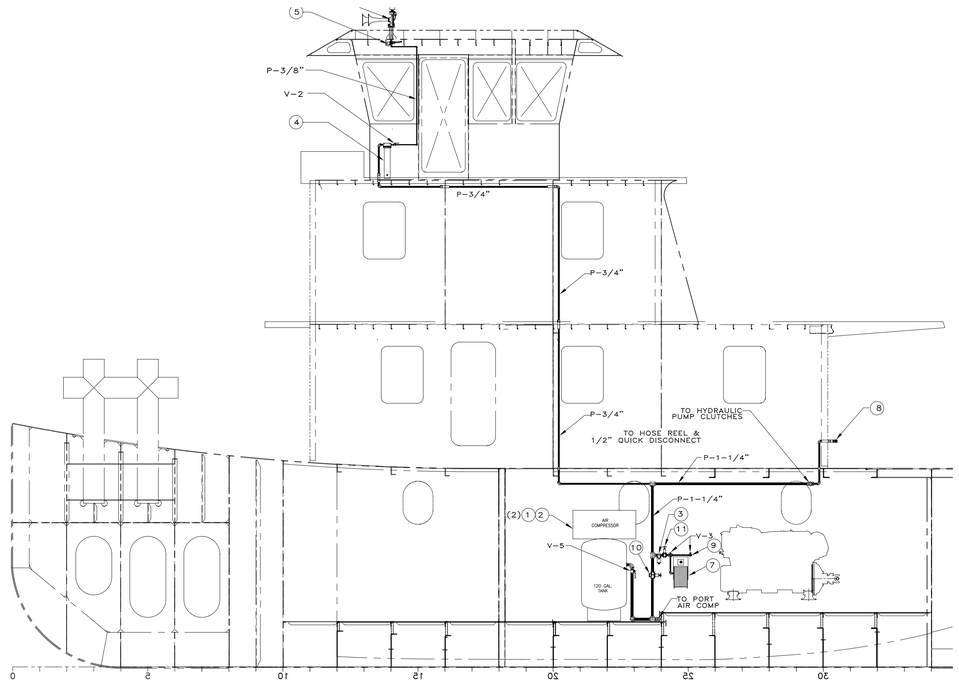
Alt. No. 1
Sht. 2 of 3

Drawn By: CHRISTOPHER DUNCAN Date: JULY 25, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: NONE
ABS App'l: _____ USCG App'l.: _____

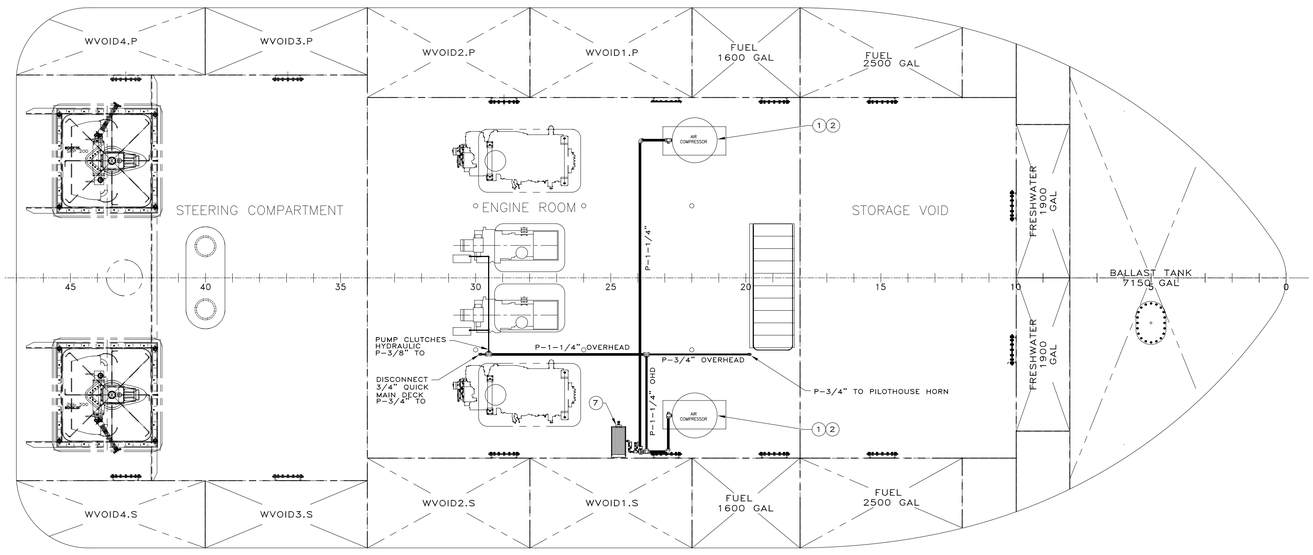
ANSI-D (24"x36")



INBOARD PROFILE LOOKING PORT



INBOARD PROFILE LOOKING STARBOARD



PLAN VIEW HOLD

	– GENERAL NOTES –
NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "M" VESSELS.
2.	PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PROVIDE TAKEDOWN JOINTS FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3.	WHERE PIPES PENETRATE BULKHEADS, OR DECKS, USE SOCKET WELD COUPLINGS FOR STEEL DECKS & BULKHEADS AND CSD STUFFING BOXES FOR ALUMINUM DECKS & BULKHEADS, SEE DETAIL 1-1A & 1-2A.
4.	PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
5.	BURSTING PRESSURE OF FLEX CONNECTIONS SHALL BE AT LEAST 5 TIMES THE WORKING PRESSURE OR 4 TIMES THE RELIEF VALVE SETTING
6.	AIR RECIEVERS SHALL BE ASME AND USCG APPROVED & STAMPED
7.	COMPRESSORS SHALL BE SUPPLIED MOUNTED ON THE VERTICAL AIR RECEIVER

COMPRESSED AIR PIPING ARRANGEMENT

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part, any of the information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

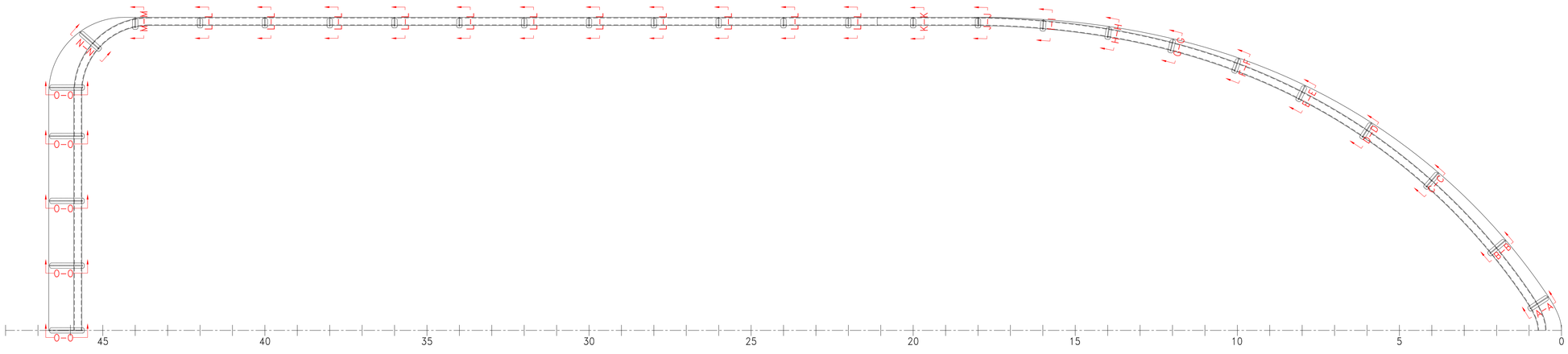
Title: 70.5'x30'x11' NCDOT TOWBOAT

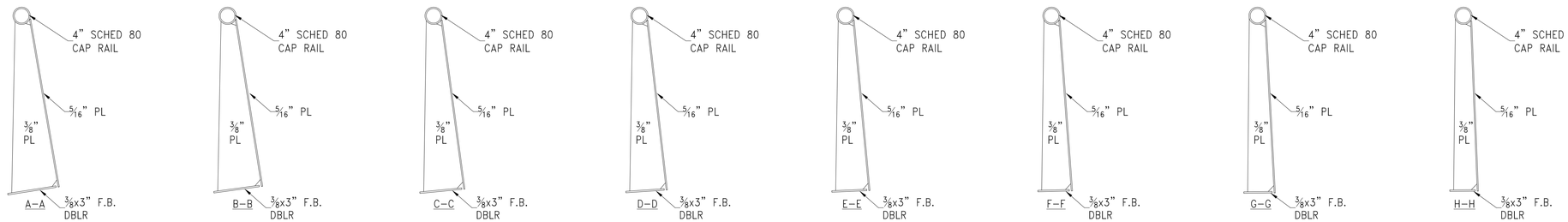
COMPRESSED AIR PIPING

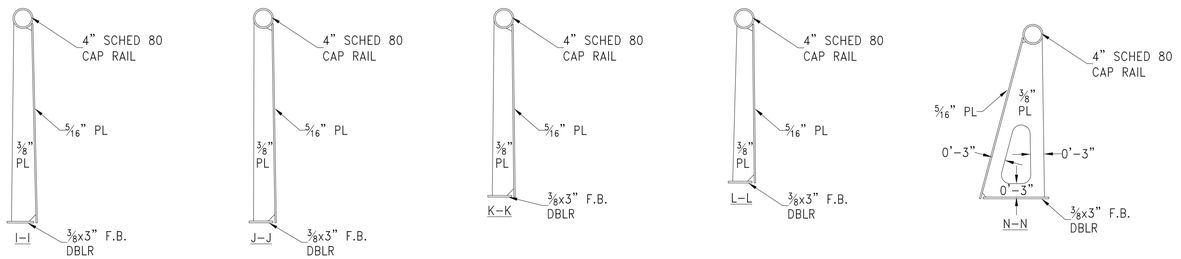
Dwg. No. 17-1372-551
Alt. No. 1
Sht. 3 of 3

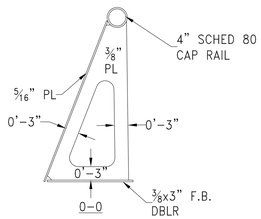
Drawn By: JAH
Date: OCT 9, 2018
Checked By:
Date:
App'd By:
Scale: NONE
ABS App'l:
USCG App'l.:

ANSI-D (24"x36")









PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

BULWARKS STRUCTURAL DETAILS

Dwg. No. 17-1372-600

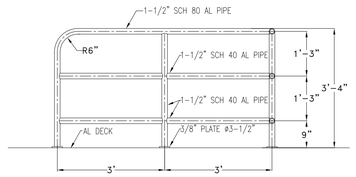
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY
Date: JUNE 05, 2018
Checked By: _____
Date: _____
App'd By: _____
Scale: ½" = 1'-0"
ABS App'l: _____
USCG App'l.: _____

