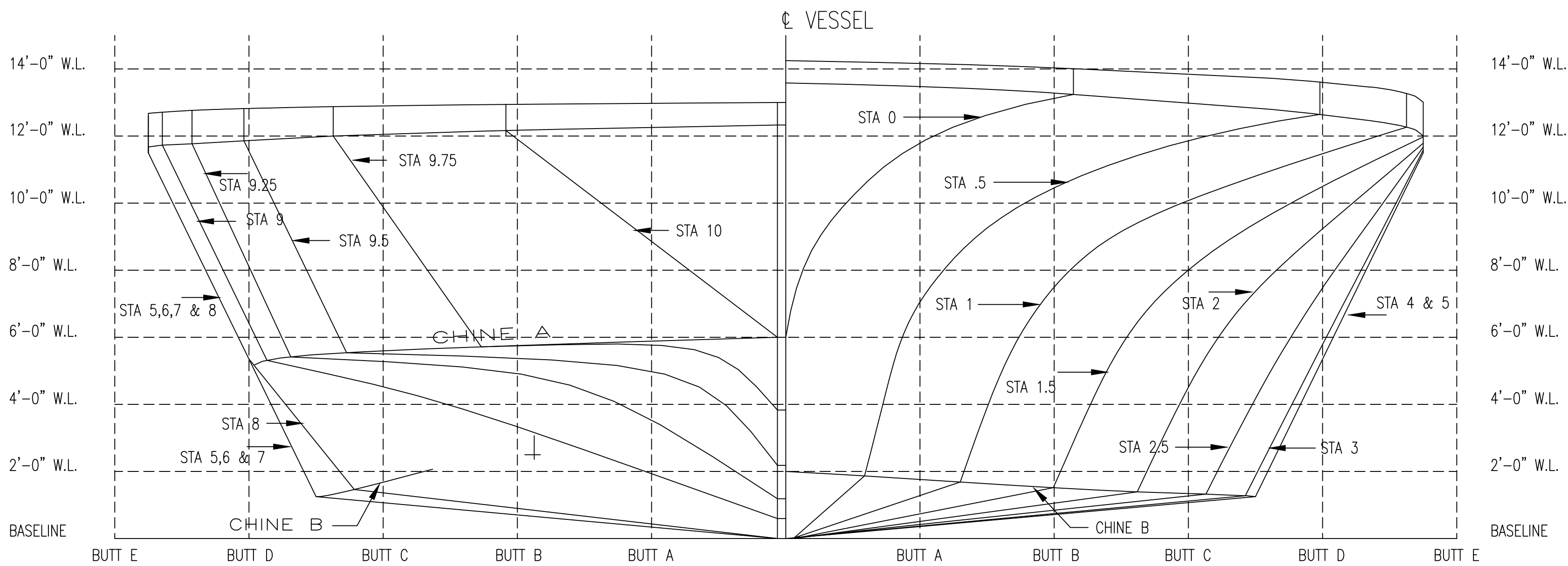


GENERAL NOTES

1. LENGTH OVERALL (MOLDED) 220'-6"
2. LENGTH BETWEEN PERPENDICULARS 209'-6"
3. BREADTH--OVER DECK (MOLDED) 50'-0"
4. BREADTH--HULL AT DECK (MOLDED) 38'-0"
5. DEPTH--AMIDSHIPS--TO SHEER 12'-6"
6. STATION SPACING 21'-0"
7. BUTTOCK SPACING 4'-0"
8. FRAMING SPACING 1'-9"
9. DECK CAMBER--6" IN 50'-0" SEE CAMBER CURVE
10. LINES HAVE NOT BEEN CORRECTED.

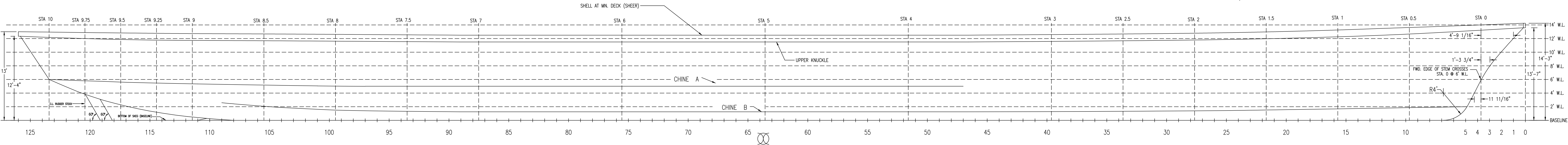
TABLE OF OFFSETS																				
HALF - BREADTHS																				
STATIONS	0	0.5	1.0	1.5	2	2.5	3	4	5	6	7	7.5	8	8.5	9	9.25	9.5	9.75	10	
M.L.D. LINE OF PLATING	0'-00"	0'-00"	0'-3.0"																0'-00"	
BOTTOM KNUCKLE	0'-00"	0'-3.0"																	0'-00"	
CHINE "B"		2'-4.125"	5'-2.375"	7'-11.6875"	10'-5.6875"	12'-6.25"	13'-8.375"	14'-00"			14'-00"	13'-8.8875"	12'-7.75"	10'-6.3125"					0'-3.0"	
CHINE "A"								16'-00"					16'-00"	16'-0"	15'-6.0625"		13'-1.5"		0'-3.0"	
2'-0" W.L.																				
3'-0" W.L.																				
4'-0" W.L.																				
5'-0" W.L.																				
6'-0" W.L.	0'-00"	3'-5.5625"	6'-10.375"	10'-1.1875"	12'-10.625"	15'-0.5625"	16'-1.25"	16'-4"			16'-4"	16'-3.625"	16'-2.8125"	15'-9.5625"	15'-0.3125"	13'-3.75"	9'-3.3125"	0'-3.00"		
8'-0" W.L.	0'-6.0625"	4'-8.4375"	8'-6.8125"	12'-00"	14'-7.25"	16'-4.3125"	17'-1.75"	17'-3"				17'-3"	17'-2.5"	16'-9.5625"	15'-11.1875"	14'-3.1875"	10'-9.5625"	3'-1.5625"		
10'-0" W.L.	1'-8.5625"	7'-2.1875"	11'-8.125"	15'-0.875"	16'-10.875"	17'-9.6875"	18'-2.3125"	18'-3"				18'-3"	18'-2.125"	17'-8.1875"	16'-9.625"	15'-1.0"	12'-00"	5'-3.6875"		
12'-0" W.L.	4'-5.3125"	12'-6.875"	17'-7.6875"	19'-00"																
SHELL AT DECK & KNUCKLE	8'-6.875"	15'-1.1"	18'-6"	19'-00"								19'-00"	19'-00"	18'-7"	17'-8.375"	16'-1.875"	13'-5.875"	8'-4.125"		
LINE OF DECK EDGE(OVERHANG)	14'-4.1875"	21'-6"	24'-1.75"	24'-11.5625"	25'-00"							25'-00"	24'-11"	23'-8.4375"	22'-1.5625"	19'-10.5625"	16'-9.125"	11'-1.25"		
HEIGHTS ABOVE BASELINE																				
M.L.D. LINE OF PLATING	6'-00"	0'-00"																		
CHINE "B"		1'-10.375"	1'-8.1875"	1'-6.1875"	1'-4.6875"	1'-3.875"	1'-3.3125"	1'-3"				1'-3"	1'-3.875"	1'-6.0625"	2'-0.8125"					
CHINE "A"														5'-0"	5'-2.125"	5'-4.3125"				
BUTTOCK "A"																				
BUTTOCK "B"																				
BUTTOCK "C"																				
UPPER KNUCKLE	13'-2.75"	12'-8"	12'-3.0625"	11'-11.6875"	11'-9.4375"	11'-8.0625"	11'-7"	11'-6"				11'-6"	11'-6.625"	11'-7.4375"	11'-8.1875"	11'-8.75"	11'-9.3125"	11'-10.4375"	12'-00"	12'-2.3125"
SHELL AT MAIN DECK	14'-00"	13'-7.4375"	13'-3.0625"	12'-11.6875"	12'-9.4375"	12'-8.0625"	12'-7"	12'-6"				12'-6"	12'-6.625"	12'-7.4375"	12'-8.1875"	12'-8.75"	12'-9.3125"	12'-9.9375"	12'-10.625"	12'-11.5"

DIMENSIONS ARE GIVEN IN FEET, INCHES AND DECIMAL INCHES.....



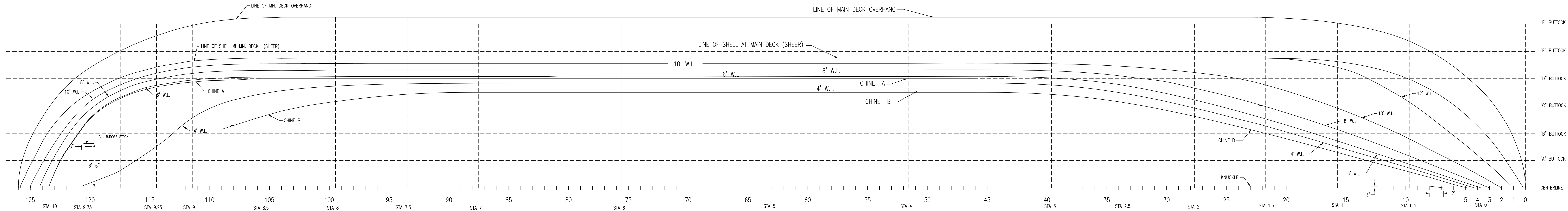
BODY PLAN

SCALE 3/8" = 1'-00"



SHEER PLAN

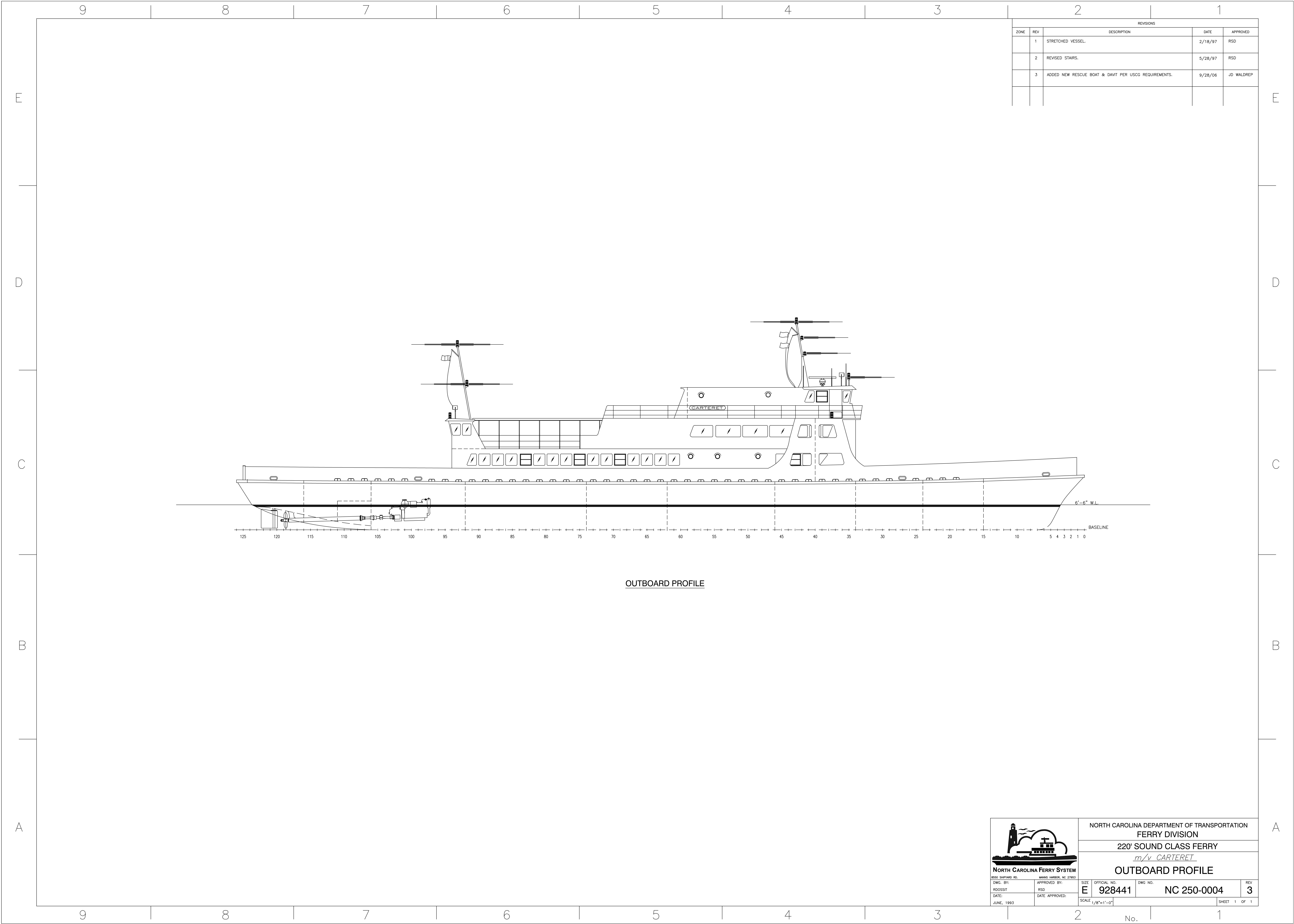
SCALE 3/16" = 1'-00"

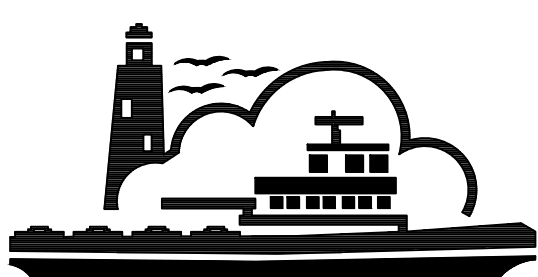


HALF BREADTH PLAN

SCALE 3/16" = 1'-00"

No.	DESCRIPTION	BY	Date
REVISIONS			
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION NOV 14, 1995		MARINE ENGINEERING CARTERET STRETCH	
		LINES & OFFSETS	
SEAL		APPROVALS	
DRWN. DOSSETT.			
CHKD.			
SCALE AS SHOWN		NC 250-0001	
			REV.0





NORTH CAROLINA FERRY SYSTEM

DESIGN: SHAWPARD INC. MARINE: HARRIS, INC. 27963

DWG. BY: RSD

DATE: JUNE, 1993

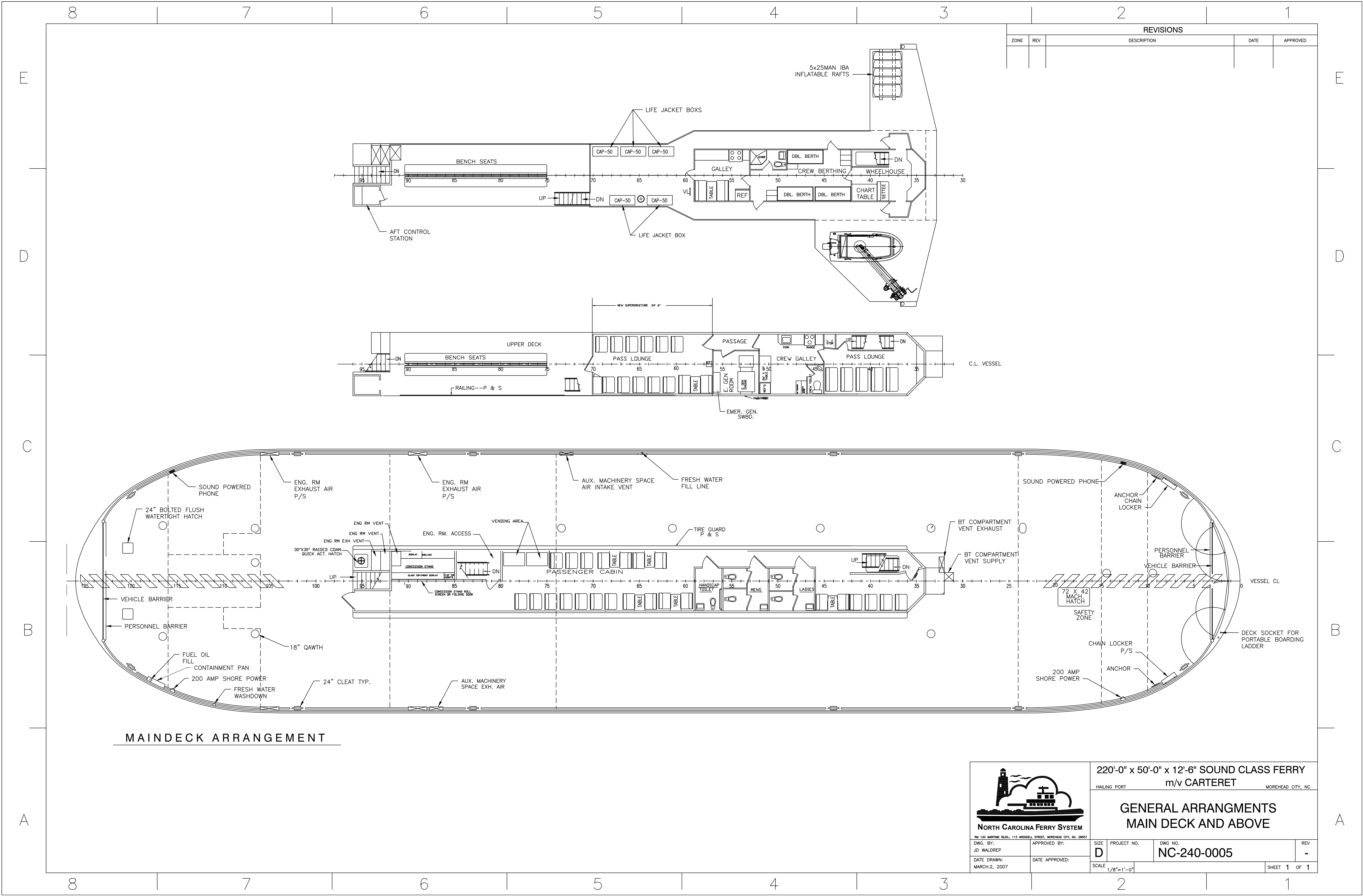
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
FERRY DIVISION

