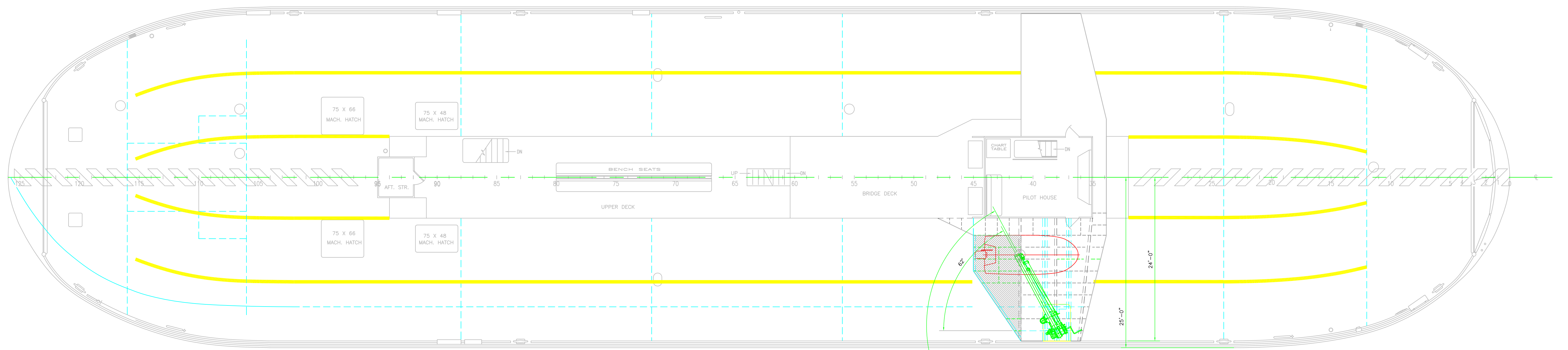
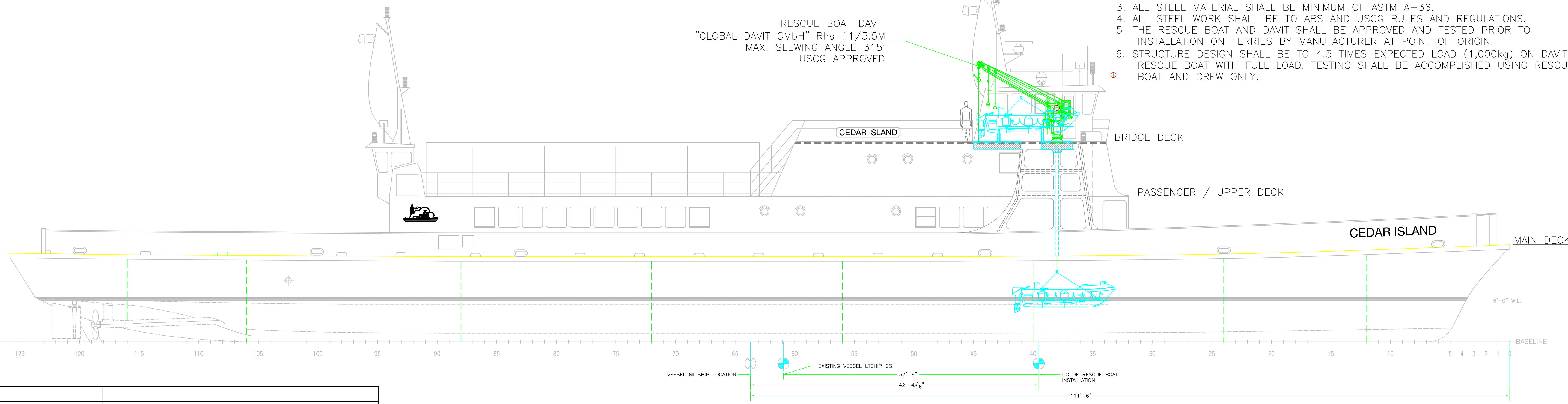


REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1a	MODIFIED DAVIT BASE PER RECOMMENDATION FROM BILL RATTEREE PE.	9-21-2006	JD WALDREP
	2a	STRUCTURE CHANGES PER RECOMMENDATION FROM BILL RATTEREE PE.	11-14-2006	JD WALDREP



GENERAL ARRANGEMENT
SCALE 1/8"=1'-0"



OUTBOARD PROFILE
SCALE 1/8"=1'-0"

RESCUE BOAT
"FASSMER"/RR 4.2M
USCG APPROVED

GENERAL NOTES:

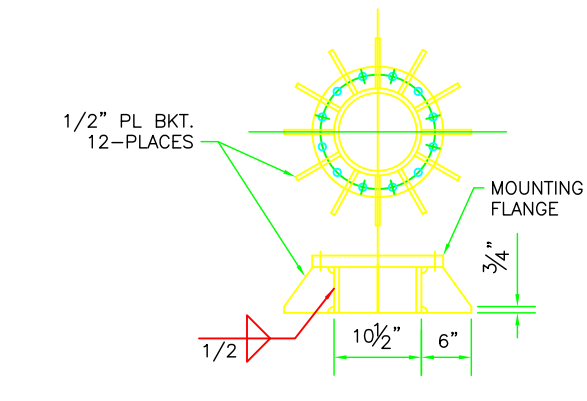
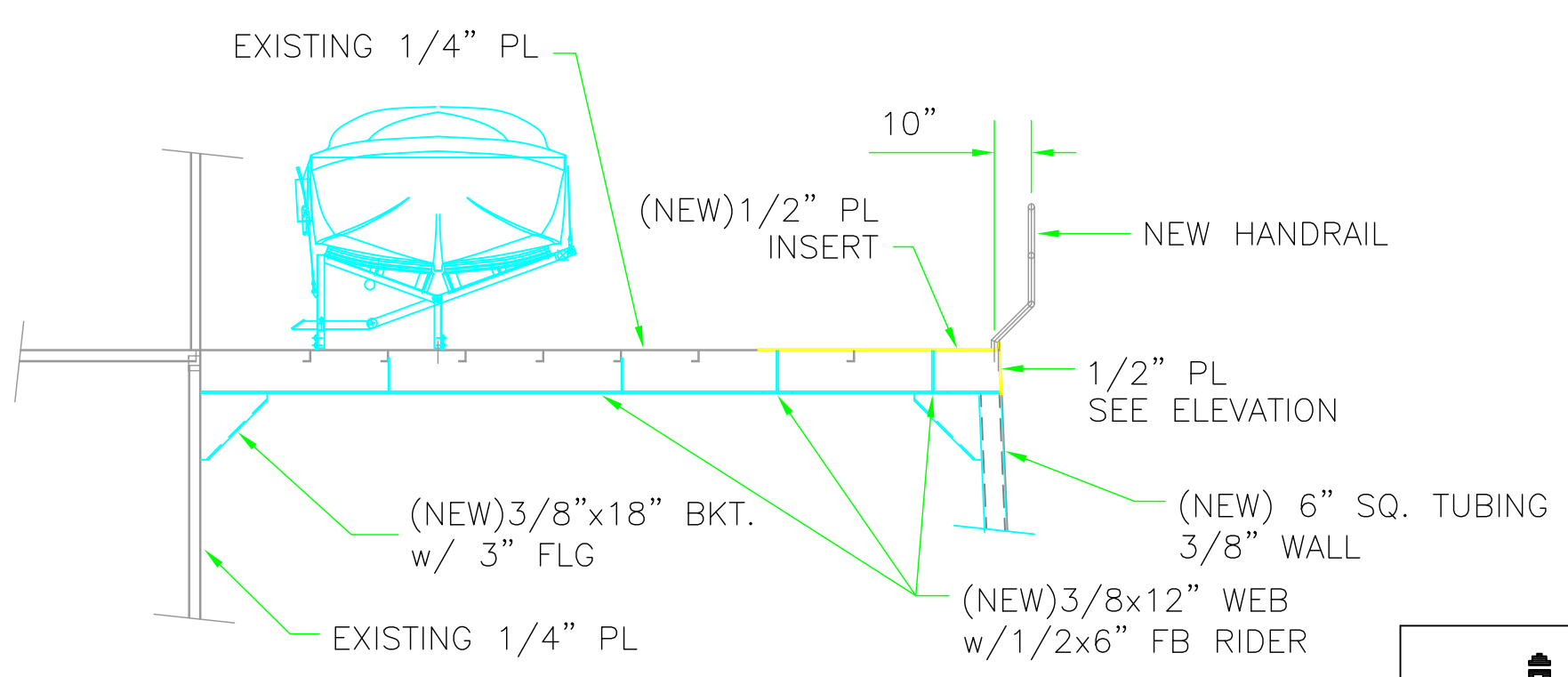
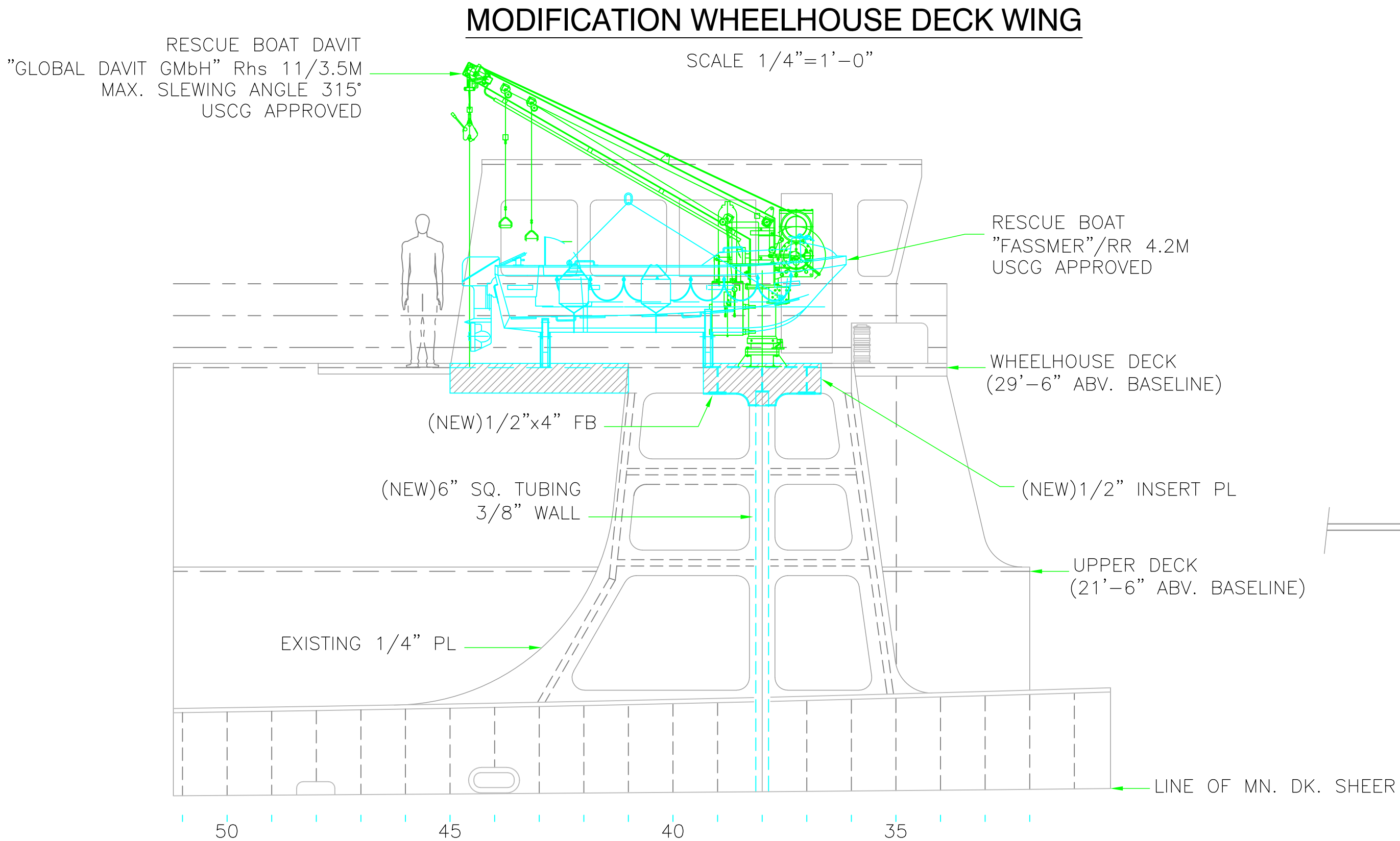
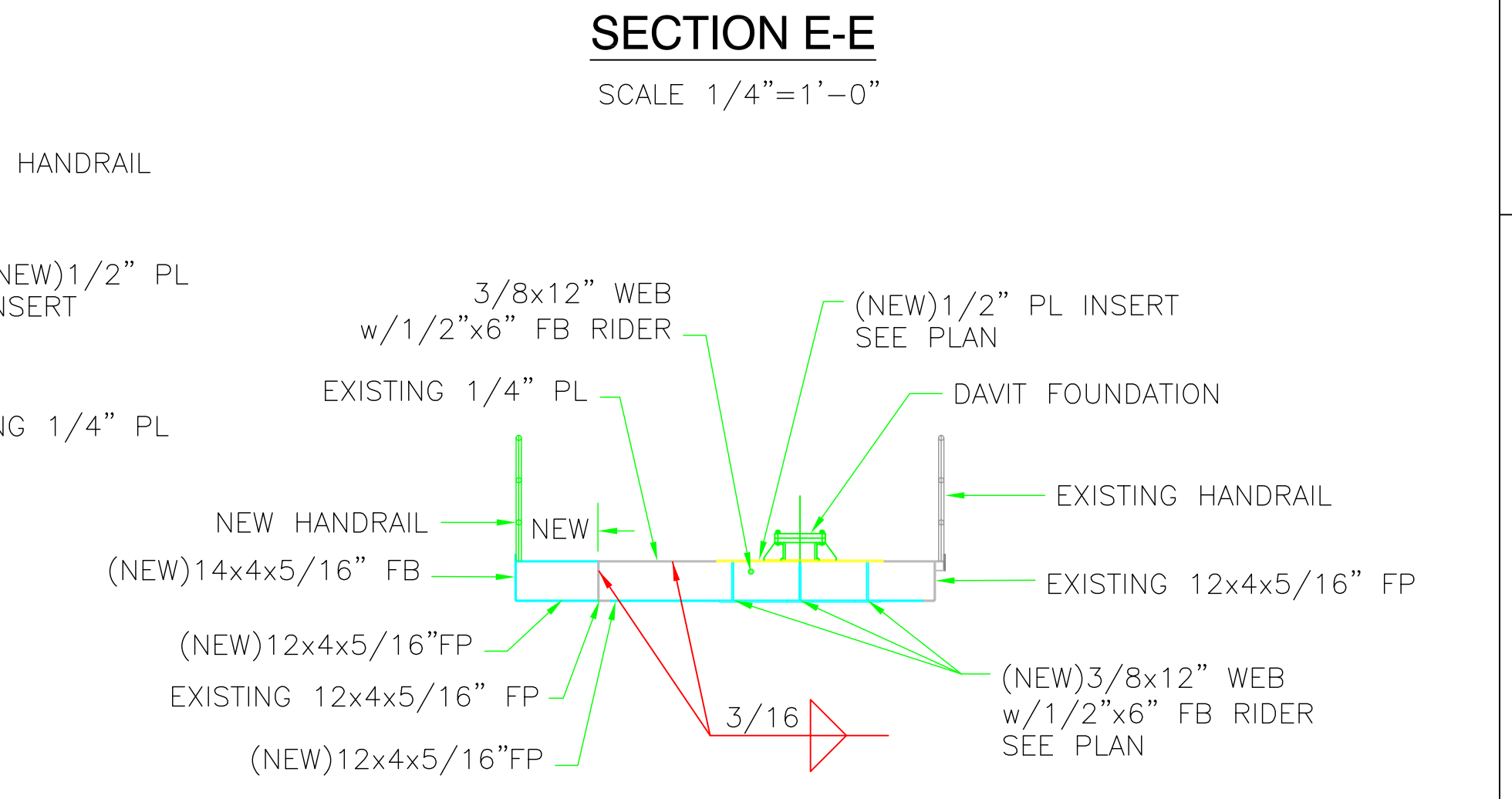
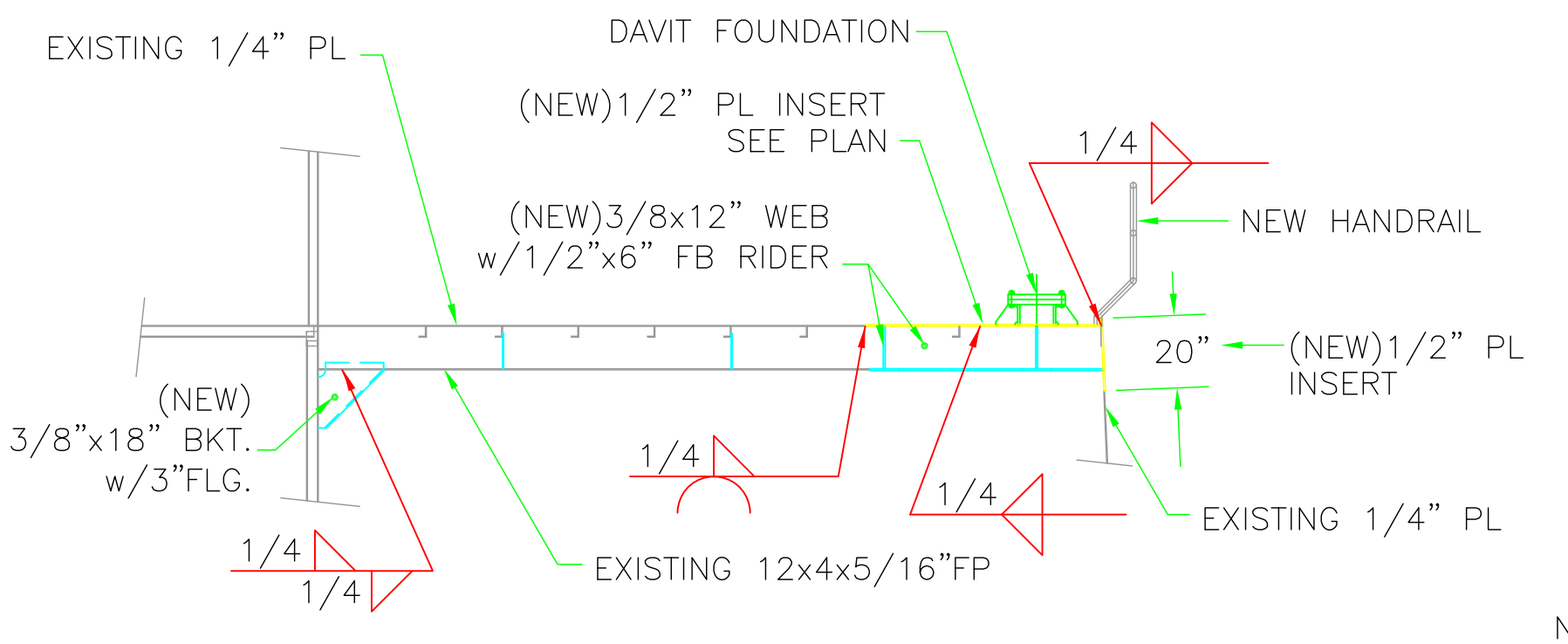
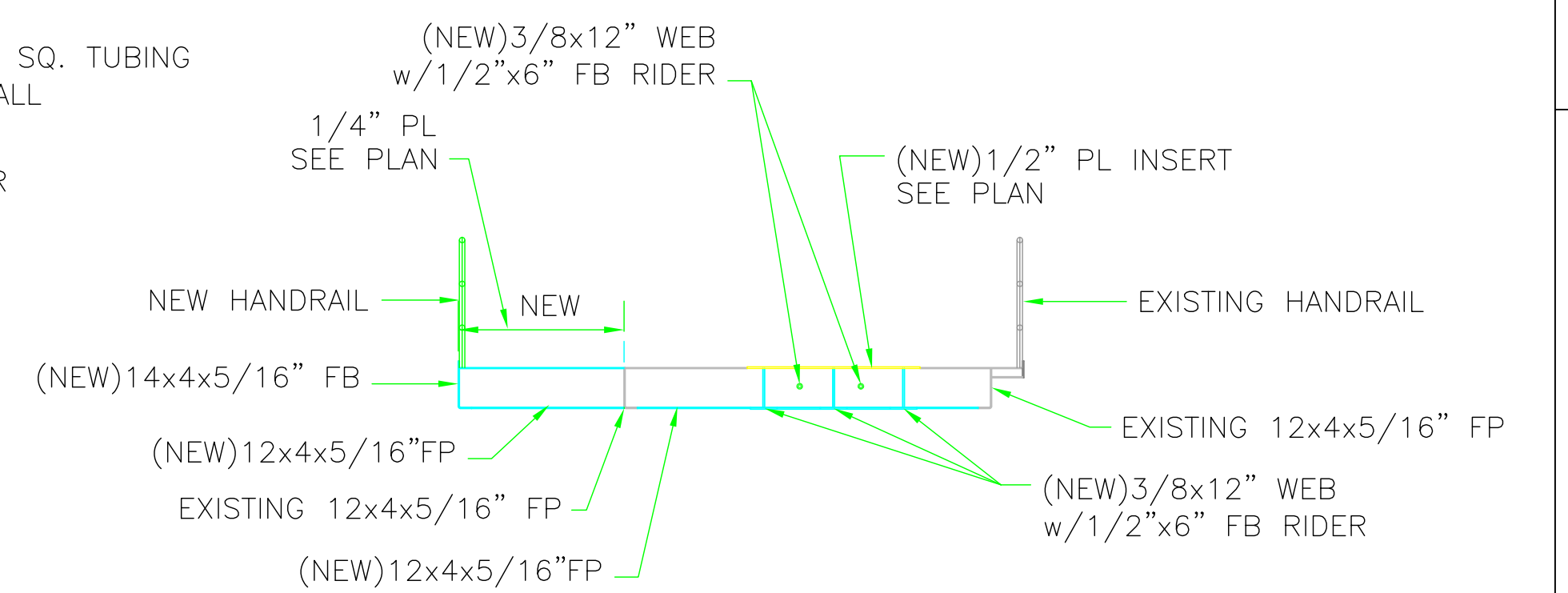
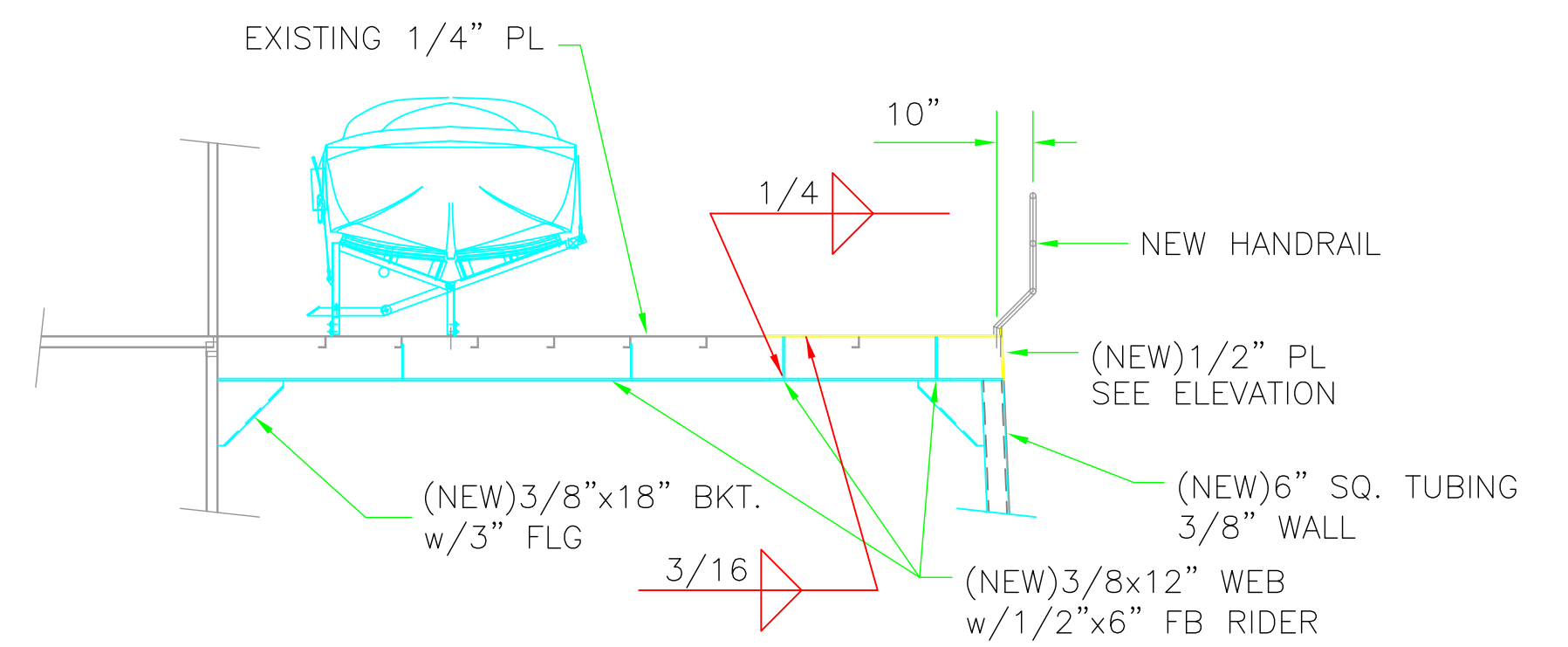
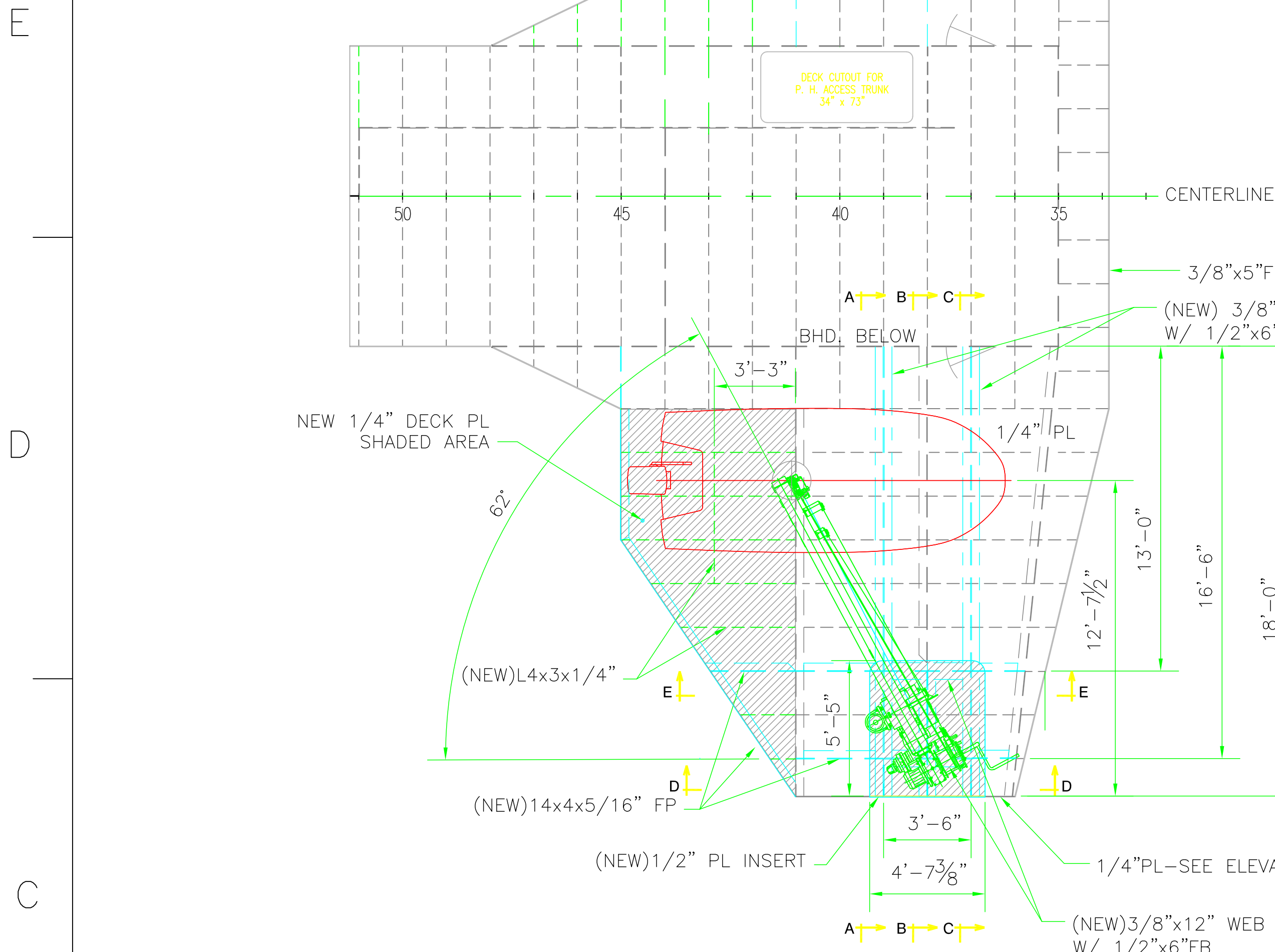
1. RESCUE BOAT AND DAVIT SHALL MEET 46 CFR 160.156 AND 46 CFR 160.132.
2. RESCUE BOAT RELEASE MECHANISM SHALL MEET 46 CFR 160.133.
3. ALL STEEL MATERIAL SHALL BE MINIMUM OF ASTM A-36.
4. ALL STEEL WORK SHALL BE TO ABS AND USCG RULES AND REGULATIONS.
5. THE RESCUE BOAT AND DAVIT SHALL BE APPROVED AND TESTED PRIOR TO INSTALLATION ON FERRIES BY MANUFACTURER AT POINT OF ORIGIN.
6. STRUCTURE DESIGN SHALL BE TO 4.5 TIMES EXPECTED LOAD (1,000kg) ON DAVIT BY RESCUE BOAT WITH FULL LOAD. TESTING SHALL BE ACCOMPLISHED USING RESCUE BOAT AND CREW ONLY.