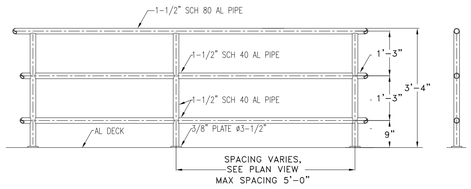
WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

ANSI-D (24"x36")

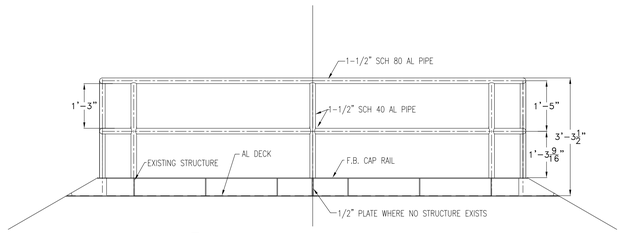
R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-110.117.120.121.131.132.133.152.153.154.182.622.dwg, 9/19/2018 1:36:55 PM, 24x36 PDF.pc3



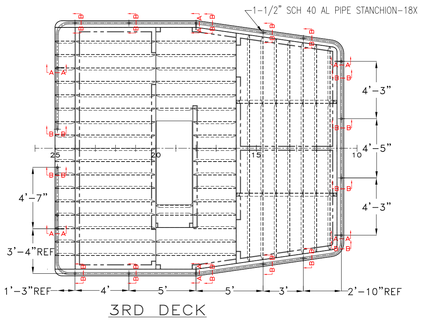
1 2ND DECK STAIR LANDING RAIL
SCALE: 1/2"=1'-0"



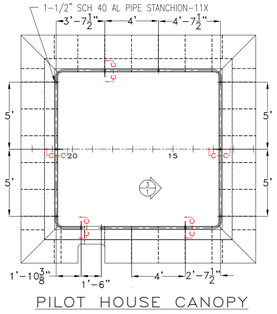
2 TYPICAL RAILING DETAIL MAIN AND 2ND DECK
SCALE: 1/2"=1'-0"



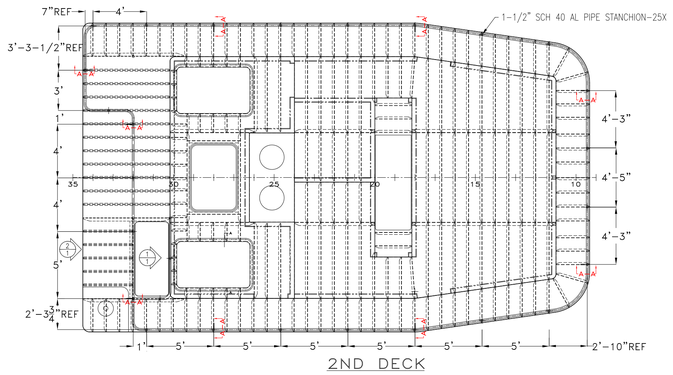
3 PILOT HOUSE ROOF RAILING DETAIL
SCALE: 1/2"=1'-0"



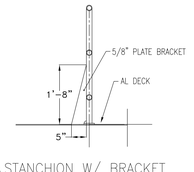
3RD DECK



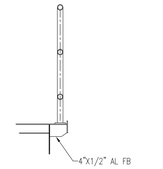
PILOT HOUSE CANOPY



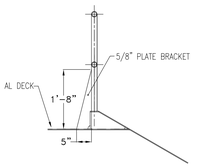
2ND DECK



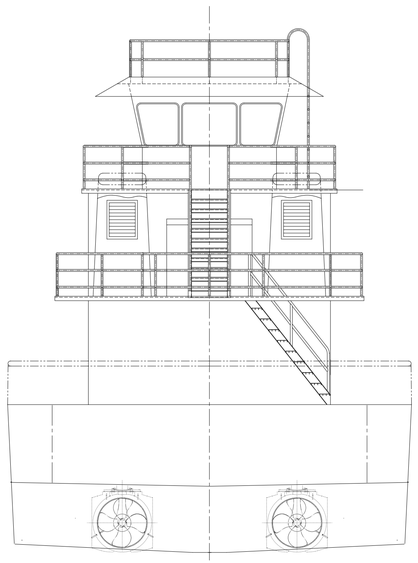
A STANCHION W/ BRACKET
SCALE: 1/2"=1'-0"



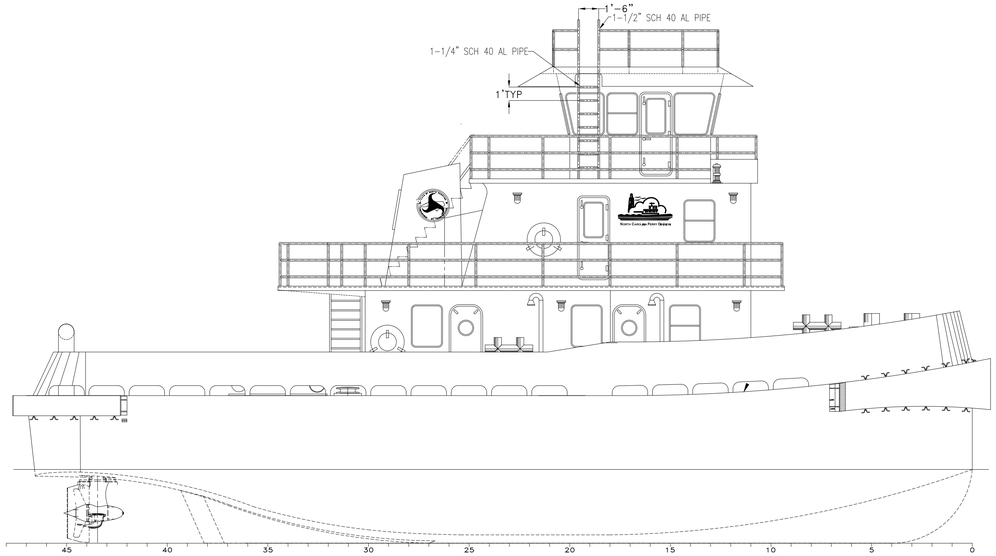
B STANCHION W/ STRUCTURE ADDED UNDER DECK
SCALE: 1/2"=1'-0"



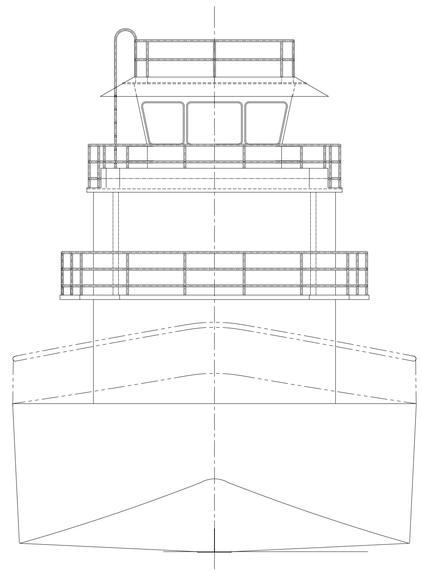
C PILOT HOUSE ROOF STANCHION W/ BRACKET
SCALE: 1/2"=1'-0"