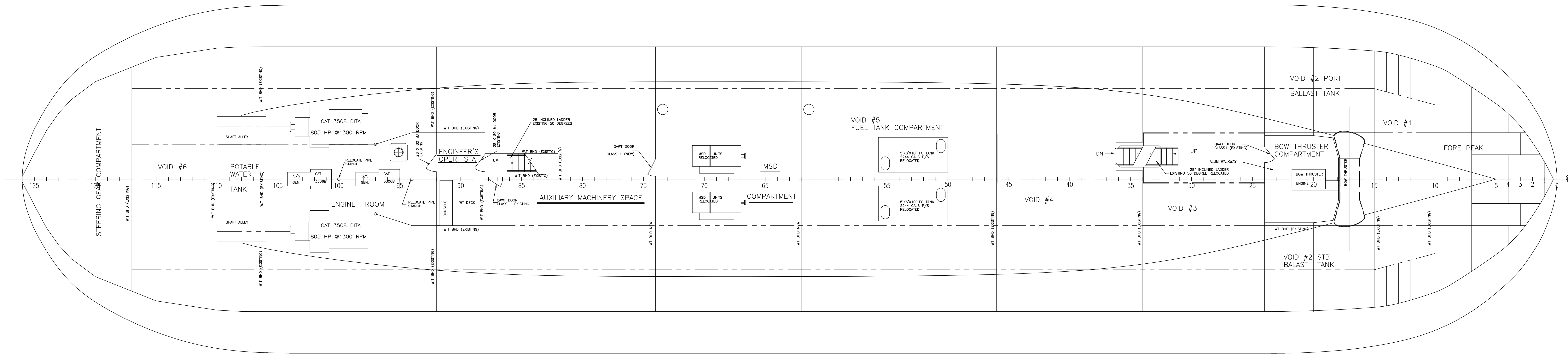
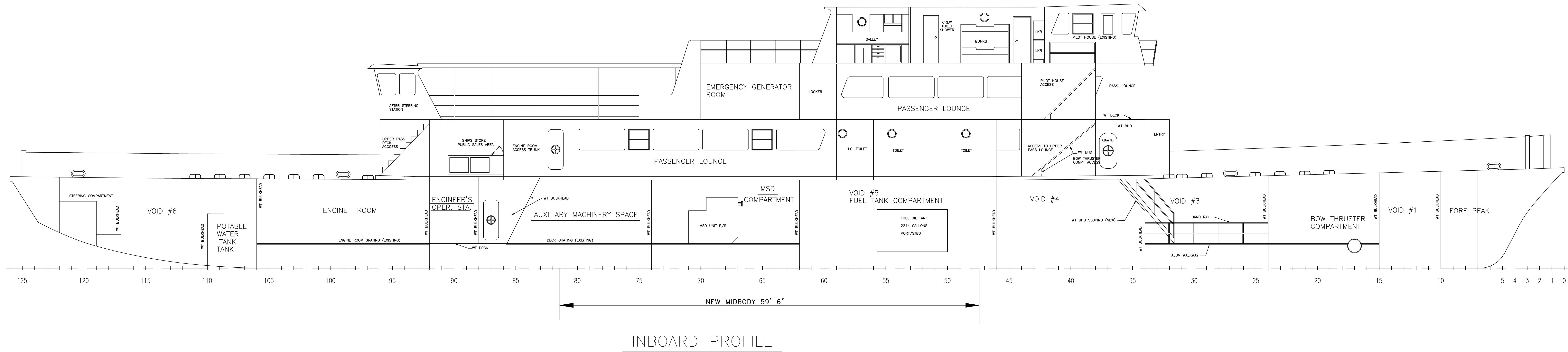
220' SOUND CLASS FERRY

m/v CARTERET

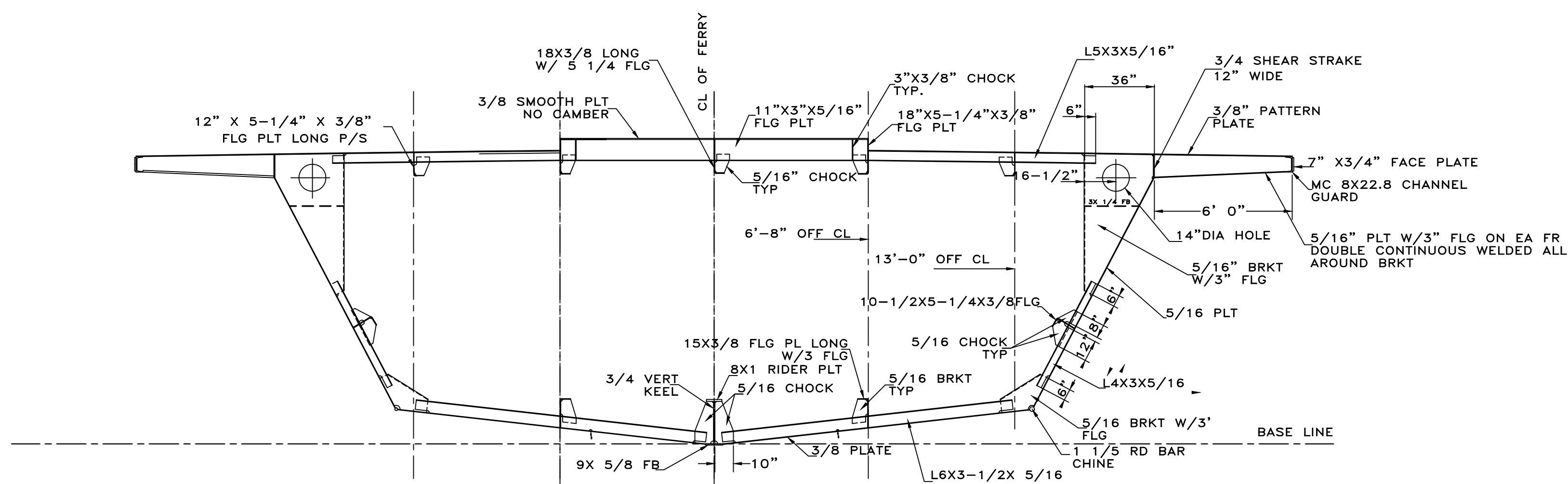
OUTBOARD PROFILE

SIZE: E	OFFICIAL NO.: 928441	DWG. NO.: NC 250-0004	REV: 3
DATE APPROVED:		SCALE: 1/8"=1'-0"	SHEET 1 OF 1

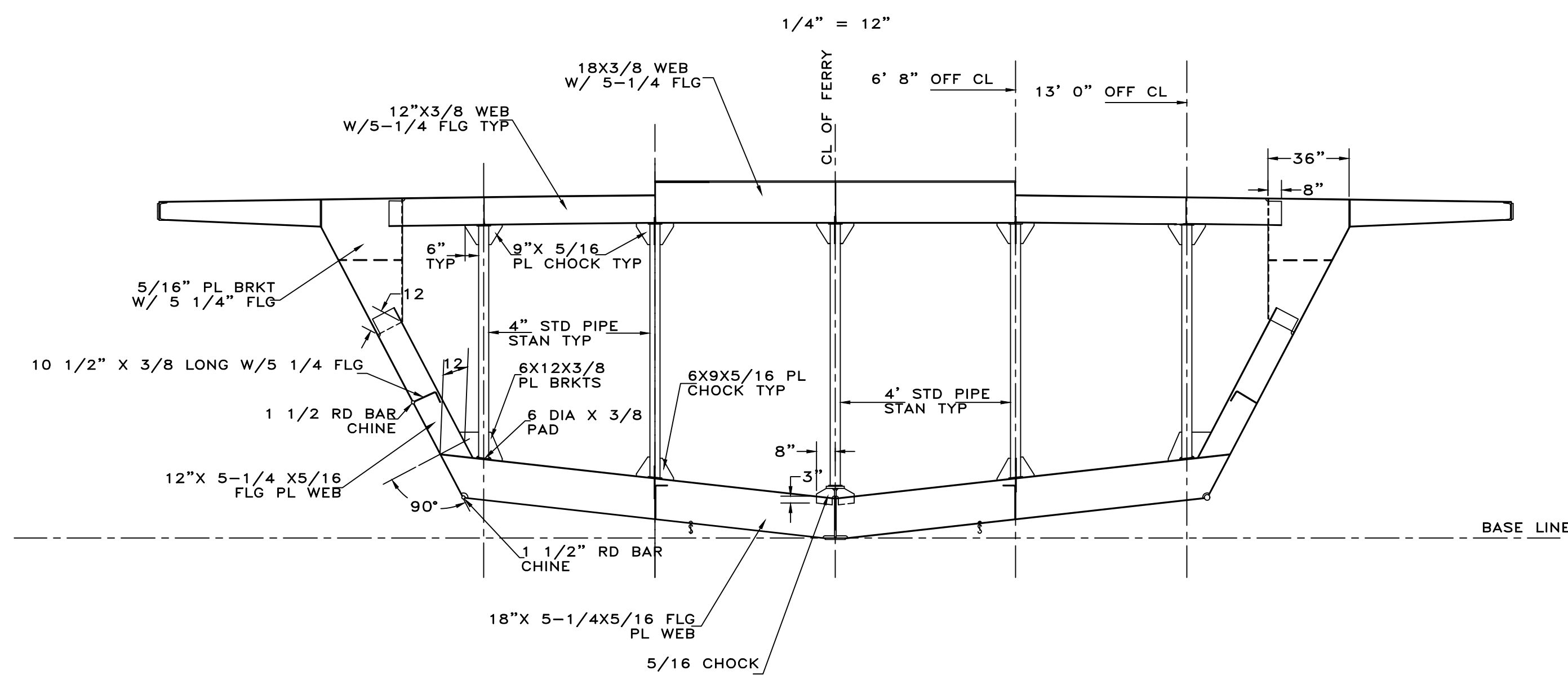




STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION		MARINE ENGINEERING	
		M/V CARTERET STRETCH	
		INBOARD PROFILE AND HOLD ARRANGEMENT	
SEAL		APPROVALS	
DRWN. DOSSETT 3/98			
CHKD.			
SCALE 3/16=12		NC250 - 0006	
			REV. 0