NO	DWG. NO.	DRAWING TITLE
6	240-00	SAFETY EQUIPMENT ARRANGEMENT
6	240-00	STRUCTURE ABOVE MAIN DECK DECKS
5	240-00	STRUCTURE ABOVE MAIN DECK
4	240-07	TRANSVERSE FRAMES
3	240-05	ARRANGEMENT MAIN DECK & ABOVE
2	240-04	OUTBOARD PROFILE
1	1-2035	RESCUE BOAT CRANE RhS 11/3.5

REFERENCES:

<p>NORTH CAROLINA FERRY SYSTEM RM 120 MARITIME BLDG., 113 ARENDELL STREET, MOREHEAD CITY, NC 28557</p>	220'-0" x 50'-0" x 12'-6" SOUND CLASS FERRY	
	HAILING PORT: m/v CEDAR ISLAND MOREHEAD CITY, NC	
RESCUE BOAT INSTALLATION		
DWG. BY: JD WALDREP	APPROVED BY:	SIZE: D
DATE DRAWN: AUG. 8, 2006	DATE APPROVED:	PROJECT NO.: 240
SCALE: 1/8"=1'-0"		OFF. NO.: 1023760
SHEET 1 OF 3		DWG. NO.: 240-65
		REV: 2

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1a	MODIFIED DAVIT BASE PER RECOMMENDATION FROM BILL RATTEREE PE.	9-21-2006	JD WALDREP
	2a	STRUCTURAL CHANGES PER RECOMMENDATION FROM BILL RATTEREE PE.	11-14-2006	JD WALDREP



220' x 50'-0 x 12'-6" SOUND CLASS FERRY
m/v CEDAR ISLAND MOREHEAD CITY, NC

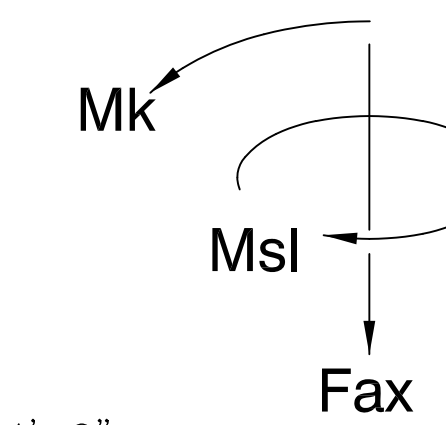
RESCUE BOAT INSTALLATION

DWG. BY: JD WALDREP	APPROVED BY:	SIZE D	PROJECT NO. 240	OFF. NO. 1023760	DWG. NO. 240-65	REV 2
DATE DRAWN: AUG. 23, 2006	DATE APPROVED:	SCALE 1/4"=1'-0"	SHEET 2 OF 3			

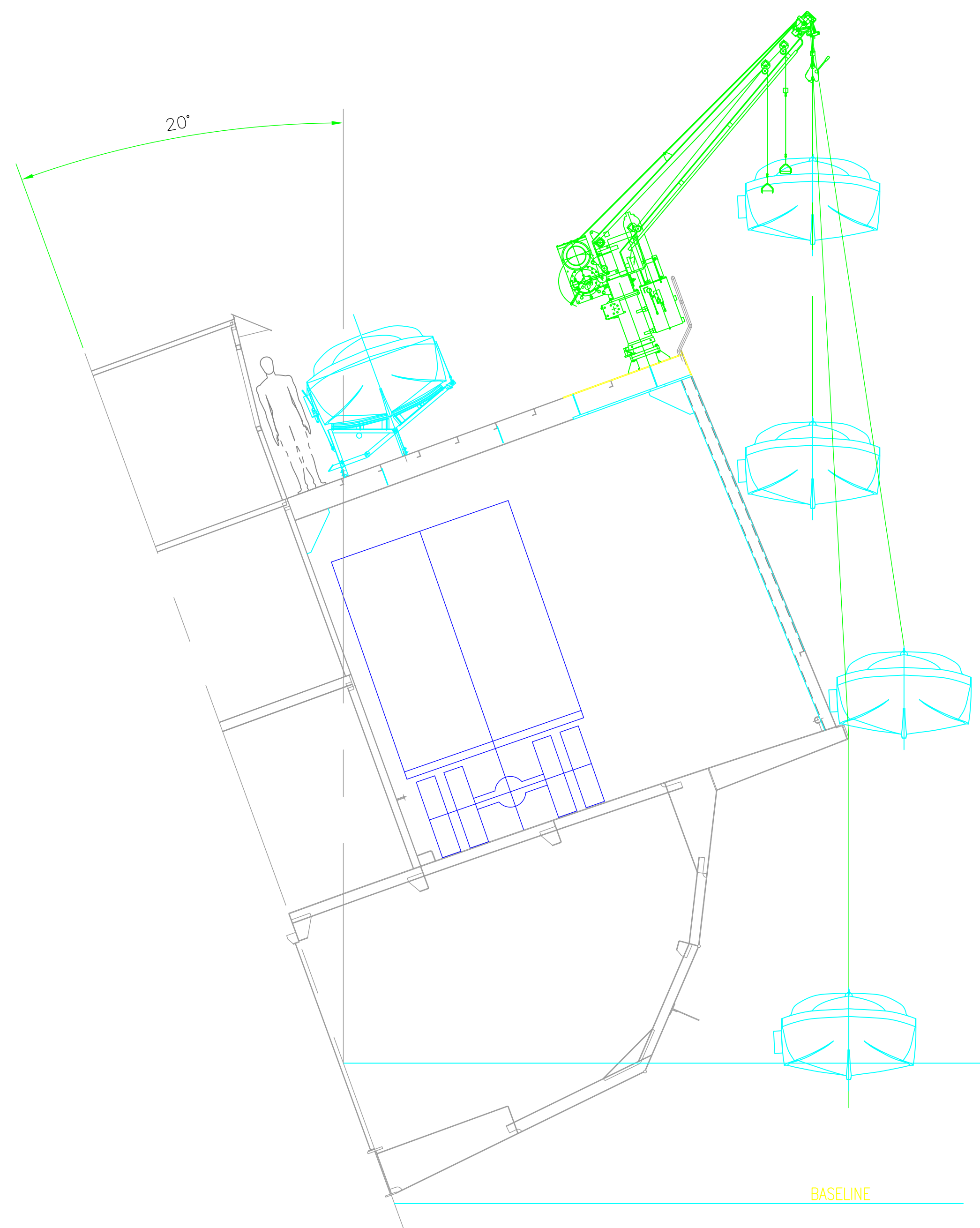
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1a	MODIFIED DAVIT BASE PER RECOMMENDATION FROM BILL RATTEREE PE.	9-21-2006	JD WALDREP
	2a	STRUCTURAL CHANGES PER RECOMMENDATION FROM BILL RATTEREE PE.	11-14-2006	JD WALDREP

Static forces on deckfoundation
(incl. inclination of 20°/10°)

Mk = 55 kNm = 40,565 ft. lbs.
Msl = 18 kNm = 13,276 ft. lbs.
Fax = 25 kN = 5,620 ft. lbs.

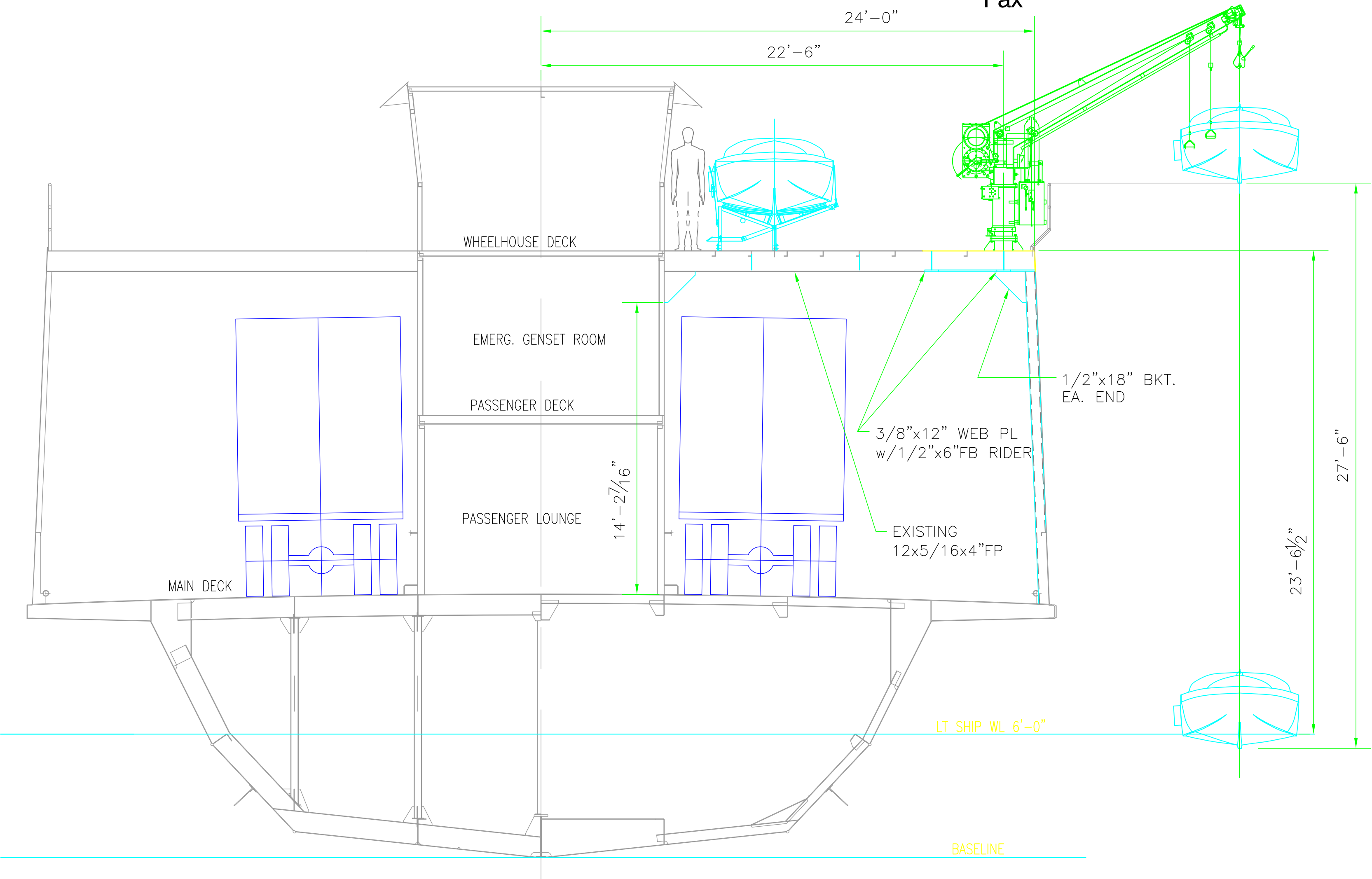


RESCUE BOAT DATA:
BOAT WEIGHT-550kg = 1,210 lbs.
BOAT WT W/6-PERSON 1,000kg=2,200 lbs.



SECTION @ FRAME 38 w/ VESSEL TRIM 20°

LOOKING FORWARD
SCALE 1/4"=1'-0"



SECTION @ FRAME 38 w/ VESSEL IN NORMAL TRIM

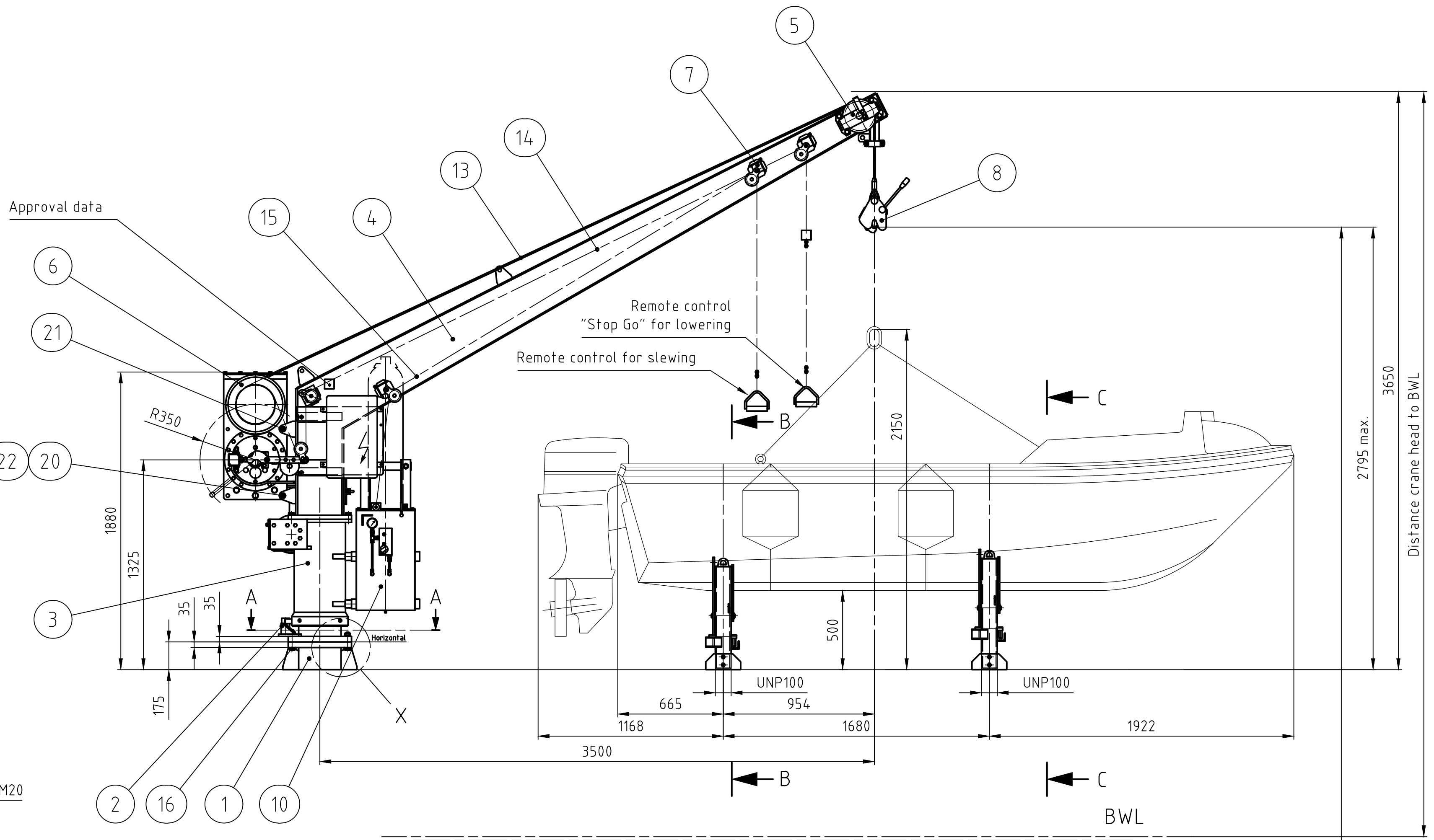
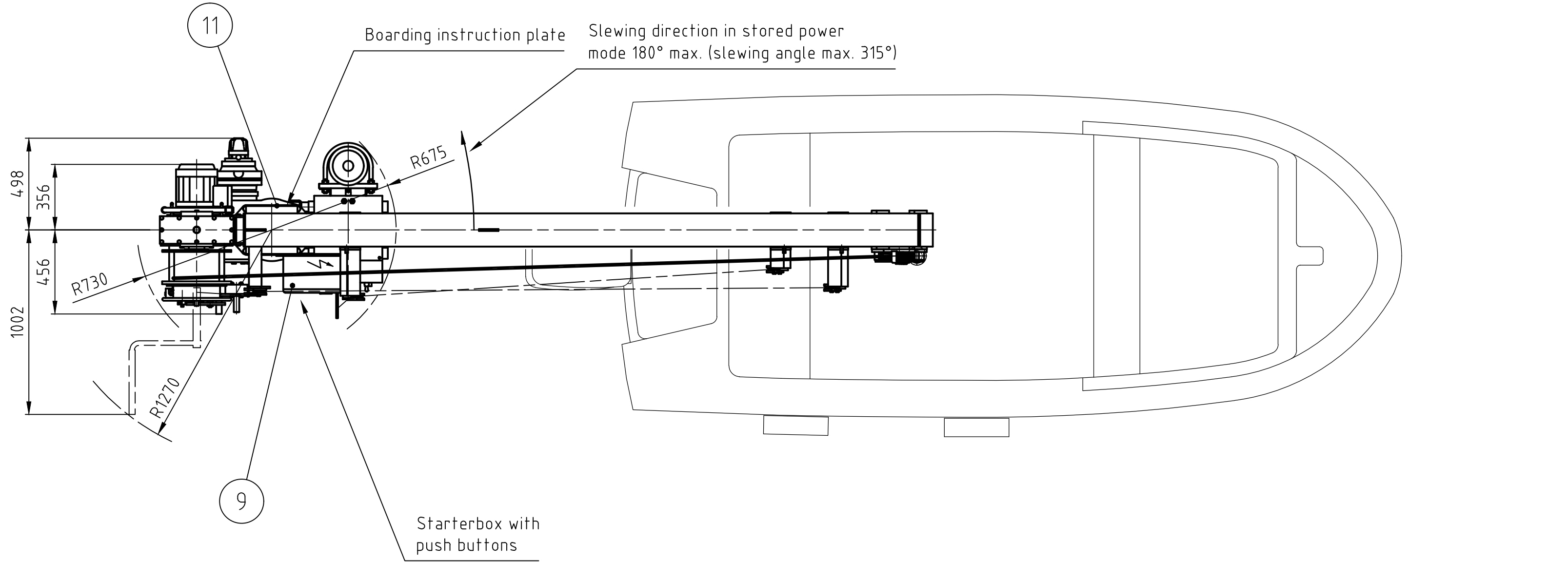
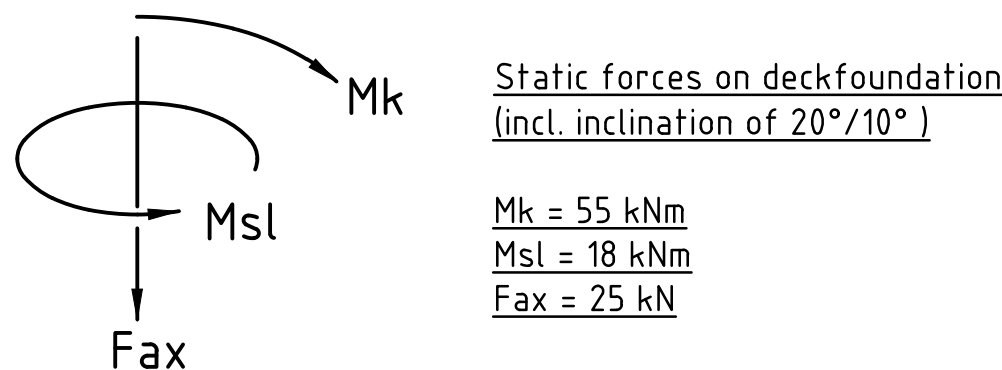
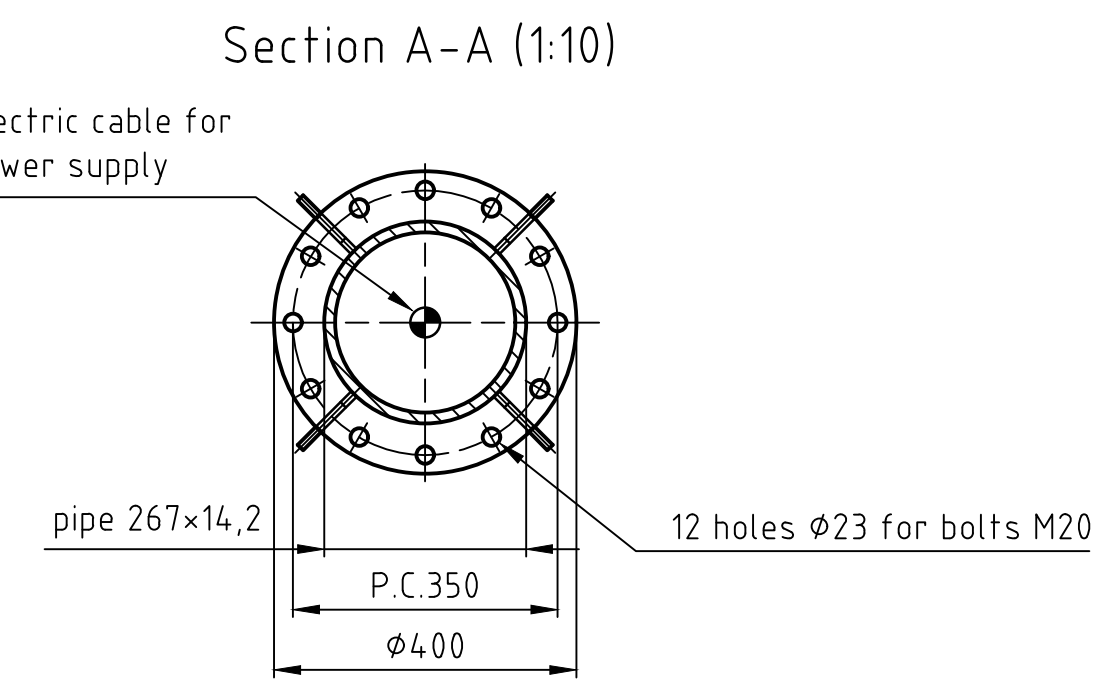
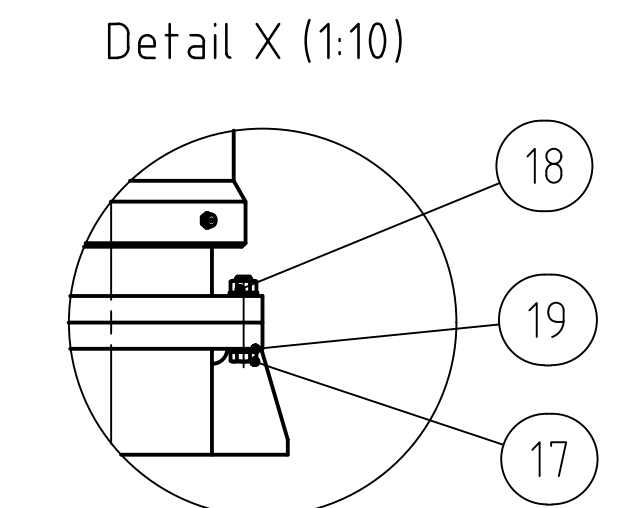
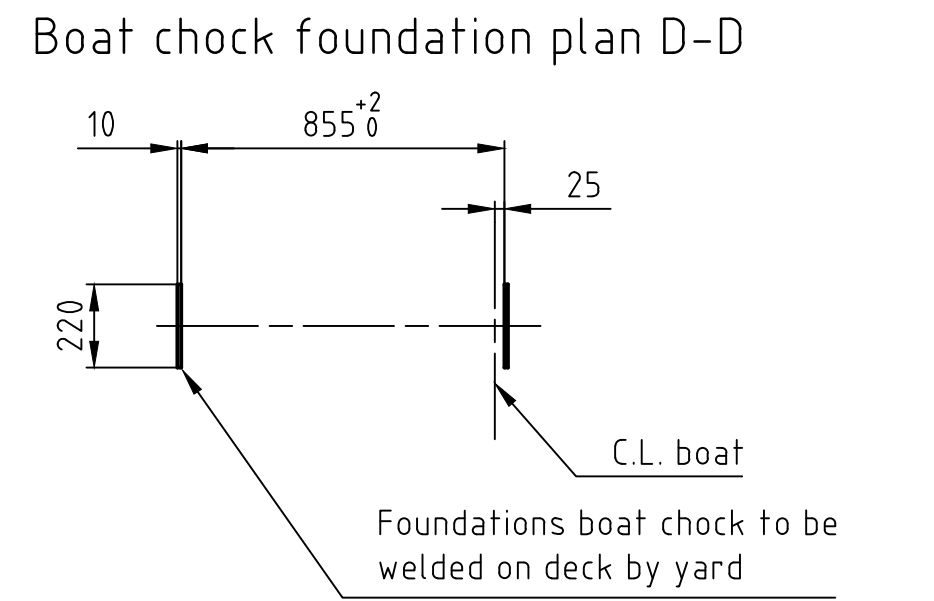
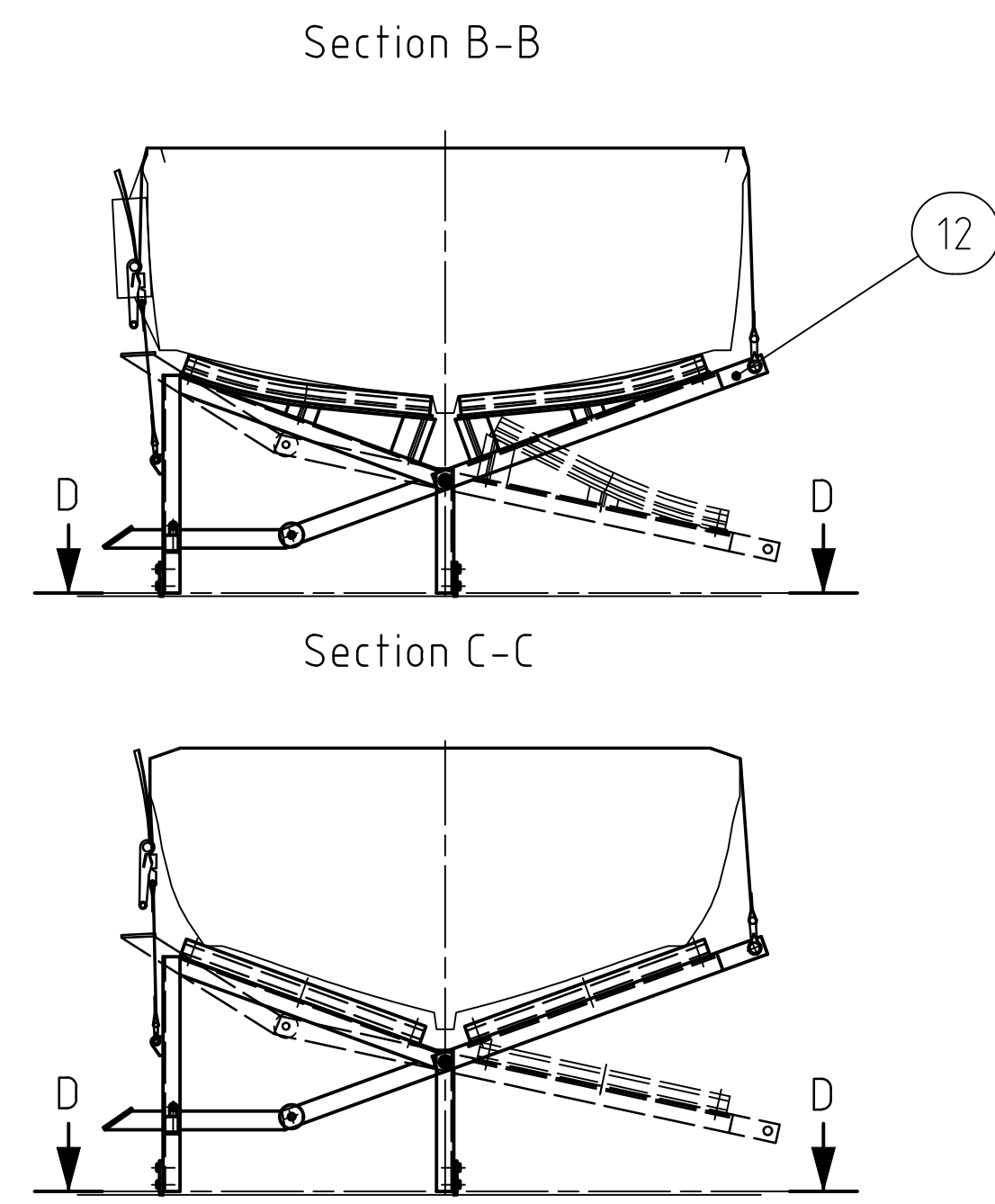
LOOKING FORWARD
SCALE 1/4"=1'-0"



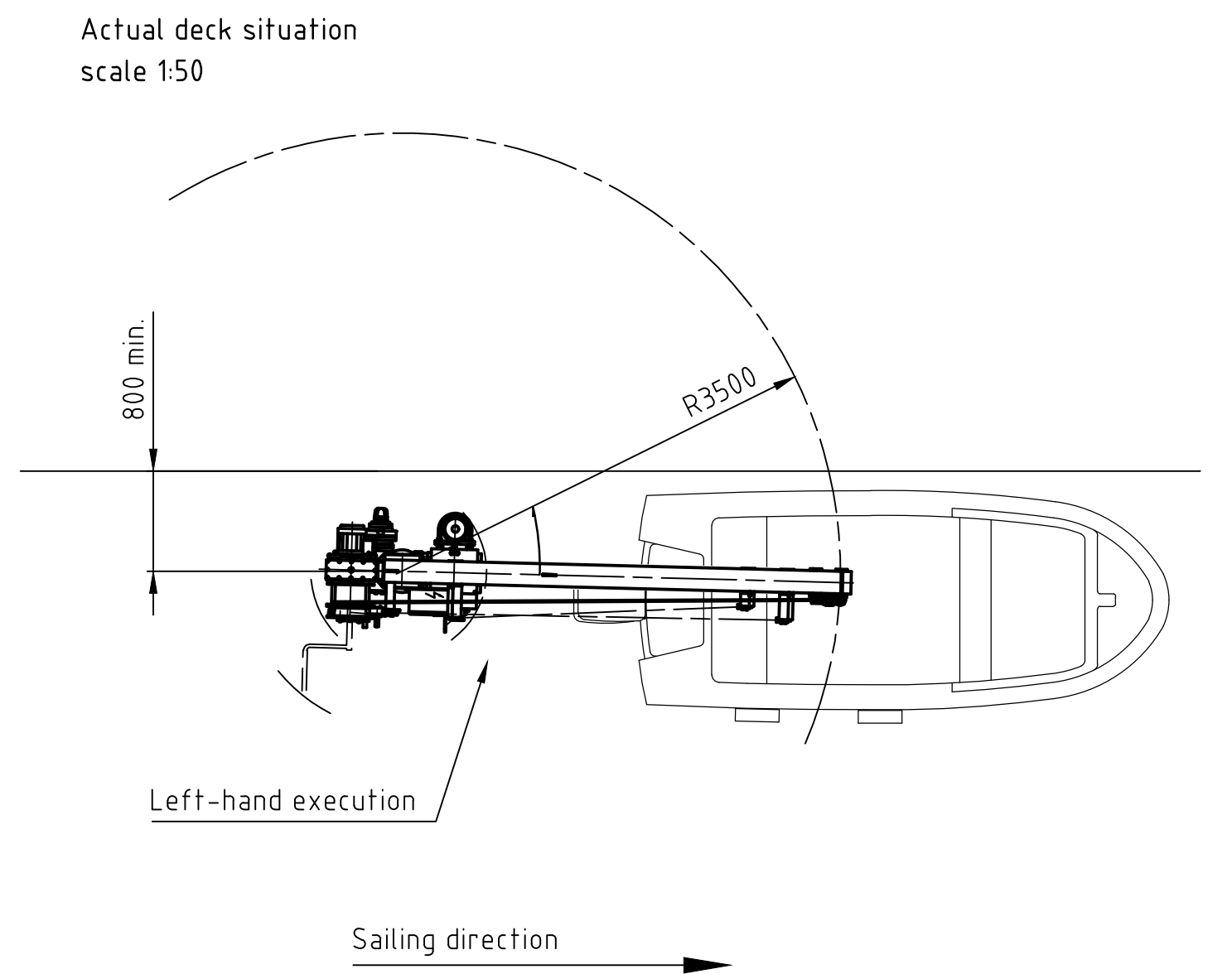
220'-0" x 50'-0" x 12'-6" SOUND CLASS FERRY
m/v CEDAR ISLAND MOREHEAD CITY, NC

RESCUE BOAT INSTALLATION

DWG. BY: JD WALDREP	APPROVED BY:	SIZE D	PROJECT NO. 240	OFF. NO. 1023760	DWG. NO. 240-65	REV 2
DATE DRAWN: AUG. 29, 2006	DATE APPROVED:	SCALE 1/4"=1'-0"	SHEET 3 OF 3			



LEFT-HAND EXECUTION IS SHOWN
RIGHT-HAND EXECUTION IS IN OPPOSITE HAND



	Oil lubricated (8.8)		MoS2 lubricated (8.8)	
	(10.9)	(10.9)	(8.8)	(10.9)
M16	210	295	170	240
M20	410	580	330	465
M24	710	1000	570	800
M27	1050	1500	840	1200

All connection parts must be galvanized

ITEM	QUANT	DESCRIPTION	MATERIAL	REMARKS	MASS P	MASS S
23	6	Washer A21	St.	DIN 125	437	1047
22	2	Hex nut M20	8	DIN 934		
21	2	Hex screw M20x30	8.8	DIN 933		
20	2	Hex screw M20x55	8.8	DIN 933		
19	23	Washer 21	C45	DIN 6916		
18	12	Hex nut M20	10	DIN 6915	1	
17	9	Hex bolt M20x100	10.9	DIN 6914	3	
16	3	Hex bolt M20x120	10.9	DIN 6914	1	
15	1	Wire rope 4mm, L=5,5m	Stainl.st.			
14	1	Wire rope 4mm, L=26m	Stainl.st.		4	
13	1	Wire rope 10mm, L=25m	1960 N/mm ²	P17SRS	11	
12	1	Arr. boat chocks, Fassmer RR4,2	2-1637	R.H. exec	13	98
11	1	Boarding instruction plate rescue boat stored power	2-0048	English		
10	1	Hydraulic assembly	ZBM0300	comp.of11600	280	
9	1	Electric assembly	99N01-T01		30	
8	1	Rescue boat hook HR.15	2-0022		1	5
7	1	Arr. remote control H-SG, C05/W02	2-0263		2	16
6	1	Arrangement winch 02E.01.21	3-1766	see D-base	47	313
5	1	Assembly components arm A05	2-0341		1	18
4	1	Davit arm 180x12/8x8 R = 3,5	1-0328			309
3	1	Arrangement column C05H.04.01	2-0447	see D-base	43	247
2	1	Slewing angle limiter 05	3-0090			4
1	1	Pedestal 05/175/gusset	4-0346			37

TEST LOADS (WORKSHOP):

STATIC TEST LIFERAFT: n.a.
 STATIC TEST RESCUE BOAT: 2,2x11 = 24,2 kN
 DYNAMIC TEST RESCUE RECOVERY: 1,0x10,35 = 10,35 kN
 DYNAMIC TEST INCLINED 20°/10°: 1,1x10 = 11 kN
 DYNAMIC TEST WINCH (LOWERING): 1,1x11 = 12,1 kN
 ALL STORES HANDLING FUNCTIONS: n.a.