STERN LOOKING FWD



PROFILE



BOW LOOKING AFT

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

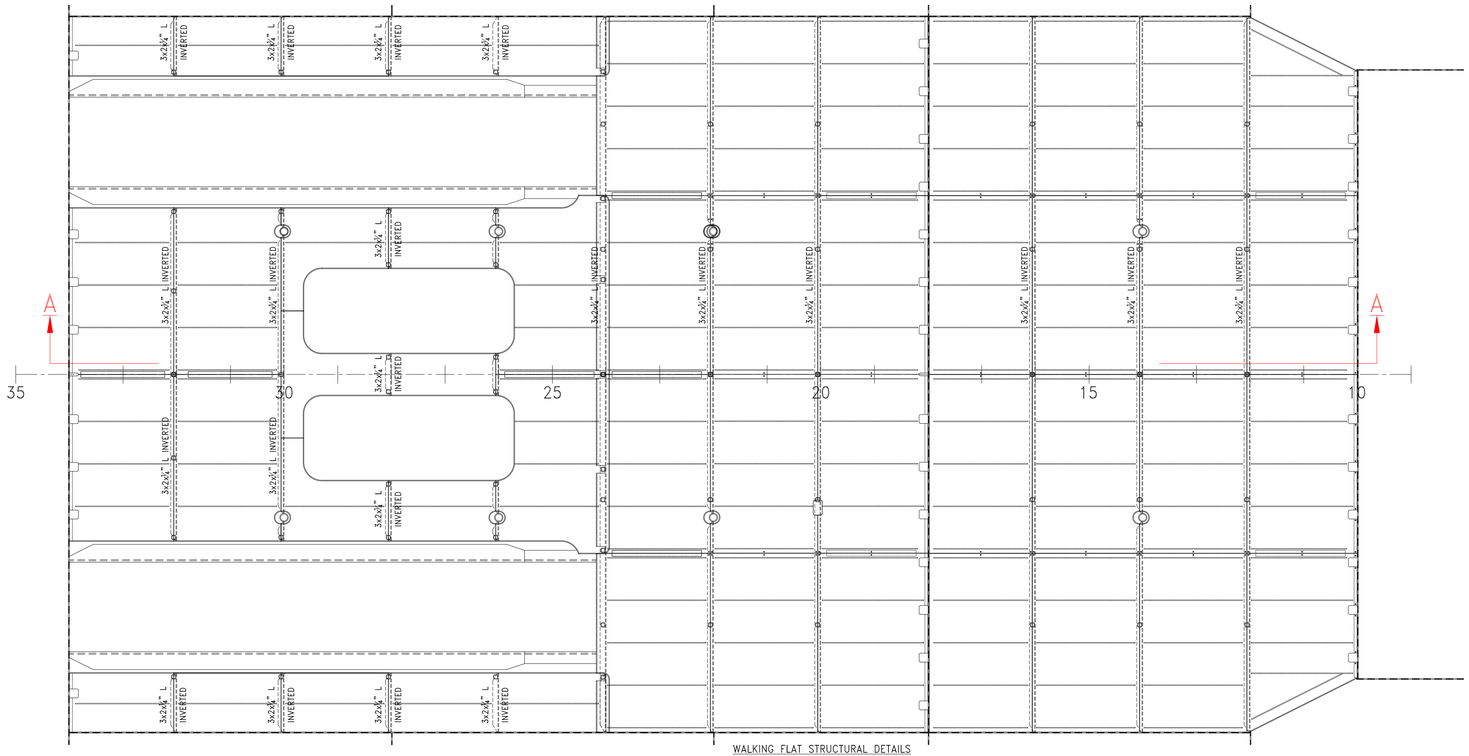
RAILS & STANCHIONS

Dwg. No. 17-1372-612
Alt. No. 0
Sht. 1 of 1

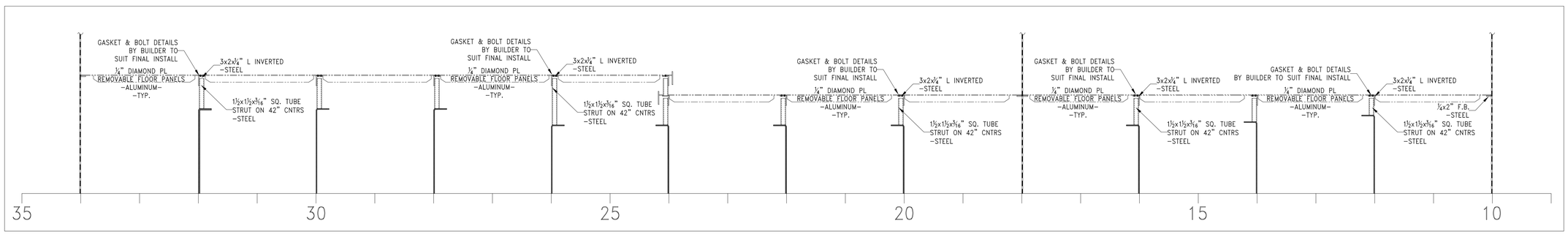
Drawn By: JAH Date: AUG 10, 2018
Checked By: Date:
App'd By: Scale: AS NOTED
ABS App'l: USCG App'l:

ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\70.5 TUG\17-1372-612.dwg, 9/20/2018 8:06:07 AM, 24x36 PDF.pc3



WALKING FLAT STRUCTURAL DETAILS
¼" PL AL. DIAMOND TREAD
W/ ¼x3" F.B. AL. STIFFS ON 16" CNTRS
REMOVABLE PANELS GASKETED & BOLTED
TO 3x2x¼" INVERTED L STEEL BEAMS



SECTION A-A
SCALE: ¾"= 1'-0"

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

BELOW DECKS
WALKING FLAT DETAILS

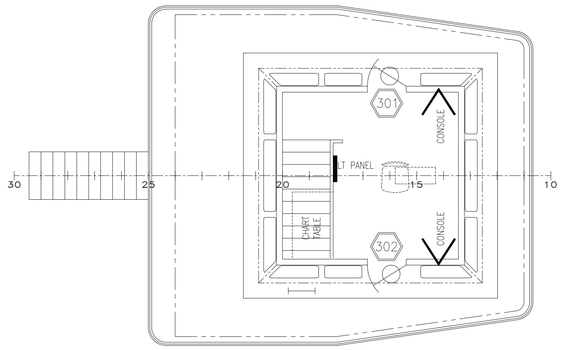
Dwg. No. 17-1372-622
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: ½" = 1'-0"
ABS App'l: USCG App'l.:

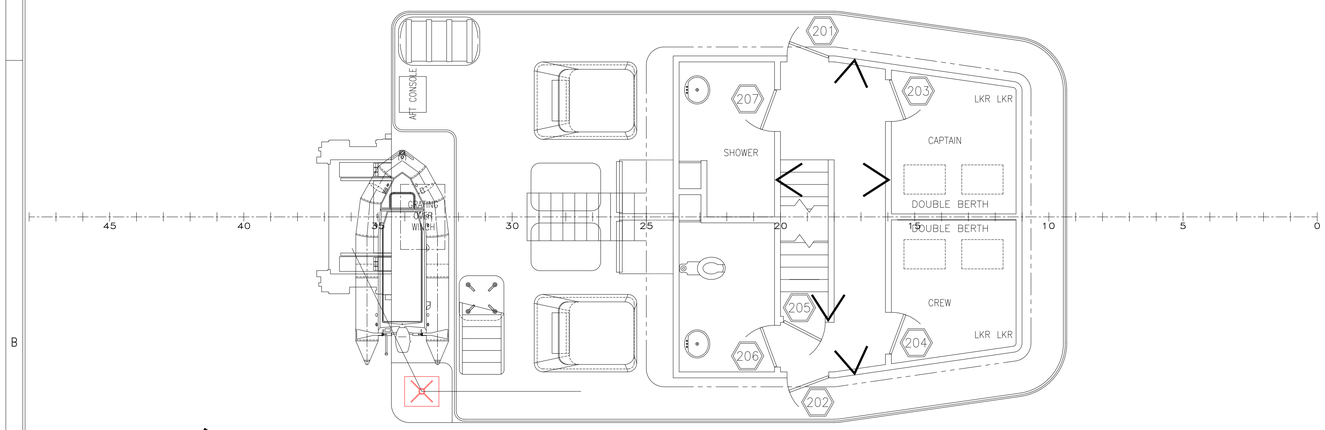
WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-110.117.120.121.131.132.133.152.153.154.182.622.dwg, 9/19/2018 1:37:42 PM, 24x36 PDF.pc3

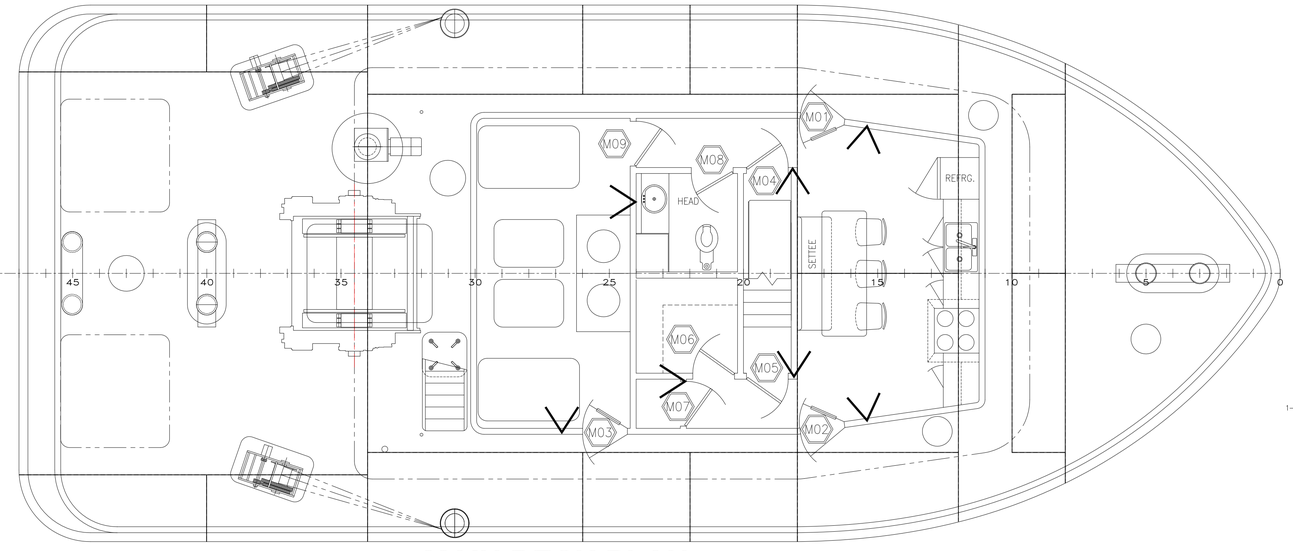


3RD DECK PLAN



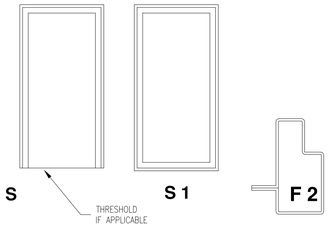
INDICATES STIFFENER SIDE OF BULKHEAD

2ND DECK PLAN



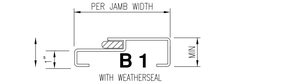
MAIN DECK PLAN

	LOCATION	FRAMES # OF PANELS	BHD. THICKS	ELEV.	HAND	FRAME TYPE	SILL TYPE	THRES-HOLD	MINIMUM CLEAR OPENING WIDTH	MINIMUM CLEAR OPENING HEIGHT	DOORS DOOR TYPE	DOORS GA.	DOORS THICK	LOUVER ROWS	LOUVER HEIGHT	FRAME OUTSIDE DIMENSIONS – NOT INCLUDING FLANGE WIDTH	FRAME OUTSIDE DIMENSIONS – NOT INCLUDING FLANGE HEIGHT	HARDWARE LOCK	HINGE SEE NOTES	CLOSER	HOLD BACKS & BUMPERS	U.S.C.G. RATING	THERMAL INSULATION	REMARKS
	MAIN DECK																							
A	**M01** FWD. PORT EXTERIOR	1			LH	–			2'-6"	5'-8"	QAWT									YES		YES	QAWT DOOR 72"x30" CLEAR OPENING, DWG #104,ALUMINUM
B	**M01** FWD. PRT. INSIDE MAHOGANY	1			RHR	–			2'-6"	5'-8"								YES	YES	YES			PLEXIGLASS 18" X 24" WINDOW, SEE GENERAL NOTES
A	**M02** FWD. STBD. EXTERIOR	1			RH	–			2'-6"	5'-8"	QAWT									YES		YES	QAWT DOOR 72"x30" CLEAR OPENING, DWG #104,ALUMINUM
B	**M02** FWD. STBD. INSIDE MAHOGANY	1			LHR	–			2'-6"	5'-8"								YES	YES	YES			PLEXIGLASS 18" X 24" WINDOW, SEE GENERAL NOTES
A	**M03** AFT. STBD. EXTERIOIR	1			RH	–			2'-6"	5'-8"	QAWT									YES		YES	QAWT DOOR 72"x30" CLEAR OPENING, DWG #104,ALUMINUM
B	**M03** AFT. STBD. INSIDE MAHOGANY	1			LHR	–			2'-6"									YES	YES	YES			PLEXIGLASS 18" X 24" WINDOW, SEE GENERAL NOTES
	M04 ENGINE ROOM STAIRS	1			RHR	F6	S	B1	2'-4"	6'-8"	F							YES	YES	YES		YES	SEE GENERAL NOTES, VAPOR PROOF SEAL, MINERAL WOOL INSUL
	M05 2ND DECK STAIRS	1			LHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	M06 PANTRY	1			LHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	M07 LOCKER	1			LHR	F3	S		2'-6"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	M08 HEAD	1			RHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	M09 E.R. EXHAUST AND VENTILATION	1			LHR	F6	S	B1	2'-4"	6'-8"	F							YES	YES	YES		YES	SEE GENERAL NOTES, VAPOR PROOF SEAL, MINERAL WOOL INSUL.
	2ND DECK																							
	201 FWD. PORT EXTERIOR	1			LHR	F6	S1		2'-4"	6'-0"	WHT							YES		YES	YES	YES	SEE GENERAL NOTES, FIBERGLASS INSULATION, W/ LITE & DOGS
	202 FWD. STBD. EXTERIOR	1			RHR	F6	S1		2'-4"	6'-0"	WHT							YES	YES	YES	YES	YES	SEE GENERAL NOTES, FIBERGLASS INSULATION, W/ LITE & DOGS
	203 CAPTAIN STATEROOM	1			RHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	204 CREW STATEROOM	1			LHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	205 PILOT HOUSE STAIRS	1			LHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	206 HEAD	1			RHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	207 SHOWER	1			LHR	F3	S		2'-4"	6'-8"	F							YES	YES	YES			SEE GENERAL NOTES
	3RD DECK																							
	301 FWD. PORT EXTERIOR	1			LH	F6	S1		2'-4"	6'-0"	WHT							YES	YES	YES		YES	SEE GENERAL NOTES, FIBERGLASS INSULATION, W/ LITE & DOGS
	302 FWD. STBD. EXTERIOR	1			RH	F6	S1		2'-4"	6'-0"	WHT							YES	YES	YES		YES	SEE GENERAL NOTES, FIBERGLASS INSULATION, W/ LITE & DOGS