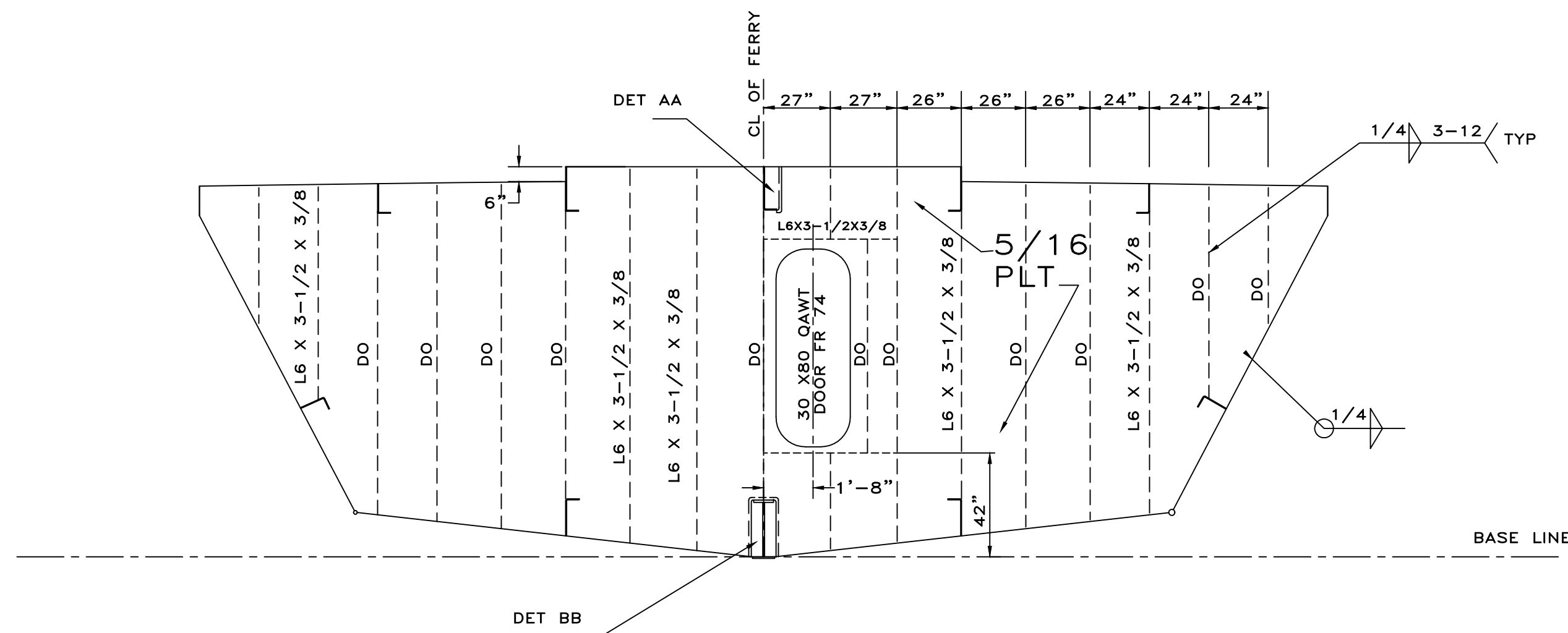
TYPICAL FRAME DETAILS



TYPICAL WEB DETAILS

SEE FRAME DETS FOR INFORMATION NOT SHOWN

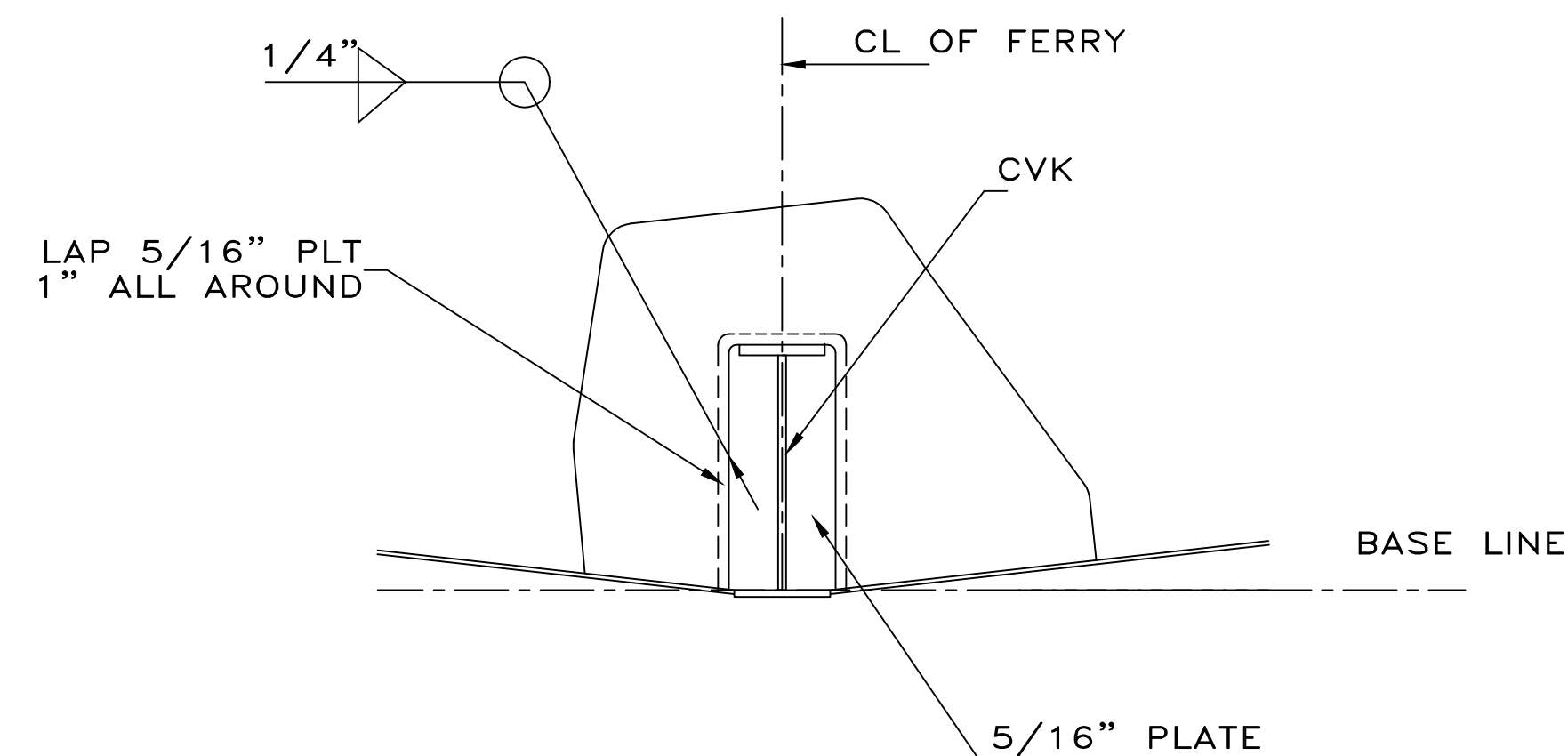
1/4" = 12"



WATERTIGHT BHDS 62 AND 74

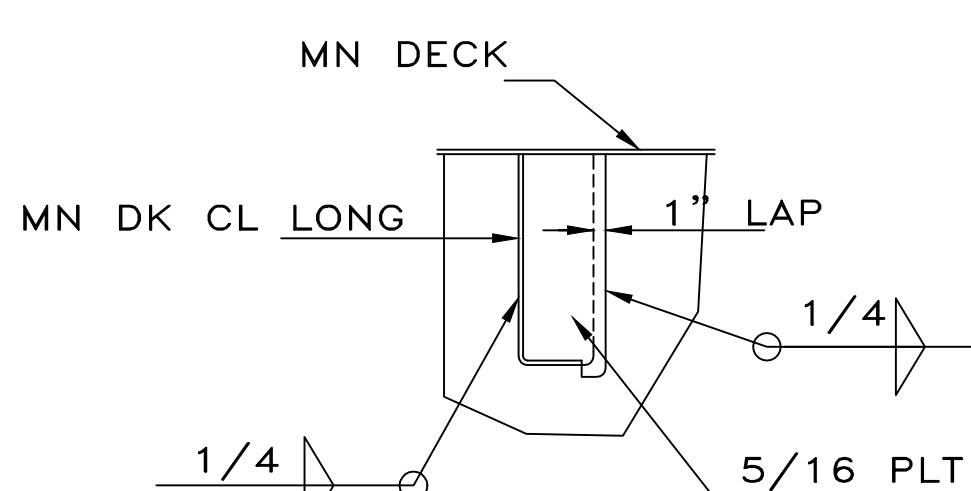
FWD SIDE LOOKING AFT

1/4" = 12"



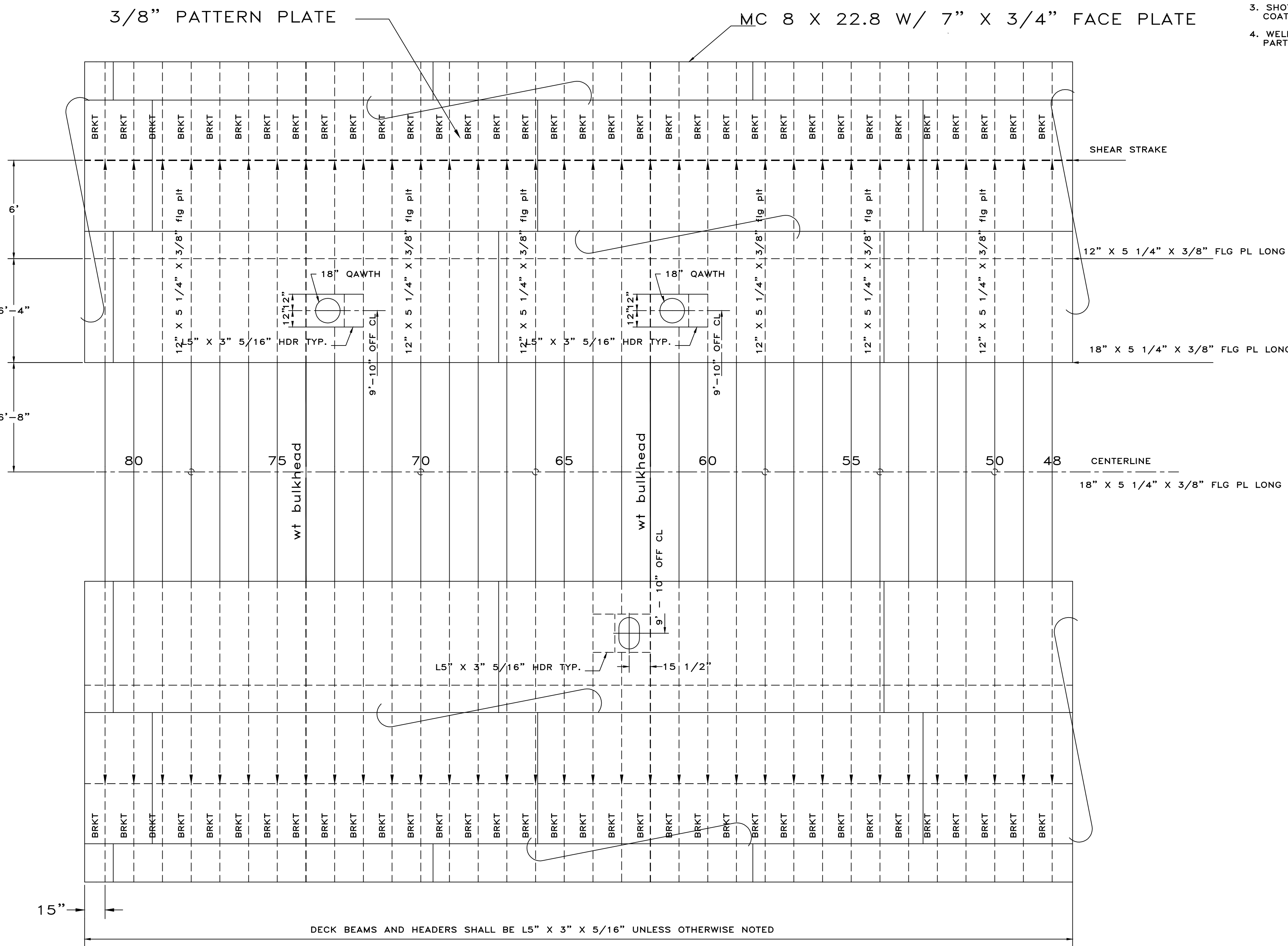
DETAIL B-B

3/4"=12"



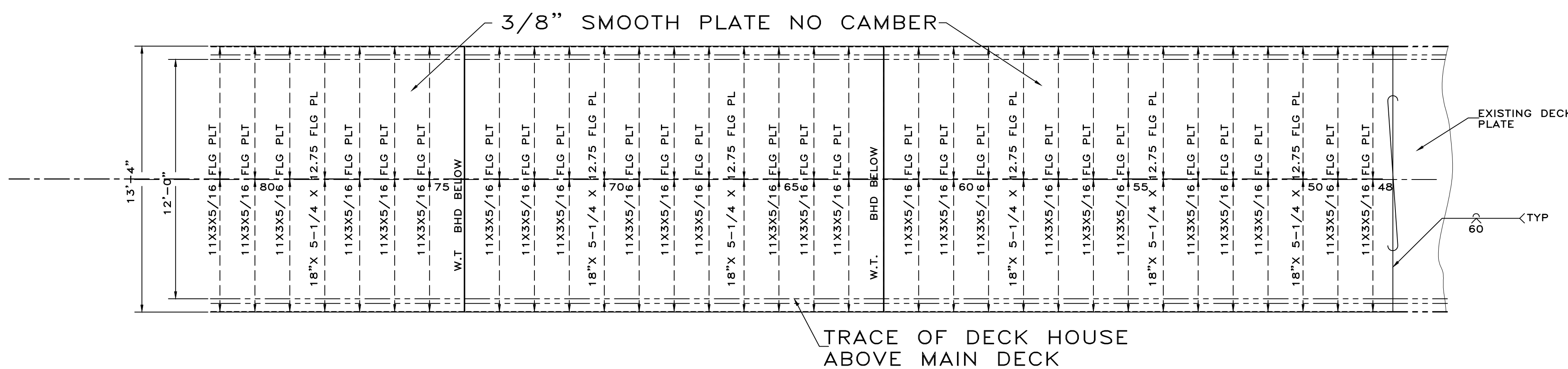
DETAIL A-A

3/4"=12"



MAIN DECK PLATING MODIFICATIONS

SCALE: 1/4" = 12"



PLAN OF RAISED DECK {NO CAMBER}

1/4"=12"

NOTES

1. TEMPLATE ALL DIMENSIONS AND WORK FROM EXISTING FERRY.
2. PLATES AND SHAPES SHALL DOMESTIC MANUFACTURED ASTM A 36. STANCHIONS SHALL BE DOMESTIC MANUFACTURED ASTM A53/106.
3. SHOT BLAST ALL STEEL TO SSPC 10 (NEAR WHITE METAL) AND APPLY 1 FULL COAT OF DEVCO 208 WELDABLE PRIMER AT 1 MIL DFT.
4. WELDING SHALL BE IN ACCORDANCE WITH AMERICAN BUREAU OF SHIPPING, PART 30. WELDERS SHALL BE ABS OR USCO CERTIFIED.

REFERENCES:

- | | |
|-----------------------------------|------------|
| 1. LINES PLAN | NC250-0001 |
| 2. OUTBOARD PROFILE | NC250-0004 |
| 3. GEN ARRGT MAIN DCK AND ABOVE | NC250-0005 |
| 4. INBOARD PROFILE AND HOLD ARRGT | NC250-0006 |

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
FERRY DIVISION	MARINE ENGINEERING
M/V CARTERET STRETCH	
STRUCT. MIDBODY MODIFICATIONS	
APPROVALS	
SEAL	
DRWN. R. DOSSETT	
CHKD.	
SCALE 1/4"=12"	NC 250-0007
	REV. 0