TEST LOADS (ON BOARD):

DYNAMIC TEST (LOWERING ONLY): 1,1x11 = 12,1 kN
 ALL STORES HANDLING FUNCTIONS: n.a.

DAVIT MAIN DATA:

S.W.L. LIFERAFT: n.a.
 S.W.L. RESCUE BOAT: 11 kN
 OUTREACH: 3,5 m
 S.W.L. STORE HANDLING: n.a.
 OUTREACH: - m

SLEWING SPEED - direct power: n.a.
 - stored power: 1 rpm

TOTAL MASS OF SYSTEM: 1400 kg

LIFE SAVING WINCH DATA:

WINCH TYPE: 02E.01
 HOISTING SPEED: 21,5 m/min
 GRAVITY LOWERING SPEED: 4,0 m/min
 WIRE ROPE SIZE: 10 mm
 MINIMUM REQUIRED BREAKING LOAD: 65,4 kN
 TYPE OF WINCH: spur gear winch
 OIL QUANTITY: 1 l
 POWER CONSUMPTION: 6,5 kW
 NOMINAL CURRENT: 28 A
 STARTING CURRENT: 160 A

STORES WINCH DATA:

WINCH TYPE: n.a.
 HOISTING/LOWERING SPEED: - m/min

WIRE ROPE SIZE: - mm
 MINIMUM REQUIRED BREAKING LOAD: - kN
 TYPE OF WINCH: - l
 OIL QUANTITY: - l
 POWER CONSUMPTION: - kW
 NOMINAL CURRENT: - A
 STARTING CURRENT: - A

ELECTRIC MAIN DATA:

VOLTAGE: 208 V
 FREQUENCY: 60 Hz

MAX. RATED POWER: 8,3 kW
 PROTECTION - on deck: IP56
 - underdeck: n.a.
 INSULATION CLASS: F
 CONTROLS - boat winch: on starter box
 - store winch: n.a.

HYDRAULIC MAIN DATA:

WORKING PRESSURE: 300 bar
 OIL FLOW: 3,0 l/min
 TANK CAPACITY: 90 l

ACCUMULATOR VOLUME: 35 l
 PRECHARGE PRESSURE: 100 bar

POWER CONSUMPTION: 1,8 kW
 NOMINAL CURRENT: 6 A
 STARTING CURRENT: 30 A

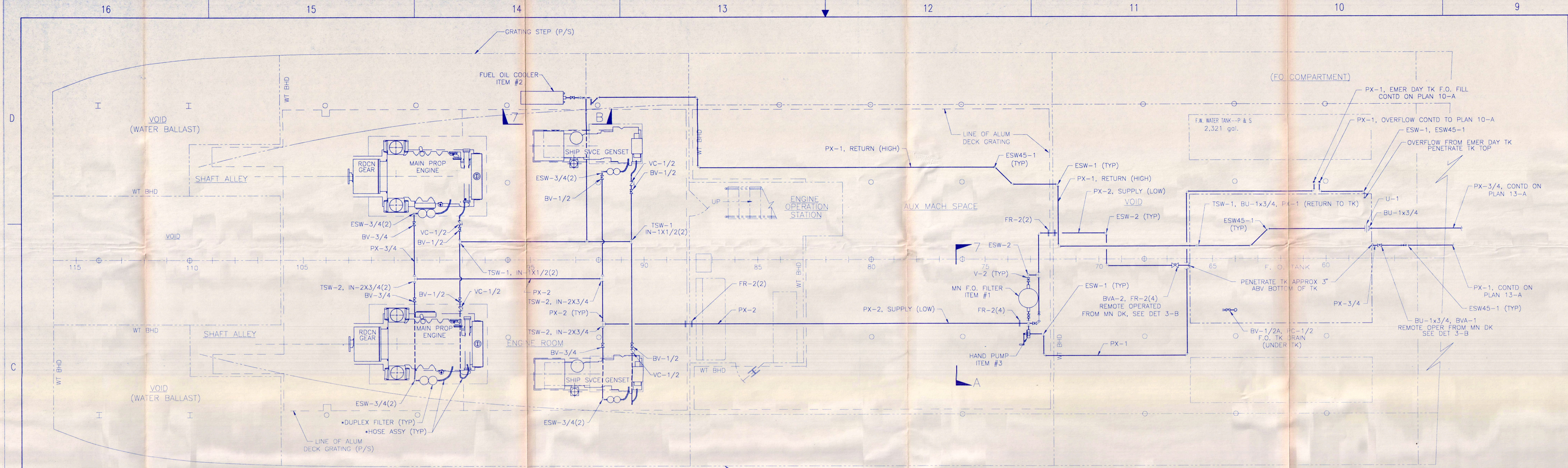
CRAFT MAIN DATA:

BOAT TYPE: Fassmer / RR 4,2
 DIMENSIONS: 4,23x1,75x0,82 m
 MASS OF BOAT WITH EQUIPMENT: 550 kg
 ACTUAL BOAT CAPACITY: 6 persons
 LOWERING MASS: 1000 kg
 RECOVERY MASS: 1000 kg
 LIFERAFT CAPACITY: n.a.
 LOWERING MASS: - kg

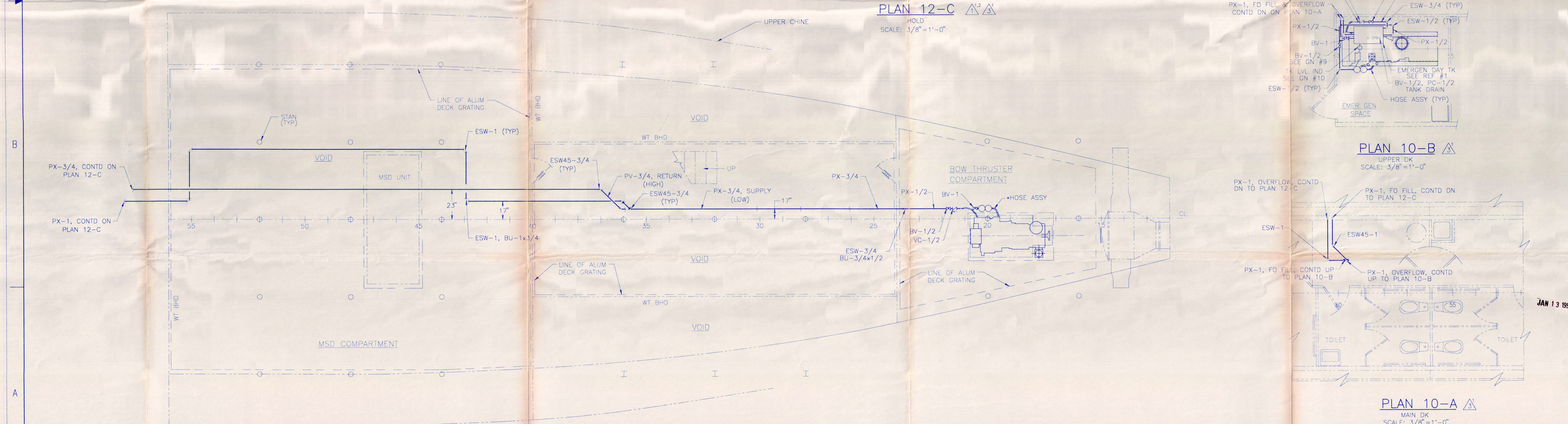
Global Davit GmbH
 Survival- & Deck Equipment

Rescue boat crane Rhs.11/3,5
 General arr. North Carolina DOT Ferry System, hull

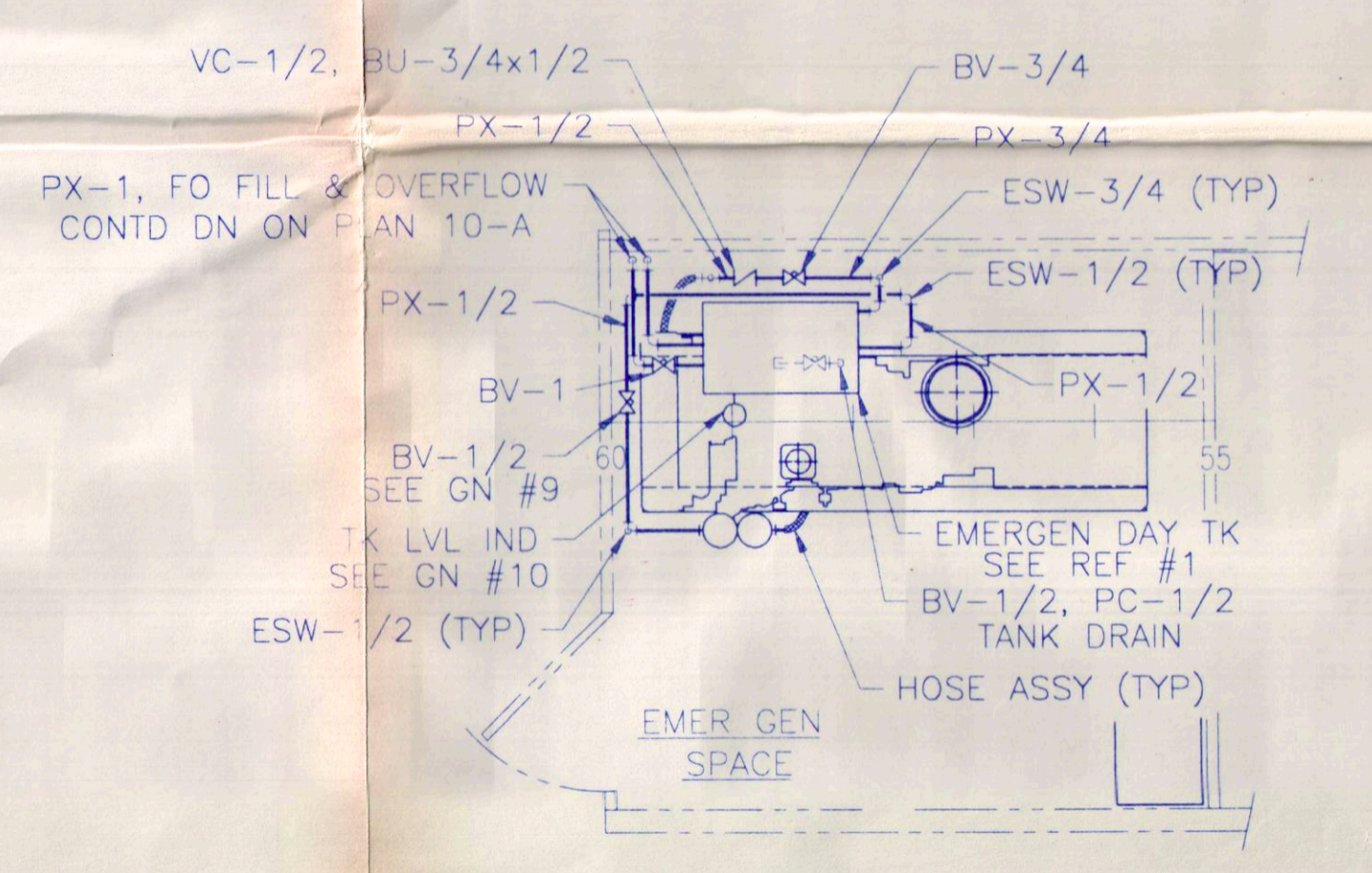
SCALE: 1:20
 DATE: 14-06-2006
 NAME: HS
 CHECKED: 1-2035
 REPLACING: 06-133
 COPY OF: 1-2010A



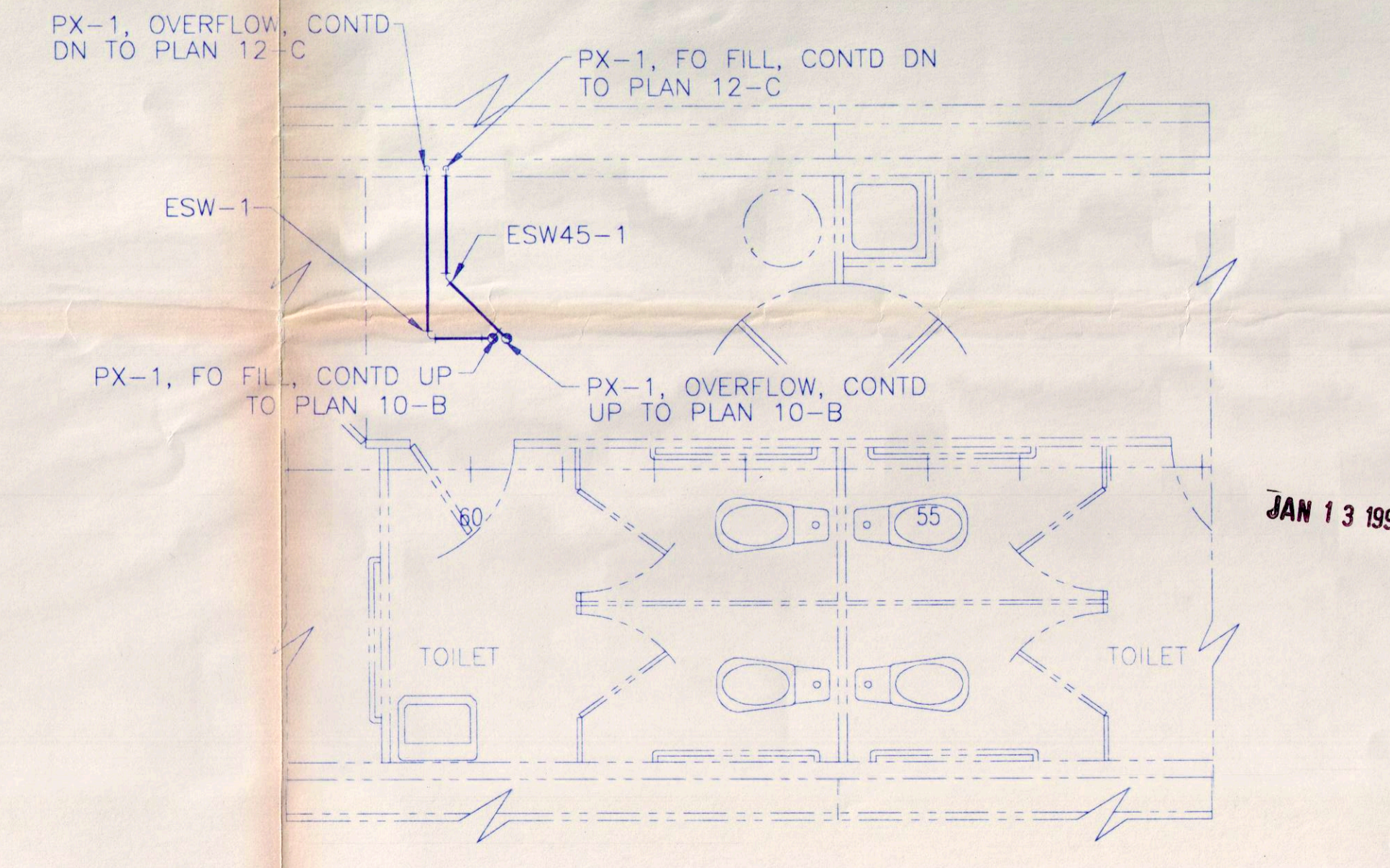
PLAN 12-C $\Delta \Delta \Delta$
 HOLD
 SCALE: 3/8"=1'-0"



PLAN 13-A $\Delta \Delta \Delta$
 HOLD
 SCALE: 3/8"=1'-0"



PLAN 10-B $\Delta \Delta \Delta$
 UPPER DK
 SCALE: 3/8"=1'-0"



PLAN 10-A $\Delta \Delta \Delta$
 MAIN DK
 SCALE: 3/8"=1'-0"

FUEL OIL PIPING							
DESIGN NO.	REV.	DATE	BY	CHECKED	DATE	SCALE	SHEET NO.
C123	1	12/94	TJB	TJB	1/17/95	AS NOTED	2
PROJECT: NC-240-0064							3
SCALE: AS NOTED							3

JAN 13 1995

U.S. Department of
Homeland Security

United States
Coast Guard



Commanding Officer
United States Coast Guard
Marine Safety Center

US Coast Guard Stop 7430
2703 Martin Luther King Jr Ave SE
Washington, DC 20593-7430
Staff Symbol: MSC-2
Phone: (202) 795-6729
Email: msc@uscg.mil

16710/P012549/mac
Serial: H2-2203194
October 3, 2022

North Carolina Department of Transportation (NCDOT)
Attn: Mr. Brent Jones
8550 Shipyard Road
Manns Harbor, NC 27953
btjones@ncdot.gov

Subj: CEDAR ISLAND, O.N. 1023760
Moss Point Marine Hull No. 123
207.8' x 38' x 12.5' Passenger Ferry (H)
Structures Modifications

Ref: (a) NCDOT Dwg. No. NC-240-0081, Rev. 5, "Deck and Bottom Scantling," 4 sheets,
dated August 29, 2022

Dear Mr. Jones:

We reviewed reference (a), submitted with your email dated August 30, 2022 (MSC Document No. 2215730), for compliance with 46 CFR Subchapter H. Reference (a) is **Approved**. The installation, workmanship and testing shall be accomplished to the satisfaction of the cognizant Officer in Charge, Marine Inspection (OCMI).

Our Project Number for this vessel is P012549. Please ensure that all future correspondence includes the Project Number and the Official Number that appears in the subject line.

Please contact LT Max Caballero at (202) 795-6744 with questions concerning our review.

Sincerely,

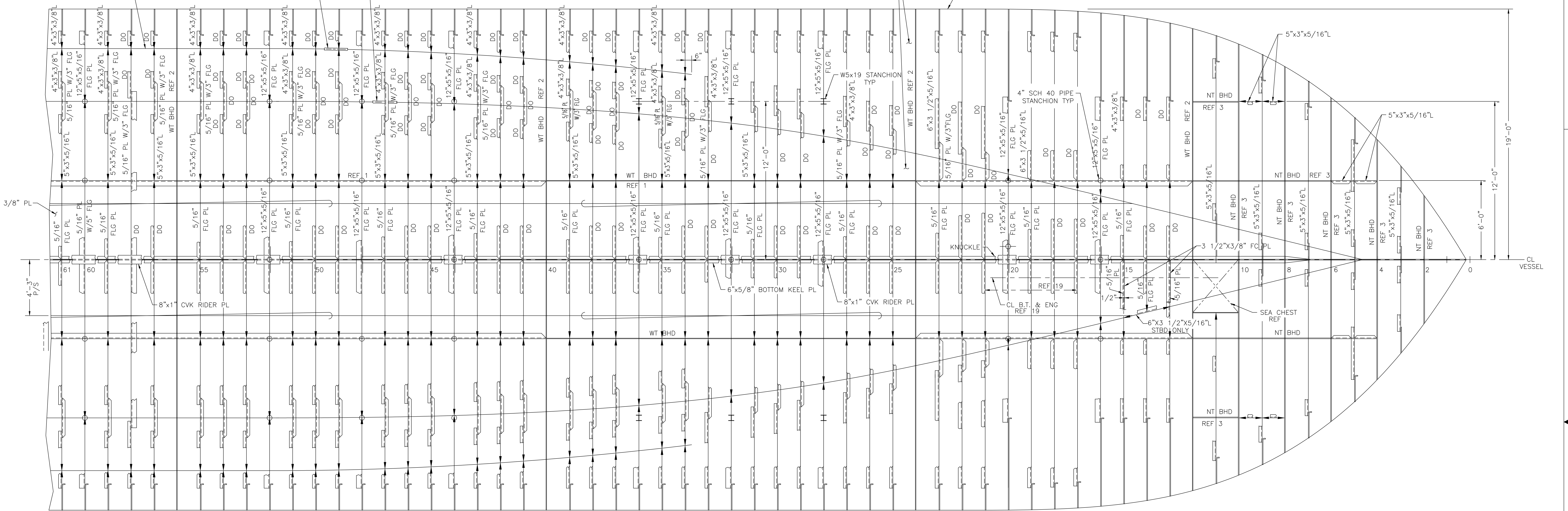
K. M. HAAS
Lieutenant Commander, U.S. Coast Guard
Chief, Major Vessel Branch
By direction

Copy: Commander, Coast Guard Sector North Carolina, Prevention Department

NOTE:
SIDE SHELL LONGITUDINAL
3/8" PL W/5" FLG-10" MIN
DEPTH AT ENDS
FOLLOWS TRACE OF UPPER
CHINE FROM FR 36 TO
FR 116 (REF 1)

UPPER CHINE
2" RND BAR
FROM FR 34 TO
FR 36 TO
TRANSOM

SHEER STRAKE
SEE GEN NOTE 11
& REF 2, 3, & 4



PLAN 6-B
BOTTOM SCANTLING
PORT SIDE DETAILED AND
STBD SIDE SIMILAR UNLESS NOTED

GENERAL NOTES:

- ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH A.B.S. STANDARDS AND BY U.S.C.G. CERTIFIED WELDERS.
- BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES UNLESS NOTED OTHERWISE.
- ALL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED.
- LONGITUDINAL STRINGERS SHALL BE INTERCOSTAL TO BULKHEADS AND TRANSVERSE WEB FRAMES.
- TRANSVERSE WEBS, CENTERLINE DECK LONGITUDINAL AND CENTERLINE VERTICAL KEEL SHALL BE RUN CONTINUOUS THROUGH BULKHEADS AND SHALL BE FITTED WITH COLLARS AT THE PENETRATIONS AS DETAILED ON REF 1.
- FRAME SPACING IS 21 INCHES.
- UNBRACKET STIFFENERS TO HAVE DOUBLE CONTINUOUS WELD FOR 1/10TH OF THEIR LENGTH AT EACH END, UNLESS NOTED OTHERWISE.
- SNIPES TO 3/4" x 3/4" EXCEPT AS NOTED, WHERE SNIPES ARE INDICATED ON DRAWINGS, EQUAL SIZE RADIUS CUTS MAY BE SUBSTITUTED.
- DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD LINE UNLESS OTHERWISE NOTED.
MOLD LINES:
a. MOLDED LINE OF CENTERLINE LONGITUDINAL BULKHEADS AND GIRDERS IS THE CENTERLINE OF PLATE OR WEB.
b. MOLDED LINE OF SHELL IS INBOARD SIDE OF PLATE.
c. MOLDED LINE OF TRANSVERSE BULKHEADS AND FLOORS IS FORWARD OF PLATE FOR MEMBERS FORWARD OF FR 64 AND IS AFT SIDE OF PLATE FOR MEMBERS AFT OF FR 64 (INCLUSIVE) UNLESS OTHERWISE NOTED.
d. MOLDED LINE OF LONGITUDINAL BULKHEADS IS THE OUTBOARD SIDE OF PLATE.
e. MOLDED LINE OF LONGITUDINAL GIRDERS IS THE HEEL, WITH FLANGE TOED INBOARD.
f. MOLDED LINE OF DECKS AND FLATS IS THE UNDERSIDE OF PLATE UNLESS OTHERWISE NOTED.
- ALL SHARP OR RAGGED EDGES TO BE GROUND SMOOTH.
- SHEER STRAKE FROM MAIN DECK DOWN TO KNUCKLE SHALL BE 1/2" x 12" PLATE.
- THIS DRAWING WAS DEVELOPED FROM "OWNER FURNISHED DRAWING"- REF 14, 15 & 16.

RESERVATIONS

- RESERVE STRUCTURE IN WAY OF ENGINES & GENERATORS - PENDING VENDOR INFORMATION & DEVELOPMENT OF REF 7.
- RESERVE CUTOUTS FOR HATCHES, VENTILATION PENDING VENDOR INFORMATION &/OR DEVELOPMENT OF REF 7, 9 & 10.
- RESERVE STRUCTURE IN WAY OF BOW THRUSTER, ENGINE AND SEA CHEST PENDING DEVELOPMENT.
- RESERVE STRUCTURE IN WAY OF STRUT, SHAFING & RUDDER - PENETRATIONS PENDING DEVELOPMENT.