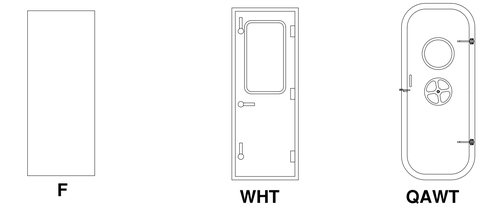


SILL TYPES

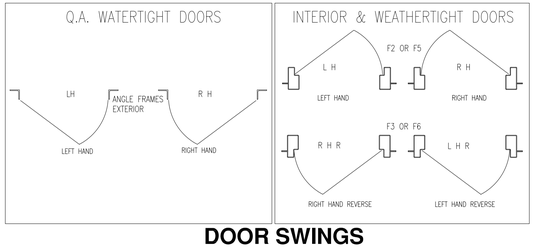
FRAME TYPE



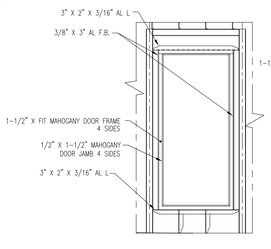
THRESHOLD TYPES



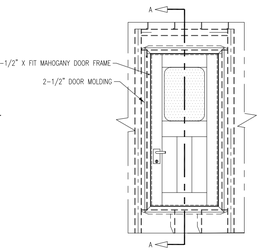
DOOR TYPES



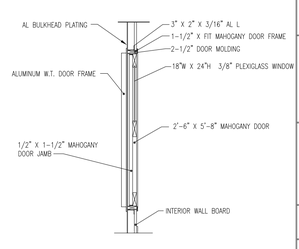
DOOR SWINGS



MAHOGANY DOOR FRAMING
M01-B, M02-B, M03-B



MAHOGANY DOOR INSTALLATION
M01-B, M02-B, M03-B



SECTION A-A

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©_____2018_____ by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

DOOR SCHEDULE

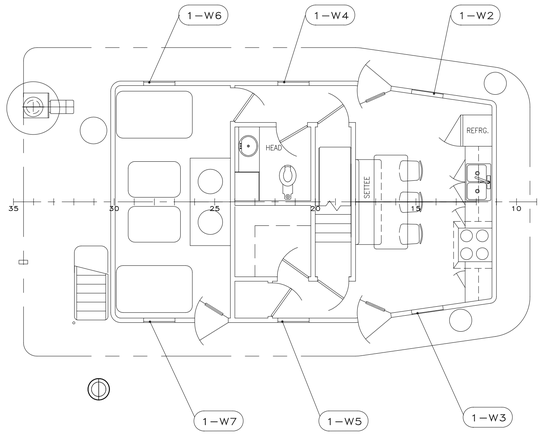
Dwg. No. 17-1372-624

Alt. No. 0
Sht. 1 of 1

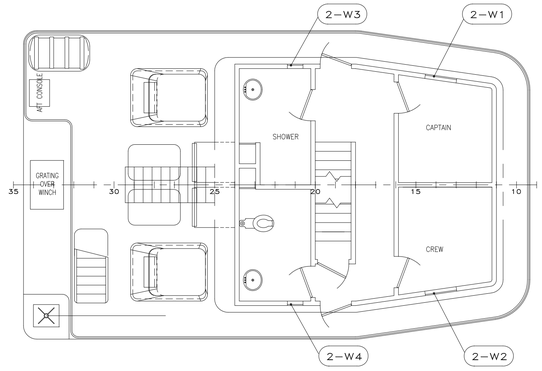
Drawn By: JAH Date: JULY 19, 2018
Checked By: Date:
App'd By: Scale: NOT TO SCALE
ABS App'l: USCG App'l.:

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-624.dwg, 9/19/2018 2:39:57 PM, 24x36 PDF.pc3

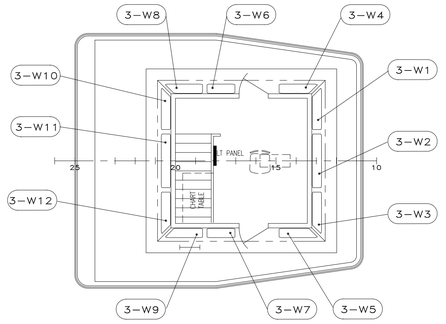
ANSI-D (24"x36")



MAIN DECK PLAN



2ND DECK PLAN



3RD DECK PLAN

WINDOW SCHEDULE

MAIN DECK

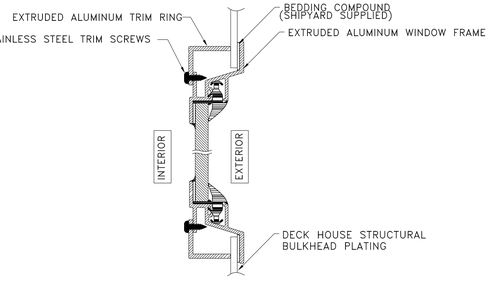
ITEM	NOMINAL SIZE (WXH)	DESCRIPTION	DECK	LOCATION	THICKNESS	CORNER RAD.	FRAME MATERIAL	REMARKS
1-W1								REMOVED
1-W2	28"X38"	WINDOW,VERTICAL SLIDING, CLAMP-IN	MAIN	GALLEY, PORT SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
1-W3	28"X38"	WINDOW, VERTICAL SLIDING, CLAMP-IN	MAIN	GALLEY, STBD SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
1-W4	28"X38"	WINDOW, FIXED, CLAMP-IN	MAIN	PASSAGEWAY, PORT SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
1-W5	28"X38"	WINDOW, FIXED, CLAMP-IN	MAIN	PASSAGEWAY, STBD SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
1-W6	28"X38"	WINDOW, FIXED, CLAMP-IN	MAIN	MACHINERY SPACE, PORT SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
1-W7	28"X38"	WINDOW, FIXED, CLAMP-IN	MAIN	MACHINERY SPACE, STBD SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS

2ND DECK

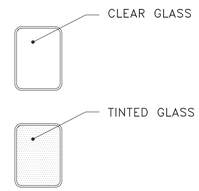
2-W1	28"X38"	WINDOW, VERTICAL SLIDING, CLAMP-IN	2ND	STATERROOM, PORT SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
2-W2	28"X38"	WINDOW, VERTICAL SLIDING, CLAMP-IN	2ND	STATEROOM, STBD SIDE	1/4"	4"	POWDER COATED ALUMINUM	TINTED GLASS
2-W3	ø12"	PORTLIGHT, WELD-IN W/ DEADLIGHT	2ND	SHOWER , PORT SIDE	3/4"	–	ALUMINUM	TINTED GLASS
2-W4	ø12"	PORTLIGHT, WELD-IN W/ DEADLIGHT	2ND	HEAD, STBD SIDE	3/4"	–	ALUMINUM	TINTED GLASS

3RD DECK

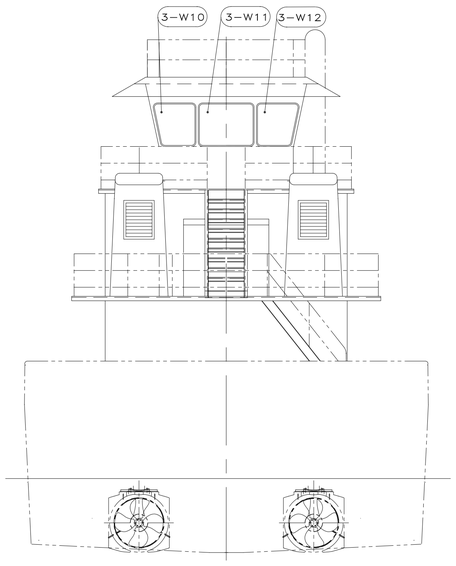
3-W1	37.5" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	FWD PILOT HOUSE , PORT	5/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W2	37.5" X 48"	WINDOW, FIXED, CLAMP-IN	3RD	FWD PILOT HOUSE, CENTER	5/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W3	37.5" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	FWD PILOT HOUSE , STBD	5/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W4	35" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	PORT SIDE PH FWD	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W5	35" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	STBD SIDE PH FWD	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W6	25" X 40.75"	WINDOW, VERTICAL SLIDING, CLAMP-IN	3RD	PORT SIDE PH CENTER	1/4"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W7	25" X 40.75"	WINDOW, VERTICAL SLIDING, CLAMP-IN	3RD	STBD SIDE PH CENTER	1/4"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W8	35" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	PORT SIDE PH AFT	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W9	35" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	STBD SIDE PH AFT	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W10	37.5" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	AFT PILOT HOUSE , PORT	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W11	37.5" X 48"	WINDOW, FIXED, CLAMP-IN	3RD	AFT PILOT HOUSE, CENTER	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS
3-W12	37.5" X 40.75"	WINDOW, FIXED, CLAMP-IN	3RD	AFT PILOT HOUSE , STBD	3/8"	4"	POWDER COATED ALUMINUM	CLEAR GLASS