D

C

B

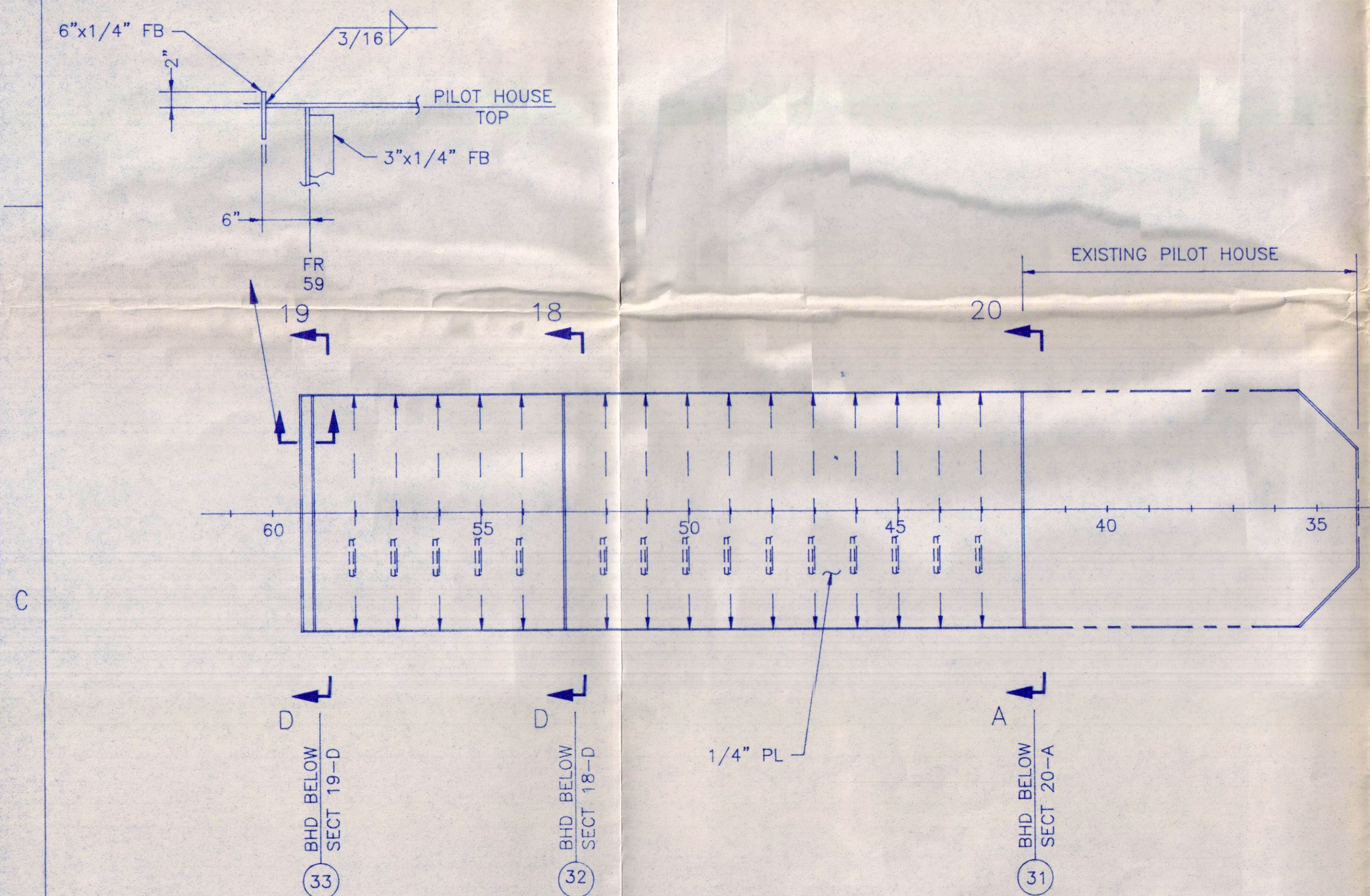
A

D

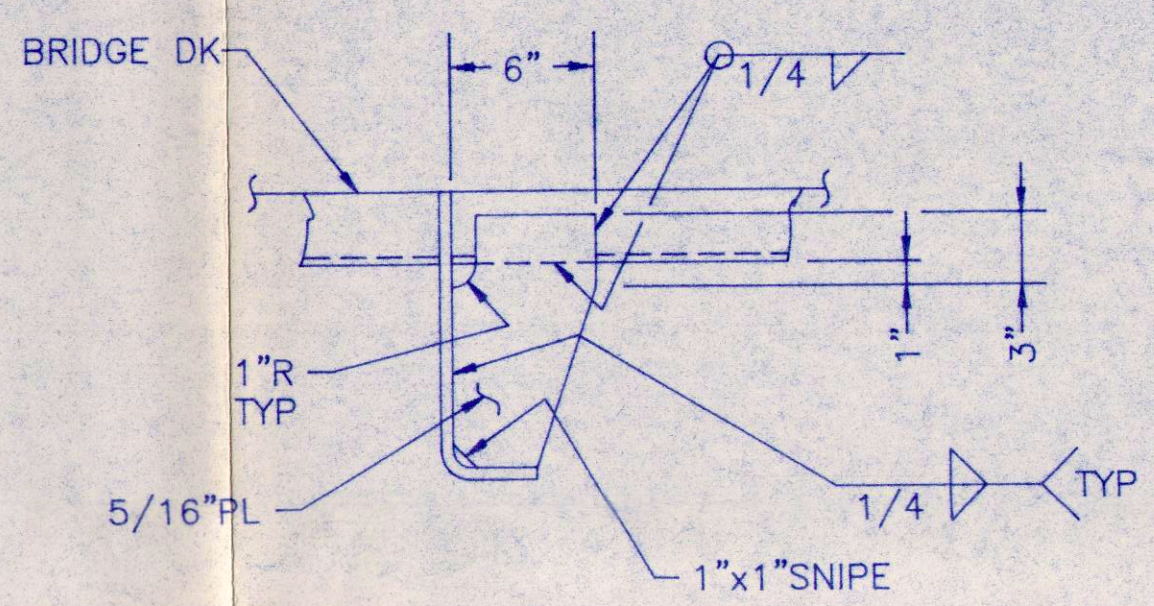
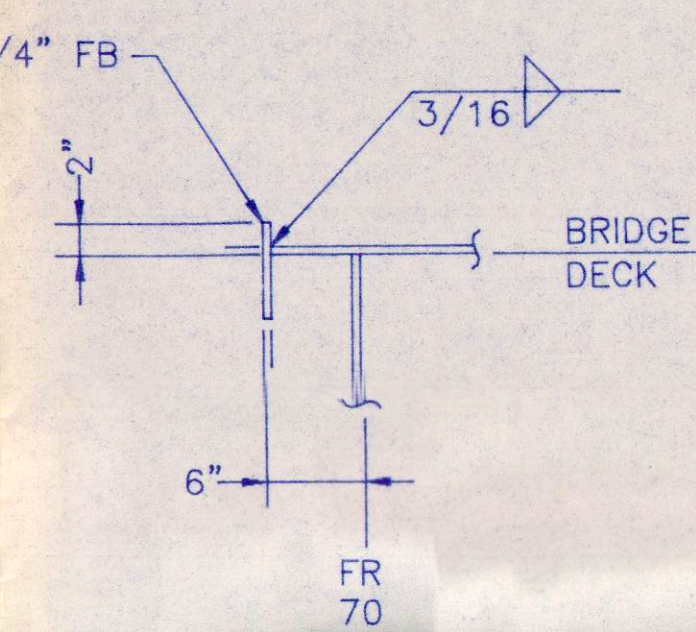
C

B

A



PLAN 7-C
TOP OF PILOT HOUSE PLATING
36'-3\"/>

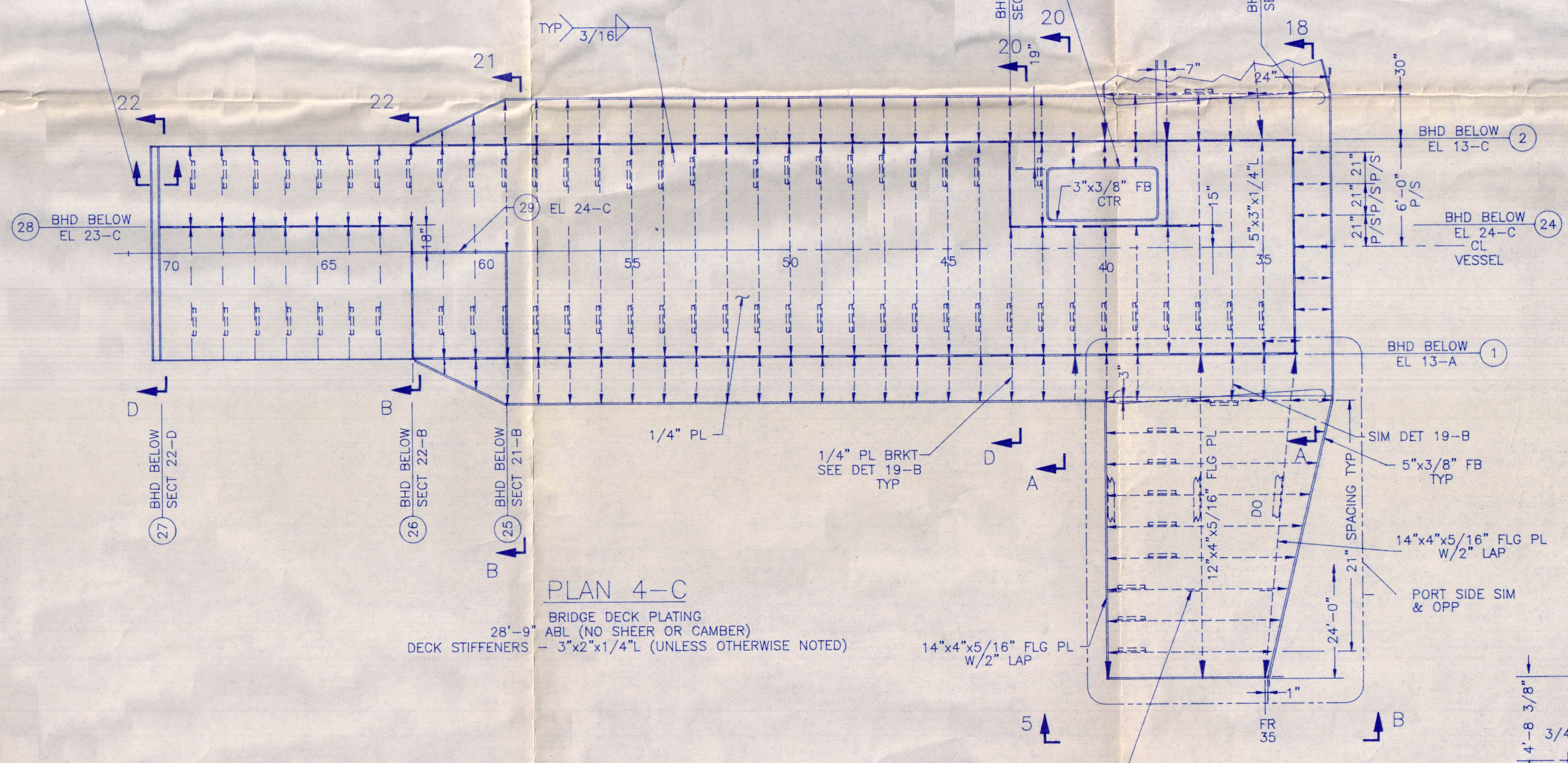


DETAIL 1-D

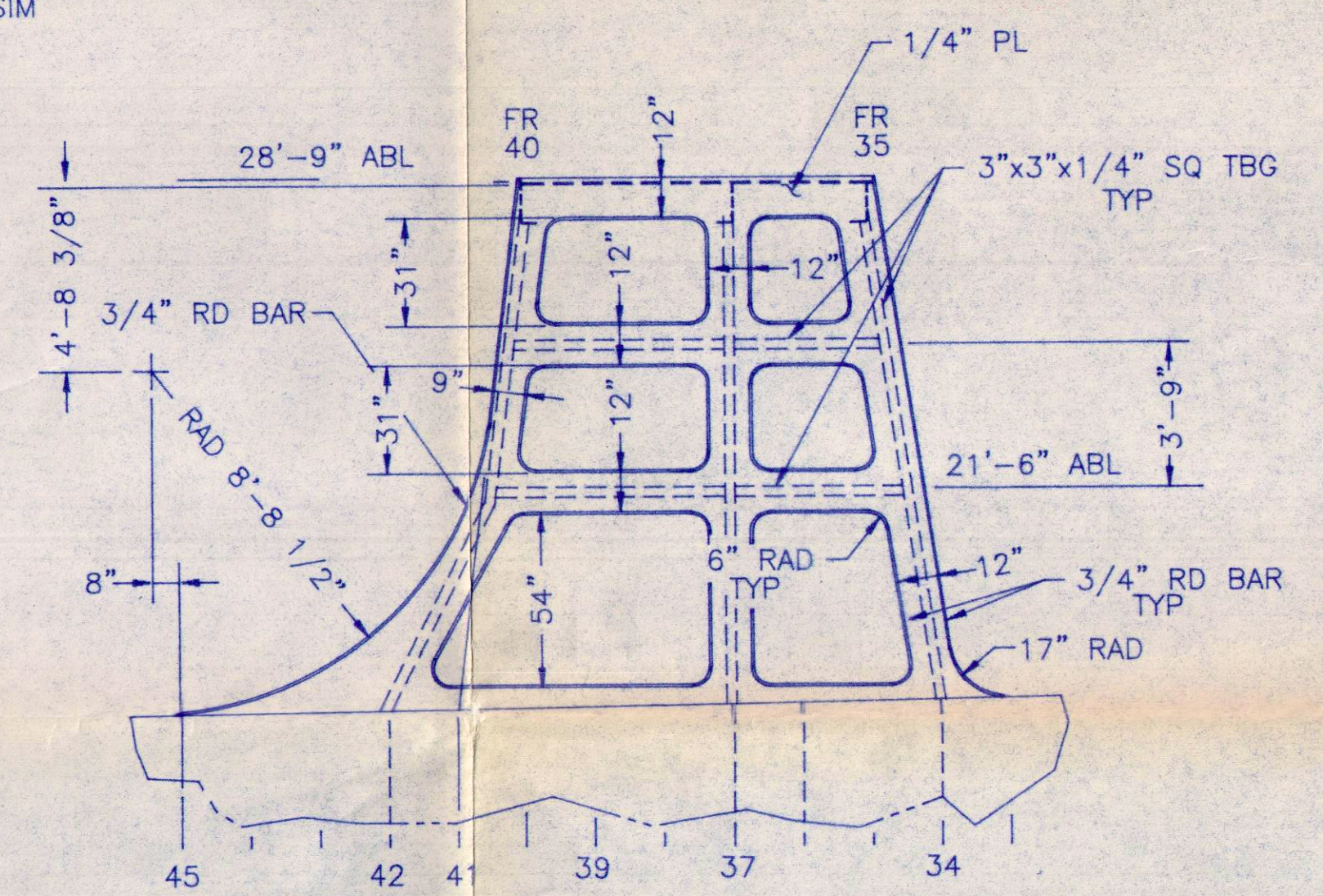
SCALE: 1 1/2\"/>

GENERAL NOTES:

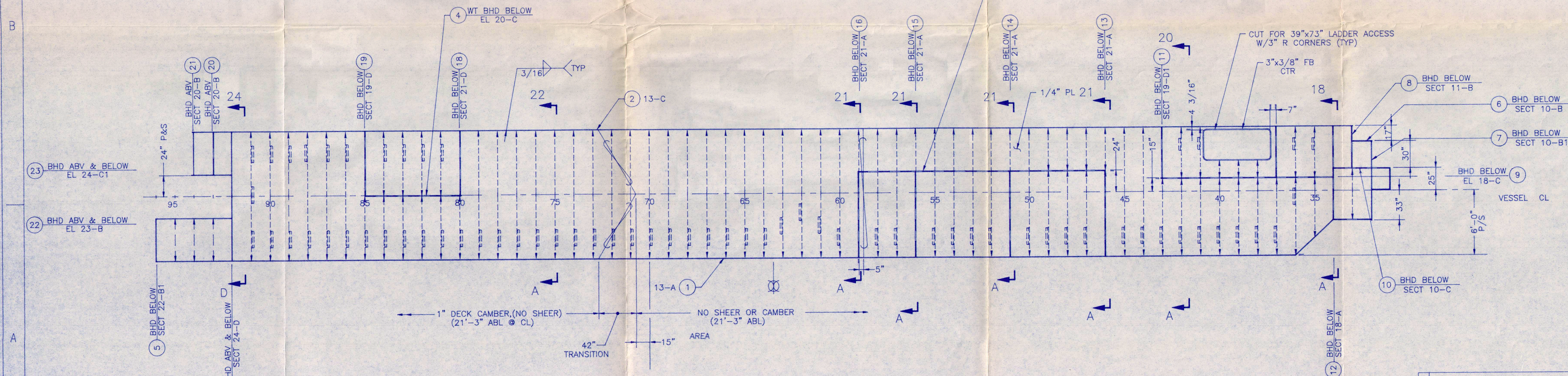
1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH A.B.S. STANDARDS AND BY U.S.C.G. CERTIFIED WELDERS.
2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES UNLESS NOTED OTHERWISE.
3. ALL STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
4. FRAME SPACING IS 21 INCHES.
5. UNBRACKETED STIFFENERS TO HAVE DOUBLE CONTINUOUS WELD FOR 1/10TH OF THEIR LENGTH AT EACH END, UNLESS NOTED OTHERWISE.
6. SNIPES TO BE 3/4\"/>
7. 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.
8. ALL SHARP OR RAGGED EDGES TO BE GROUND SMOOTH.
9. ALL BHD ARE 3/16\"/>