4
3
2
1

No.	DESCRIPTION	DATE	BY
5	RELOCATED QWTMH FROM BLKD 56 TO FR 53, Pg 3, C-23	8/29/21	BTJ
4	1. INCORP AS-BUILT CMNTS DTD 9-7-94. 2. INCORP AS-BUILT CMNTS DTD 11-6-96.		RCJ
3	1. PLAN 13-B: RELOC PL BUTT 12" AFT FR 110 TO 12" AFT FR 111 & CALL-OUT FOR SHAFT DBLR PL WAS RUDDER PER DES DEV. 2. REV STR IWO LAD OPNG @ FR 35P PER REF 3. ADDED HATCH FWD FR 75(S) PER ECP 005. 4. LIFTED RSV PER DEV OF ADDED REF 19.	6/8/94	RAO/SF
2	1. LIFTED RSV #1,2 & 4. 2. ADDED REF #17 & 18.	4/6/94	AW/PF
1	1. INCORP OWNER'S CMNTS DTD 1-17-94. 2. UPDATED DWG PER DESIGN DEVELOPMENT.	1/25/94	P/SF

No.	DESCRIPTION	DATE	BY
5	RELOCATED QWTMH FROM BLKD 56 TO FR 53, Pg 3, C-23	8/29/21	BTJ
4	1. INCORP AS-BUILT CMNTS DTD 9-7-94. 2. INCORP AS-BUILT CMNTS DTD 11-6-96.		RCJ
3	1. PLAN 13-B: RELOC PL BUTT 12" AFT FR 110 TO 12" AFT FR 111 & CALL-OUT FOR SHAFT DBLR PL WAS RUDDER PER DES DEV. 2. REV STR IWO LAD OPNG @ FR 35P PER REF 3. ADDED HATCH FWD FR 75(S) PER ECP 005. 4. LIFTED RSV PER DEV OF ADDED REF 19.	6/8/94	RAO/SF
2	1. LIFTED RSV #1,2 & 4. 2. ADDED REF #17 & 18.	4/6/94	AW/PF
1	1. INCORP OWNER'S CMNTS DTD 1-17-94. 2. UPDATED DWG PER DESIGN DEVELOPMENT.	1/25/94	P/SF

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FERRY DIVISION MARINE ENGINEERING

SOUND CLASS FERRY

DECK AND BOTTOM SCANTLING

Trinity Industries Co.
Trinity Marine Group
1405 Harbor Street
P.O. Box 309 - Concord, NC 28025

JOB NO. C123 DRAWING NO. 123
DRAWN BY: P. FORBES
CHECKED BY: N. RIVERA
SCALE: 3/8"=1'-0"

DATE: 11/11/24
DATE: 11/11/24
DATE: 11/11/24

SHEET 1 OF 4
REV 5

NC-240-0081

REFERENCES

REFERENCES

D

C

B

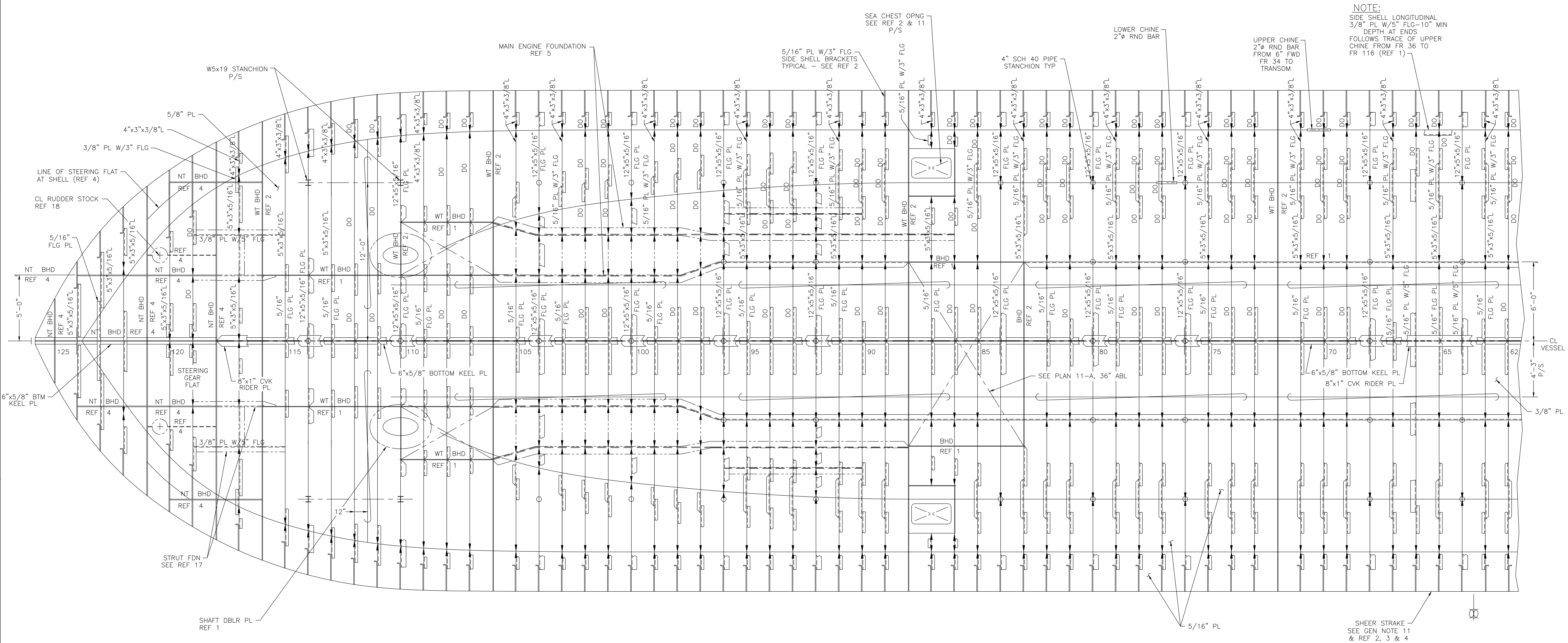
A

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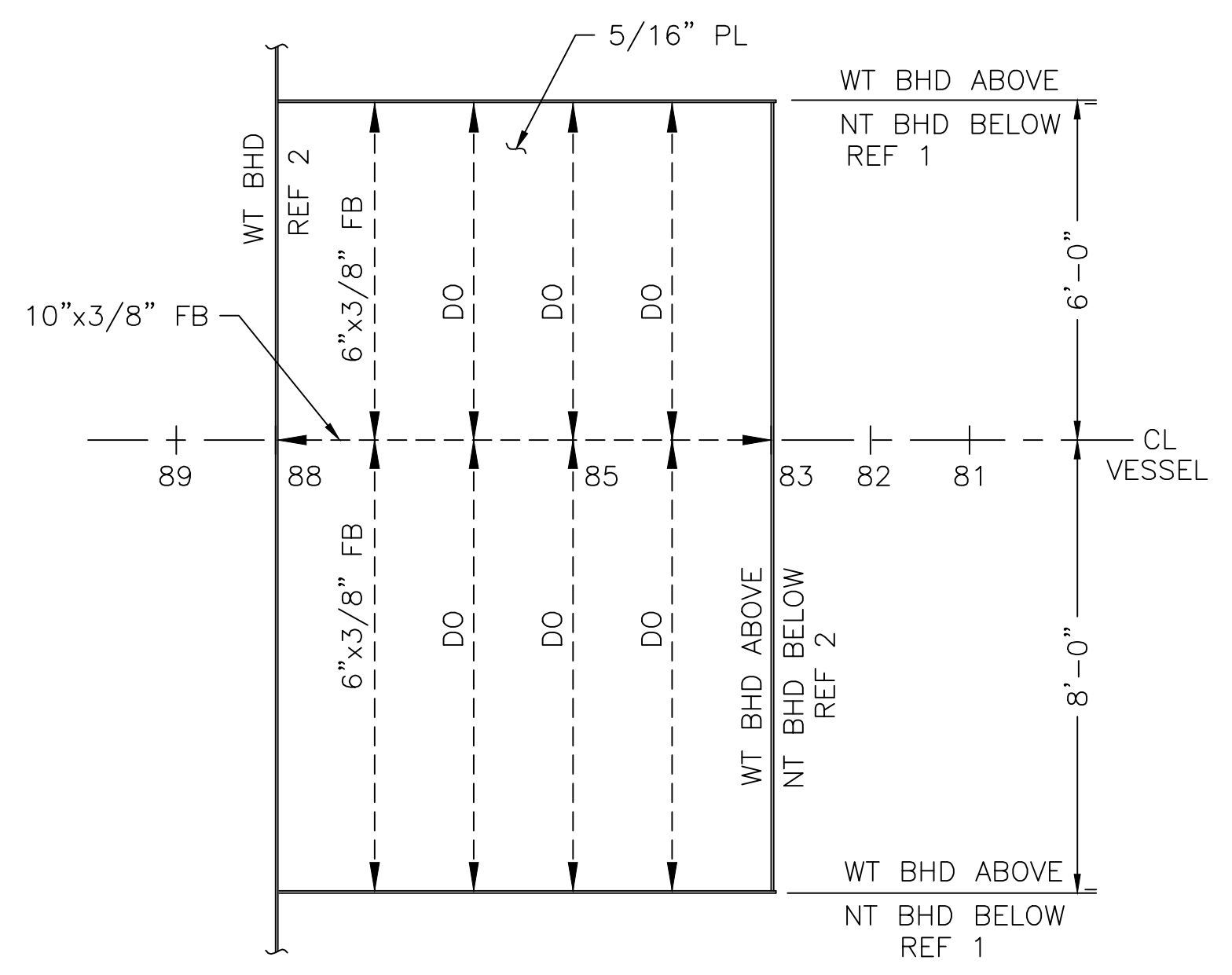
A



NOTE:
SIDE SHELL LONGITUDINAL
3/8" PL W/5" FLG-10" MIN
DEPTH AT ENDS
FOLLOWS TRACE OF UPPER
CHINE FROM FR 36 TO
FR 116 (REF 1)

1,2 1 1 1,2

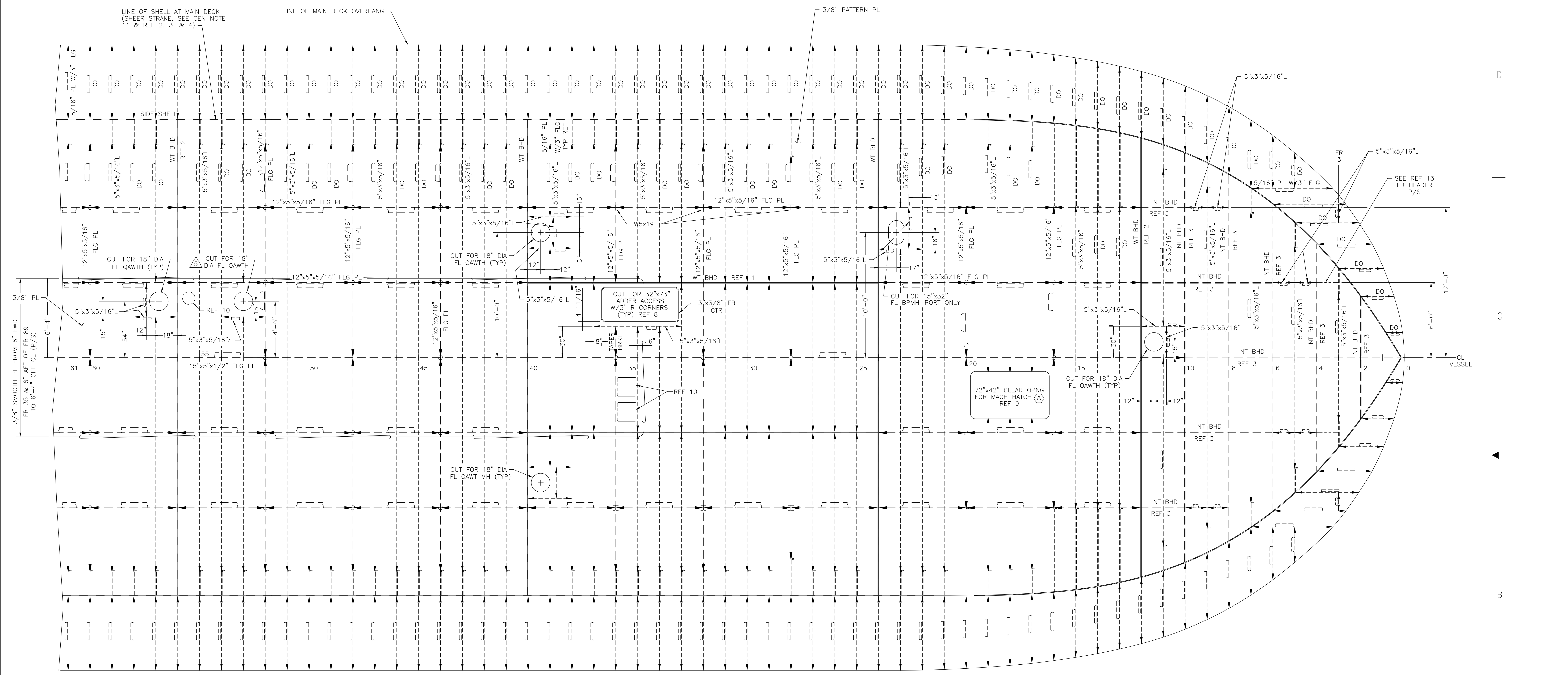
PLAN 13-B
BOTTOM SCANTLING
PORT SIDE DETAILED AND
STBD SIDE SIMILAR UNLESS NOTED



PLAN 11-A
E.O.S. DECK @ 36" ABL

DECK AND BOTTOM SCANTLING

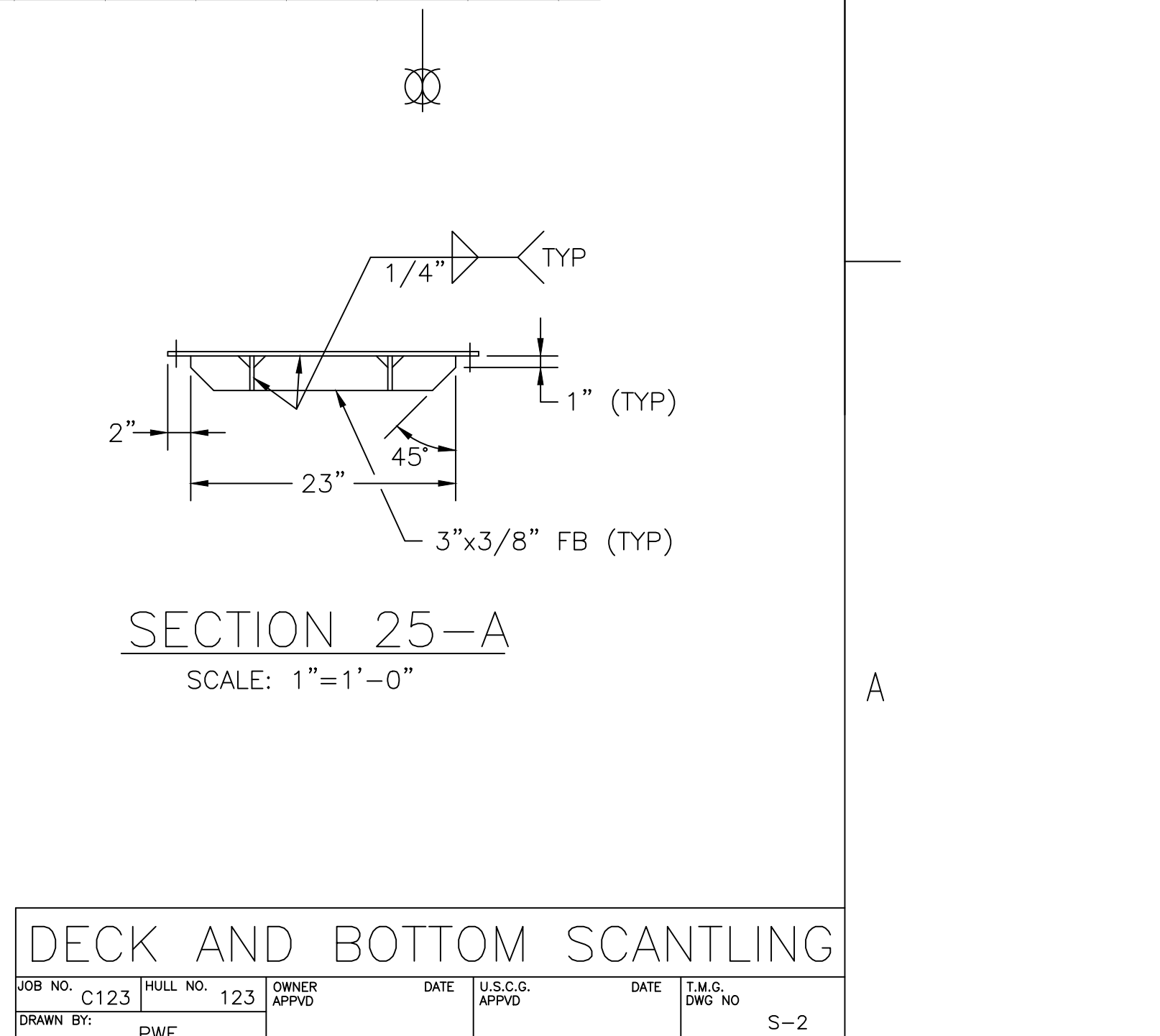
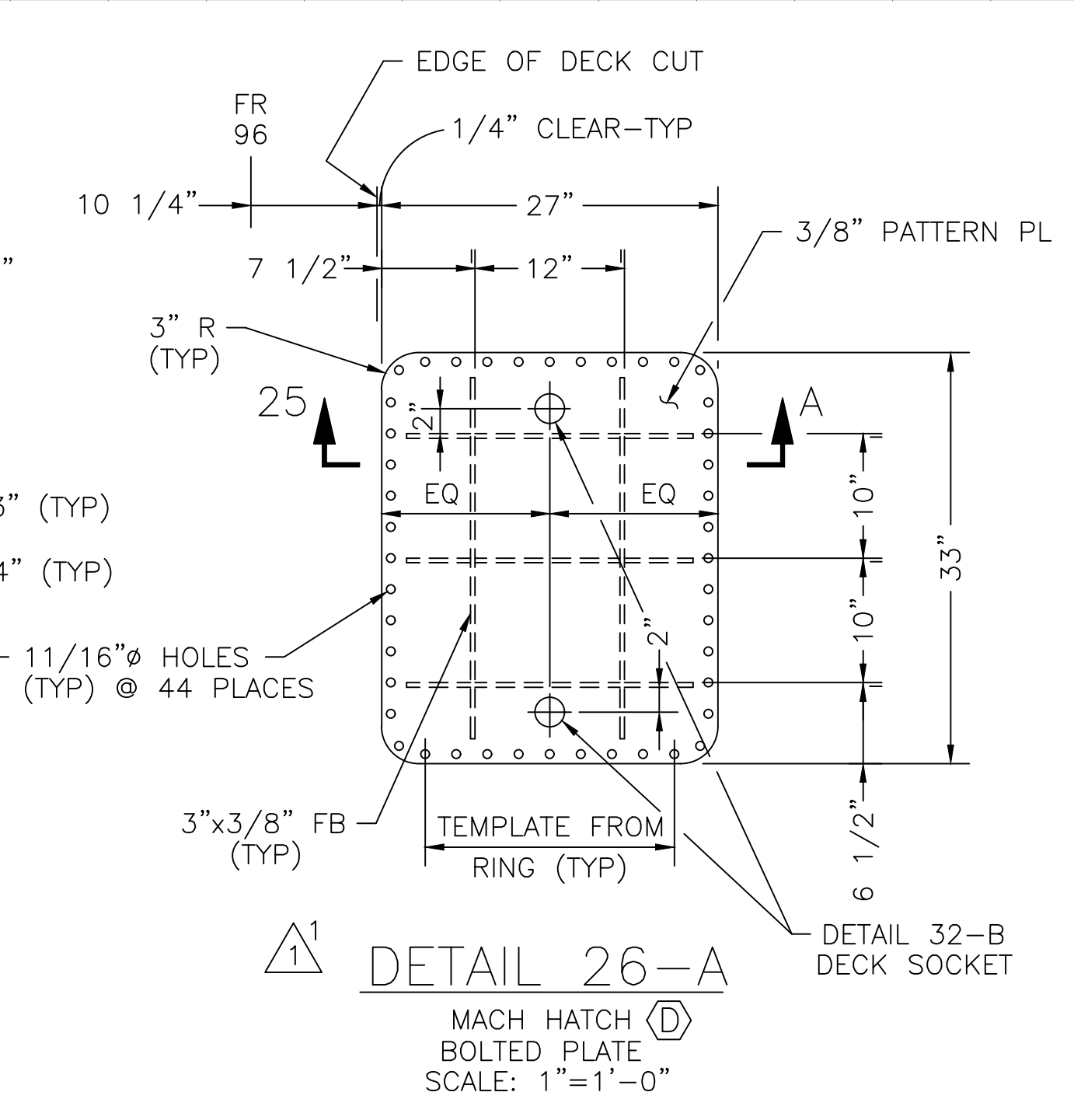
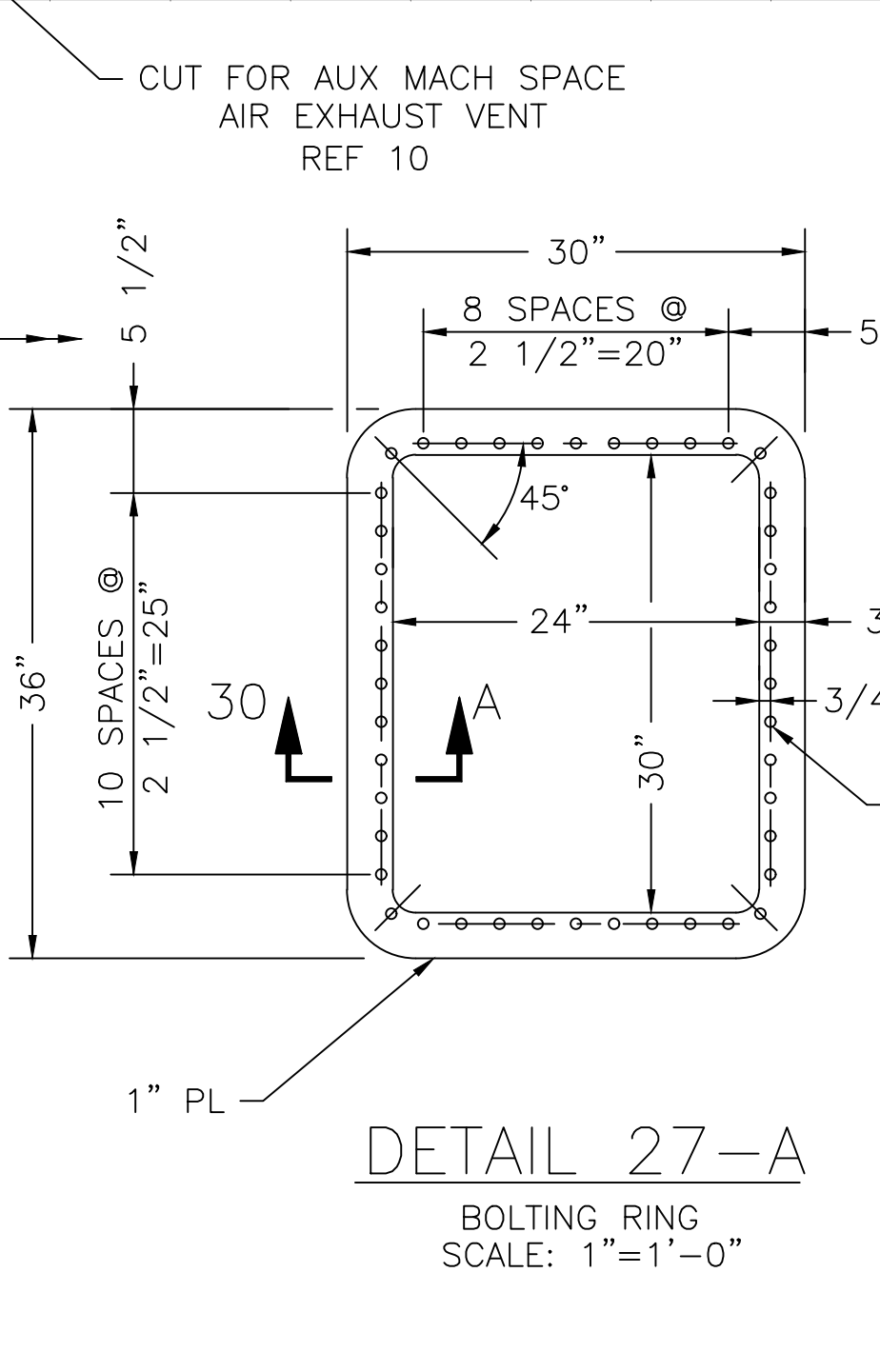
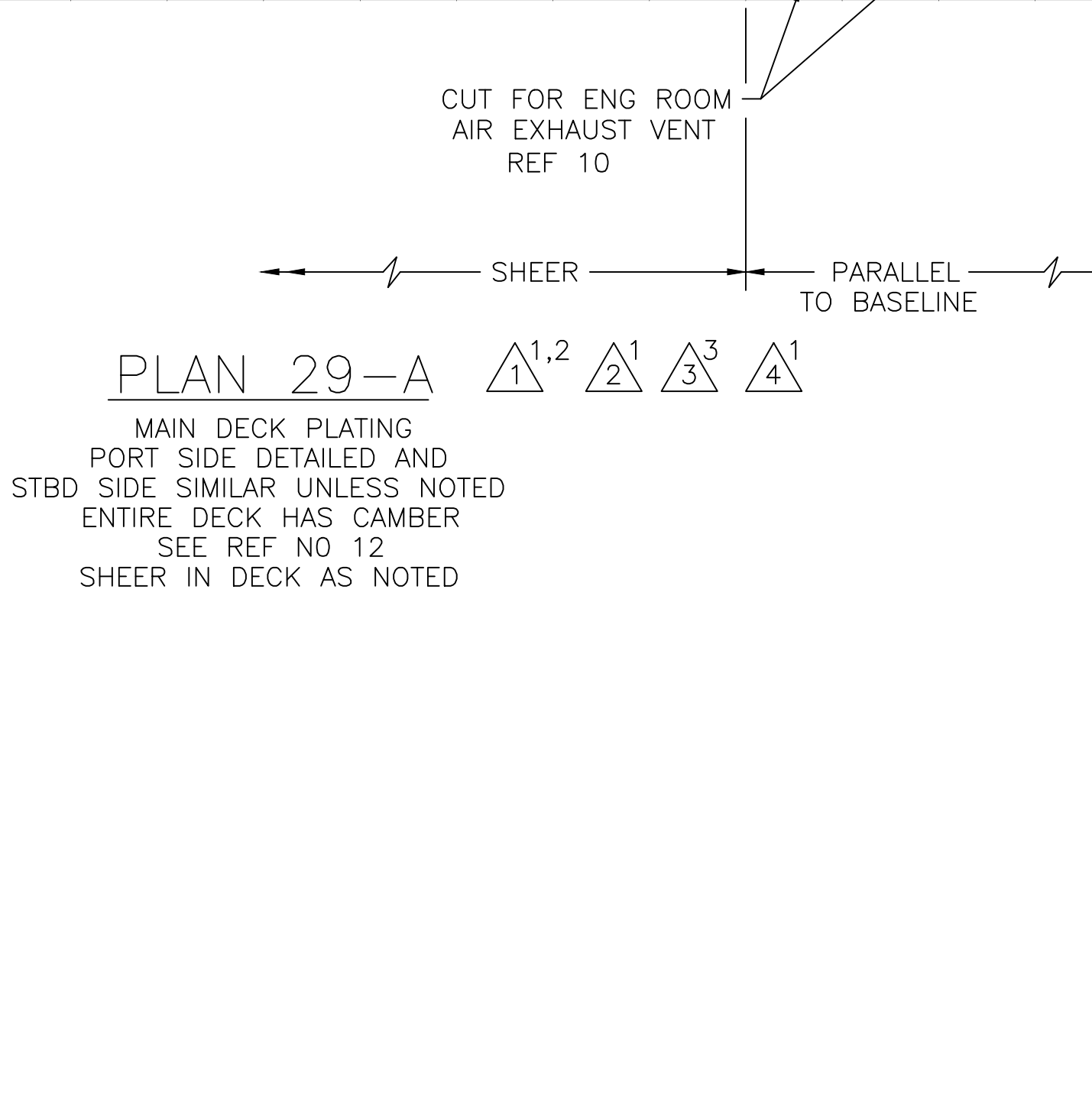
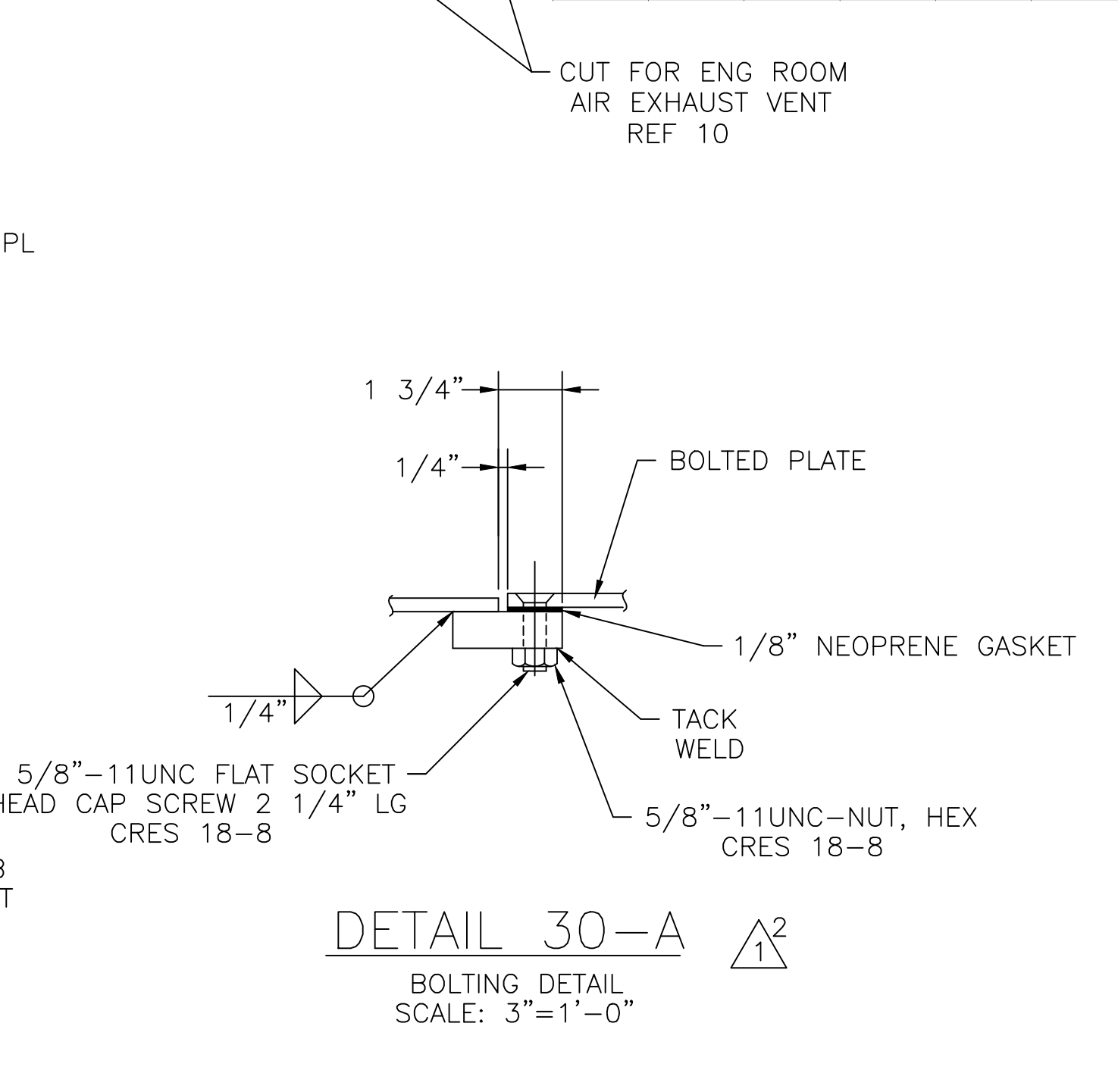
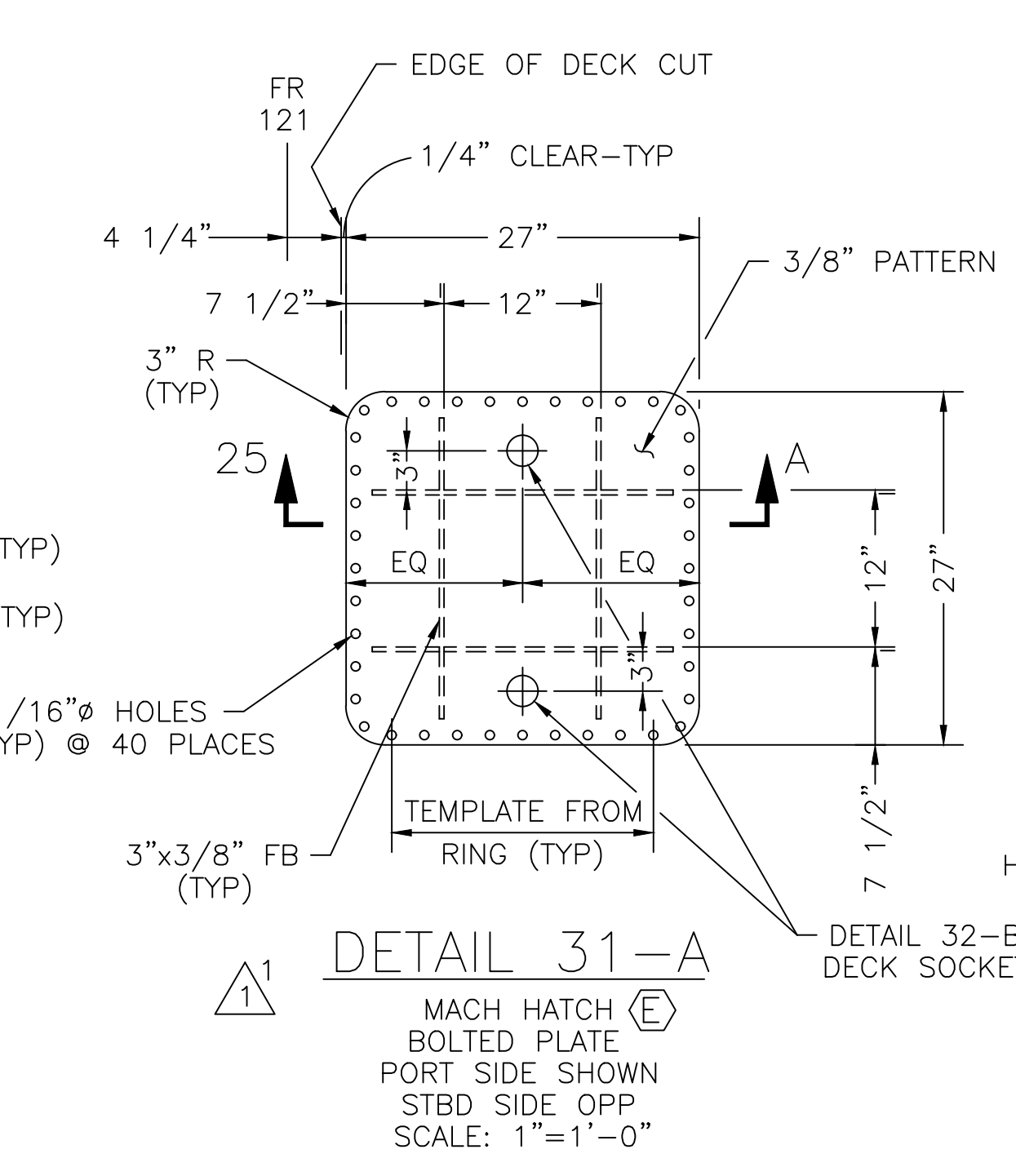
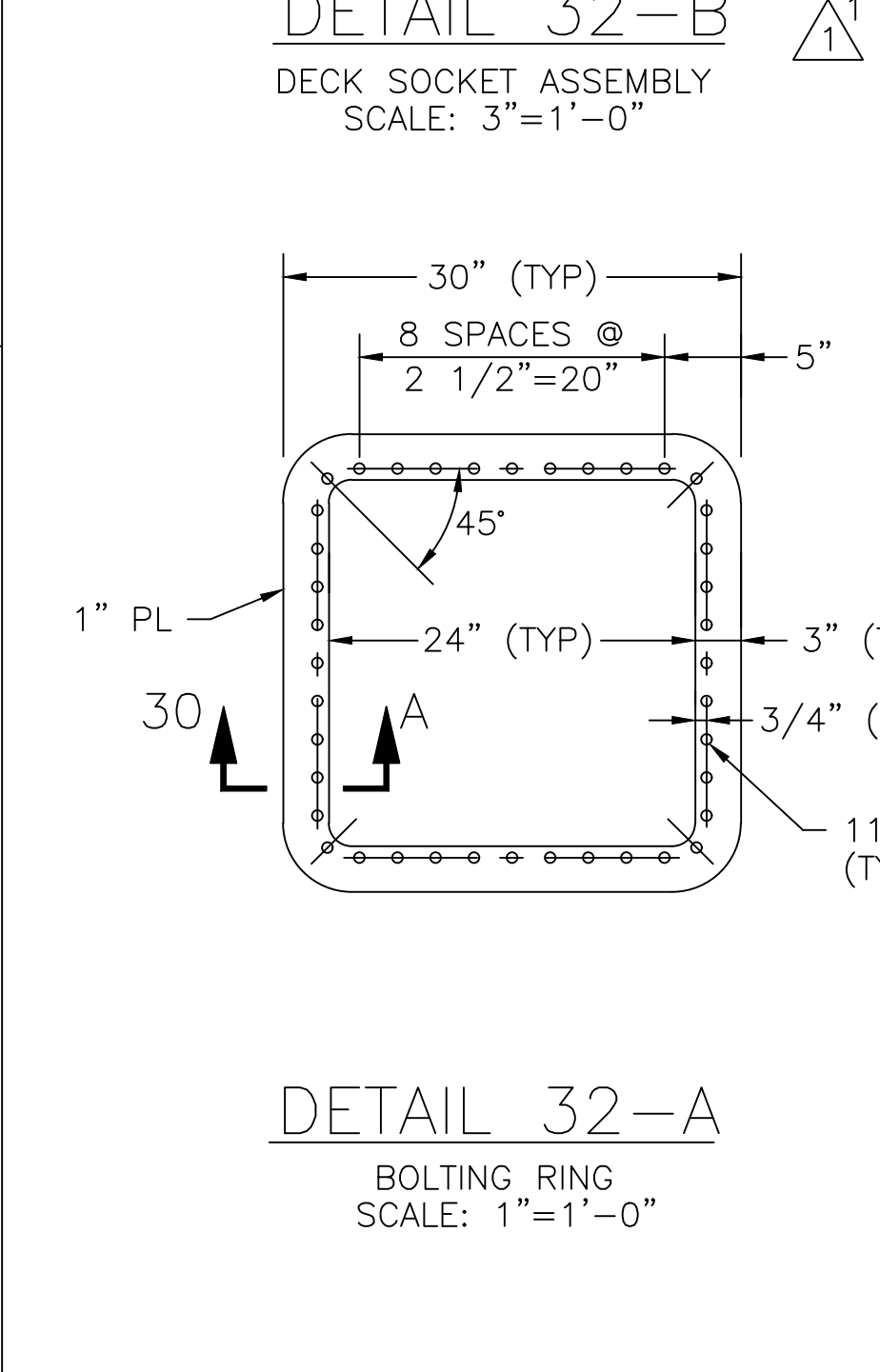
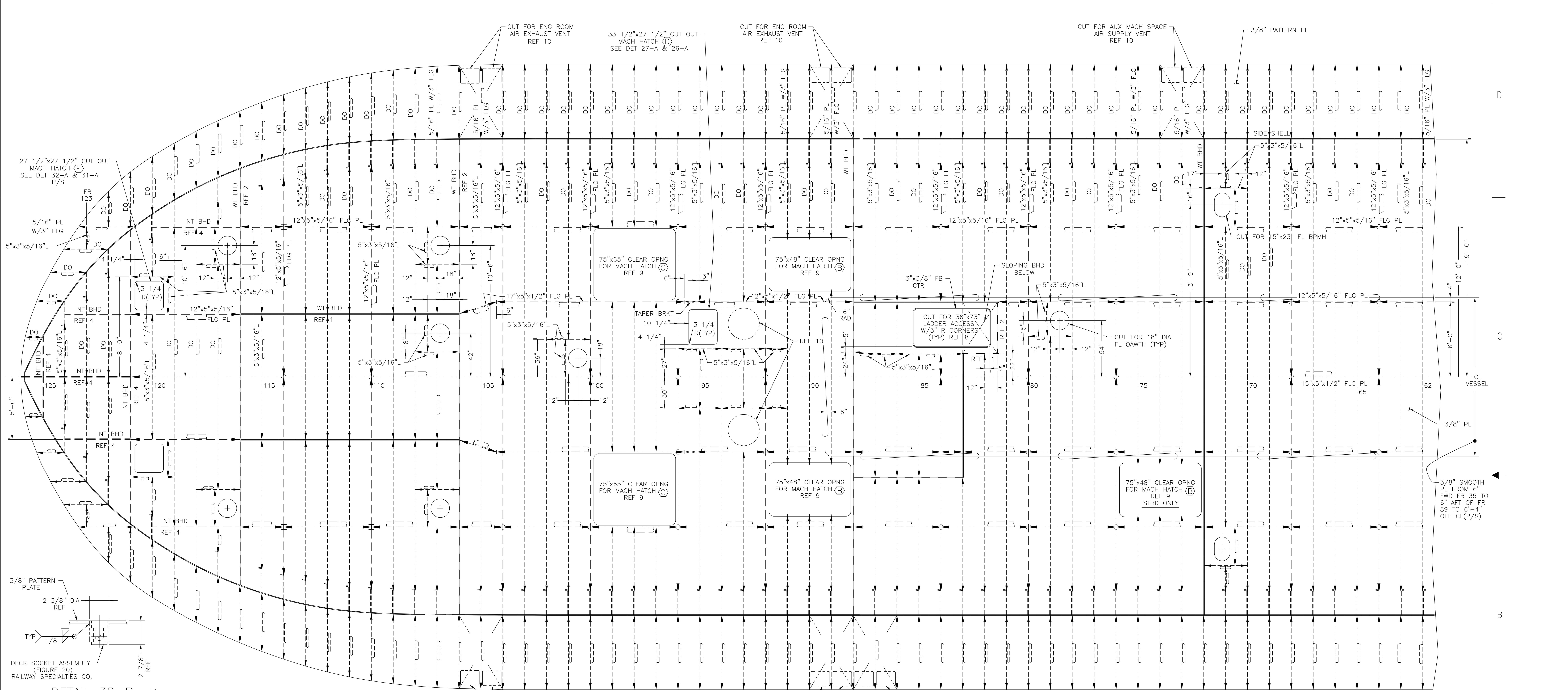
JOB NO. C123	DRAWN BY: PWF	CHECKED BY: NR	SCALE: 3/8"=1'-0"	DATE: 11/11/11	DATE: 11/11/11	DATE: 11/11/11	SHEET 2 OF 4	NO. 5	S-2
PROJECT: NC-240-0081									