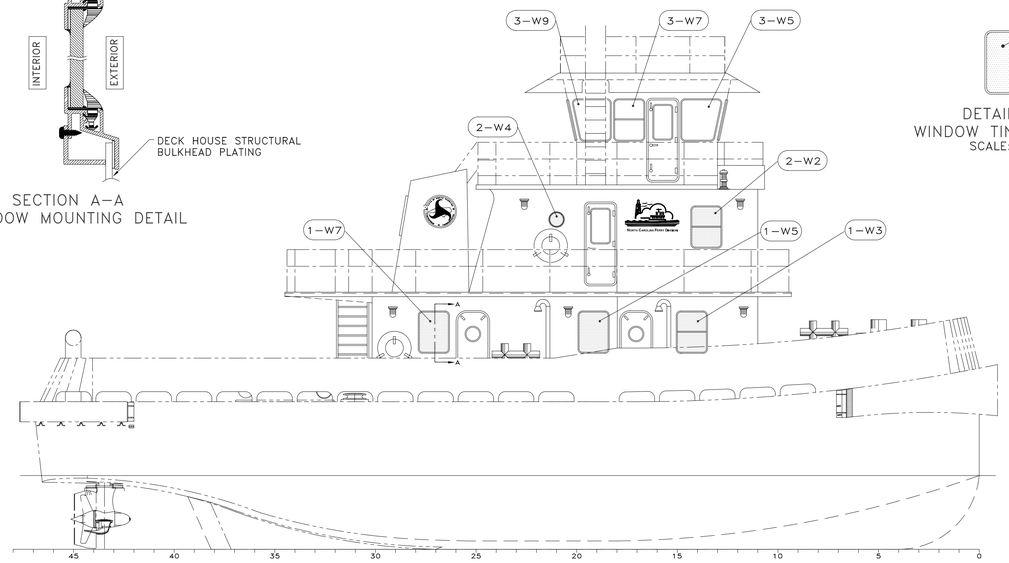
SECTION A-A
WINDOW MOUNTING DETAIL



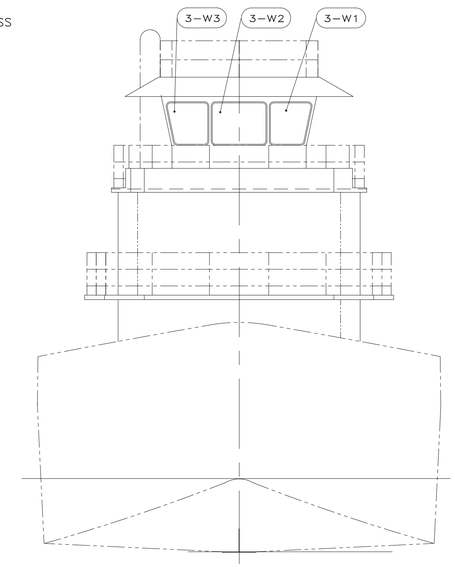
DETAIL 1-1
WINDOW TINT LEGEND
SCALE: NONE



STERN LOOKING FWD



PROFILE



BOW LOOKING AFT

NO.	– GENERAL NOTES – DESCRIPTION
1.0	VESSEL TO BE CONSTRUCTED IN ACCORDANCE WITH 46 CFR SUBCHAPTER M
2.0	ALL GLASS SHALL BE TEMPERED SAFETY GLASS
3.0	WINDOW SIZES TO BE VERIFIED WITH LOFTED PLATE CUT OUTS
4.0	SEE DETAIL 1-1 FOR WINDOW TINTING LEGEND

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

WILLIAM HAIDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

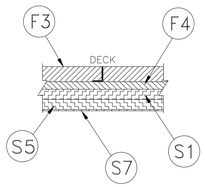
Title: 70.5'x30'x11' NCDOT TOWBOAT

WINDOW SCHEDULE

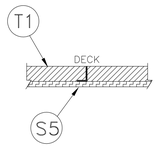
Dwg. No. 17-1372-625
Alt. No. 1
Sht. 1 of 1

Drawn By: JAH — Date: JUNE 05, 2018
Checked By: — Date:
App'd By: — Scale: 3/16" = 1'-0"
ABS App'l: — USCG App'l.:

ANSI-D (24"x36")



OVERHEAD INSULATION FOR ENGINE SPACE (A-60)



OVERHEAD INSULATION FOR FWD VOID OVERHEAD

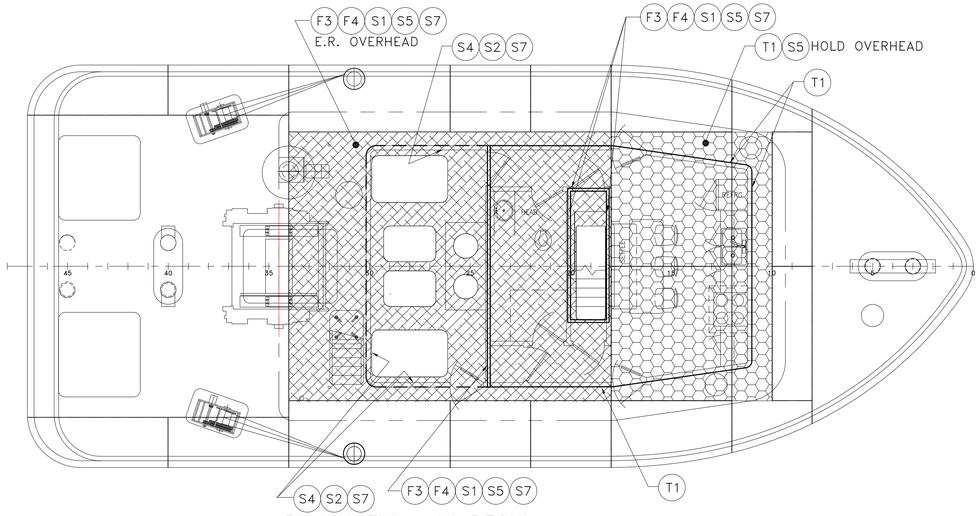
LEGEND

FIRE INSULATION (F) — (BULKHEADS) — (DECKS)

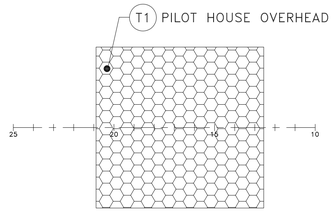
SOUND INSULATION (S) — (BULKHEADS) — (DECKS)

FIRE & SOUND INSULATION — (BULKHEADS) — (DECKS)

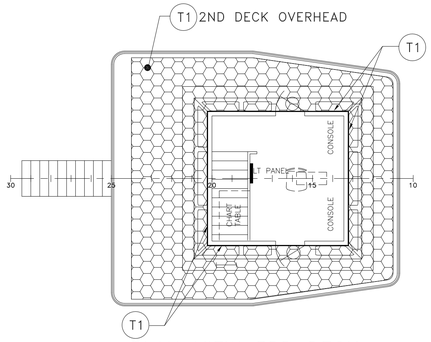
THERMAL INSULATION (T) — (BULKHEADS) — (DECKS)



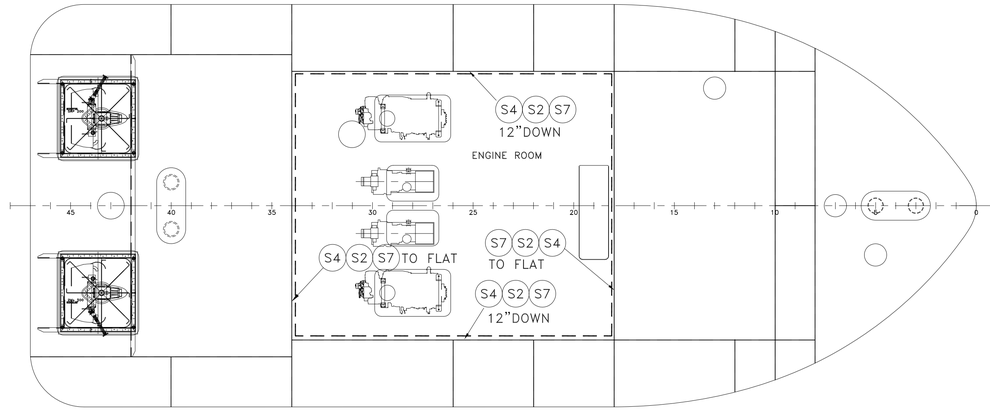
PLAN VIEW MAIN DECK



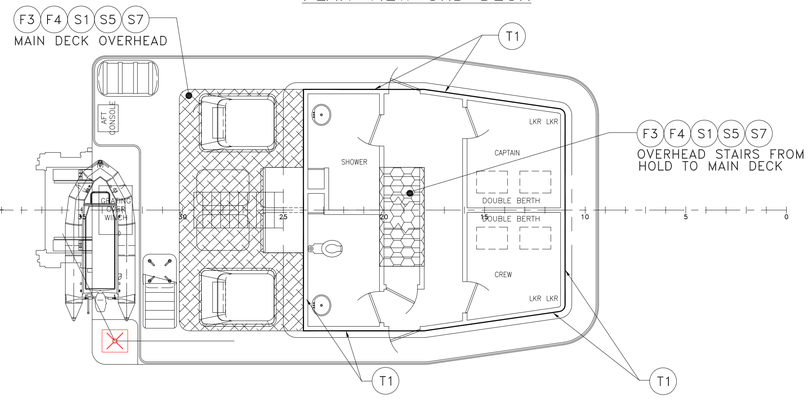
PLAN VIEW P.H. OVERHEAD



PLAN VIEW 3RD DECK



PLAN VIEW HULL



PLAN VIEW 2ND DECK

BILL OF MATERIALS

SYMBOL

(BULKHEADS) (DECKS)

FIRE INSULATION / A-60

(ALL TO MEET U.S.C.G. 164.007 REQUIREMENTS EXCEPT (F2) WHICH IS TO MEET U.S.C.G. 164.008 REQUIREMENT)

- (F2) THERMAX / 3/4" THICK FIRE SHEATHING. (OR EQUAL) B-15 PANEL.
- (F3) 3" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD.
- (F4) 1-1/2" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD WITH LEAD FACING.
- (F5) 1-1/2" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD WITH FIBERGLASS CLOTH FACING.
- (F6) 3" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD WITH FIBERGLASS CLOTH FACING.
- (F7) 1-1/2" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD.
- (F8) 1-1/2" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD WITH MYLAR FACING.
- (F10) 3" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD WITH MYLAR FACING.
- (F11) 2" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD.
- (F12) 1" THICK 8.0 P.C.F. DELTA MARINE MINERAL WOOL MARINE BOARD.