PLAN 4-C
BRIDGE DECK PLATING
28'-9\"/>



ELEVATION 5-B
STBD SIDE SHOWN-PORT SIM & OPP

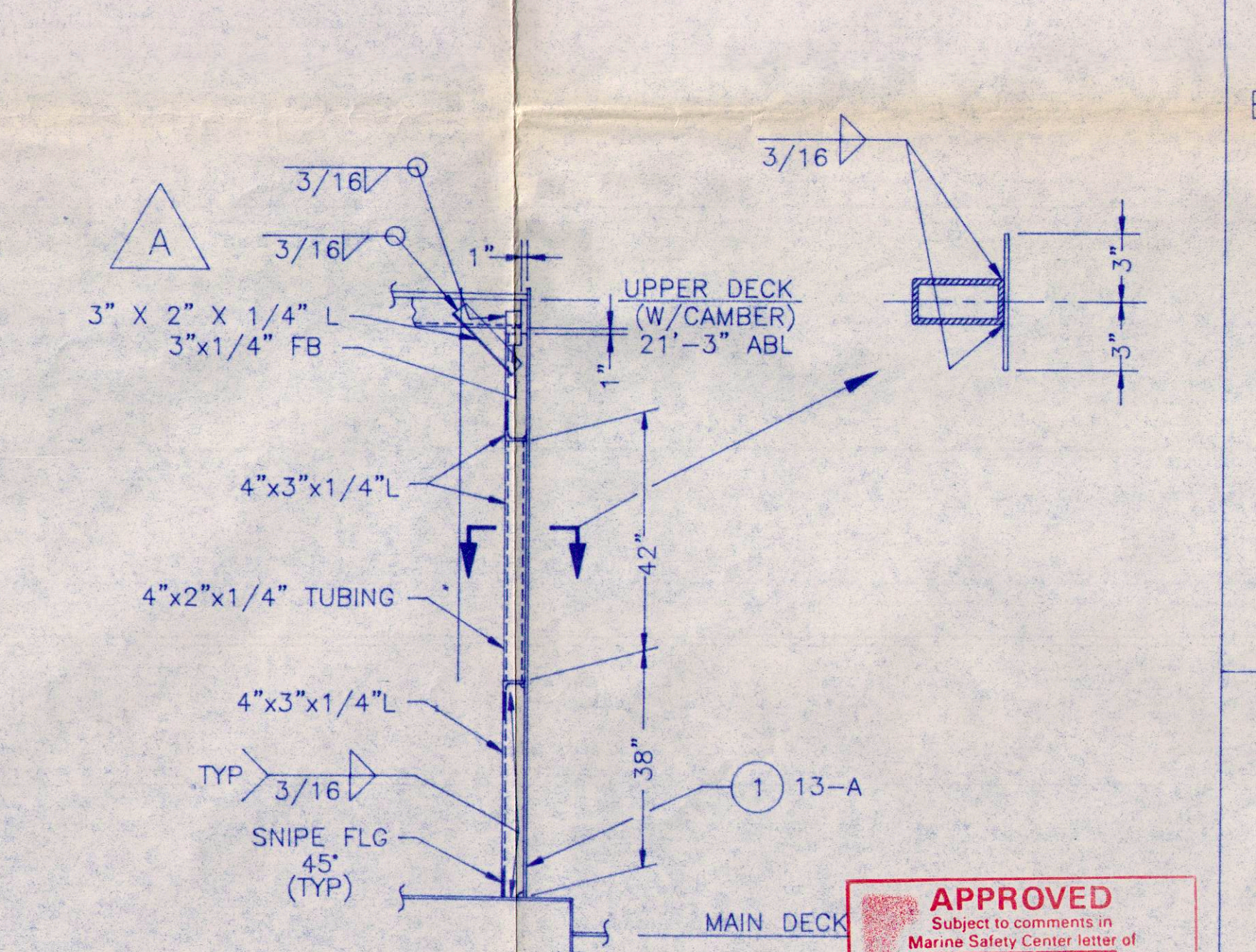
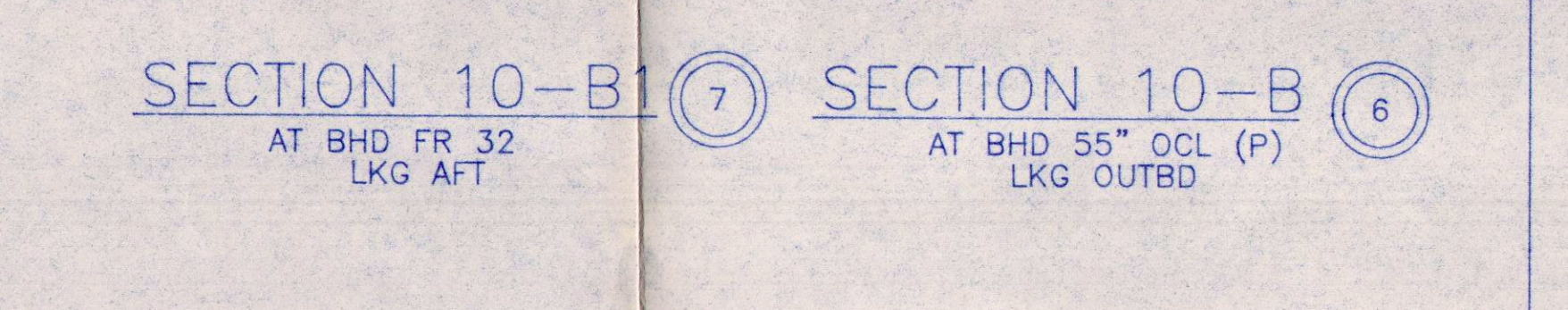
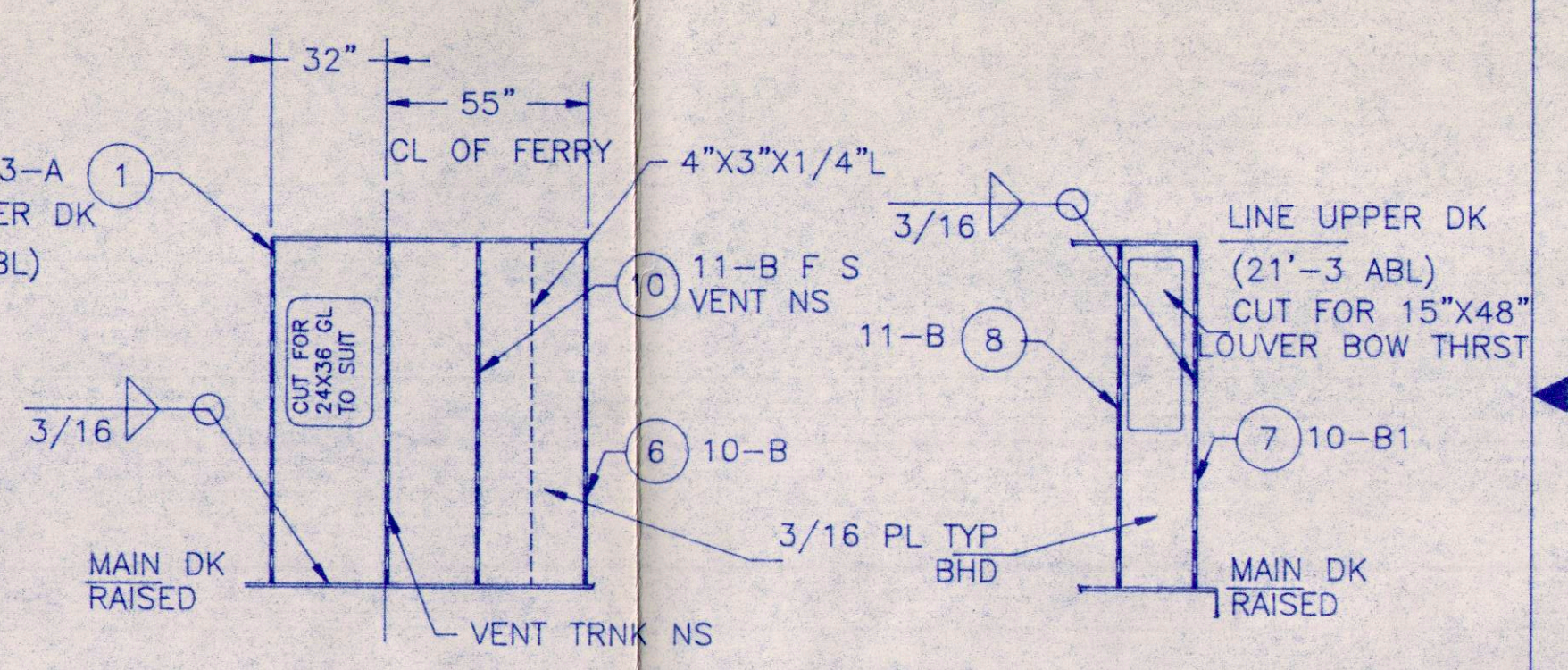
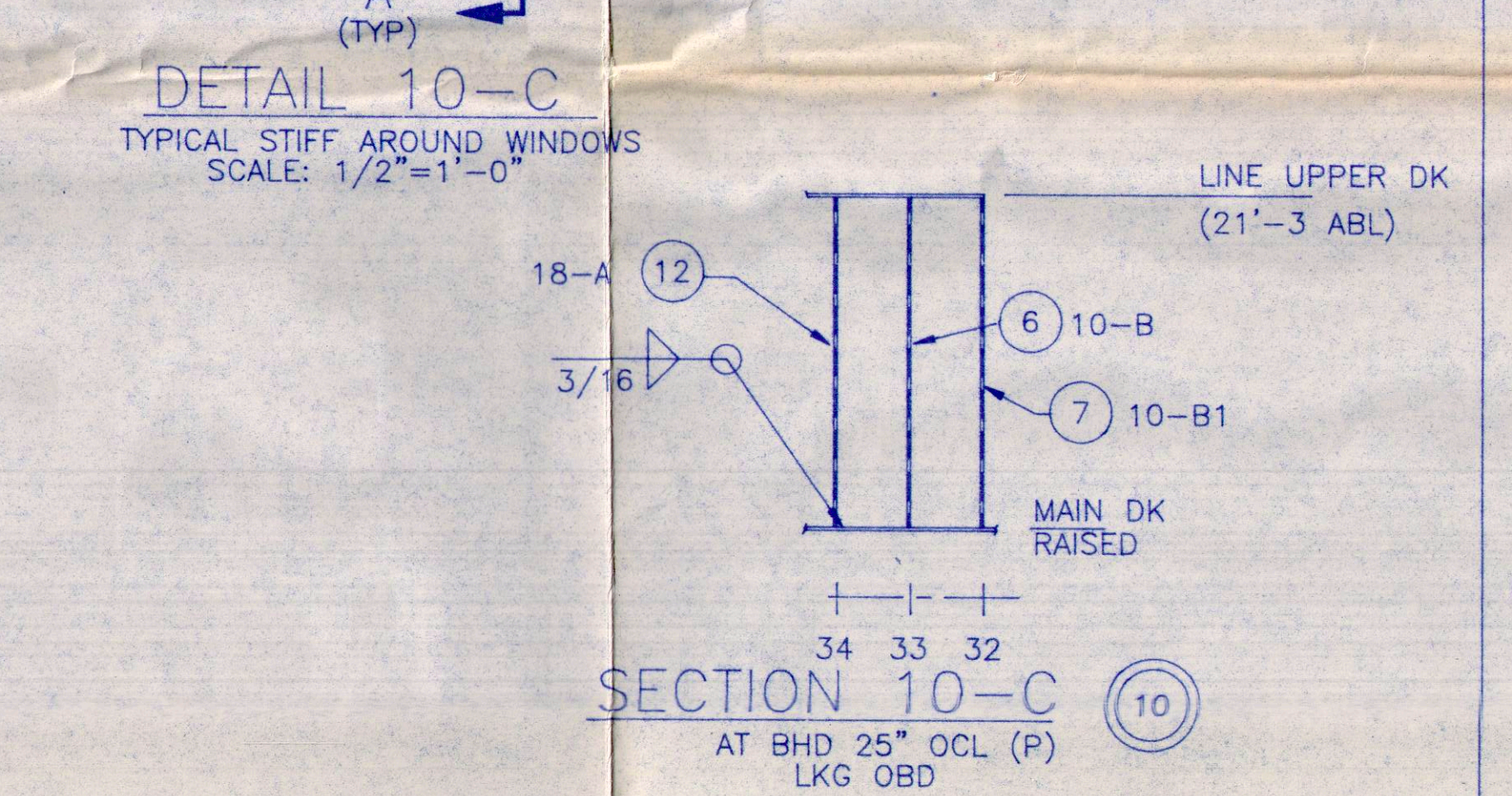
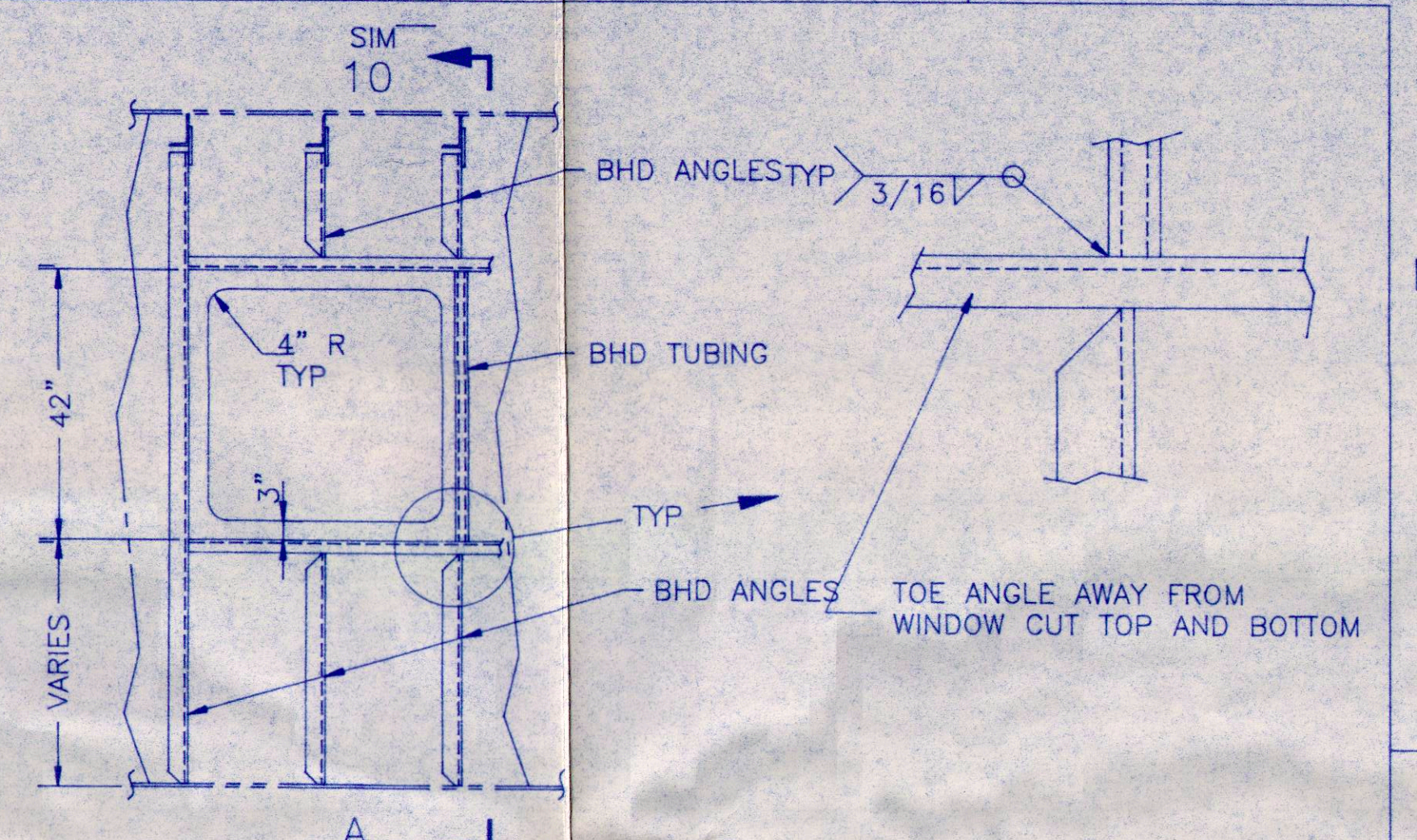
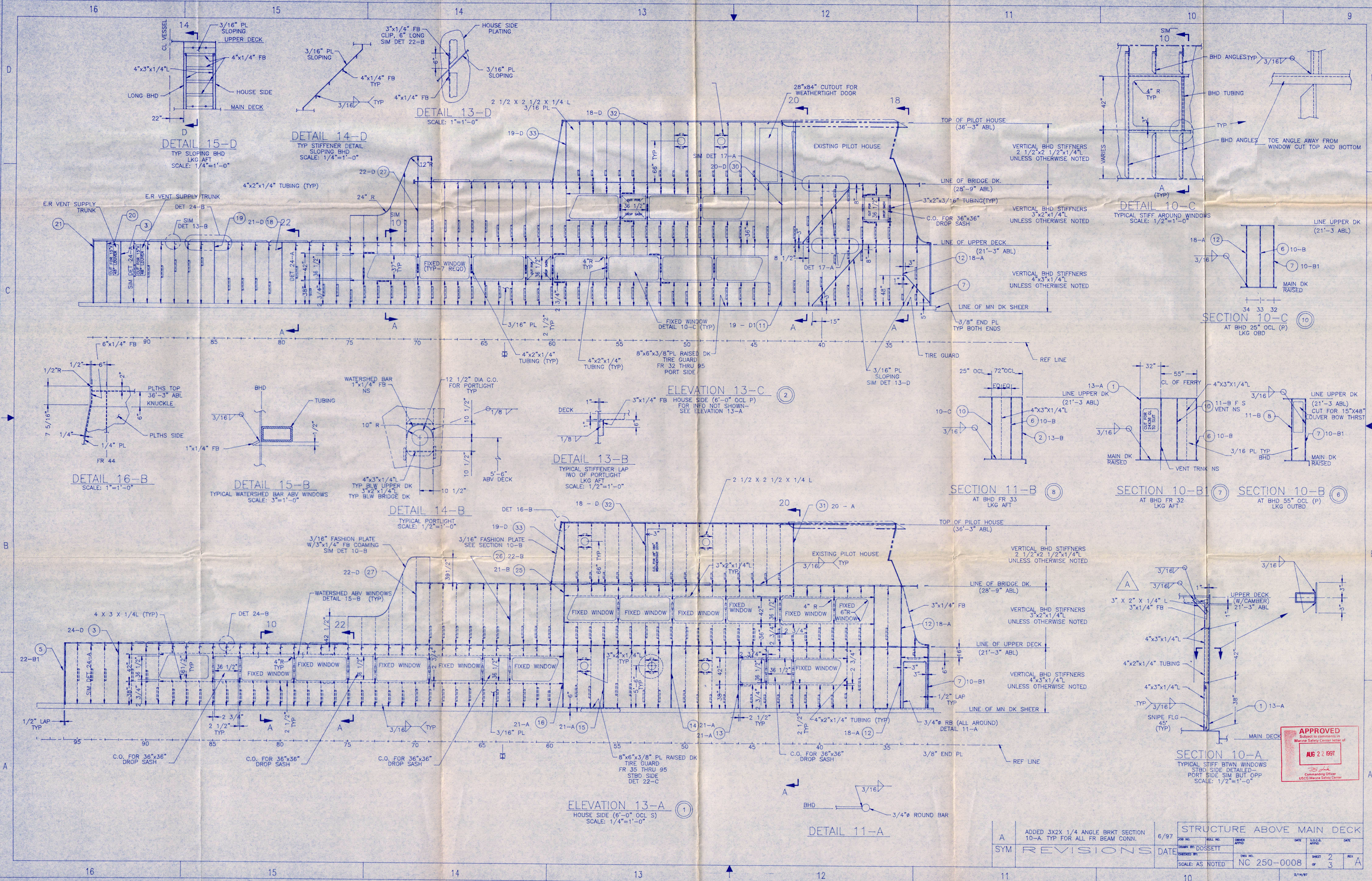