PARALLEL TO BASELINE
SHEER

△^{1,2} △¹ △² △¹
PLAN 21-A
 MAIN DECK PLATING
 PORT SIDE DETAILED AND
 STBD SIDE SIMILAR UNLESS NOTED
 ENTIRE DECK HAS CAMBER
 SEE REF. NO. 12
 SHEER IN DECK AS NOTED

DECK AND BOTTOM SCANTLING					
JOB NO. C123	DRAWN BY: PWF	DATE: 10/15/03	SCALE: 3/8"=1'-0"	SHEET 3 OF 4	REV 5
WALL NO. 123	CHECKED BY: NR	DWG NO. NC-240-0081	DATE: 10/15/03	FIG. NO. S-2	



DECK AND BOTTOM SCANTLING					
JOB NO.	WALL NO.	OWNER	DATE	ISSUE	DATE
C123	123	PPG			
DRAWN BY:	PWF	DWG NO.	NC-240-0081	SHEET	4
CHECKED BY:	NR			OF	5
SCALE:	3/8"=1'-0"				

U.S. Department of
Homeland Security

United States
Coast Guard



Commanding Officer
United States Coast Guard
Marine Safety Center

US Coast Guard Stop 7430
2703 Martin Luther King Jr Ave SE
Washington, DC 20593-7430
Staff Symbol: MSC
Phone: (202) 795-6729
Email: msc@uscg.mil

16710/P012549/tmw
Serial: E2-2202980
September 9, 2022

NCDOT Ferry Division
Attn: Jeremy Remme
8550 Shipyard Road
Manns Harbor, NC 27953
jjremme@ncdot.gov

Subj: CEDAR ISLAND, O.N. 1023760
Moss Point Marine Hull No. 123
207.8' x 38.0' x 12.5' Passenger Ferry (H)
Electrical One-line and Load Analysis

Ref: (a) NCDOT Dwg. No. NC-240-0041, Rev. 8, "Electrical One Line," 2 sheet, dated August 22, 2022
(b) NCDOT Doc. No. NC-240-0040, Rev. 1, "Elec. Load Analysis," 1 page dated August 31, 2022

Dear Mr. Remme:

We reviewed references (a) and (b), submitted by your letter dated September 1, 2022 (MSC Document No. 2215816), for compliance with 46 CFR Subchapter H, Reference (a) is **Approved**. The installation, workmanship and testing shall be accomplished to the satisfaction of the cognizant Officer in Charge, Marine Inspection (OCMI). Reference (b) is **Examined**. Specific approval of this reference is not required; however, it contains information that is needed to verify compliance and subsequent approval of required plans.

As an agreed-upon condition for your participation in the Marine Safety Center's electronic commerce program, you must provide the OCMI with a copy of this letter and references (a) and (b).

Our Project Number for this vessel is P012549. Please ensure that all future correspondence includes the Project Number and the Official Number that appears in the subject line.

Subj: CEDAR ISLAND, O.N. 1023760
Electrical One-line and Load Analysis

16710/P012549/tmw
Serial: E2-2202980
September 9, 2022

Please contact Mr. Tyler Whidby at (202) 795-6737 with any questions concerning our review.

Sincerely,

Shawn P. Karasevucz

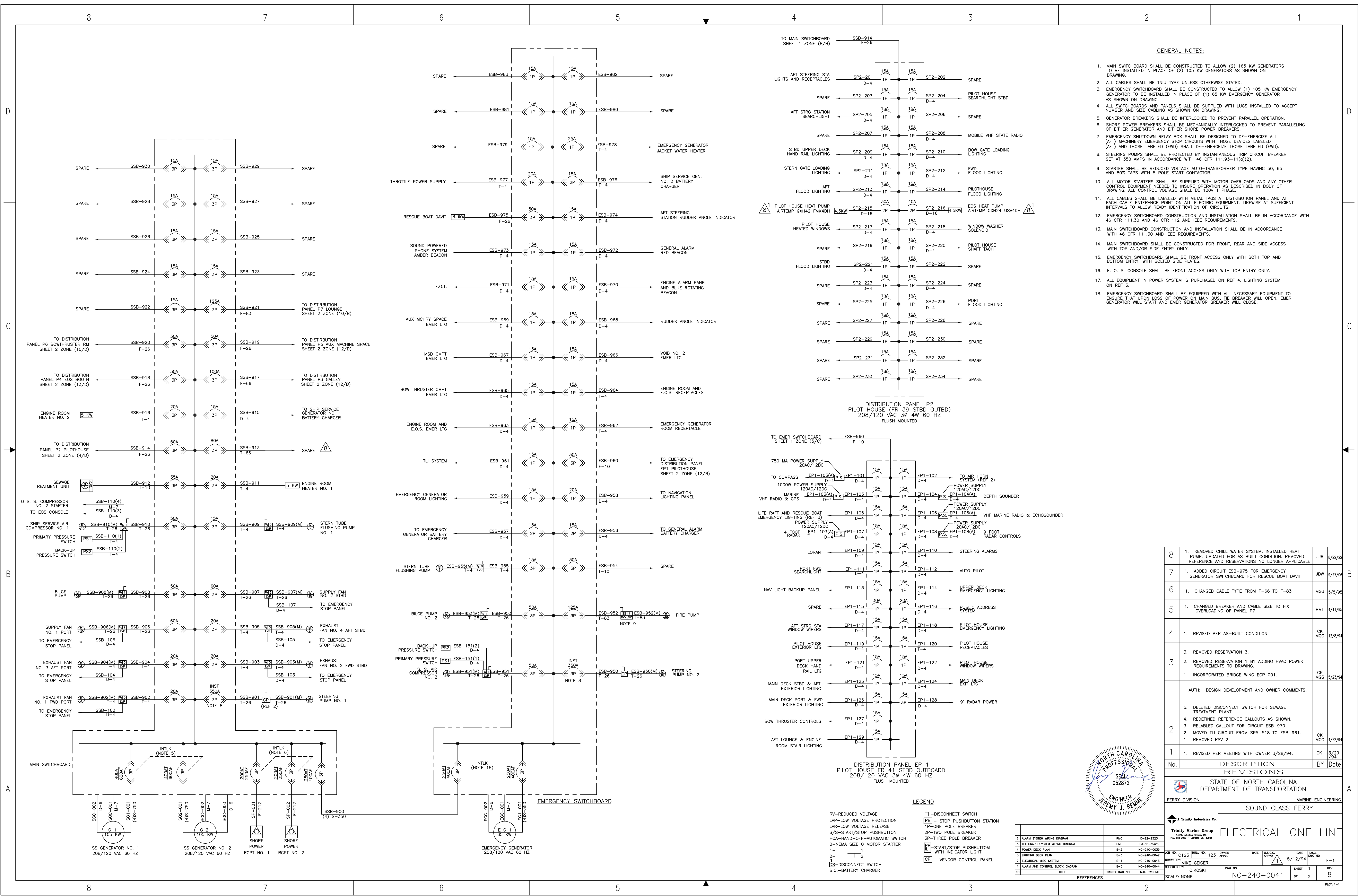
S. P. KARASEVICZ

Lieutenant Commander, U.S. Coast Guard

Chief, Electrical Branch

By direction

Copy: Supervisor, Coast Guard Marine Safety Detachment Fort Macon
Commander, Coast Guard Sector North Carolina, Prevention Department



- GENERAL NOTES:**
- MAIN SWITCHBOARD SHALL BE CONSTRUCTED TO ALLOW (2) 165 KW GENERATORS TO BE INSTALLED IN PLACE OF (2) 105 KW GENERATORS AS SHOWN ON DRAWING.
 - ALL CABLES SHALL BE TNU TYPE UNLESS OTHERWISE STATED.
 - EMERGENCY SWITCHBOARD SHALL BE CONSTRUCTED TO ALLOW (1) 105 KW EMERGENCY GENERATOR TO BE INSTALLED IN PLACE OF (1) 65 KW EMERGENCY GENERATOR AS SHOWN ON DRAWING.
 - ALL SWITCHBOARDS AND PANELS SHALL BE SUPPLIED WITH LUGS INSTALLED TO ACCEPT NUMBER AND SIZE CABLES AS SHOWN ON DRAWING.
 - GENERATOR BREAKERS SHALL BE INTERLOCKED TO PREVENT PARALLEL OPERATION.
 - SHORE POWER BREAKERS SHALL BE MECHANICALLY INTERLOCKED TO PREVENT PARALLELING OF EITHER GENERATOR AND EITHER SHORE POWER BREAKERS.
 - EMERGENCY SHUTDOWN RELAY BOX SHALL BE DESIGNED TO DE-ENERGIZE ALL (AFT) MACHINERY EMERGENCY STOP CIRCUITS WITH THOSE DEVICES LABELED (AFT) AND THOSE LABELED (FWD) SHALL DE-ENERGIZE THOSE LABELED (FWD).
 - STEERING PUMPS SHALL BE PROTECTED BY INSTANTANEOUS TRIP CIRCUIT BREAKER SET AT 350 AMPS IN ACCORDANCE WITH 46 CFR 111.93-11(a)(2).
 - STARTER SHALL BE REDUCED VOLTAGE AUTO-TRANSFORMER TYPE HAVING 50, 65 AND 80% TAPS WITH 5 POLE START CONTACTOR.
 - ALL MOTOR STARTERS SHALL BE SUPPLIED WITH MOTOR OVERLOADS AND ANY OTHER CONTROL EQUIPMENT NEEDED TO INSURE OPERATION AS DESCRIBED IN BODY OF DRAWING. ALL CONTROL VOLTAGE SHALL BE 120V 1 PHASE.
 - ALL CABLES SHALL BE LABELED WITH METAL TAGS AT DISTRIBUTION PANEL AND AT EACH CABLE ENTRANCE POINT ON ALL ELECTRIC EQUIPMENT. LIKEWISE AT SUFFICIENT INTERVALS TO ALLOW READY IDENTIFICATION OF CIRCUITS.
 - EMERGENCY SWITCHBOARD CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH 46 CFR 111.30 AND 46 CFR 112 AND IEEE REQUIREMENTS.
 - MAIN SWITCHBOARD CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH 46 CFR 111.30 AND IEEE REQUIREMENTS.
 - MAIN SWITCHBOARD SHALL BE CONSTRUCTED FOR FRONT, REAR AND SIDE ACCESS WITH TOP AND/OR SIDE ENTRY ONLY.
 - EMERGENCY SWITCHBOARD SHALL BE FRONT ACCESS ONLY WITH BOTH TOP AND BOTTOM ENTRY, WITH BOLTED SIDE PLATES.
 - E. O. S. CONSOLE SHALL BE FRONT ACCESS ONLY WITH TOP ENTRY ONLY.
 - ALL EQUIPMENT IN POWER SYSTEM IS PURCHASED ON REF 4, LIGHTING SYSTEM ON REF 3.
 - EMERGENCY SWITCHBOARD SHALL BE EQUIPPED WITH ALL NECESSARY EQUIPMENT TO ENSURE THAT UPON LOSS OF POWER ON MAIN BUS, THE BREAKER WILL OPEN, EMER GENERATOR WILL START AND EMER GENERATOR BREAKER WILL CLOSE.

No.	DESCRIPTION	BY	Date
8	1. REMOVED CHILL WATER SYSTEM, INSTALLED HEAT PUMP. UPDATED FOR AS BUILT CONDITION. REMOVED REFERENCE AND RESERVATIONS NO LONGER APPLICABLE	JUR	8/22/22
7	1. ADDED CIRCUIT ESB-975 FOR EMERGENCY GENERATOR SWITCHBOARD FOR RESCUE BOAT DAVIT	JOW	9/27/08
6	1. CHANGED CABLE TYPE FROM F-66 TO F-83	MGG	5/5/95
5	1. CHANGED BREAKER AND CABLE SIZE TO FIX OVERLOADING OF PANEL P7.	BMT	4/11/95
4	1. REVISED PER AS-BUILT CONDITION.	CK MGG	12/8/94
3	3. REMOVED RESERVATION 3. 2. REMOVED RESERVATION 1 BY ADDING HVAC POWER REQUIREMENTS TO DRAWING.	CK MGG	5/23/94
2	1. INCORPORATED BRIDGE WING ECP 001. AUTH: DESIGN DEVELOPMENT AND OWNER COMMENTS.	CK MGG	4/22/94
1	1. REVISED PER MEETING WITH OWNER 3/28/94.	CK	3/29/94

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FERRY DIVISION MARINE ENGINEERING