(BULKHEADS) (DECKS)

SOUND INSULATION (TO MEET U.S.C.G. 164.009 REQUIREMENTS)

- (S1) 2" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD.
- (S2) 2" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD WITH MYLAR FACING
- (S3) 2" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD WITH GROOVED SURFACE & PERFERATED FIBERGLASS FACING.
- (S4) 2" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD WITH LEAD FACING.
- (S5) 1" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD WITH MYLAR FACING.
- (S6) 1" THICK 2.9 P.C.F. "JOHNS MANVILLE" HULLBOARD.
- (S7) 18 GAGE PERFORATED ALUMINUM SHEET

(BULKHEADS) (DECKS)

THERMAL INSULATION (TO MEET U.S.C.G. 164.009 REQUIREMENTS)

- (T1) 3" THICK UNFACED MINERAL WOOL INSUALTION 2.5 P.C.F., "JOHNS MANVILLE" OR EQUAL

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
Info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

INSULATION SCHEDULE: THERMAL, ACCOUSTIC & FIRE MAIN & HOLD DECKS

Dwg. No. 17-1372-635

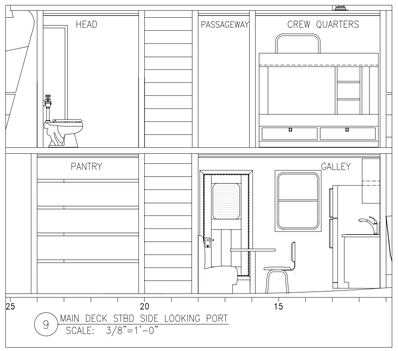
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY — Date: JUNE 05, 2018
Checked By: — Date:
App'd By: — Scale: 1/4" = 1'-0"
ABS App'l: — USCG App'l.:

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

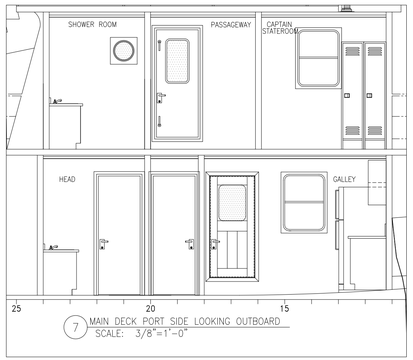
ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-635.dwg, 9/19/2018 2:41:14 PM, 24x36 PDF.pc3



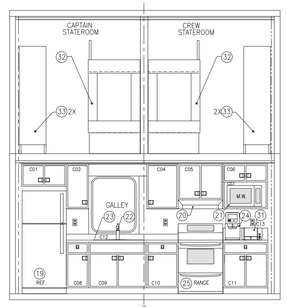
8 2ND DECK STBD SIDE LOOKING PORT
SCALE: 1/4"=1'-0"

9 MAIN DECK STBD SIDE LOOKING PORT
SCALE: 3/8"=1'-0"



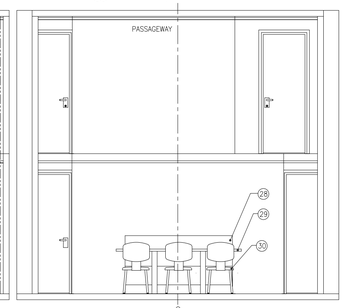
10 2ND DECK PORT SIDE LOOKING OUTBOARD
SCALE: 1/4"=1'-0"

7 MAIN DECK PORT SIDE LOOKING OUTBOARD
SCALE: 3/8"=1'-0"



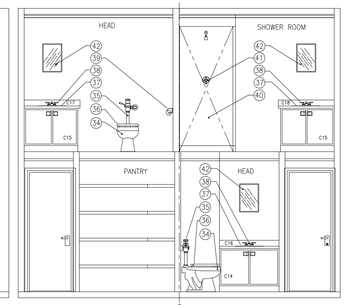
2 2ND DECK STATEROOMS FWD ELEVATION
SCALE: 3/8"=1'-0"

1 MAIN DECK GALLEY LOOKING FWD
SCALE: 3/8"=1'-0"



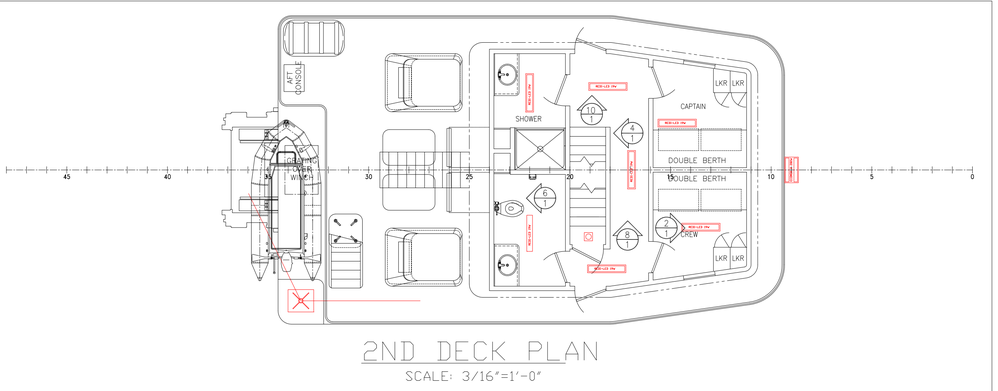
4 2ND DECK FRAME 17 LOOKING AFT
SCALE: 3/8"=1'-0"

3 MAIN DECK GALLEY LOOKING AFT
SCALE: 3/8"=1'-0"

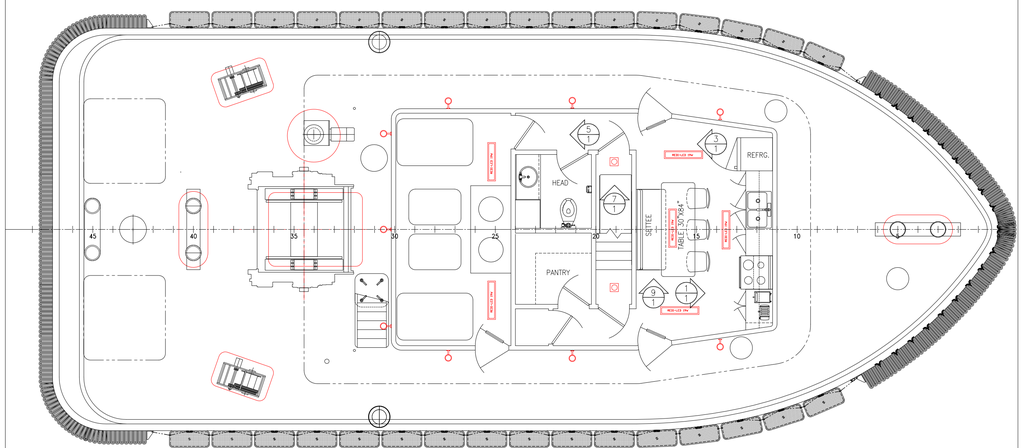


6 2ND DECK FRAME 21 LOOKING AFT
SCALE: 3/8"=1'-0"

5 MAIN DECK FRAME 21 LOOKING AFT
SCALE: 3/8"=1'-0"



2ND DECK PLAN
SCALE: 3/16"=1'-0"



MAIN DECK PLAN
SCALE: 3/16"=1'-0"

BILL OF MATERIALS

CABINET SCHEDULE

ITEM	QTY.	DESCRIPTION	WIDTH	DEPTH	HEIGHT	LOCATION	MATERIAL	MANUFACTURER #	REMARKS
C01	1	WALL CABINET, REFRIGATOR	30"	12"	15"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C02	1	WALL CABINET	15"	12"	30"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C03	1	PANEL, OVER SINK	39"	1"	24"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C04	1	WALL CABINET	21"	12"	8"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C05	1	WALL CABINET, OVER RANGE	30"	12"	24"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C06	1	WALL CABINET	30"	12"	12"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C07	1	SHELF, MICROWAVE	30"	12"	18"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C08	1	BASE CABINET	15"	24"	34.5"	GALLEY	STAINLESS STEEL		DOOR& DRAWER LATCHES
C09	1	BASE CABINET, SINK	39"	24"	34.5"	GALLEY	STAINLESS STEEL		DOOR LATCHES
C10	1	BASE CABINET	21"	24"	34.5"	GALLEY	STAINLESS STEEL		DOOR& DRAWER LATCHES
C11	1	BASE CABINET	30"	24"	34.5"	GALLEY	STAINLESS STEEL		DOOR& DRAWER LATCHES
C12	1	COUNTER TOP	75"	25.5"	1.5"	GALLEY	STAINLESS STEEL		WITH BACKSPLASH
C13	1	COUNTER TOP	FIT	25.5"	1.5"	GALLEY	STAINLESS STEEL		WITH BACKSPLASH
C14	1	BASE CABINET	FIT	21"	29"	HEAD, M.D.	STAINLESS STEEL		DOOR LATCHES
C15	2	BASE CABINET	36"	21"	29"	2ND DECK HEAD & SHOWER	STAINLESS STEEL		DOOR LATCHES
C16	1	COUNTERTOP	FIT	22.5"	1.5"	HEAD, M.D.	STAINLESS STEEL		WITH BACK SPLASH
C17	1	COUNTERTOP	37.5"	22.5"	1.5"	HEAD, 2ND DECK	STAINLESS STEEL		WITH BACK SPLASH
C18	1	COUNTERTOP	37.5"	22.5"	1.5"	SHOWER	STAINLESS STEEL		WITH BACK SPLASH

FIXTURE & EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	LOCATION	FINISH	MANUFACTURER #	REMARKS
19	1	REFRIGERATOR, 20.8 CUBIC FT	GALLEY	STAINLESS STEEL		W/ ICE MAKER
20	1	HOOD	GALLEY	STAINLESS STEEL		
21	1	MICROWAVE, 1.6 CU FT, 1150W	GALLEY	STAINLESS STEEL		
22	1	FAUCET, KITCHEN, SINGLE HANDLE	GALLEY	STAINLESS STEEL		
23	1	KITCHEN SINK, 33"X22"X8"	GALLEY	STAINLESS STEEL		
24	1	COFFEE MAKER	GALLEY			STAINLESS STEEL DECANTER
25	1	RANGE	GALLEY	STAINLESS STEEL		
26	1	BASE CABINET	GALLEY	STAINLESS STEEL		DOOR& DRAWER LATCHES
27	1	BASE CABINET, SINK	GALLEY	STAINLESS STEEL		DOOR LATCHES
28	1	SETTEE, 72" LONG X 36" HIGH	GALLEY	BLACK VINYL		
29	1	TABLE, 84" X 30"	GALLEY	STAINLESS STEEL		TABLE BASES.COM
30	3	CHAIR	GALLEY	BLACK PAINTED STEEL & FABRIC		
31	1	TOASTER, 4 SPLICE	GALLEY	STAINLESS STEEL		
32	2	BUNK, DOUBLE, 32"W X 80"L	STATEROOMS	STAINLESS STEEL OR ENAMELED STEEL		W/ CURTAINS
33	4	LOCKER, 15"W X 18"D X 72"H	STATEROOMS	ENAMELED STEEL, GRAY		
34	2	TOILET, ELONGATED,	HEADS	CERMAMIC		
35	2	VALVE, FLUSH	HEADS	CHROME PLATED BRASS		
36	2	SEAT, TOILET, COMMERCIAL	HEADS	POLYSTYRENE SS HINGE		
37	3	LAVATORY	HEADS & SHOWER	STAINLESS STEEL		
38	3	FAUCET, LAVATORY	HEADS & SHOWER	CHROME PLATED BRASS		
39	2	HOLDER, TOILET PAPER ROLL	HEADS	STAINLESS STEEL		COMMERCIAL GRADE
40	1	SHOWER STALL	SHOWER	STAINLESS STEEL OR FIBERGLASS		
41	1	VALVE, SHOWER	SHOWER	CHROME PLATED BRASS		
42	1	MIRROR, 12" X 18" , COMMERCIAL	HEADS & SHOWER	STAINLESS STEEL FRAME		