PLAN 5-A
UPPER DECK PLATING
DECK STIFFENERS - 5\"/>

NO.	TITLE	TRINITY DWG NO	N.C. DWG NO	REFERENCES

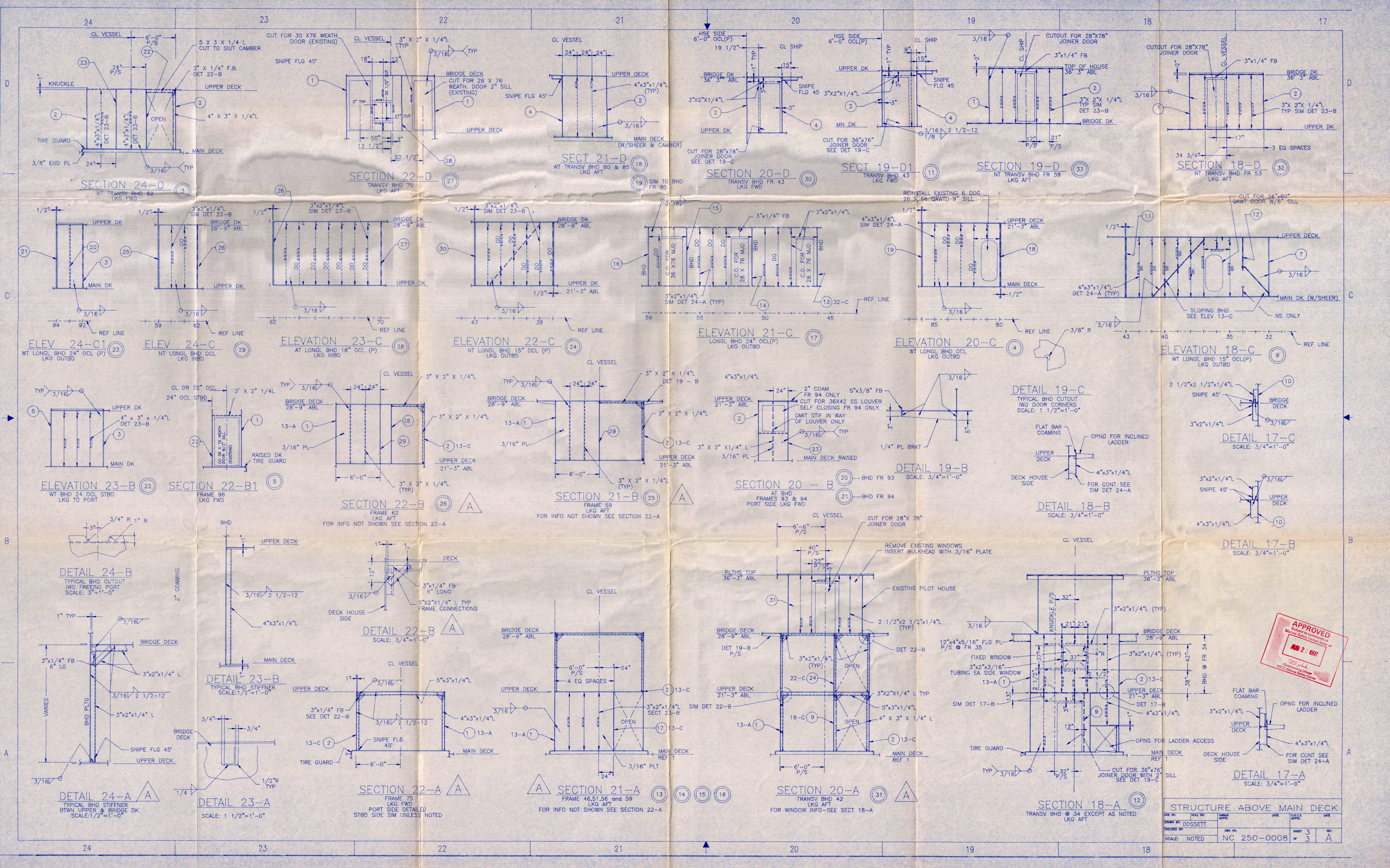
No.	DESCRIPTION	BY	Date
REVISIONS			
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION MARINE ENGINEERING			
M/V CARTERET STRETCH			
STRUCTURE ABOVE MAIN DECK BULKHEADS AND DECKS			
JOB NO.	DRAWN BY: DOSSETT	DATE	REV
CHECKED BY:	DATE	DWG NO.	SHEET 1 OF 3
SCALE: 1/4\"/>		NC 250 - 0008	