SOUND CLASS FERRY

ELECTRICAL ONE LINE

Trinity Marine Group
1400 Laurel Street, N.C. 28506

DATE: 5/12/94
DRAWN BY: MIKE GEIGER
CHECKED BY: C.KOSKI

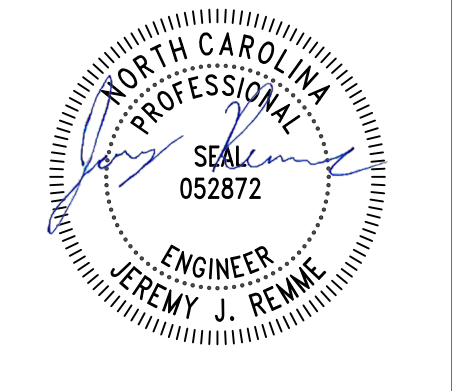
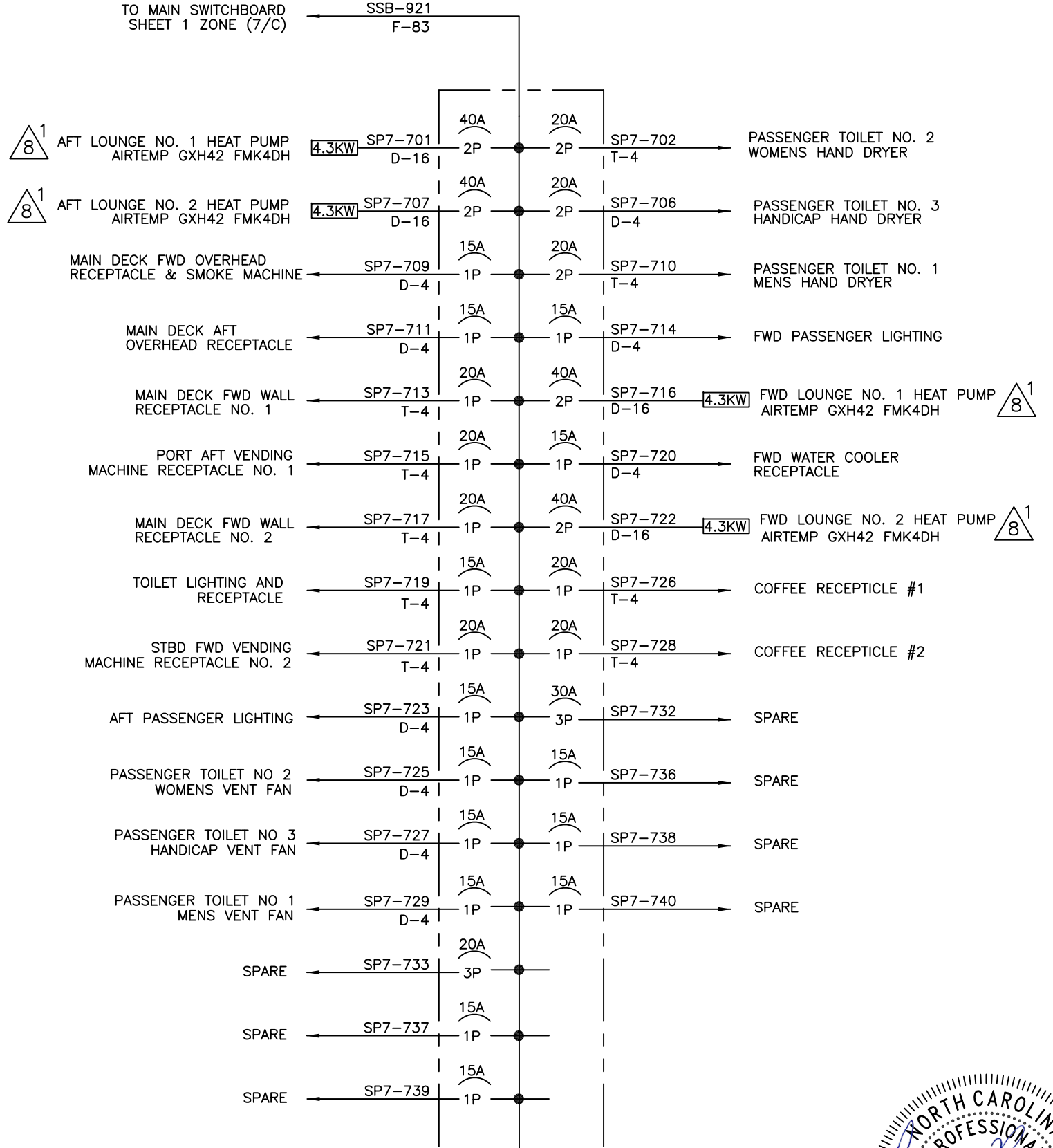
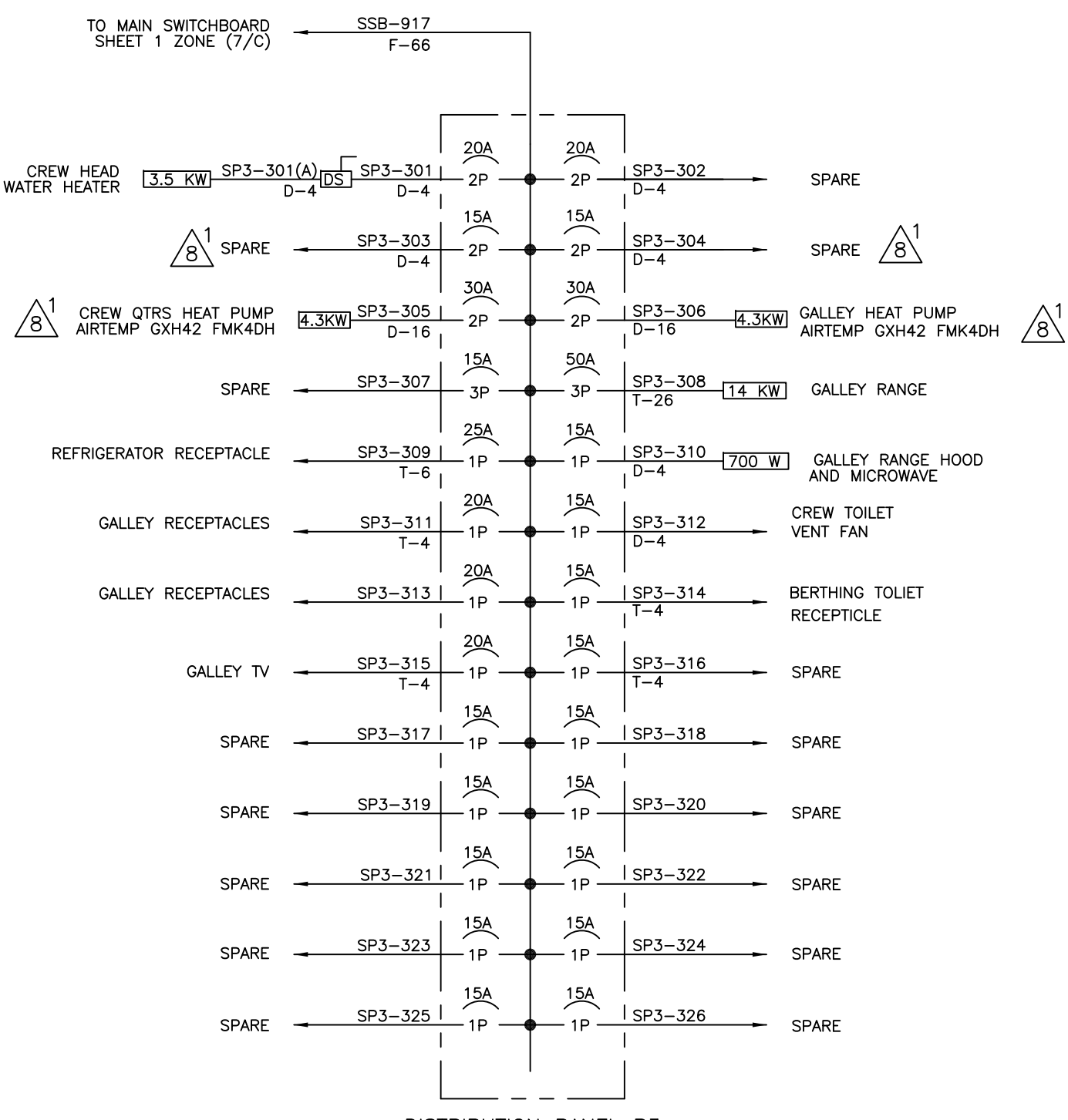
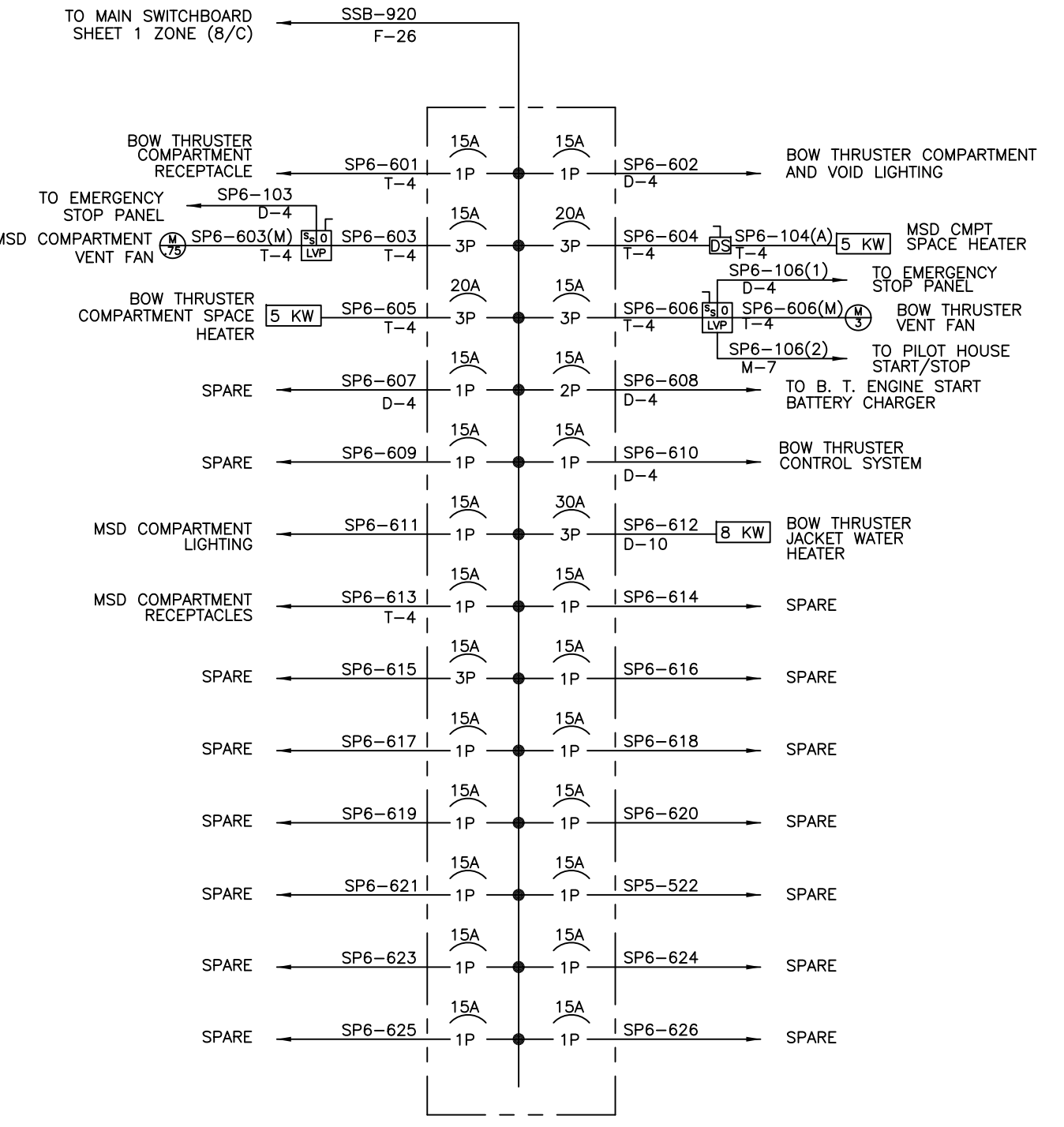
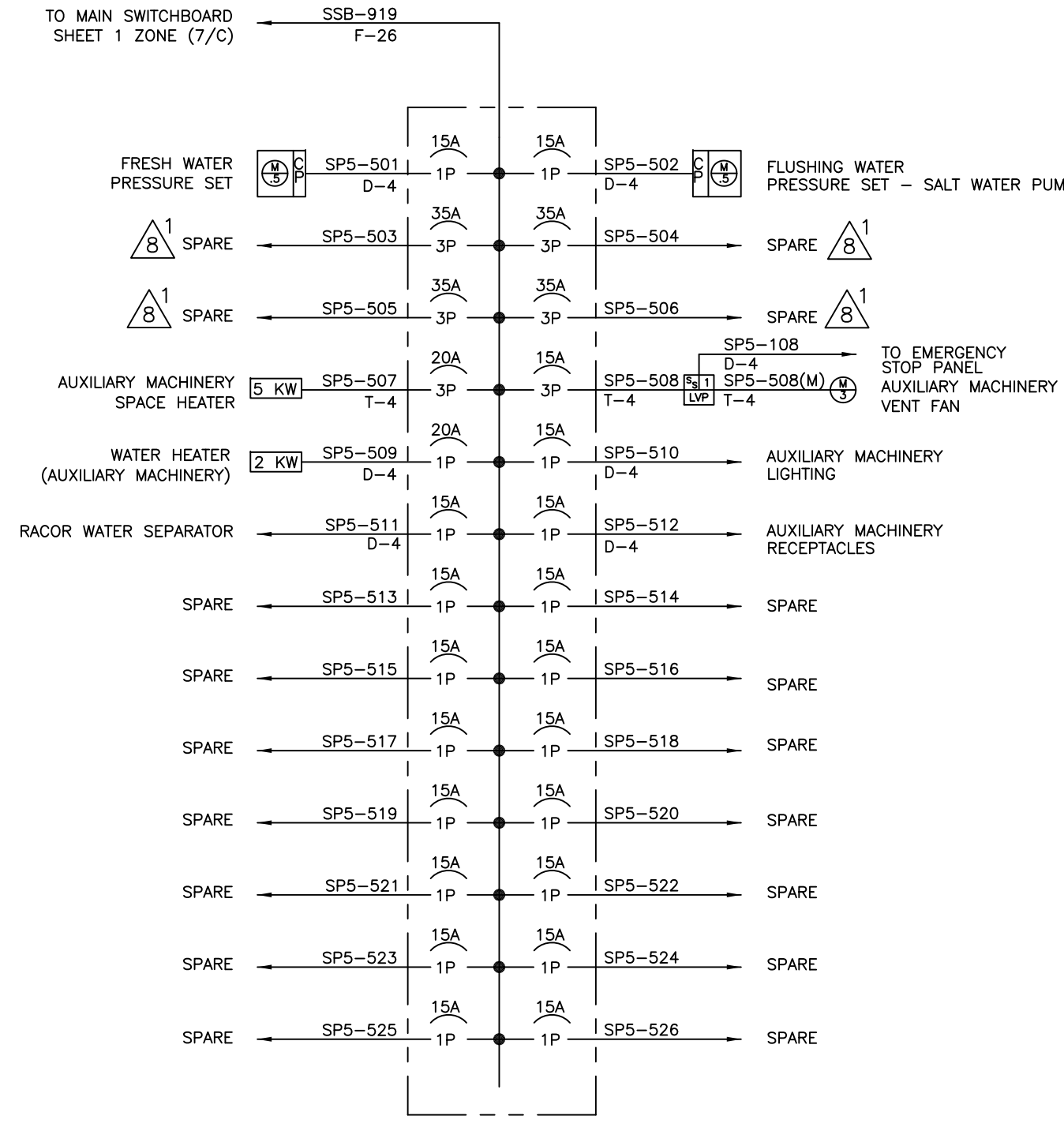
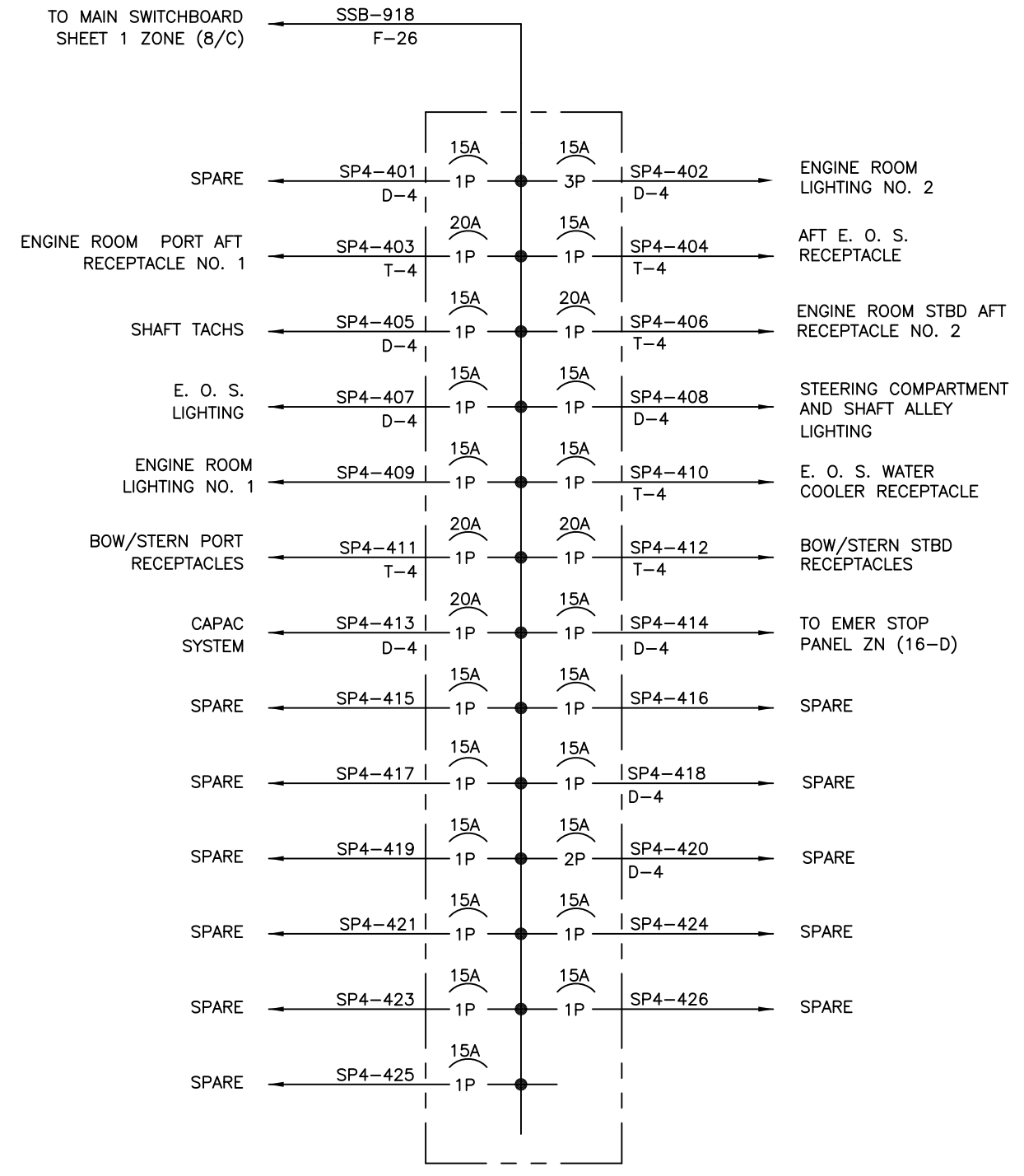
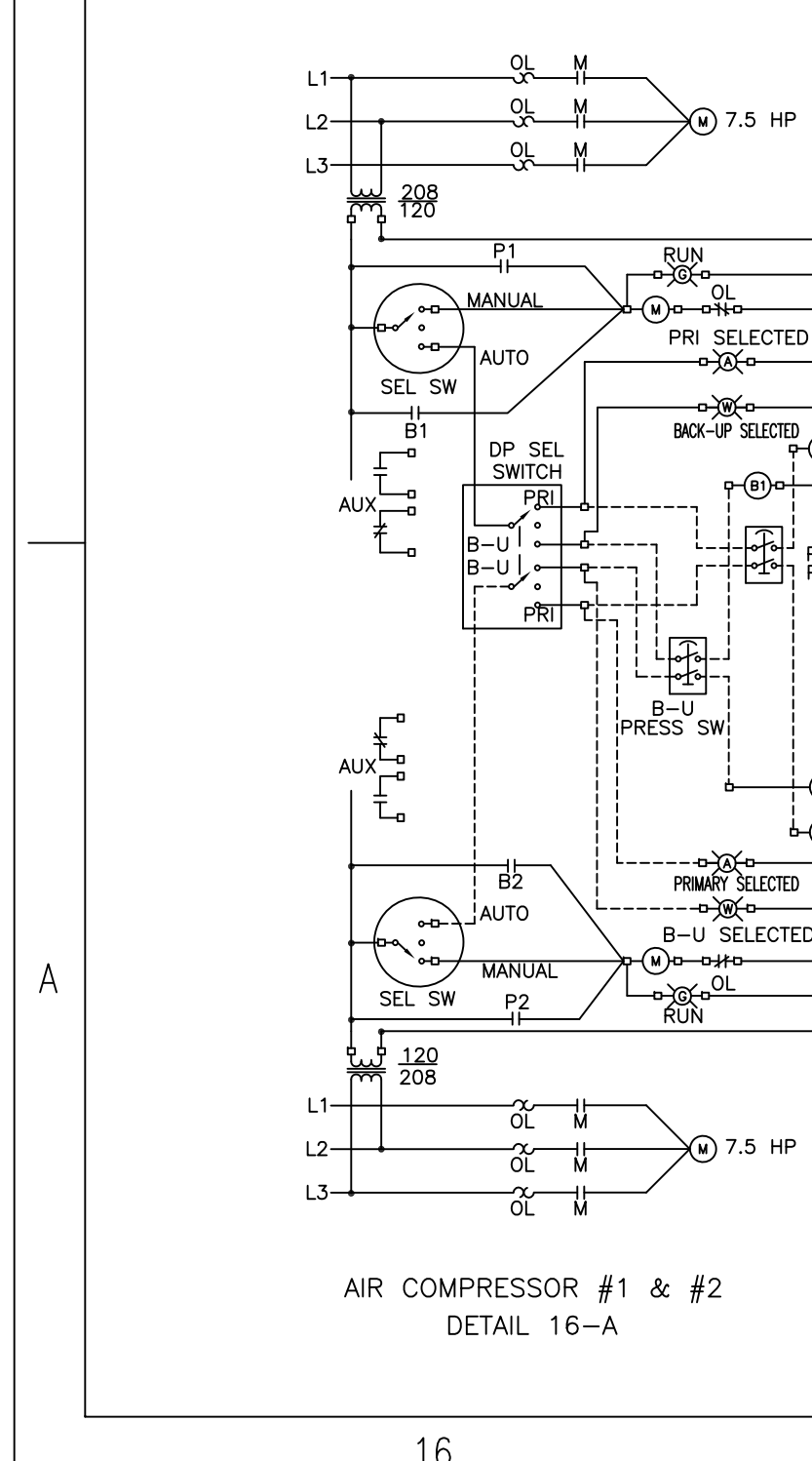
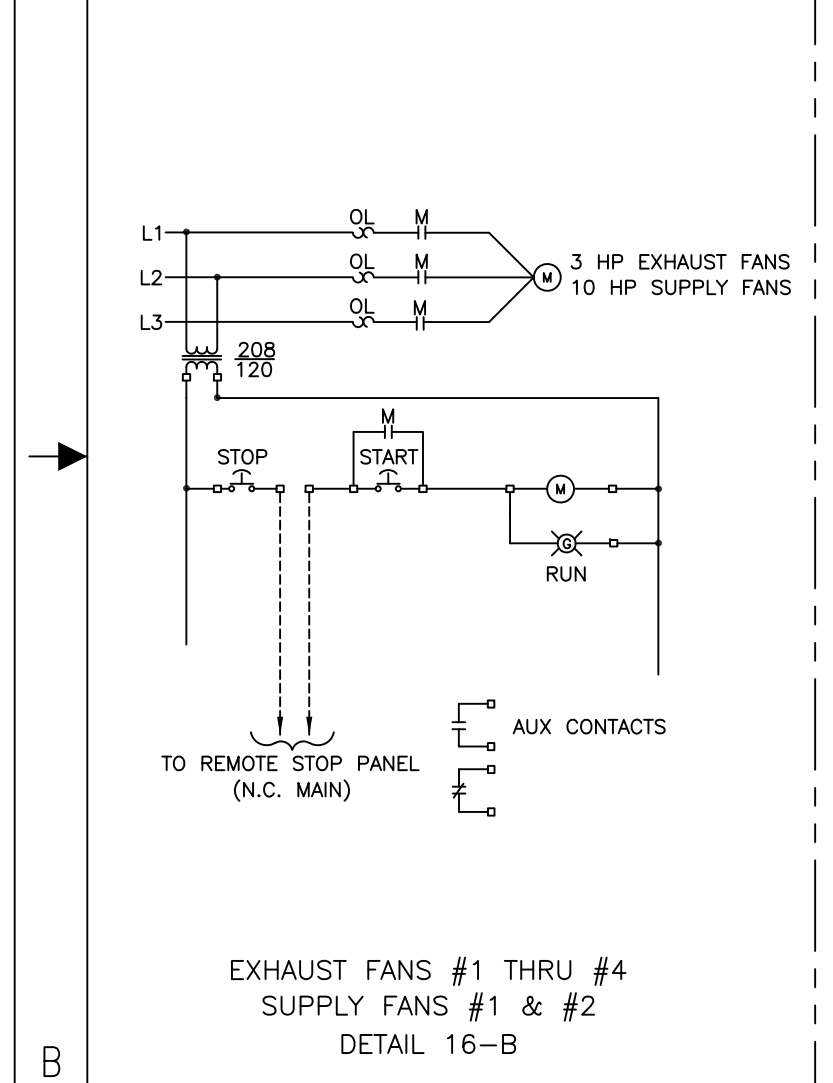
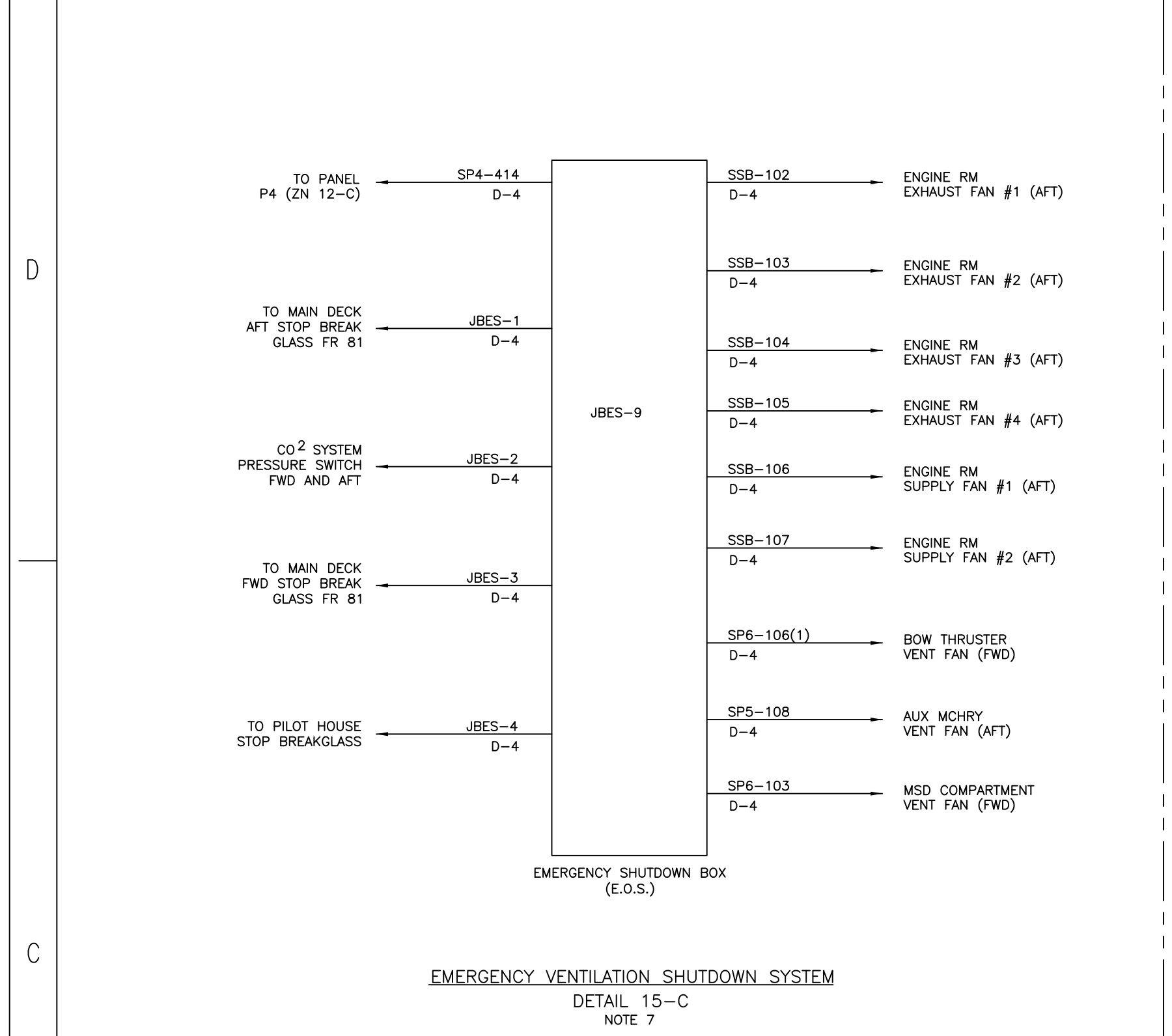
NO. NC-240-0041
SHEET 1 OF 2



- LEGEND**
- RV - REDUCED VOLTAGE
 - LVP - LOW VOLTAGE PROTECTION
 - LVR - LOW VOLTAGE RELEASE
 - S/S - START/STOP PUSHBUTTON
 - H/O - HAND-OFF-AUTOMATIC SWITCH
 - 0 - NEMA SIZE 0 MOTOR STARTER
 - 1 - 1
 - 2 - 2
 - DS - DISCONNECT SWITCH
 - B.C. - BATTERY CHARGER
 - DS - DISCONNECT SWITCH
 - SP - STOP PUSHBUTTON STATION
 - 1P - ONE POLE BREAKER
 - 2P - TWO POLE BREAKER
 - 3P - THREE POLE BREAKER
 - ST - START/STOP PUSHBUTTON WITH INDICATOR LIGHT
 - CP - VENDOR CONTROL PANEL

REFERENCES

NO.	TITLE	TRINITY DWG NO.	N.C. DWG NO.
4	ALARM SYSTEM WIRING DIAGRAM	PAC	D-23-2333
5	TELEGRAPH SYSTEM WIRING DIAGRAM	PAC	DA-21-2323
4	POWER DECK PLAN	E-2	NC-240-0039
3	LIGHTING DECK PLAN	E-3	NC-240-0042
3	ELECTRICAL WIRING SYSTEM	E-4	NC-240-0043
1	ALARM AND CONTROL BLOCK DIAGRAM	E-5	NC-240-0044



ELECTRICAL ONE LINE							
JOB NO. C123	REVISION NO. 123	DRAWN BY: M.G.G.	DATE: 5/12/94	SCALE: NONE	PROJECT NO. NC-240-0041	SHEET 2 OF 2	REV 8

U.S. Department of
Homeland Security

United States
Coast Guard



Commanding Officer
United States Coast Guard
Marine Safety Center

US Coast Guard Stop 7430
2703 Martin Luther King Jr Ave SE
Washington, DC 20593-7430
Staff Symbol: MSC-2
Phone: (202) 795-6729
Email: msc@uscg.mil

16710/P012549/rwr
Serial: E1-2203554
November 7, 2022

North Carolina Department of Transportation (NCDOT)
Attn: Mr. Jeremy Remme
8550 Shipyard Road
Manns Harbor, NC 27953
jjremme@ncdot.gov

Subj: CEDAR ISLAND, O.N. 1023760
Moss Point Marine Hull No. 123
207.8' x 38' x 12.5' Passenger Ferry (H)
HVAC Modifications

Ref: (a) NCDOT Dwg. No. NC-240-0075, Rev. 1, "HVAC and Machinery Ventilation Arr & Details," 2 sheets, dated September 8, 2022
(b) Marine Pipe and Cable Transit, Technical Data Sheet, 2 pages, undated
(c) Airtemp, Handler and Condenser Data Sheets, 9 pages, undated
(d) Your email dated November 3, 2022
(e) Our letter Serial No. E1-2203169, dated October 5, 2022

Dear Mr. Remme:

We reviewed references (a) through (c), submitted by your letter dated October 21, 2022 (MSC Document No. 2216893), for compliance with 46 CFR Subchapter H. Reference (a) is **Approved**. The installation, workmanship and testing shall be accomplished to the satisfaction of the cognizant Officer in Charge, Marine Inspection (OCMI). References (b) though (d) are **Examined**. Specific approval of these references is not required; however, they contain information that is needed to verify compliance and subsequent approval of required plans. Calculations such as these are not normally approved but are examined to verify compliance with appropriate regulations. The following comments apply:

Reference (a)

1. As per reference (d), there are 4 engine room exhaust fans and 1 auxiliary machinery space exhaust fan meeting the ventilation requirements of Table 72.15-10(b). We note the bill of materials (BOM) indicates the use of 6 engine room vent fans, but only 5 are shown and needed for compliance. This issue shall be addressed to the satisfaction of the OCMI. This comment supersedes comment 1 of reference (e).

2. We note the data sheets and corresponding part numbers for the AIRTEMP condensers and air handlers for the HVAC system provided in reference (c). Comment 2 of reference (e) is resolved.
3. As per reference (d), the Hartzell 50-29-VN3 supply fans provide 16,000CFM each for a total of 32,000CFM. The total deck area for the engine room is 1,146ft², thus demonstrating compliance with 46 CFR 72.15-15(c)(2). Comment 3 of reference (e) is resolved.
4. As per reference (d), the Hartzell 44 MDA-24-DK3 exhaust vent fans provide 6,000CFM each for a total of 24,000CFM. The total engine room volume is 14,516ft³, ensuring the time for air change is in compliance with 46 CFR 72.15-10(b). Comment 4 of reference (e) is resolved.
5. Your revised plan does not provide information about the control of ventilation fans. As per 46 CFR 72.15-15(b), means shall be provided for stopping all fans in ventilation systems serving machinery and cargo spaces and for closing all doorways, ventilators, and annular spaces around funnels and other openings to such spaces from outside these spaces in case of fire. This issue shall be addressed to the satisfaction of the OCMI. This comment supersedes comment 5 of reference (e).
6. Your plan indicates the use of the existing chill water system ductwork to be repurposed and used as fresh air intake. It is understood that the existing ductwork will be contained solely within the space and will not have any fans or power units, just open vents. Comment 6 of reference (e) is no longer applicable.
7. In reference (d) you provided the fan and space details for the 4 toilet vent fans, items 27; however, you did not provide the associated ducting material or size information. As per 46 CFR 72.05-50(c), where ventilation ducts are required to meet bulkhead requirements, the space within the duct shall be considered to be the same as the space served by the ventilator, and the ducts need to be insulated to meet the applicable requirements of 46 CFR Tables 72.05-10(d) and 72.05-10(e). This issue shall be addressed to the satisfaction of the cognizant OCMI. This comment supersedes comment 7 of reference (e).
8. Your revised plan does not indicate any details for the associated supply and exhaust ductwork. The scope of our review is limited to the supply and exhaust fans only. Should you require approval of the ductwork, please submit plans to the cognizant OCMI or Marine Safety Center for review. This comment supersedes comment (8) of reference (e).
9. In your revised plan, it is understood that the deck penetrations of "Plan 15-C", will be accomplished via steel pipe and welded to the deck. Firestop sealant will be applied inside the pipe around the copper tubes and insulation. Comment 9 of reference (e) is resolved.
10. As per your letter, the emergency generator space is not considered part of this review. Comment 10 of reference (e) is no longer applicable.

Subj: CEDAR ISLAND, O.N. 1023760
HVAC Modifications

16710/P012549/rwr
Serial: E1-2203554
November 7, 2022

As an agreed-upon condition for your participation in the Marine Safety Center's electronic commerce program, you must provide the OCMI with a copy of this letter and reference (a).

Our Project Number for this vessel is P012549. Please ensure that all future correspondence includes the Project Number and the Official Number that appears in the subject line.

Please contact LT Ryan Robertson at (202) 795-6735 with questions concerning our review.