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

© 2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

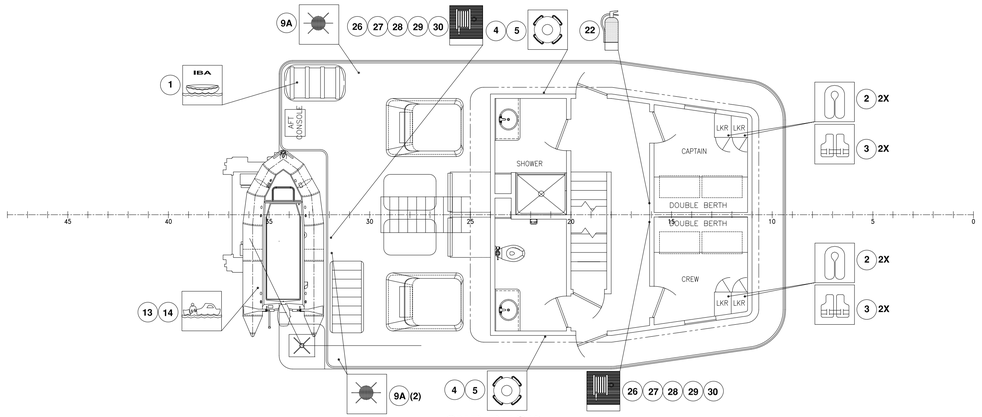
CREW GALLEY, STATEROOMS & RESTROOMS

Dwg. No. 17-1372-655

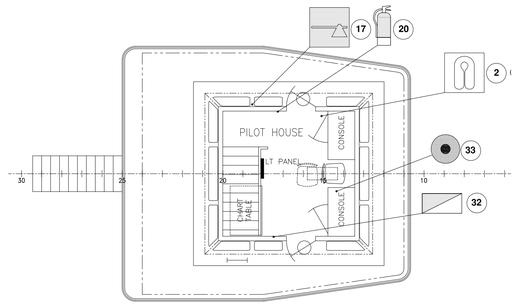
Alt. No. 0
Sht. 1 of 1

Drawn By: JAH Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: SEE DWG
ABS App'l: USCG App'l.:

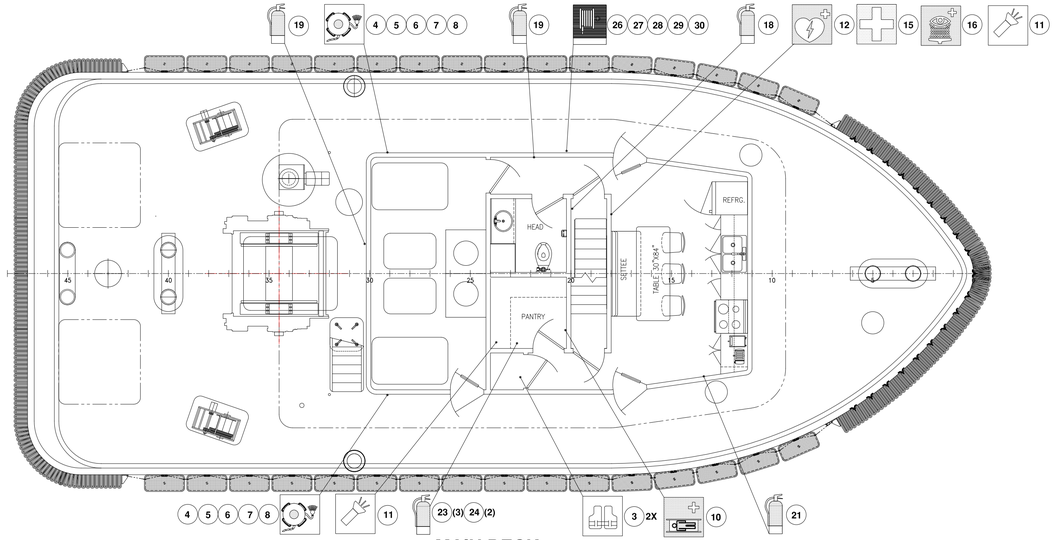
WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER



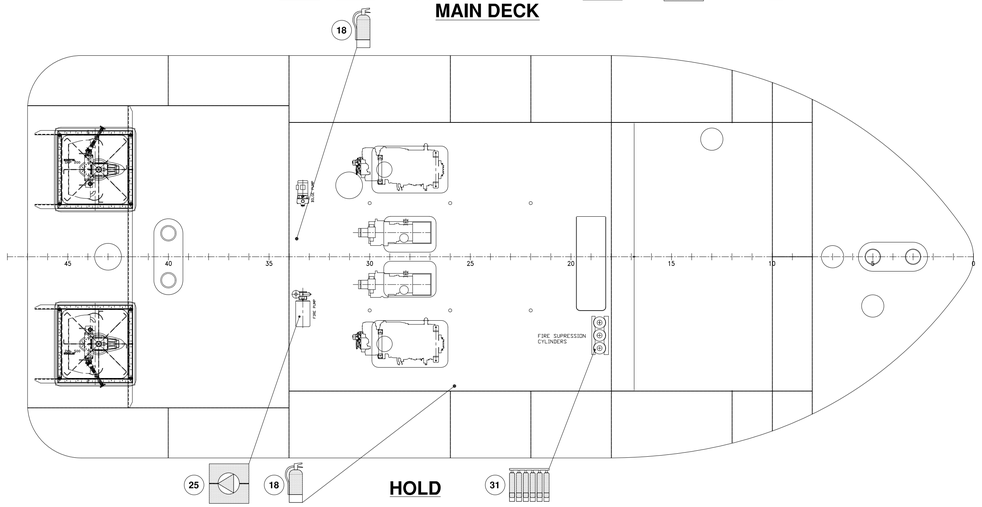
2ND DECK



3RD DECK



MAIN DECK



HOLD

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	INFLATABLE BOUYANT APPARATUS
	LIFE PRESERVERS, ADULT
	ADULT WORK VEST
	30" LIFE RING
	30" LIFE RING W/ ROPE & WATERLIGHT
	PLYWOOD BACK BOARD FOR RESCUE
	DEFIBRILLATOR
	RESCUE BOAT
	FIRE AXE
	FIRE EXTINGUISHER
	FIRE PUMP
	FIRE HOSE STATION W/ RACK, VALVE, HOSE AND NOZZLE
	FIXED FIRE EXTINGUISHING SYSTEM
	FIRE DETECTION SYSTEM CONTROL PANEL
	FIRST AID KIT
	EYE WASH STATION
	GENERAL ALARM CONTACT MAKER
	GENERAL ALARM CONTACT MAKER
	LIFE RAFT AND RESCUE BOAT FLOOD LIGHT W/ LOCAL SWITCH

EQUIPMENT LIST

LIFE SAVING EQUIPMENT

ITEM	QTY.	DESCRIPTION	LOCATION	PART NUMBER	MANUFACTURER	REMARKS
1	1	INFLATABLE BOUYANT APPARATUS	2ND DECK AFT			
2	6	LIFE PRESERVERS, ADULT	SEE DWG			
3	6	ADULT WORK VEST	SEE DWG			
4	4	LIFE RING, 30"	SEE DWG			
5	4	BRACKET, LIFE RING	SEE DWG			
6	100 FT	ROPE,ORANGE, POLYETHYLENE, 5/16"	MAIN DECK			50' PER LIFE RING
7	2	LIGHT, MAN OVERBOARD	MAIN DECK			
8	2	BRACKET, MAN OVERBOARD LT	MAIN DECK			
9	12 FT	ROPE, ORANGE, POLYETHYLENE, 5/16"	SEE DWG			6 FT PER LIGHT
9A	3	12 VOLT IBA & RESCUE BOAT FLOODLIGHT W/ LOCAL SWITCH	SEE DWG			

RESCUE EQUIPMENT

ITEM	QTY.	DESCRIPTION	LOCATION	PART NUMBER	MANUFACTURER	REMARKS
10	1	PLYWOOD BACKBOARD	PANTRY			RESCUE STRETCHER
11	2	3 CELL FLASHLIGHT	PANTRY/GALLEY			MOUNTING BRACKET W/ GALLEY FLASHLIGHT
12	1	DEFIBRILLATOR, PORTABLE	GALLEY			
13	1	BOAT, RESCUE, 14'-RIGID INFLATABLE	2ND DECK AFT			
14	1	OUTBOARD, 15 HP, FOUR STROKE	2ND DECK AFT			
15	1	FIRST AID KIT	GALLEY			
16	1	EYE WASH STATION	GALLEY			

FIRE SAFETY EQUIPMENT

ITEM	QTY.	DESCRIPTION	LOCATION	PART NUMBER	MANUFACTURER	REMARKS
17	2	AXE, FIRE	SEE DWG			W/ MOUNTING BRACKETS
18	3	FIRE EXTINGUISHER, 15# ABC TYPE II	ENGINE ROOM E.R. ACCESS TRUNK			W/ MOUNTING BRACKETS
19	2	FIRE EXTINGUISHER, 15# ABC TYPE II	MAIN DECK			W/ MOUNTING BRACKETS
20	1	FIRE EXTINGUISHER, 10# ABC TYP. II	PILOTHOUSE			W/ MOUNTING BRACKETS
21	1	FIRE EXTINGUISHER, 10# ABC TYP. II	GALLEY			W/ MOUNTING BRACKETS
22	1	FIRE EXTINGUISHER, 10# ABC TYP. II	2ND DECK PASSAGEWAY			W/ MOUNTING BRACKETS
23	3	FIRE EXTINGUISHER, 15# ABC TYPE II	FORWARD VOID SPARES			W/ MOUNTING BRACKETS
24	2	FIRE EXTINGUISHER, 10# ABC TYP. II	FORWARD VOID SPARES			W/ MOUNTING BRACKETS
25	1	FIRE PUMP, 50 PSI @ 80 GPM	ENGINE ROOM			
26	3	FIRE HOSE ENCLOSURE	SEE DWG			STAINLESS STEEL
27	3	FIRE HOSE, UL, 19, 50', 1.5"	SEE DWG			
28	3	ANGLE HOSE VALVE, BRASS, 1.5"	SEE DWG			
29	3	COMBINATION NOZZLE, 1.5"	SEE DWG			
30	3	SPANNER WRENCH, UNIVERSAL	SEE DWG			
31	1	FIXED FIRE EXTINGUISHING SYSTEM	ENGINE ROOM			
32	1	FIRE DETECTION SYSTEM	PILOT HOUSE			USCG TYPE APPROVED
33	1	GENERAL ALARM CONTACT MAKER	PILOT HOUSE			