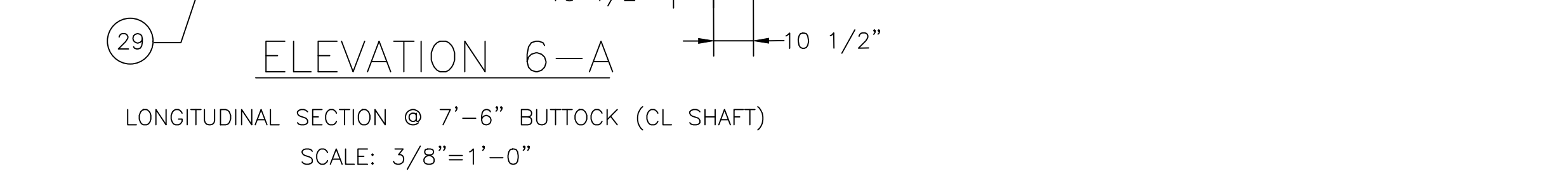
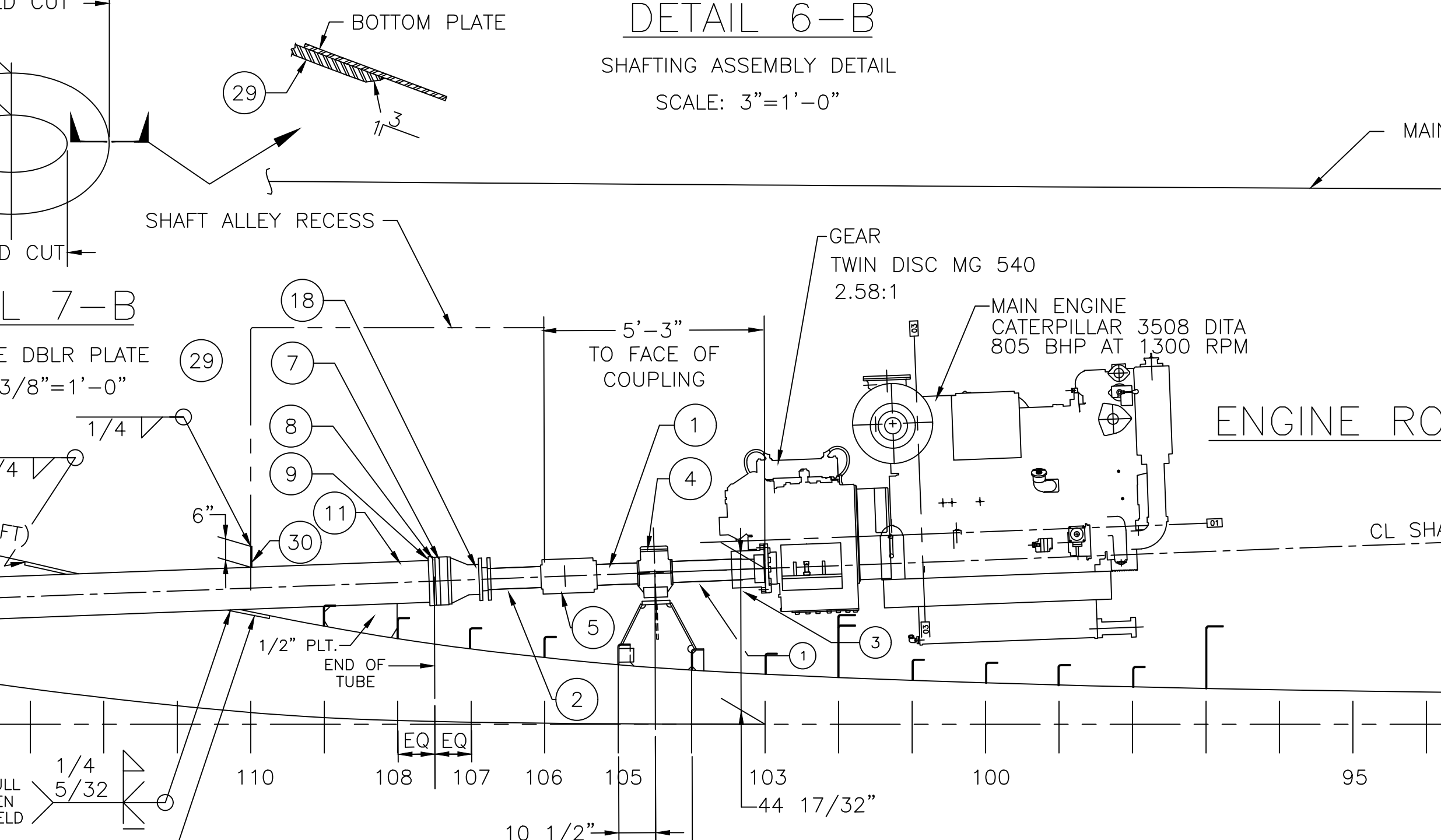
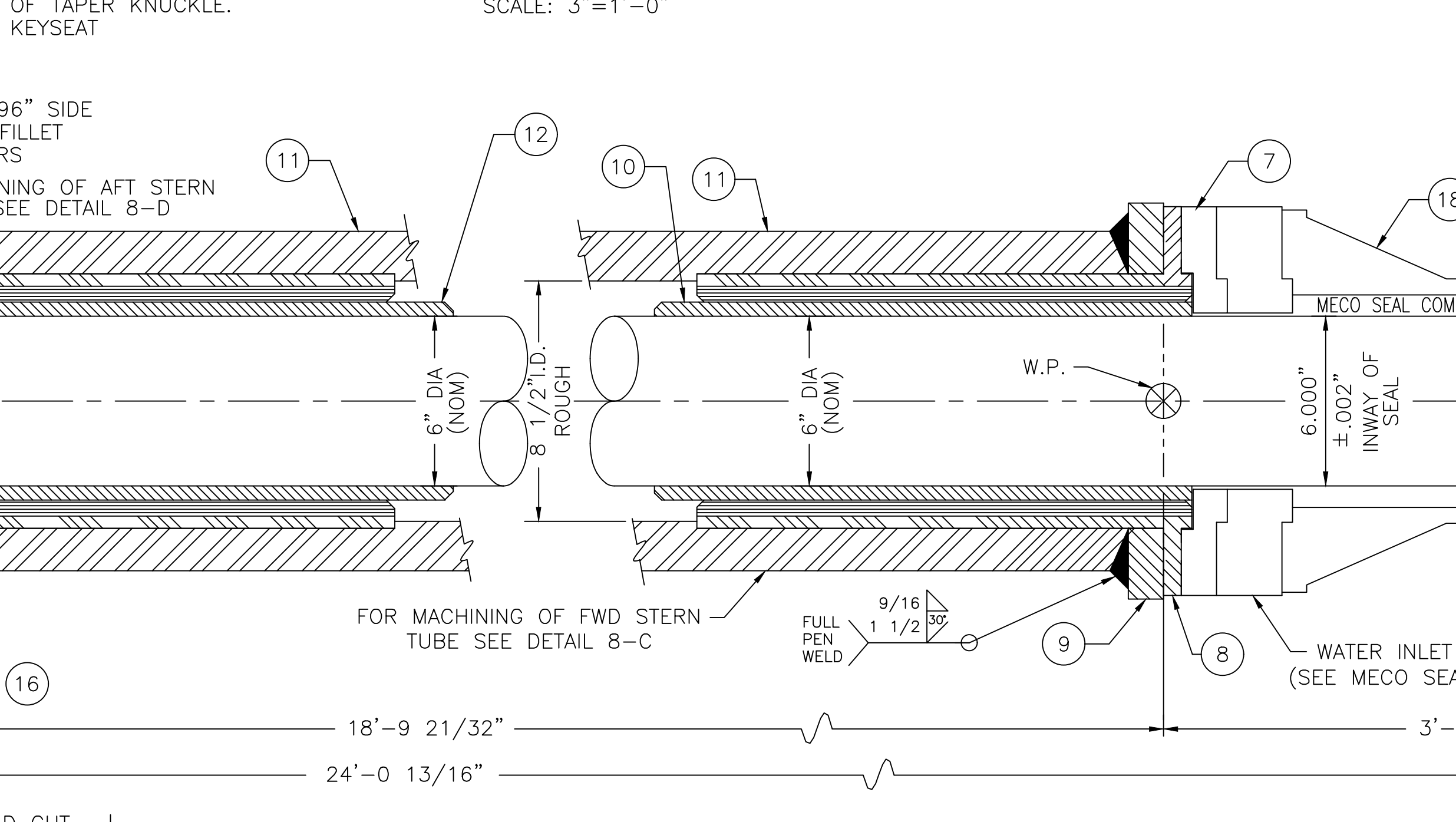
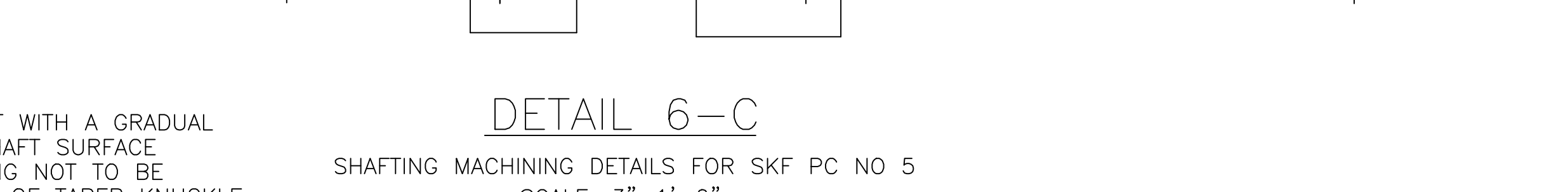
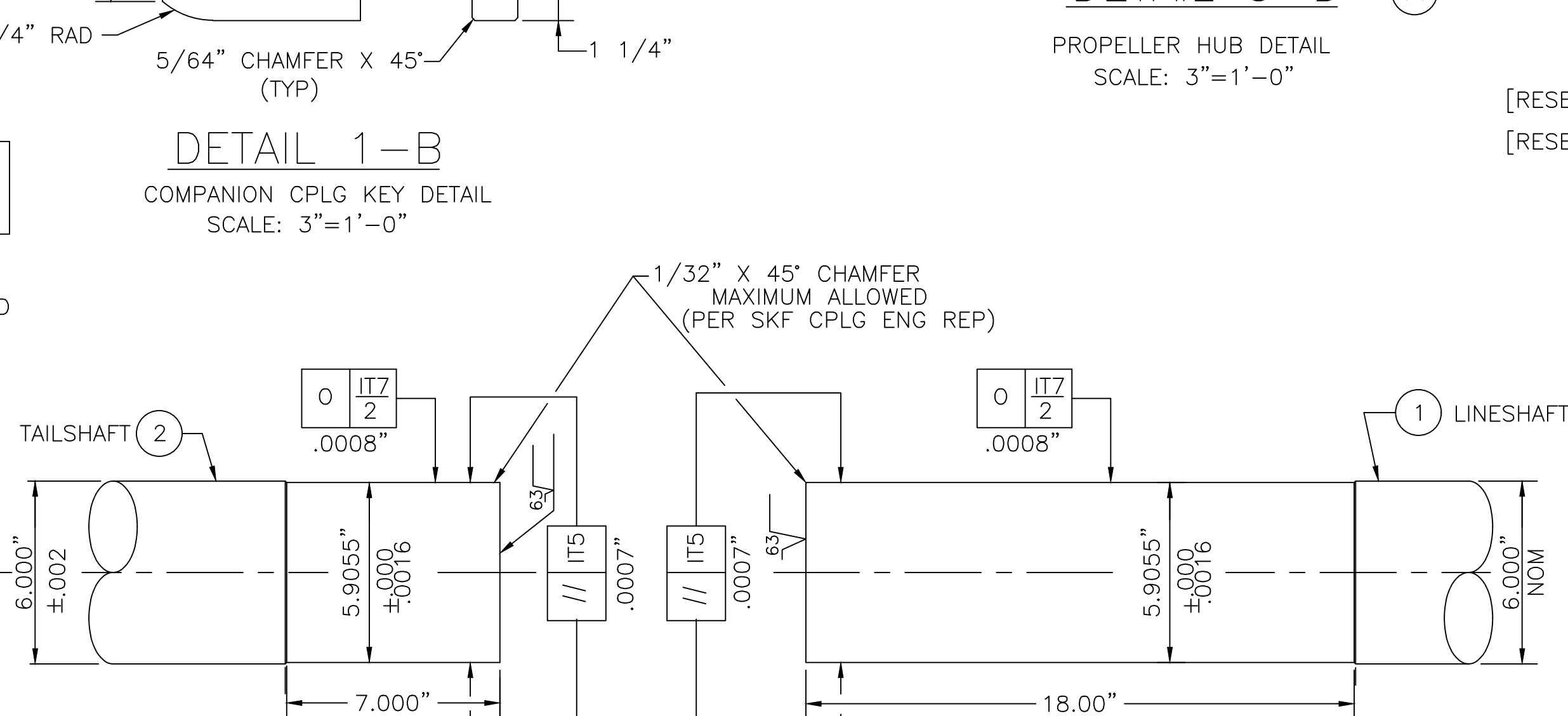
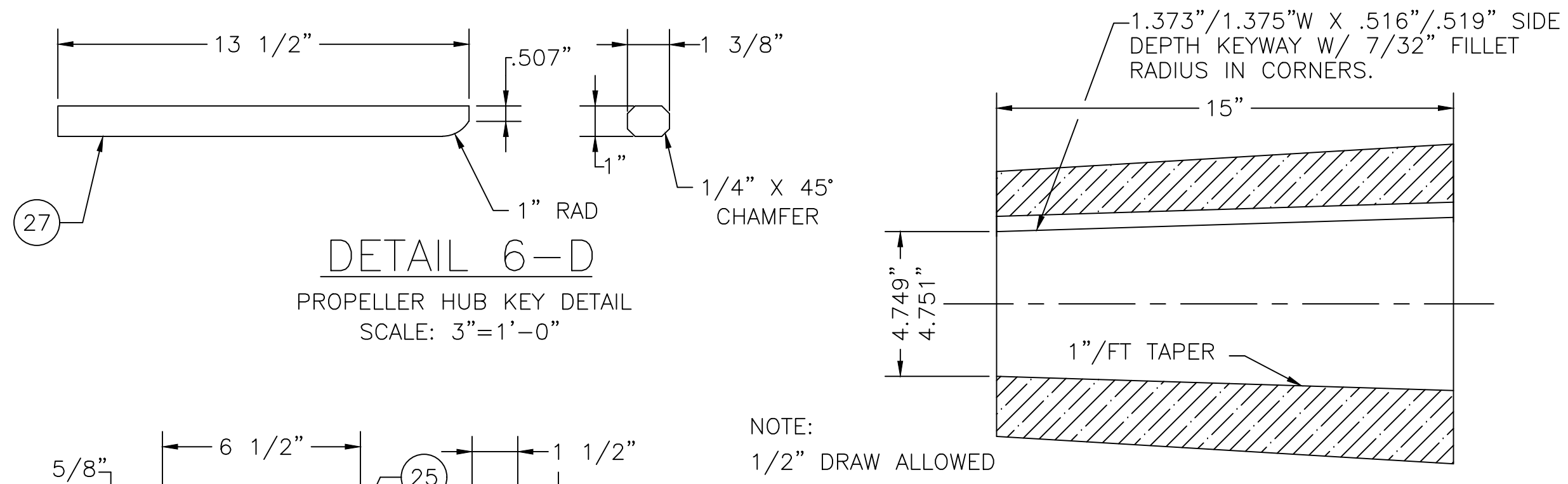
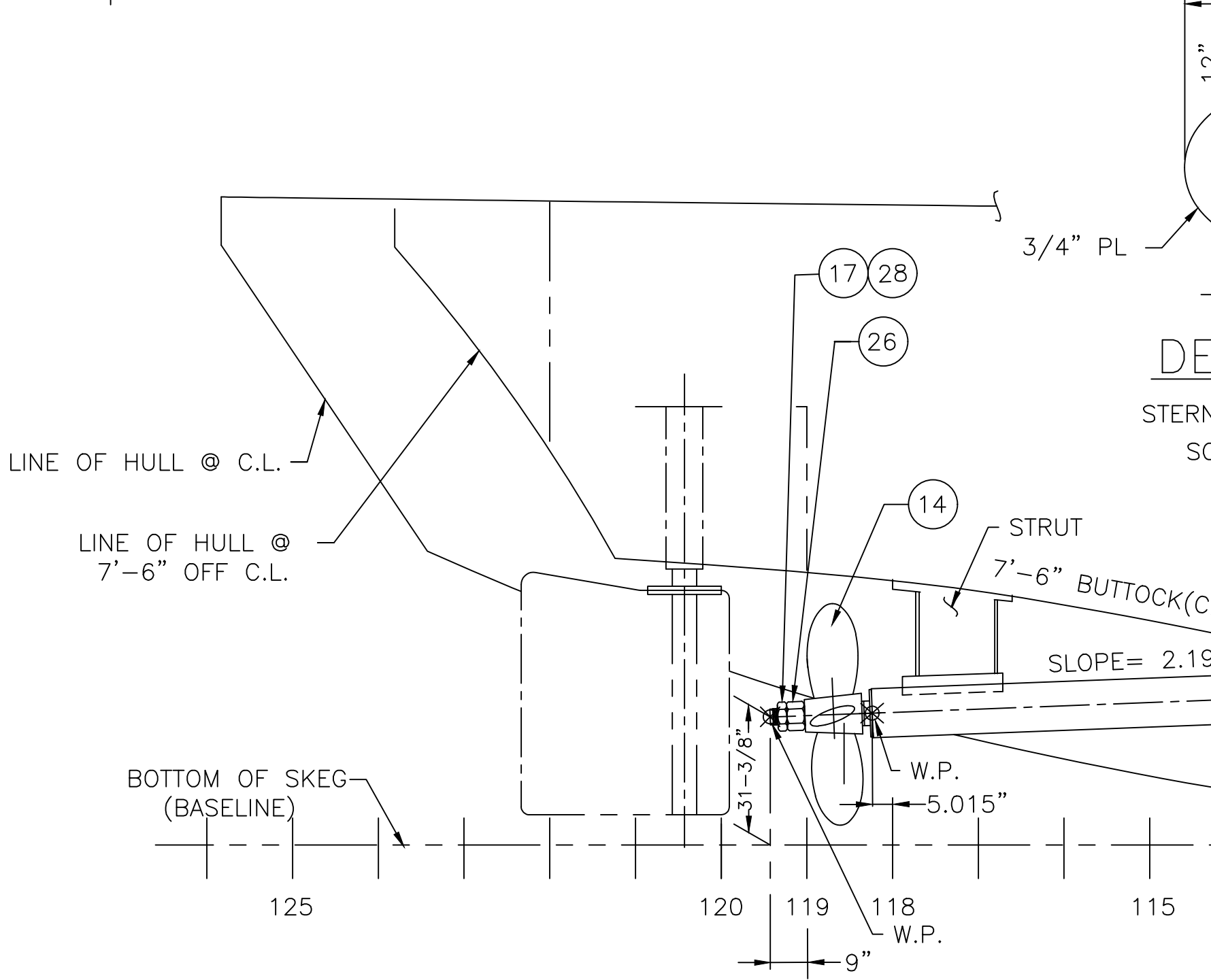
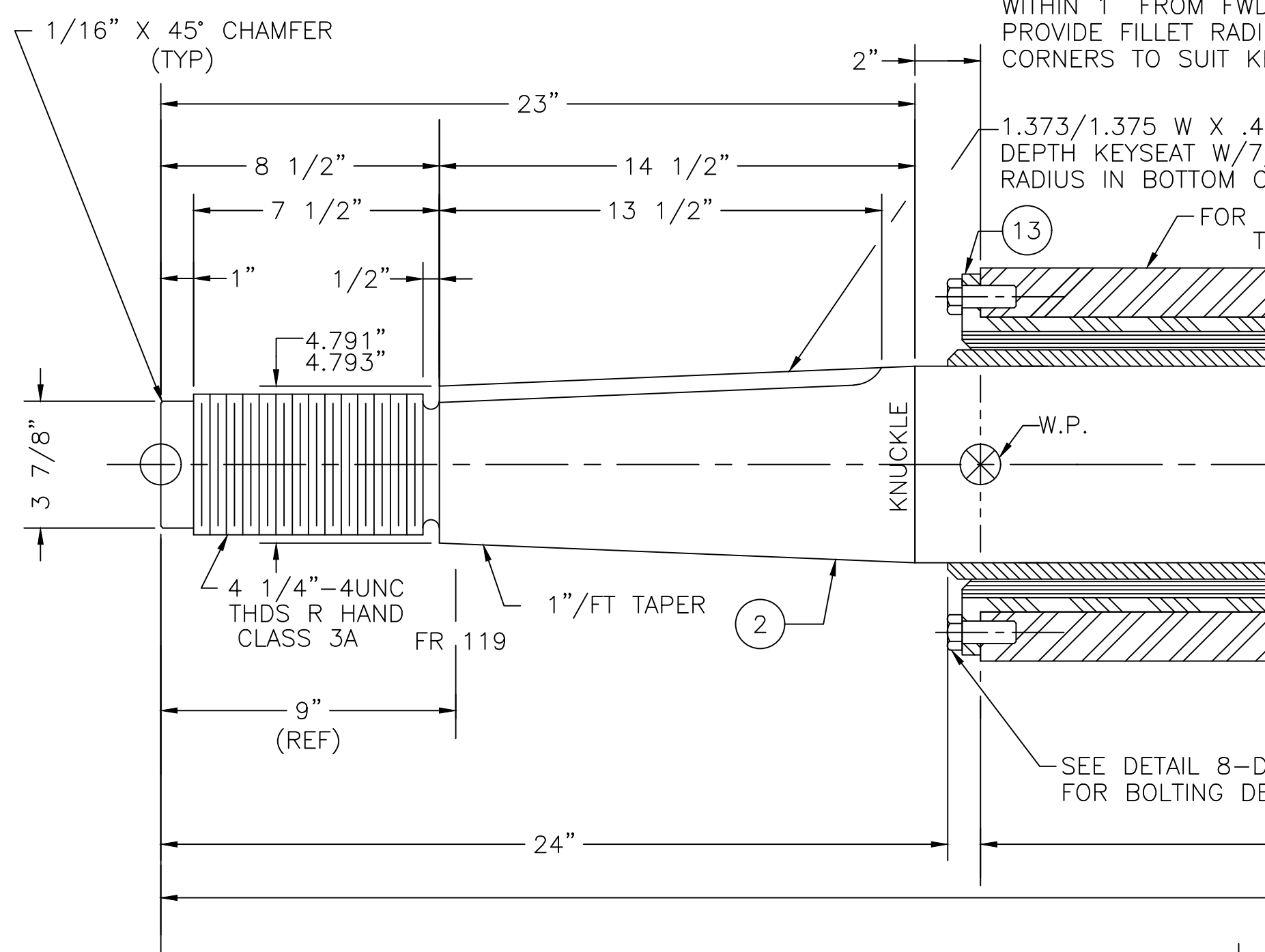
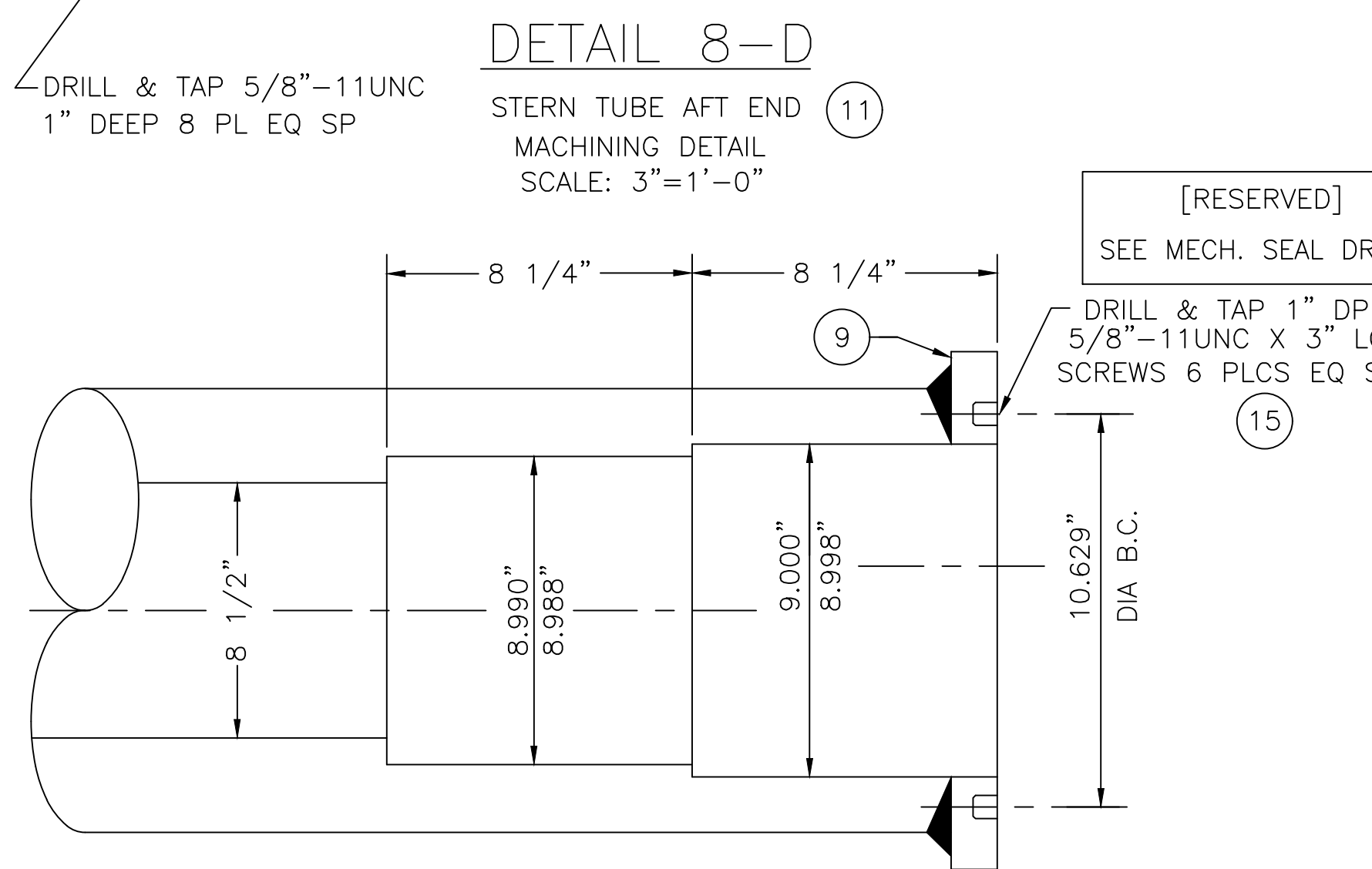
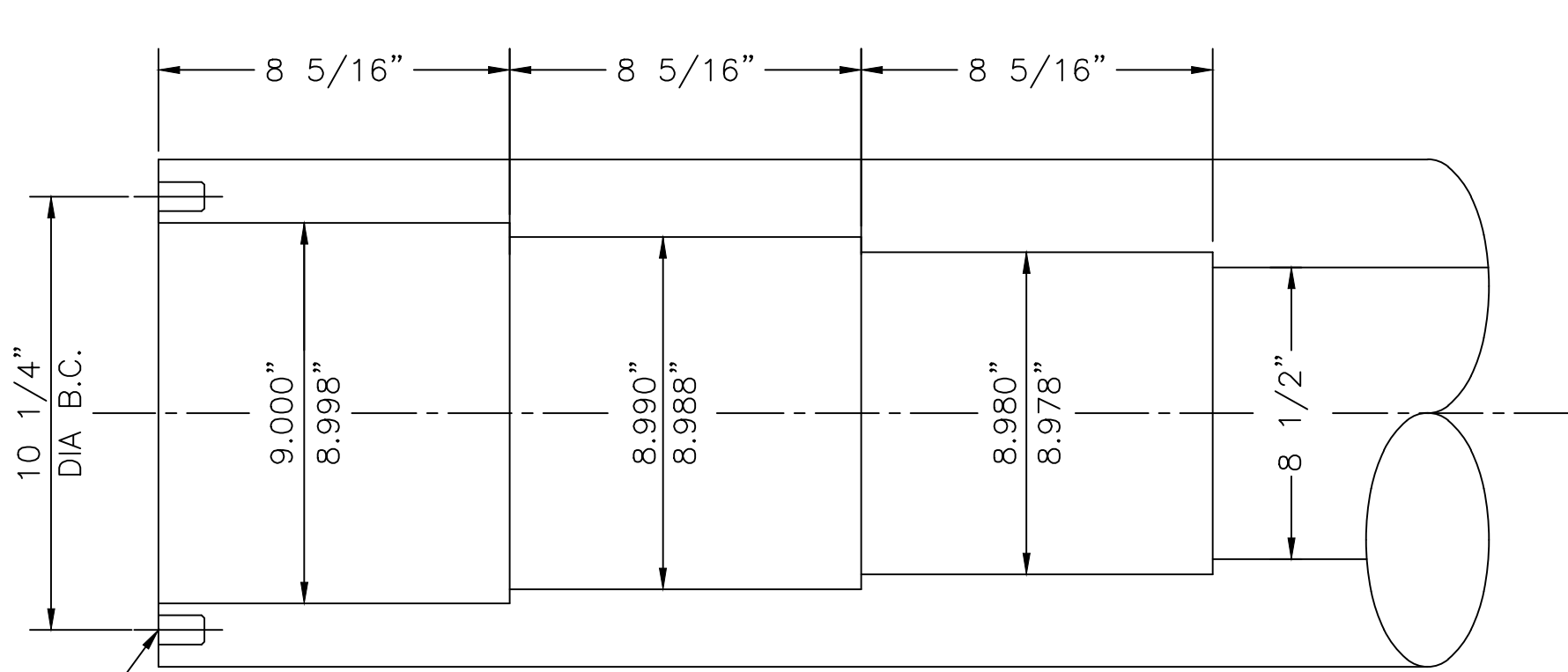
APPROVED
Subject to comments in
Marine Safety Center letter of
AUG 22 1997
USSC Marine Safety Center