Sincerely,

R. E. THOMAS
Lieutenant Commander, U. S. Coast Guard
Chief, Machinery Branch
By direction

Copy: Commander, Coast Guard Sector North Carolina, Prevention Department

PIPING BILL OF MATERIAL

DESCRIPTION	MATERIAL	ANSI	ASTM	REMARKS
1/4" O.D. TUBE	COPPER		B-88	TYPE K
3/8" O.D. TUBE	COPPER		B-88	TYPE K
1/2" O.D. TUBE	COPPER		B-88	TYPE K
5/8" O.D. TUBE	COPPER		B-88	TYPE K

BULKHEAD PENETRATION BILL OF MATERIAL

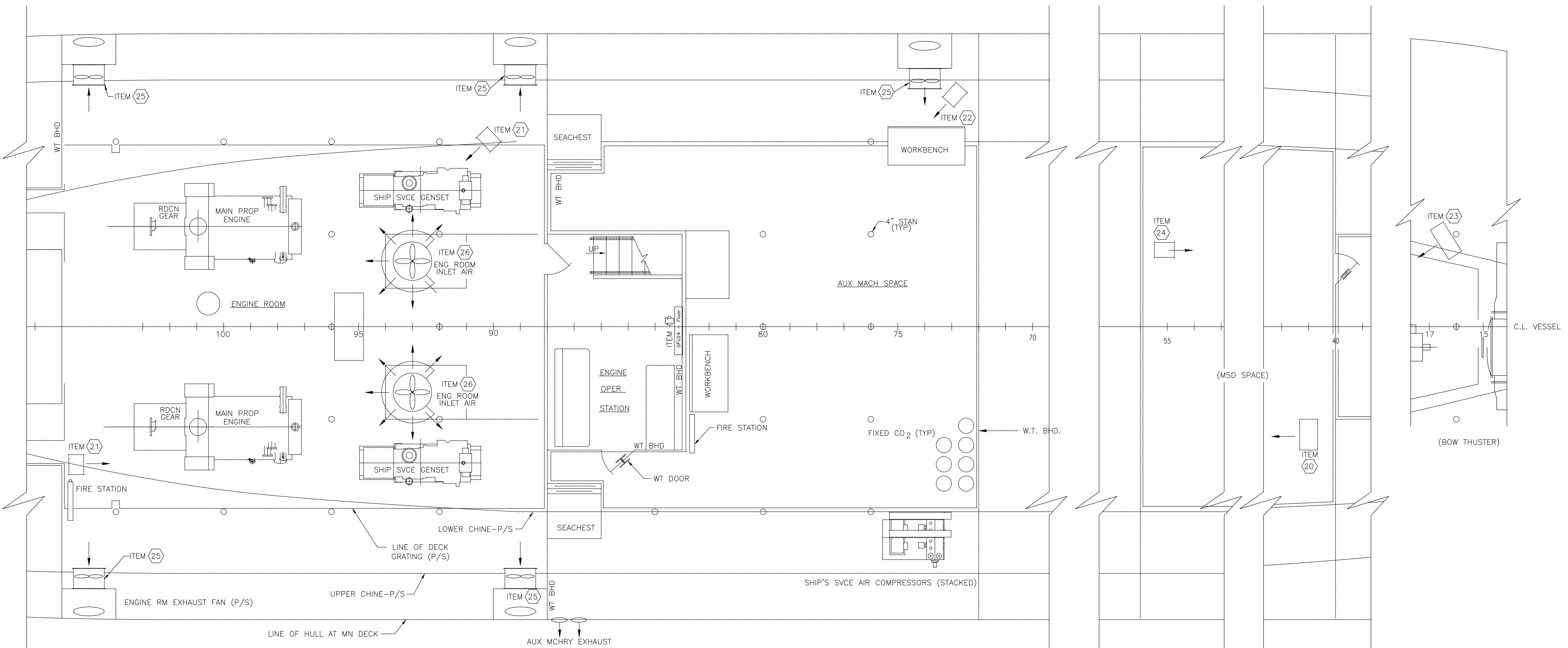
DESCRIPTION	MATERIAL	ANSI	ASTM	REMARKS
3" SCHEDULE 80	STEEL		A53	Grade B
6" SCHEDULE 80	STEEL		A53	Grade B
FIRESTOP - MPACT MARINE FIRESTOP 2010 IMO FTP CODE Annex 1 Part3	SEALANT			OR EQUIVALENT

HVAC EQUIPMENT LIST

PC NO.	QTY	ITEM DESCRIPTION	MFGR	MODEL	REMARKS
1	4	A/C MULTI ZONE CONDENSER	AIRTEMP	GXH42(12.3)FMK4DH	PASSENGER LOUNGE
2	4	A/C AIR HANDLER	AIRTEMP	GHH24(7.0)LUK4DH	PASSENGER LOUNGE
3	4	A/C AIR HANDLER	AIRTEMP	GCH18(5.3)FMK4DH	PASSENGER LOUNGE
4	1	A/C MULTI ZONE CONDENSER	AIRTEMP	GXH42(12.3)FMK4DH	CREW QUARTERS
5	1	A/C AIR HANDLER	AIRTEMP	GHH24(7.0)LUK4DH	CREW QUARTERS
6	1	A/C AIR HANDLER	AIRTEMP	GCH18(5.3)FMK4DH	CREW QUARTERS
7	1	A/C MULTI ZONE CONDENSER	AIRTEMP	GXH42(12.3)FMK4DH	CREW GALLEY
8	1	A/C AIR HANDLER	AIRTEMP	GHH24(7.0)LUK4DH	CREW GALLEY
9	1	A/C AIR HANDLER	AIRTEMP	GCH18(5.3)FMK4DH	CREW GALLEY
10	1	A/C SINGLE ZONE CONDENSER	AIRTEMP	GXH24(7.0)USV4DH	ENGINEER OPERATING STATION (EOS)
11	1	A/C AIR HANDLER	AIRTEMP	GFU24(7.0)USV4DH	ENGINEER OPERATING STATION (EOS)
12	1	A/C MULTI ZONE CONDENSER	AIRTEMP	GXH42(12.3)FMK4DH	PILOTHOUSE
13	1	A/C AIR HANDLER	AIRTEMP	GCH12(5.3)FMK4DH	PILOTHOUSE
14	2	A/C AIR HANDLER	AIRTEMP	GCH18(5.3)FMK4DH	PILOTHOUSE

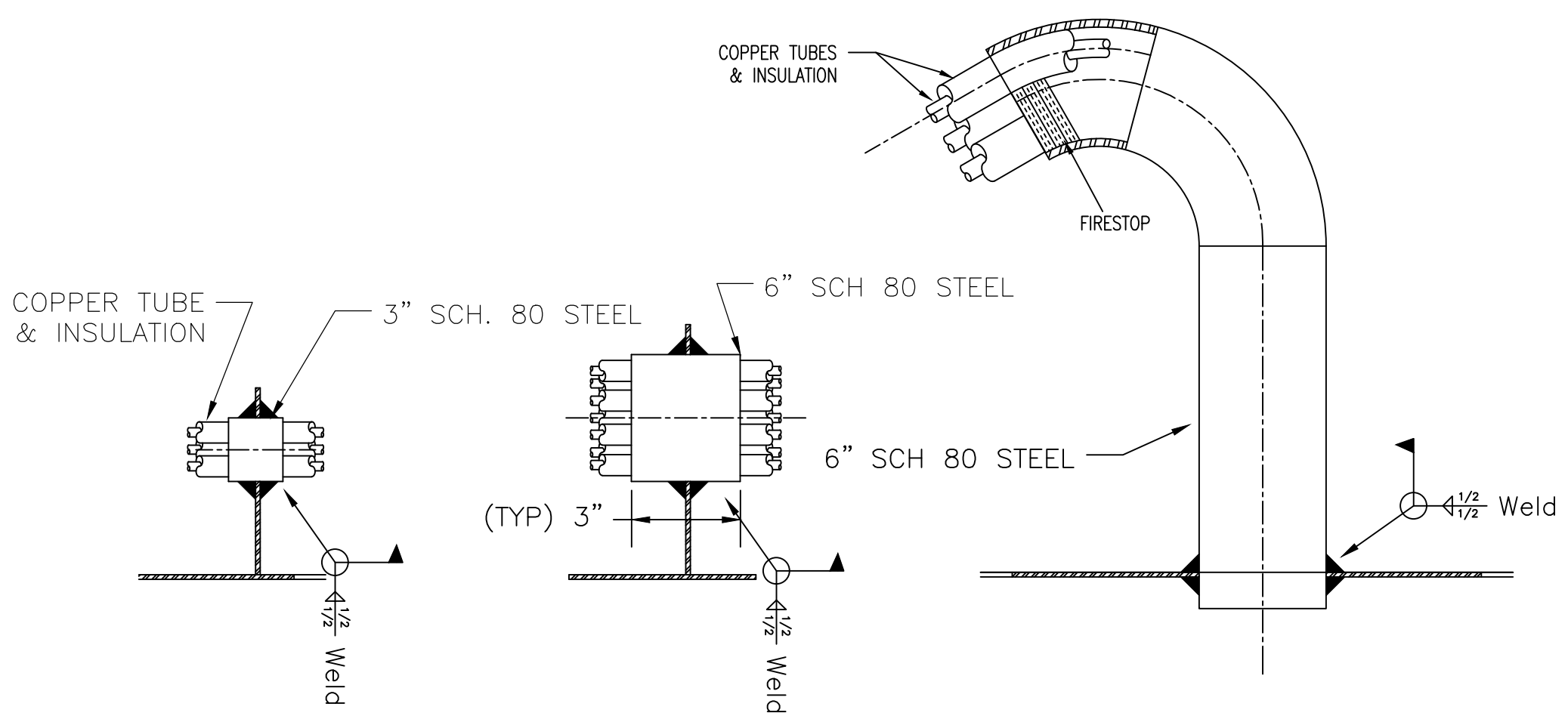
VENTILATION EQUIPMENT LIST

PC NO.	QTY	ITEM DESCRIPTION	MFGR	MODEL	REMARKS
20	1	MSD COMPARTMENT HEATER	CHROMALOX	LUH-05-83	MSD COMPARTMENT
21	2	ENGINE ROOM HEATER	CHROMALOX	LUH-05-83	ENGINE ROOM
22	2	AUX MACHINERY COMPARTMENT HEATER	CHROMALOX	LUH-05-83	AUX MACHINE SPACE
23	1	BOWTHRUSTER COMPARTMENT HEATER	CHROMALOX	LUH-05-83	AUX MACHINE SPACE
24	1	MSD COMPARTMENT VENT FAN	HARTZELL	44MDA-12-DG2	MSD COMPARTMENT EXHAUST
25	6	ENG RM, AUX MCHRY RM, VOID VENT FAN	HARTZELL	44MDA-24-DK3	ENG RM, AUX MCHRY RM & VOID
26	2	ENGINE ROOM SUPPLY FANS	HARTZELL	50-29-VN3	AFT MAIN DECK
27	4	TOILET VENT FANS	NUTONE	C-350C2	ALL TOILETS
28	4	TOILET VENT FANS	NUTONE	C-350C2	ALL TOILETS
29					

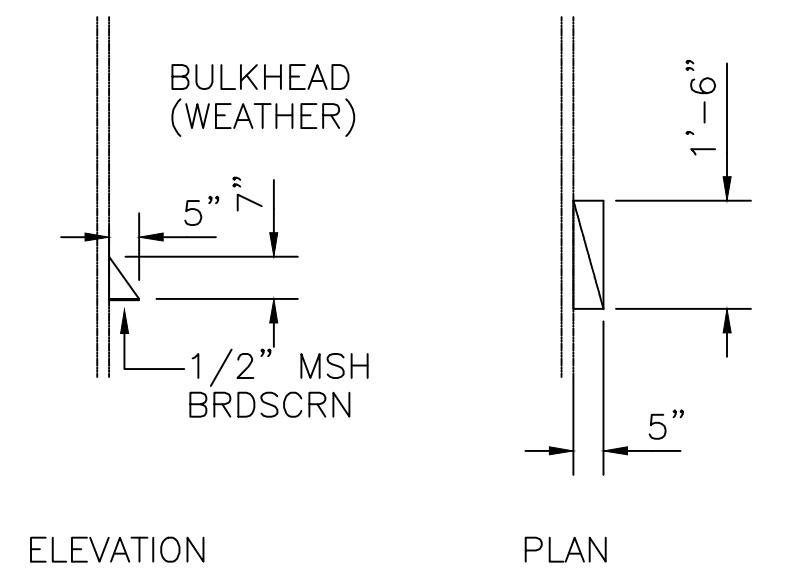


PLAN 5-A
HOLD

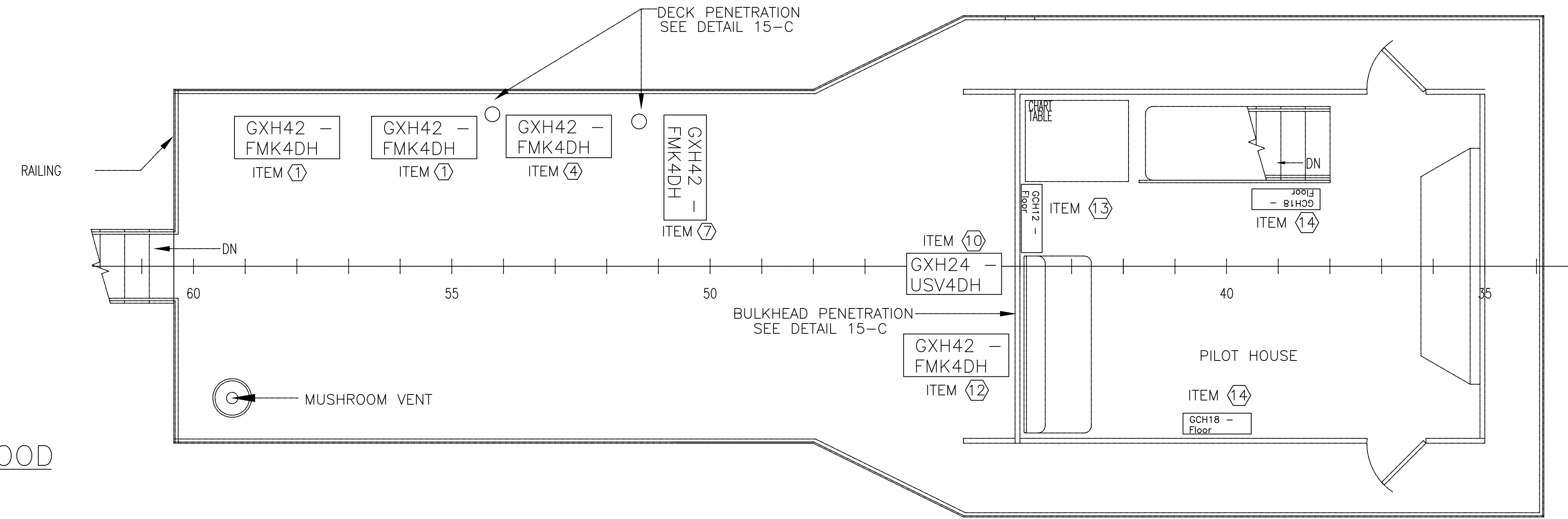
1	Updated to include Bulkhead Penetration Bill of Materials per USCG Comments on Letter E1-2203169	JJR	10/20/22
No.	DESCRIPTION	BY	Date
REVISIONS			
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION		MARINE ENGINEERING	
SOUND CLASS FERRY			
HVAC & MACHINERY VENTILATION ARR & DETAILS			
JOB NO. C123	HALL NO. 123	OWNER APPROV	DATE
DRAWN BY: BTJ		U.S.C.G. APPROV	DATE
CHECKED BY: JJR	DWG NO. NC-240-0075	SHEET 1 of 2	REV 1
SCALE: 3/8" = 1'-0"			



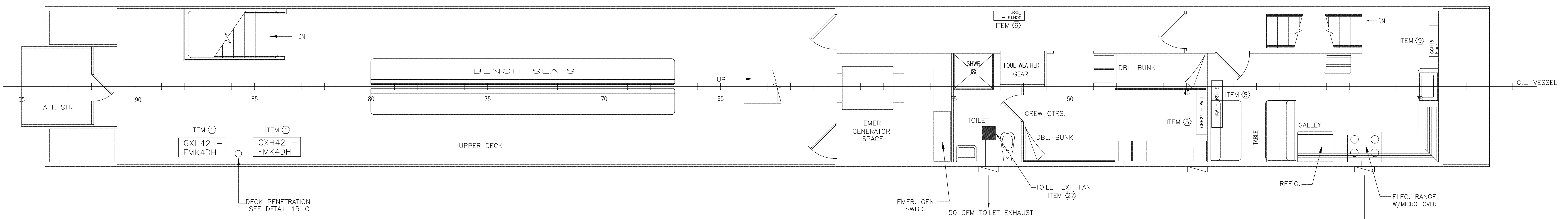
PLAN 15-C
 TYPICAL HVAC DECK AND
 BULKHEAD PENETRATION
 SCALE: 1-1/2" = 1'-0"



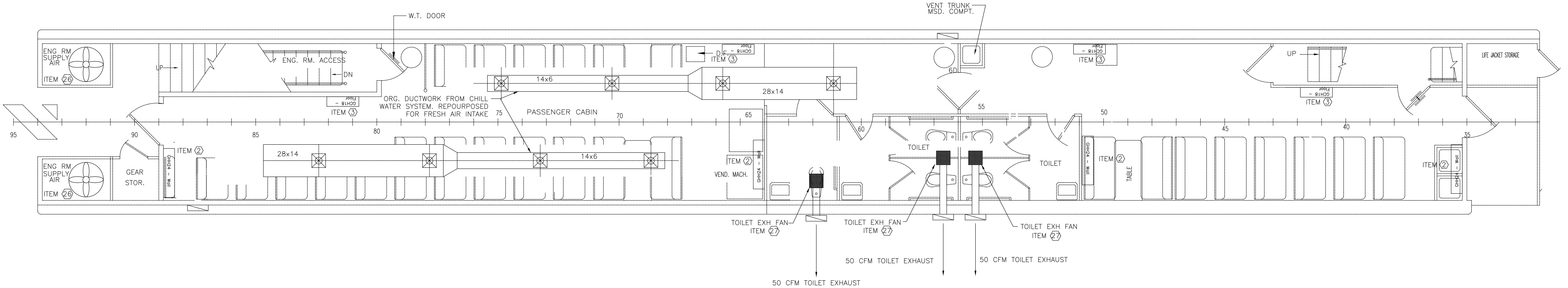
PLAN 13-C
 TYPICAL O/A AND/OR EXHAUST AIR HOOD
 SCALE: 3/8" = 1'-0"



PLAN 11-C
 BRIDGE DK
 SCALE: 3/8" = 1'-0"



PLAN 13-B
 UPPER DK
 SCALE: 3/8" = 1'-0"



PLAN 13-A
 MAIN DECK
 SCALE: 3/8" = 1'-0"

HVAC & MACH ARG'T & DET					
DRW NO. C123	SCALE NO. 123	OWNER APPROV. DATE	DESIGN APPROV. DATE	TITLE DATE	FIG. NO. P-26
DRAWN BY: BTJ	CHECKED BY: JUR	DWG NO. NC-240-0075		SHEET 2	REV 1
SCALE: 3/8" = 1'-0"				OF 2	1



R410-A



Submittal: GXH42(12.3)FMK4DH Flex Match Outdoor Unit

Job Name: _____ Location: _____ Date: _____

Purchaser: _____ Engineer: _____

Submitted To: _____ For: _____

Unit Designation: _____ Schedule #: _____

- Features:**
- Inverter-driven Compressor and Fan
 - Flared Piping Connections
 - Wireless Remote Controller Included (Ductless)
 - Anti-corrosion coils
 - Intelligent defrost
 - Auto-Restart
 - Easy diagnosis
 - Limited 5-year parts & 7-year compressor warranty



SYSTEM RATINGS

Rated Cooling Capacity:	38,999
Minimum Cooling Capacity:	8,871
Maximum Cooling Capacity:	40,944
Rated Heating Capacity:	45,004
Minimum Heating Capacity:	8,871
Maximum Heating Capacity:	46,062
SEER:	21
EER:	10.43
HSPF:	10.2
COP:	3.61

OUTDOOR UNIT DATA

Compressor	
Type:	Inverter Rotary
RLA:	17.8
Fan Motor	
Output Power:	170
FLA:	0.82
Air Flow CFM (Max):	4,531
Sound Pressure	
Cooling:	61
Heating:	71
Physical Characteristics	
Dimensions:	
Width:	42.795
Height:	43.425
Depth:	17.323
Weight (Net lbs)	198.45

Operating Ambient Temperature Range (°F)

Cooling (Min-Max):	0 ~ 118
Heating (Min-Max):	-4 ~ 86

Refrigerant Piping Data

Refrigerant Type:	R-410A
Pre-charged Amount (Oz):	128.8
Additional amount (Oz/ft.):	0.215

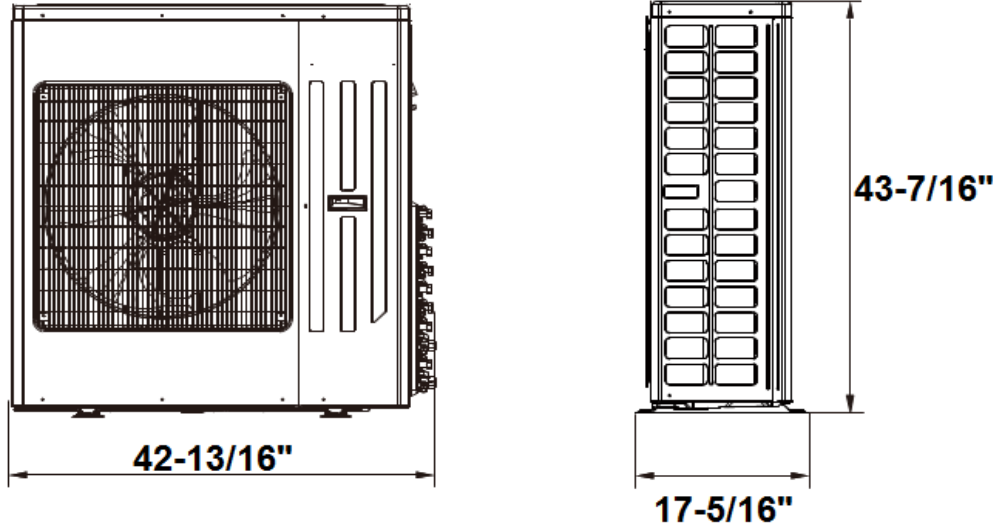
Power Supply

Voltage (Min-Max):	176/253
Minimum Circuit Ampacity (MCA):	24
Max. Overcurrent Protection (MOCP):	30

No additional refrigerant is needed if total line set length does not exceed 131.2 feet. If length exceeds 131.2 feet, add 0.215 Oz/ft
 See page 3 and 4 for piping limitations.

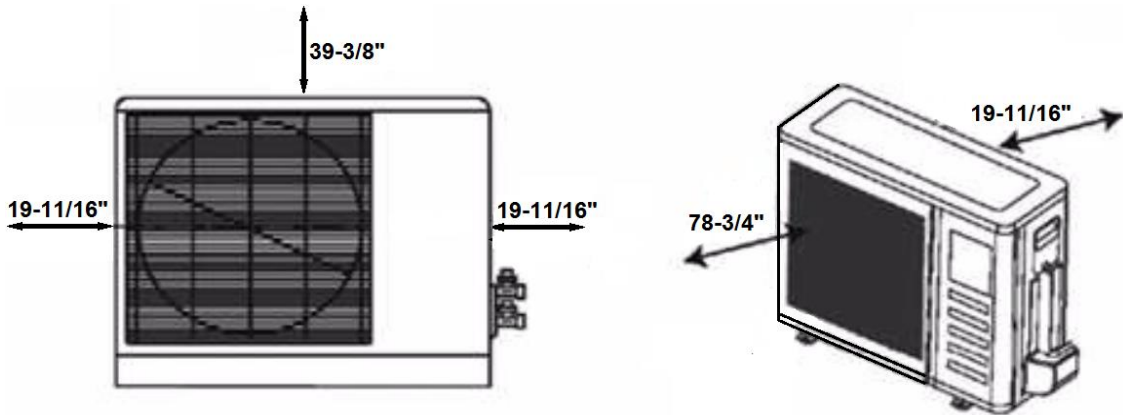
Submittal: GXH42(12.3)FMK4DH

Outdoor Unit Dimensions



Outdoor Unit Piping Connection Size		
	"Liquid"	Gas
Circuit "A"	1/4"	3/8"
Circuit "B"	1/4"	3/8"
Circuit "C"	1/4"	3/8"
Circuit "D"	1/4"	3/8"
Circuit "E"	1/4"	3/8"

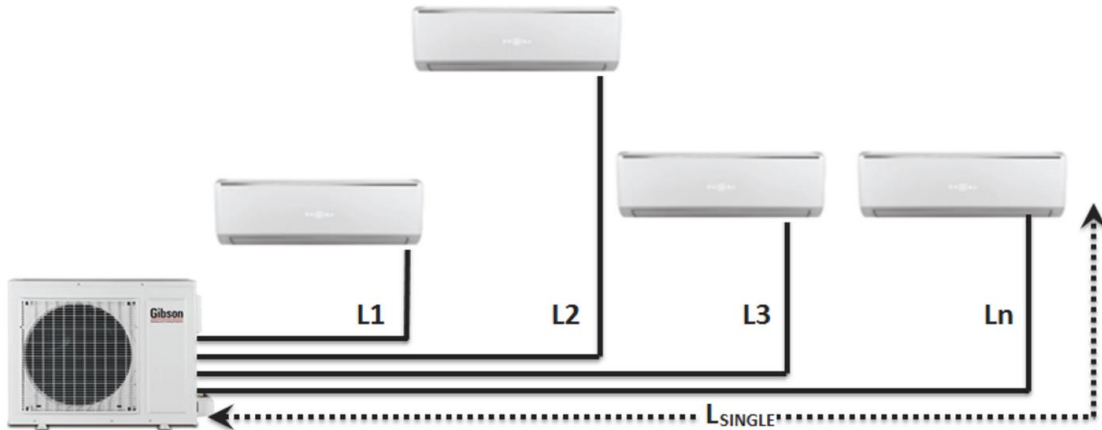
Outdoor Unit Minimum Clearances



Specifications are subject to change without notice.

Submittal: GXH42(12.3)FMK4DH

System Piping Length Information

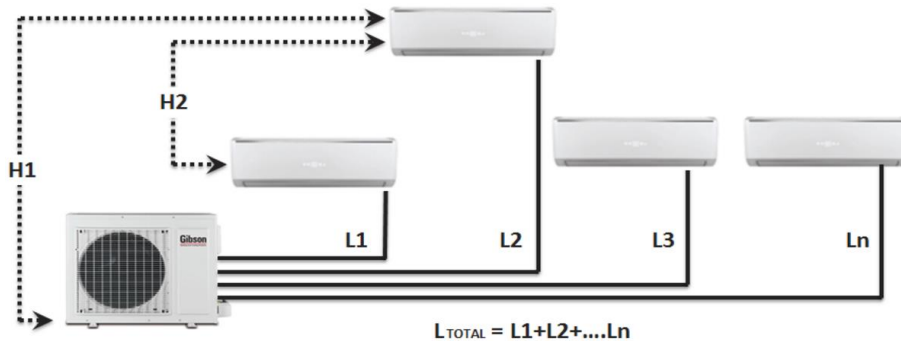


$$L_{TOTAL} = L1 + L2 + \dots + Ln$$

Model Number	Min. Piping Length Per Indoor Unit (Ln)	Max. Piping Length Per Indoor Unit (Ln)	Max. Total Piping Length (L _{TOTAL})
GXH18(5.3)FMK4DH	10	32.8	65.6
GXH24(7.0)FMK4DH	10	65.6	196.8
GXH30(8.8)FMK4DH	10	82	229.7
GXH36(10.6)FMK4DH	10	82	246.1
GXH42(12.3)FMK4DH	10	82	246.1

"L" is the linear equivalent length of liquid line including elbows.

System Piping Height Difference Information



$$L_{TOTAL} = L1 + L2 + \dots + Ln$$

Model Number	Max. Height Difference Between Indoor and Outdoor Units (H1)	Max. Height Difference Between Indoor Units (H2)
GXH18(5.3)FMK4DH	32.8	32.8
GXH24(7.0)FMK4DH	32.8	32.8
GXH30(8.8)FMK4DH	49.2	49.2
GXH36(10.6)FMK4DH	49.2	49.2
GXH42(12.3)FMK4DH	49.2	49.2

"H" is the difference in height measured from the piping connections.

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ODU SKU: 1009424



R410-A



Submittal: GCH18(5.3)FMK4DH Flex Match Console

- Features:**
- Inverter-driven Variable Speed Blower
 - Flared Piping Connections
 - Wireless Remote Controller Included
 - Anti-corrosion coils
 - Air Filters Included
 - Turbo Cooling
 - Child Lock Function
 - Very Quiet Operation



Indoor Unit Data

Blower:

CFM (Max/Min):	494/241
Output (W):	30
RLA:	0.140
Capacitor Rating (µF):	N/A

Sound Pressure

Cooling dB (A) (Min/Max):	33/48
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Physical Characteristics

Net Weight (lbs):	33
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Unit Body Dimensions (in.)

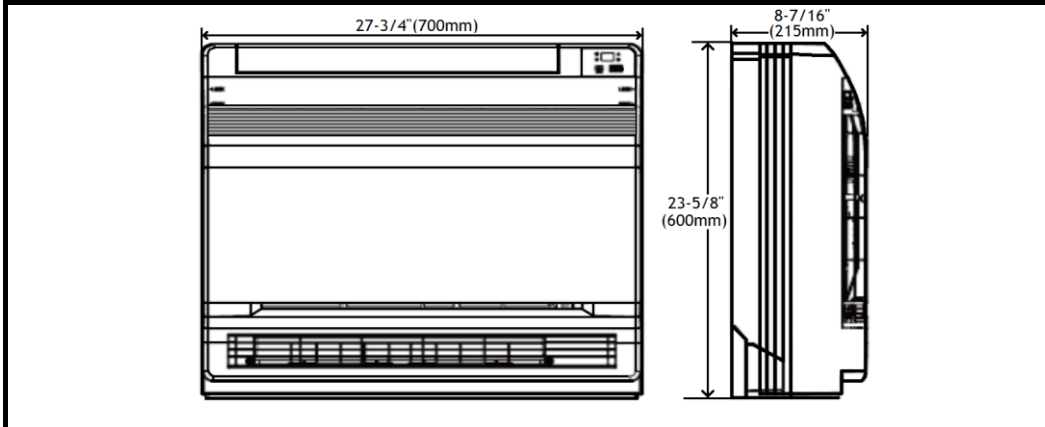
W:	27.559
H:	23.662
D:	8.465

Piping Connection Size

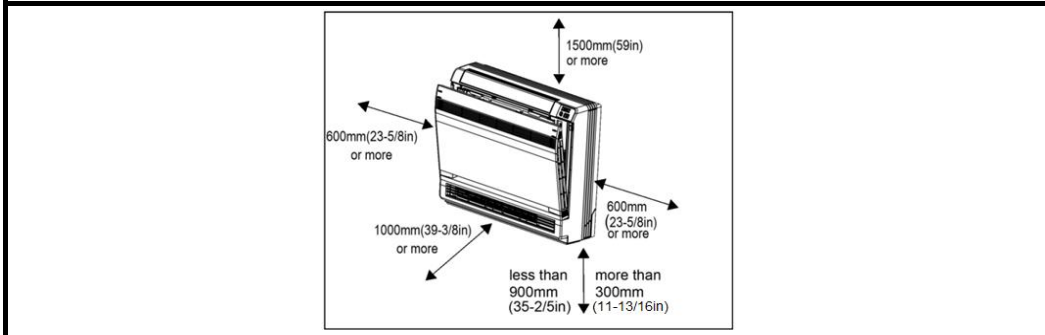
"Liquid":	1/4"
Gas:	1/2"

Piping Note: A 1/4" to 1/2" adapter will be used at the outdoor unit. Line set will be 1/4" and 1/2".