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.
Naval Architects
Marine Engineers
Consultants
Surveyors
1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com
Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

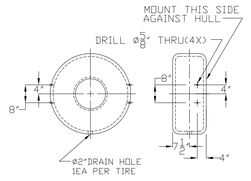
Title: 70.5'x30'x11' NCDOT TOWBOAT

LIFE, EMERGENCY & FIRE FIGHTING EQUIPMENT

Dwg. No. 17-1372-680
Alt. No. 1
Sht. 1 of 1

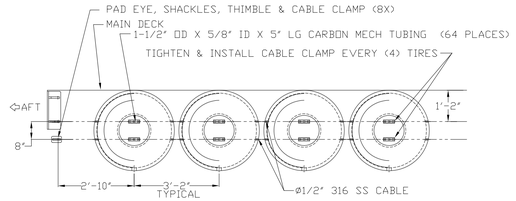
Drawn By: JACOB CONNALLY
Checked By:
App'd By:
ABS App'l:
Date: JUNE 05, 2018
Date:
Scale: 3/16" = 1'-0"
USCG App'l.:

ANSI-D (24"x36")



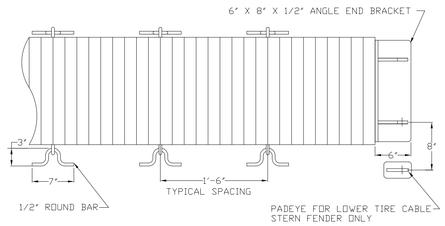
TIRE HOLE DETAIL "B"

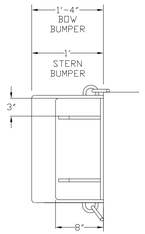
SIZE: H40 X 16-14
DIMENSIONS: 36"H X 15"W X 13.5" RIM
WEIGHT: 140 LBS
SCALE: 3/8" = 1'-0"

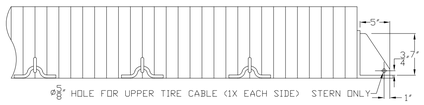


SIDE SHELL TIRES DETAIL "A"

32 EACH (16 PER SIDE)
36"H X 15"W X 13.5 RIM
SCALE: 3/8" = 1'-0"

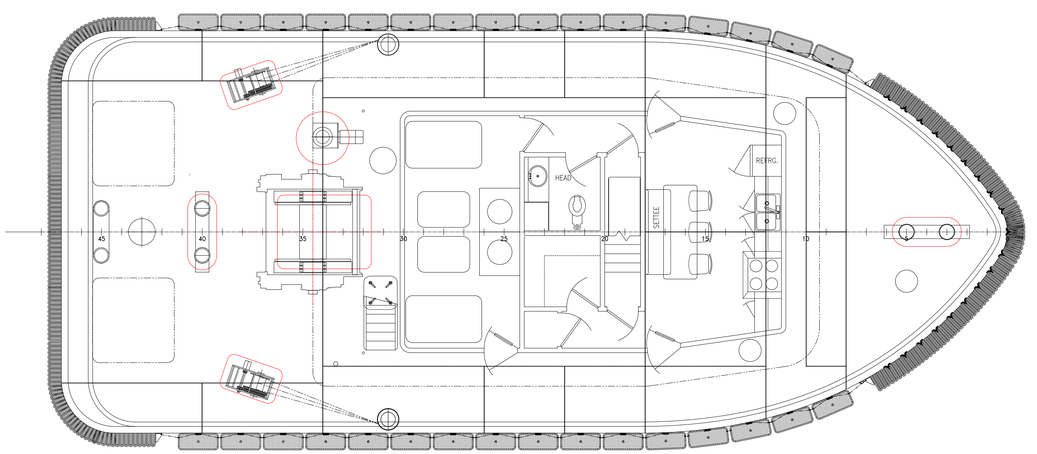






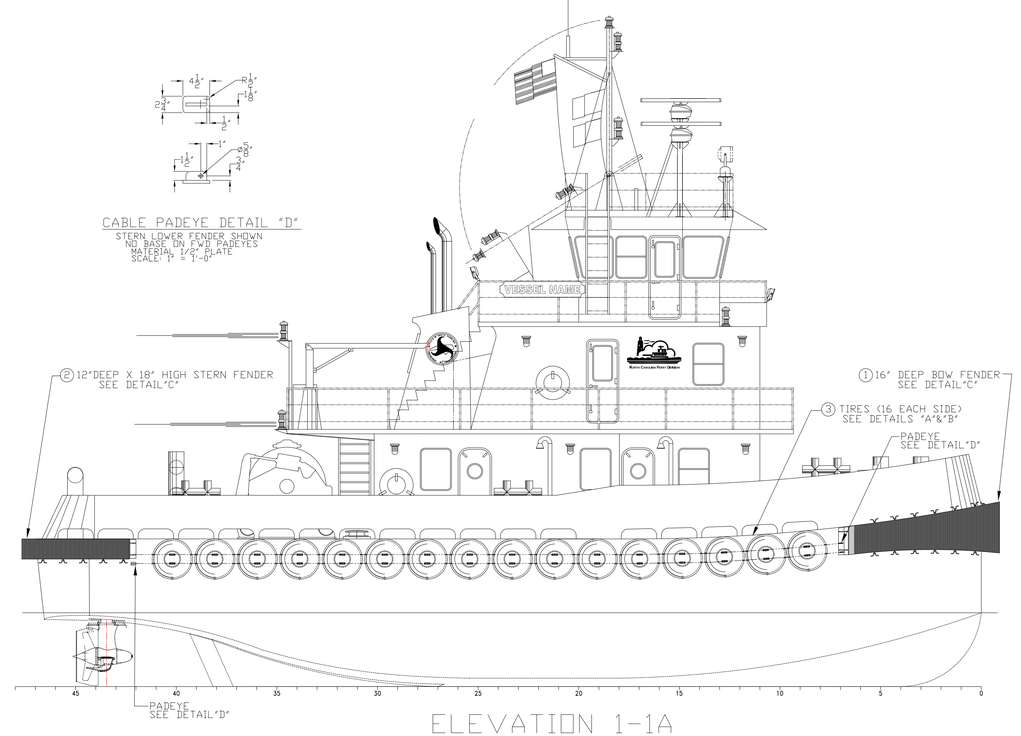
BOW AND STERN FENDER DETAIL "C"

STERN FENDER SHOWN
SCALE: 1" = 1'-0"



CABLE PADEYE DETAIL "D"

STERN LOWER FENDER SHOWN
NO BASE ON FWD PADEYES
MATERIAL 1/2" PLATE
SCALE: 1" = 1'-0"



ELEVATION 1-1A

OUTBOARD PROFILE

SCALE: 3/16"=1'-0"

BILL OF MATERIALS

BUMPERS & TIRE SCHEDULE

ITEM	QTY.	DESCRIPTION	MANUFACTURER #	REMARKS
1	AR	FENDER, BOW, 16" DEEP, CHAIN LINK HANGER		OR EQUAL
2	AR	FENDER, STERN , 12" DEEP X 18" HIGH, CHAIN LINK HANGER		OR EQUAL
3	32	TIRE, AIRCRAFT, 40 X 16-14, 36"HX15"WX13.5"RIM		

NO.	- GENERAL NOTES - DESCRIPTION
1.	STRUCTURAL STEEL TO MEET ABS GRADE A. STANDARDS
2.	UNBRACKETED STIFFNERS OF SHELL, WATERTIGHT AND OILTIGHT BHDS AND HOUSE FRONTS ARE TO HAVE DOUBLE CONT. WELDS FOR 1/10 OF THEIR LENGTH AT EACH END.
3.	UNBRACKETED STIFFNERS OF NONTIGHT STRUCTURAL BHDS, DECKHOUSE SIDES AND AFTER ENDS ARE TO HAVE A PAIR OF MATCHING INTERMITTENT WELDS AT EACH END.
4.	THE WELDING OF LONGITUDINALS MAY BE AS REQ. UNDER FRAMES OR DECKS ABOVE. IN ADDITION, THEY ARE TO HAVE DOUBLE CONTINUOUS WELDS AT THE END AND IN WAY OF TRANSVERSES EQUAL IN LENGTH TO THE DEPTH OF THE LONGITUDINAL FOR DECK LONGITUDINALS ONLY A MATCHED PAIR OF WELDS IS REQ. AT THE TRANSVERSES. FOR SLAB LONGITUDINALS THE ATTACHMENT IS TO BE MADE DOUBLE CONTINUOUS FILLET WELDS OF A SIZE w WHICH IS 0.3 TIMES THE THICKNESS OF THE THINNER PLATE BUT NEED NOT BE GREATERS THAN 5/16 IN.
5.	SHIPYARD TO PROVIDE RATHOLES, SNIPES & CUTOUTS TO ALLOW FOR . ADEQUATE DRAINAGE TO THE BILGE AT CENTERLINE.

PROPRIETARY RIGHTS

This document discloses matter in which DeJong & Lebet, Incorporated has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce, disclose or use in any manner this document in whole or in part or any information contained therein, except by written permission, or written agreement with DeJong & Lebet, Incorporated.

In the event of a purchase of this document the purchaser is authorized to construct no more than one device in accord herewith, unless otherwise agreed to in writing by DeJong & Lebet, Incorporated.

©2018 by DeJong & Lebet, Inc.

DeJong & Lebet, Inc.

Naval Architects
Marine Engineers
Consultants
Surveyors

1734 Emerson Street
Jacksonville, Florida 32207
www.dejongandlebet.com

Phone: (904) 399-3673
Fax: (904) 399-1522
info@dejongandlebet.com

Title: 70.5'x30'x11' NCDOT TOWBOAT

RUBBER FENDER & TIRE LAYOUT

Dwg. No. 17-1372-684
Alt. No. 0
Sht. 1 of 1

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: Date:
App'd By: Scale: SEE DWG
ABS App'l: USCG App'l.:

WILLIAM HAYDEN LICENSE NO. 60106 STATE OF FLORIDA PROFESSIONAL ENGINEER

ANSI-D (24"x36")

R:\1300-1399 FILES\17-1372 NCDOT 70.5ft Sound Class Tug\65 TUG\17-1372-684.dwg, 9/19/2018 2:43:15 PM, 24x36 PDF.pc3