Dimensions



Installation Clearances



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R410-A

Inverter



AIR CONDITIONER CERTIFIED



Submittal: GH24(7.0)LUK4DH

Flex Match Wall Mount

Features:

- Inverter-driven Variable Speed Blower
- Flared Piping Connections
- Wireless Remote Controller Included
- Anti-corrosion coils
- iFeel Operation
- Air Filters Included
- Turbo Cooling
- Child Lock Function



Unit Data

Blower Data

CFM (Max/Min):	706/530
Output (W):	60
RLA:	0.380
Capacitor Rating (µF):	N/A

Sound Pressure

Cooling dB (A) (Min/Max):	36/48
---------------------------	-------

Physical Characteristics

Net Weight (lbs): 34.2

Dimensions (in.)

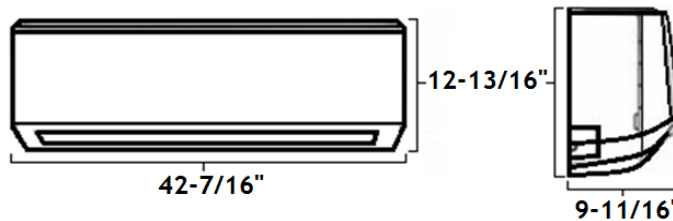
W:	42.441
H:	12.795
D:	9.685

Piping Connection Size

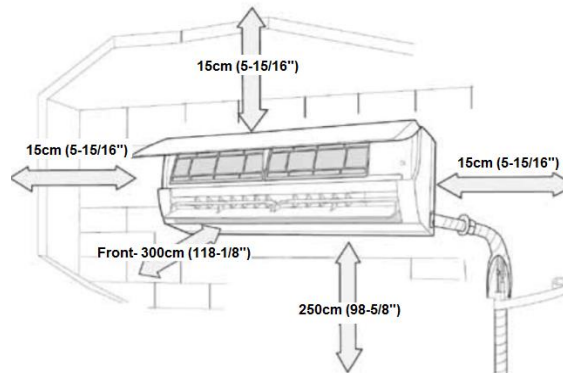
"Liquid":	1/4"
Gas:	5/8"

Piping Note: A 3/8" to 5/8" adapter will be used at the outdoor unit. Line set will be 1/4" and 5/8".

Dimensions



Clearances



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IDU SKU: 1007905



R410-A



AHRI CERTIFIED



Submittal: GCH12(3.5)FMK4DH Flex Match Console

Features:

- Inverter-driven Variable Speed Blower
- Flared Piping Connections
- Wireless Remote Controller Included
- Anti-corrosion coils
- Air Filters Included
- Turbo Cooling
- Child Lock Function
- Very Quiet Operation



Indoor Unit Data

Blower:

CFM (Max/Min):	441/206
Output (W):	30
RLA:	0.140
Capacitor Rating (µF):	N/A

Sound Pressure

Cooling dB (A) (Min/Max):	27/43
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Physical Characteristics

Net Weight (lbs): 33

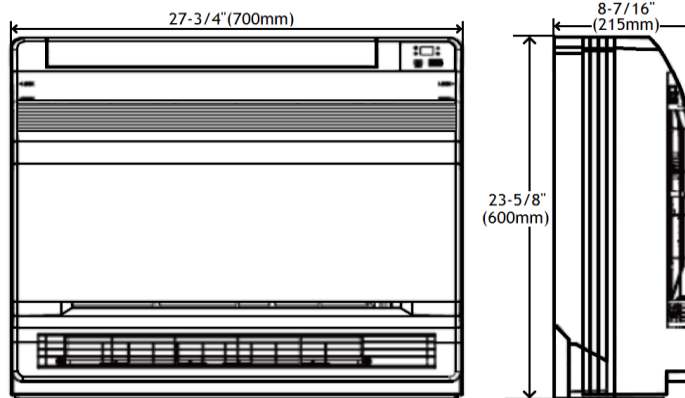
Unit Body Dimensions (in.)

W:	27.559
H:	23.662
D:	8.465

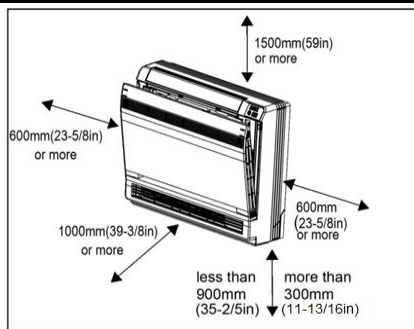
Piping Connection Size

"Liquid":	1/4"
Gas:	3/8"

Dimensions



Installation Clearances



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IDU SKU: 1009426



R410-A

Inverter



AHRI CERTIFIED



Submittal:GXH24(7.0)USV4DH LC Ducted Heat Pump

Job Name:	Location:	Date:
Purchaser:	Engineer:	
Submitted To:	For:	
Unit Designation:	Schedule #:	

- Features:**
- Inverter-driven Compressor and Fan
 - Flared Piping Connections
 - Wireless Remote Controller Included
 - Anti-corrosion coils
 - Intelligent defrost
 - Auto-Restart
 - Easy diagnosis
 - Limited 5-year parts & 7-year compressor warranty



SYSTEM RATINGS	
Rated Cooling Capacity (Btu):	23,800
Minimum Cooling Capacity (Btu):	7,400
Maximum Cooling Capacity (Btu):	29,000
Rated Heating Capacity (Btu):	27,200
Minimum Heating Capacity (Btu):	8,200
Maximum Heating Capacity (Btu):	32,400
SEER:	16.00
EER:	10.65
HSPF:	10.00
COP (BTU/W):	11.50
METERING DEVICE	
Location:	ODU
Type:	EEV

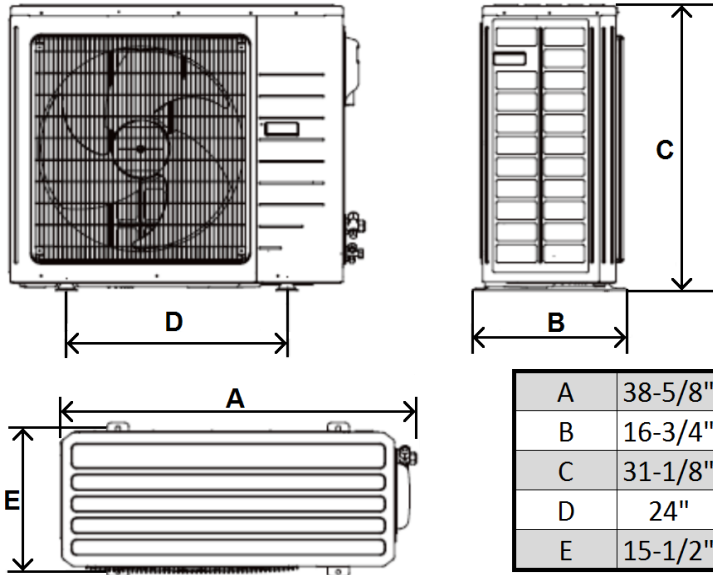
OUTDOOR UNIT DATA	
Compressor	Type: Inverter Rotary RLA: 18
Fan Motor	FLA: 1.5
Sound Pressure (dBA):	57
Physical Characteristics	Net Weight (lbs): 152.1
Dimensions (in)	W: 38-5/8" D: 16-3/4" H: 31-1/8"

Operation Range	
Cooling (Min-Max):	0~118.4F
Heating (Min-Max):	0~75.2F
Power Supply	
Voltage (Min-Max):	187/253
Minimum Circuit Ampacity (MCA):	24
Max. Overcurrent Protection (MOCP):	40

Refrigerant Piping Data	
Refrigerant Type:	R410A
Pre-charged Amount (Oz):	77.6
Factory pre-charged for (ft):	25
Additional amount (Oz/ft.):	0.645
Max. Piping Length (ft):	164
Max. Piping Height (ft):	49.2
ODU Connection Size (Gas):	5/8"
ODU Connection Size (Liquid):	3/8"

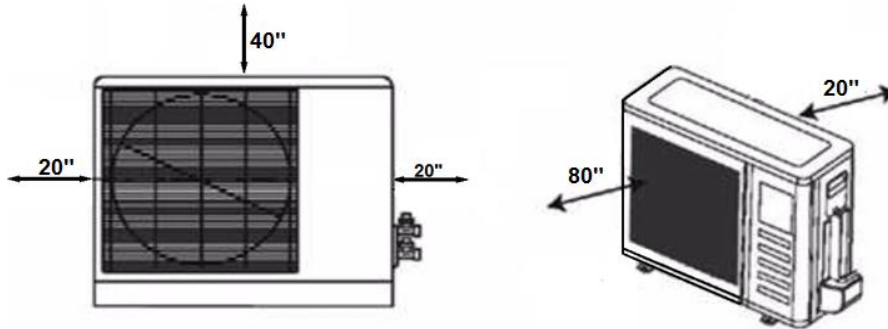
Submittal: GXH24(7.0)USV4DH

Outdoor Unit Dimensions



ODU Suction (Gas) Flared Connection Size	5/8"
ODU "Liquid" Flared Connection Size	3/8"

Outdoor Unit Minimum Clearances



Specifications are subject to change without notice.



R410-A

Inverter



AIR CERTIFIED



Submittal: GFU24(7.0)USV4DH

LC Floor Ceiling Heat Pump

Features:

- Inverter-driven Variable Speed Blower
- Flared Piping Connections
- Wireless Remote Controller Included
- Anti-corrosion coils
- iFeel Operation
- Air Filters Included
- Turbo Cooling
- Child Lock Function



Indoor Unit Data

Blower:

CFM (Max/Min): 705/490

Sound Pressure:

dB (A) (Min/Max): 40/49

Electrical Data:

Voltage (Min/Max): 187/252

Minimum Circuit Ampacity (A): 1

MOCP (A): 15

Indoor unit is powered by separate circuit

Physical Characteristics:

Net Weight (lbs): 88.2

Dimensions

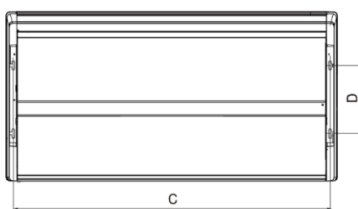
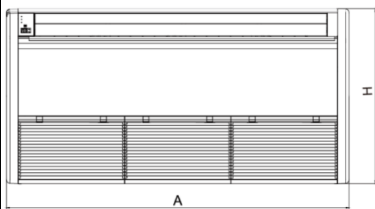
Width: 58"

Depth: 27-5/8"

Height: 8-15/16"

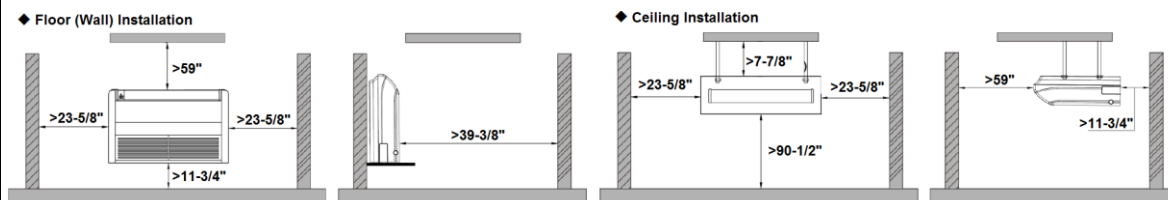
Drain Connection: 3/4"

Dimensions



GFU24(7.0)USV4DH	
A	37-3/8"
B	33-1/8"
C (Hanger)	30-3/4"
D (Hanger)	26-3/4"
E	6-1/4"

Clearances



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ODU SKU: 1009445
IDU SKU: 1009457





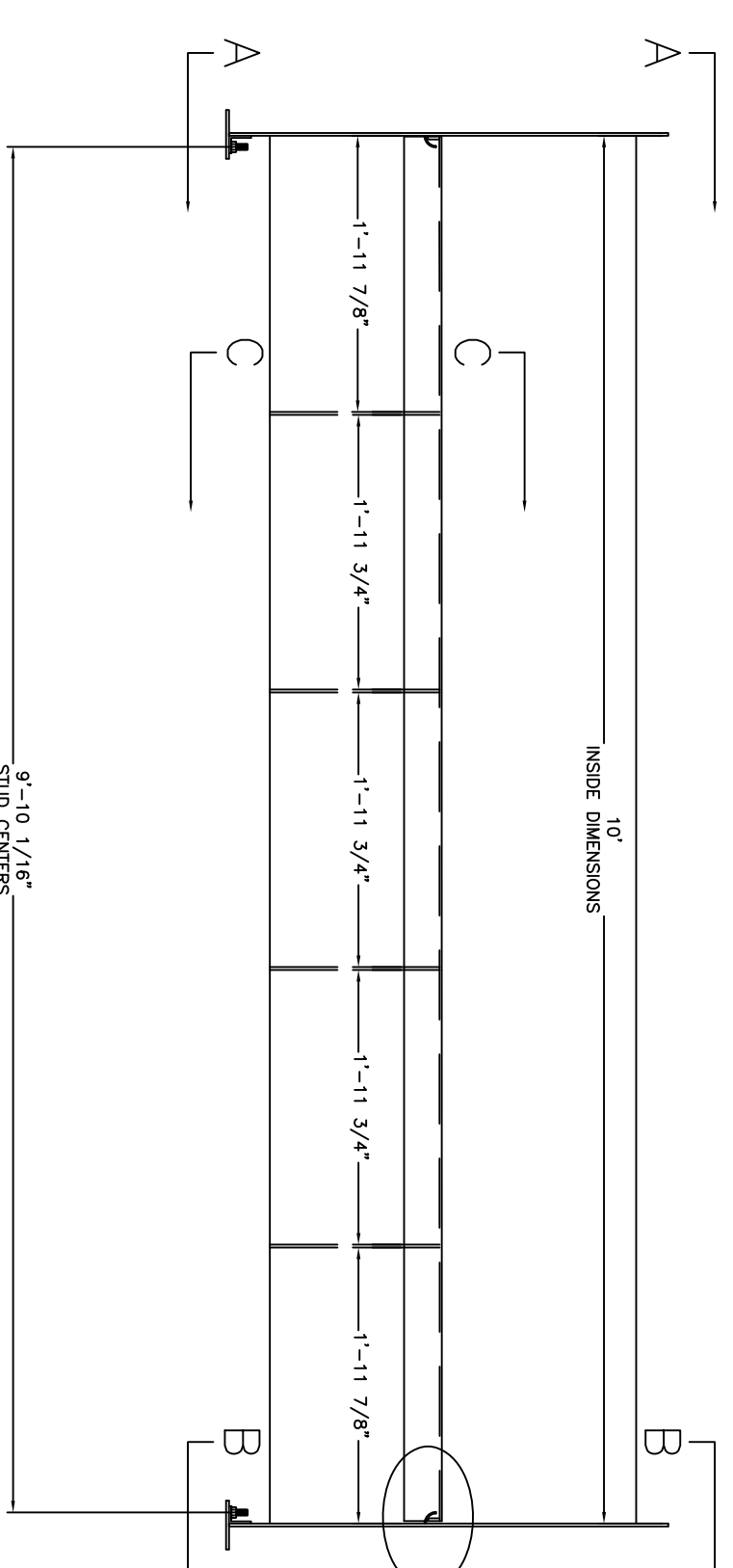
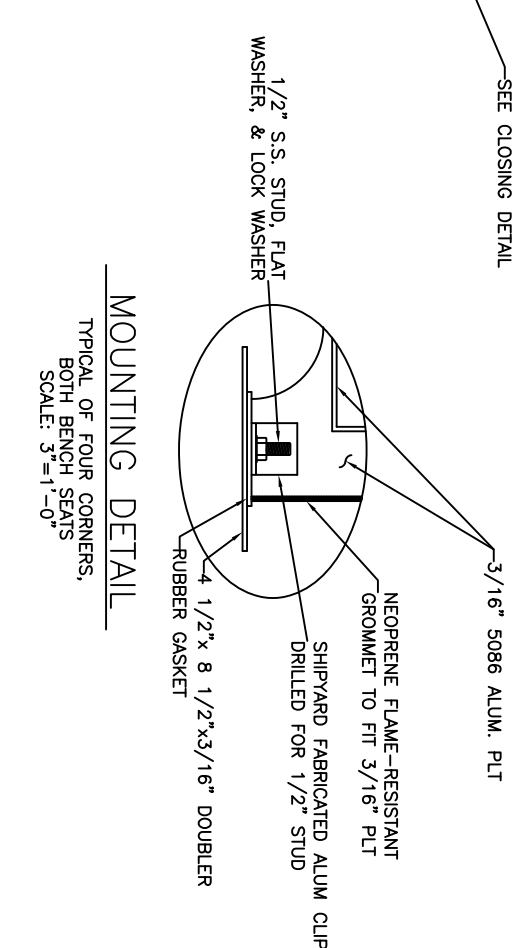
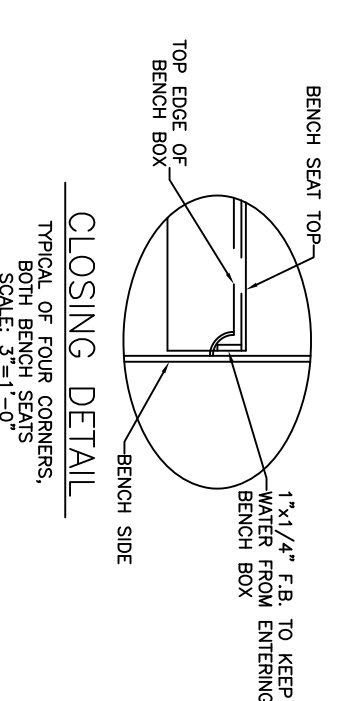
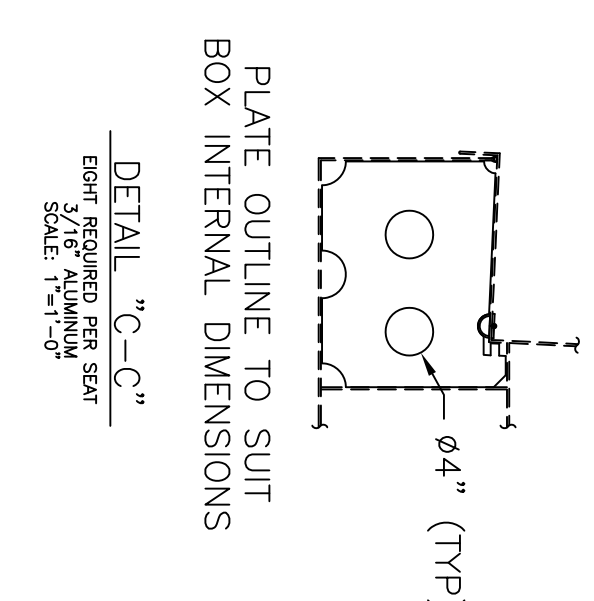
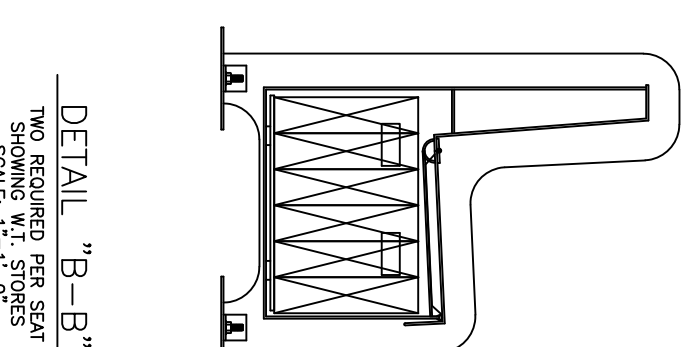
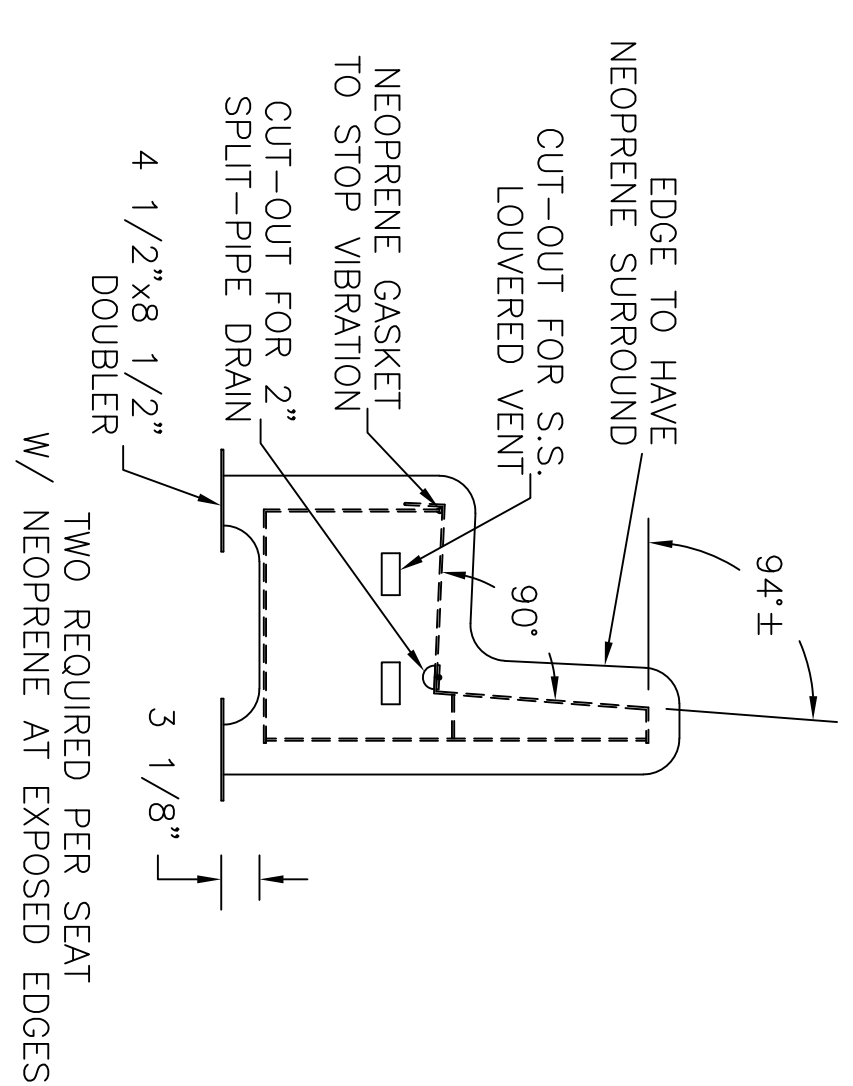




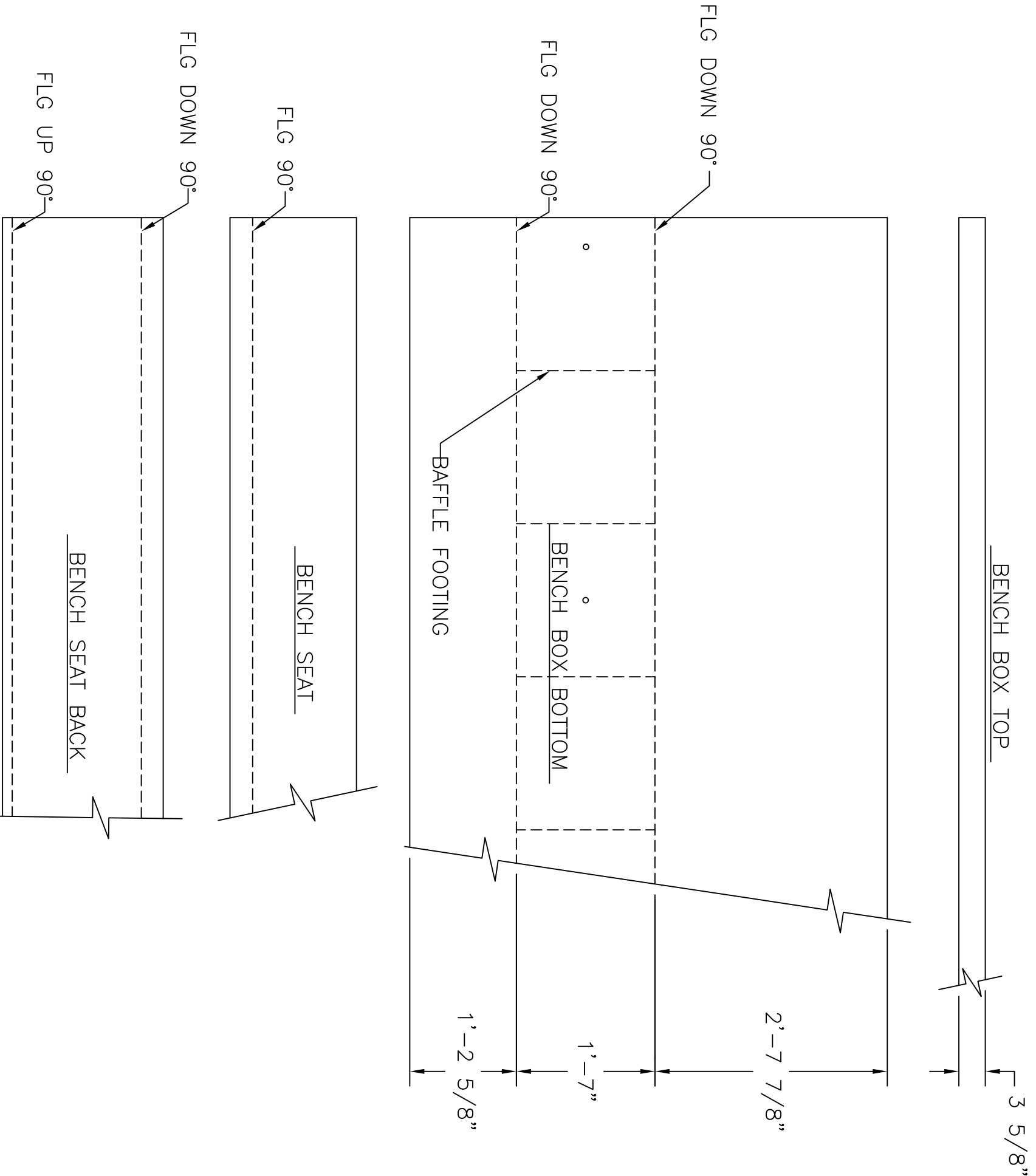
BILL OF MATERIALS

ITEM QTY	DESCRIPTION	MODEL No.	ASTM
1	100' NEOPRENE FLAME RESISTANT (SPOOL)	NEOPRENE CARB	ASTM A305
2	S.S. LOUVERED VENTS	ROSONAL MAR	ASTM A201 (A192)
3	20" LFLH MODULIN (ALUMINUM)	—	—
4	10" LENGTH 1 1/4" X 1" FLATBAR (ALUMINUM)	—	—
5	10 X 20 X 3/16 ALUMINUM SOBB ALLOT FLATES	—	—
6	PANO HINGE	—	—
8	LENGTH, TYPE 304 S.S.	MASTER CARB	ASTM A304

NEOPRENE GROMMET SHALL WITHSTAND 400 PSI PRESSURE. FLAME RESISTANT AND NON TOXIC.



ALUMINUM BENCH SEATS
W/ LIFE JACKET STORAGE BELOW
SCALE: 1"=1'-0"



ALUMINUM PLATES EXPANDED
SCALE: 1"=1'-0"

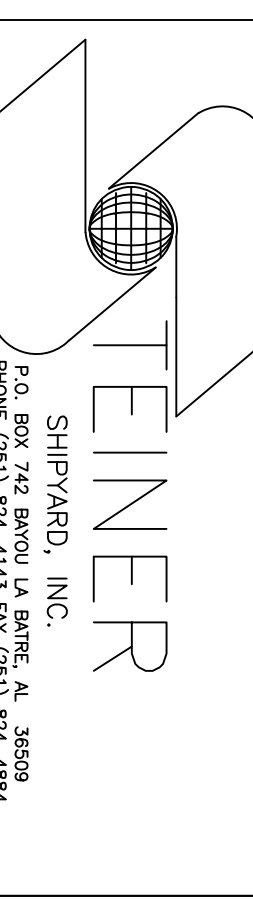
- NOTES-**
- 1.) BENCH SEATS TO BE CONSTRUCTED USING JIM BOUY MODEL 601 ADULT LIFE JACKET AS TEMPLATE TO INSURE PROPER BAFFLE SPACING
 - 2.) S.S. HINGE TO BE DELIVERED SHIPPED LOOSE FOR BLASTING, HINGE TO BE INSTALLED PRIOR TO PAINTING
 - 3.) SHIPYARD TO PROVIDE WOODEN SLATS INSIDE BENCH SEATS
 - 4.) EACH SEAT DESIGNED FOR 30 ADULT LIFE JACKETS

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REV.	DESCRIPTION	BY	DATE
1	STOCK WATER TIGHT CLOSING SEAT		
2	LIFE JACKET STORAGE SEAT		
3	—		



PROJECT: STOCK WATER TIGHT CLOSING SEAT
 TITLE: LIFE JACKET STORAGE SEAT
 SHEET NO.: LUSTORE2.DWG
 DATE: 31 JANUARY 2003
 SCALE: 3/4"=1'
 DRAWN BY: D. OVERSTREET