STRUCTURE ABOVE MAIN DECK			
6/97	DATE	DATE	DATE
DRN: W. DOSSETT	CHECKED BY:	DATE	DATE
SCALE: AS NOTED	NC 250-0008	SHEET 2	REV 3



APPROVED
Subject to comments in
Margin Safety Center letter of
2/1/97
Commanding Officer
USCG Marine Safety Center

STRUCTURE ABOVE MAIN DECK					
JOB NO.	SHEET NO.	OWNER	DATE	U.S.C. APPROV.	DATE
DOSSETT	3	NC 250-0008	2/1/97		
CHECKED BY:	DWG NO.	SHEET	REV		
SCALE: NOTED	NC 250-0008	3	A		



PARTS LIST										
ITEM NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC NO.	CODE IDENT	PART NO.	REMARKS	GR NO.	UNIT
1	2	6"	LINE SHAFT	STL	ASTM 1045					
2	2	6"	TAILSHAFT	SST			AQUAMET 22	ARMCO		
3	2		GEAR COMPANION COUPLING					SUPPLIED W/GEAR, TWIN DISC		
4	2	6"	LINE SHAFT BEARING, SPLIT ROLLER PILLOW BLOCK				SAFS TYPE	DODGE, EXPANSION TYPE		
5	2		TAILSHAFT/LINE SHAFT CPLG	SST	TYPE 304		OK 150 HB	SKF		
6	2	6"	MED. MECHANICAL SHAFT SEAL FOR 6.000" SHAFT	VARIOUS				MPM-600 "MECO" SEAL		
7	2		SPACER PLATE	SST				SEE MECO MECH. SEAL		
8	2		FWD STERN TUBE BEARING, 7 I.D. X 9 O.D. X 17 1/2 LG	VARIOUS			861782180	JOHNSON, CODE 0700		
9	2		STERN TUBE PLATE FLANGE 11.616 I.D. X 15.116 O.D. X 1 1/2 THK	STL	ABS GR A			SEE MECO SEAL FOR B.C.		
10	2	7"O.D.	STERN TUBE FWD BRG LINER 7.00 O.D. X 8.993 I.D. X 19 LG	BRZ				SEE GEN NOTE #2		
11	2		STERN TUBE MECH TUBING 12.00 X 8 1/2 I.D. X 8 13/32 LG	STL	ASTM A106					
12	2	7"O.D.	STERN TUBE MECH TUBING 12.00 X 8 1/2 I.D. X 8 13/32 LG	BRZ				SEE GEN NOTE #2		
13	2		ACT STERN TUBE BEARING 9.000 X 7 I.D. X 25 1/2 LG	VARIOUS			861782100	GAVEL, JOHNSON		
14	4	5/8" DIA X 0.00" PITCH	PROPELLER 4 BLADE, MAX 54" DIA	BRZ				2 RH & 2 LH		
15	12	5/8"-11UNC	HD CAP SCREW 5/8 X 1 1/2 LG	SST						
16	5/8"-11UNC		STRENGTH 1 HD HD BOLT	SST	TYPE 316					
17	2	4 1/4"-4UNC	PROPELLER JAM NUT	BRZ						
18	2		MODIFIED STUFFING BOX THRU PLATE, 7.50" O.D.	STL	ABS GR A			SEE MECO MECH. SEAL		
19	2	1" PL	1" BUNG X 1 LG HEX HD CAP SCREW W/3 3/4 LG MIN THREAD LENGTH	STL	ASTM A449			SAE GR 5		
20	8	1"-8UNC	1" BUNG X 8 1/2 LG HD STR HEX HD BOLT W/5/8 PLT KC NUT	STL	ASTM A449			SAE GR 5 ;BEARING FDN		
21	8	1"	PLATE, 1" THICK	STL	ABS GR A			BEARING FDN		
22	AR	1" THK	PROPELLER FULL NUT	BRZ	SAE GR 5			BEARING FDN		
23	AR	1/2" THK	PROPELLER KEY	STL	ASTM A36			BEARING FDN		
24	AR	1/2"X4"	FLAT BAR, 1/2" THK X 4" W	STL	ASTM A36			BEARING FDN		
25	2	-	COMPANION KEY	STL	ASTM A668			48000 PSI MIN Y.S.		
26	2	4 1/4"-4UNC	PROPELLER FULL NUT	BRZ	SAE GR 5			KEYSTOCK, 30000 PSI MIN Y.S.		
27	2	-	PROPELLER KEY	SST				HDS DRILLED FOR LKWIRE		
28	4	1/2"-13UNC	STERN TUBE SOCKET HEAD CAP SCREW	BRZ				SEE DETAIL 7-B		
29	2	3/4" THK	STERN TUBE DBLR PLATE	STL	ASTM A36			AT FR 110 PENET		
30	2	24"O.D.	STERN TUBE BULKHEAD DOUBLER PLATE 5/16 THK	STEEL	ASTM A36					
31										

GENERAL NOTES:

1. SHAFT SLEEVE SHALL BE IN ACCORDANCE WITH A.S.M.E. STANDARDS.

2. LINERS WILL BE OF BRONZE CASTINGS FROM ASTM SPEC B-584, COPPER ALLOY UNS NO. C93200, C93700, C92200, C83600 OR C83800 ALL OF WHICH HAVE PROPERTIES BETTER THAN:
a) TENSILE STRENGTH (MIN) ≥ 30000 PSI.
b) ELONGATION IN (2)IN (MIN %) = 15.
c) CERTIFICATES REQUIRED.

3. MACHINE LINER O.D. AFTER LINER IS INSTALLED ON SHAFT.

4. VERIFY O.D. OF SHAFT PRIOR TO MACHINING I.D. OF LINER FOR INTERFERENCE FIT.

5. SHOTBLAST INTERIOR OF BOTH SHAFT TUBES EXCEPT IN WAY OF MACHINED SURFACES. LINE TO SSPC-SP-10. APPLY TWO (2) COATS OF COAL TAR EPOXY AT 8 MILS DFT EACH. APPLY TWO(2) COATS OF FORMULA 121/63 ANTI-FOULING AT 2 MILS DFT. FIRST COAT OF FORMULA 121 SHALL BE APPLIED WHILE THE SECOND COAT OF COAL TAR IS TACKY.

SHAFT CALCULATIONS

H = 805 BHP

RPM = 1300

SRPM = 503.88

RED = 2.58:1

$d = 100 \sqrt{\frac{(H/R)[C_1/(U+C_2)]}{(503.88)^3}}$

$d = 100(1.29) \sqrt{\frac{(805/503.88)[3.695/(60,000+23180)]}{(503.88)^3}}$

$d = 129 \cdot \sqrt[3]{(1.5976) \cdot (.0000444)}$

$d = 129 \cdot \sqrt[3]{.0000710}$

$d = 129 \cdot (.0414214)$

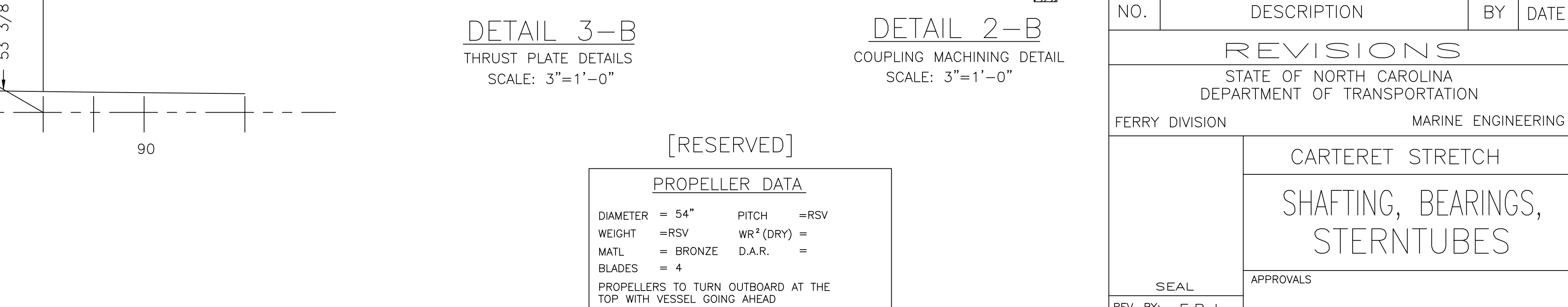
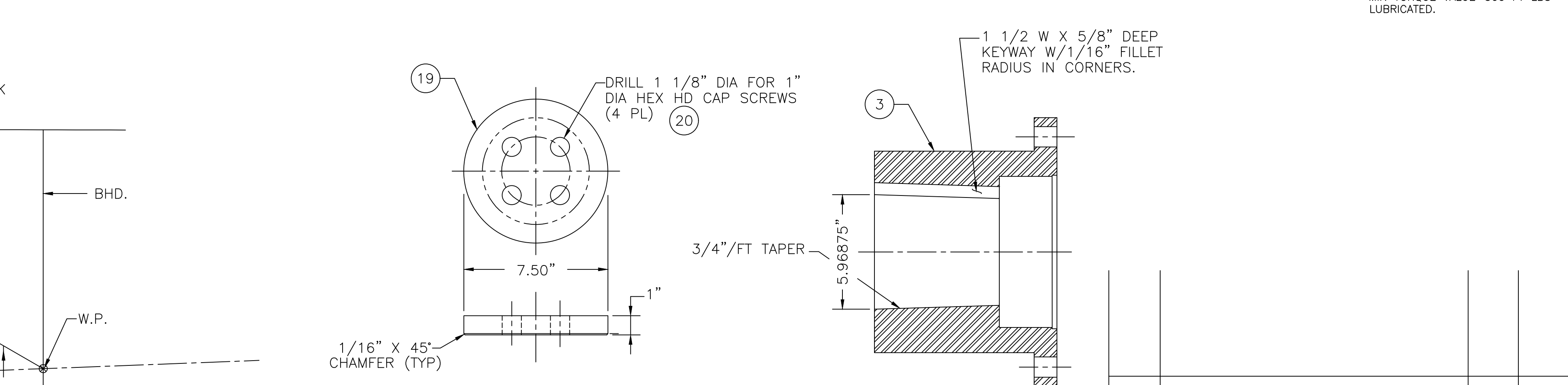
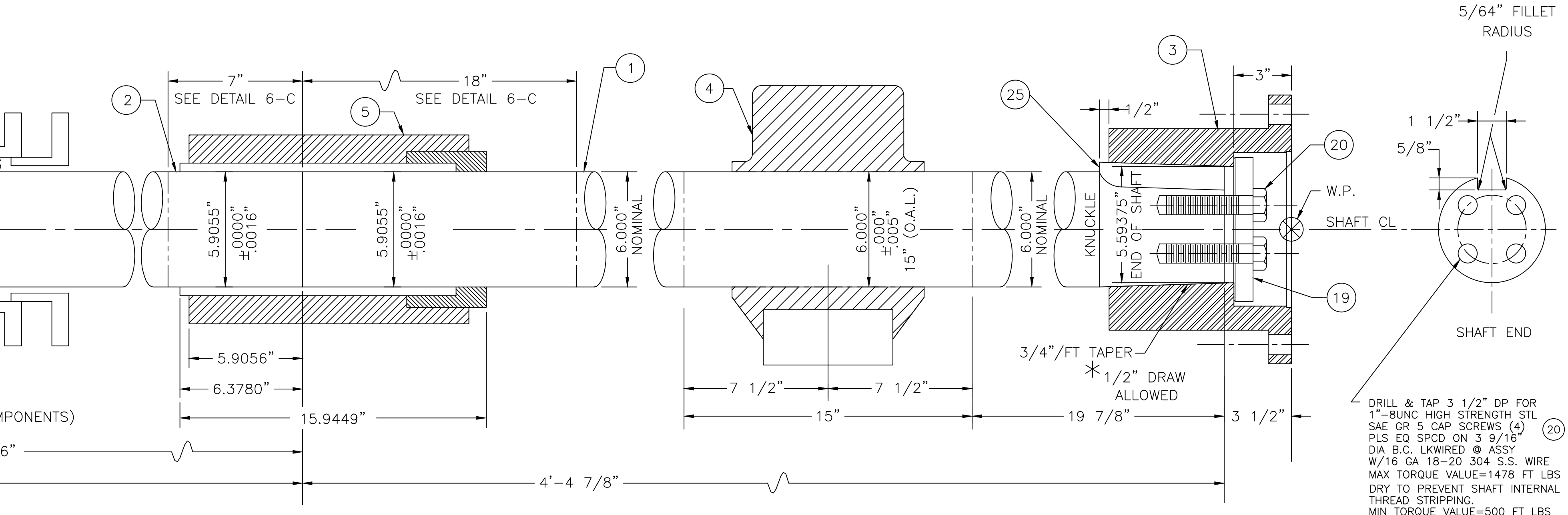
$d = 5.3434$

$C_1 = 3.695$

$U = 60,000$

$C_2 = 23180$

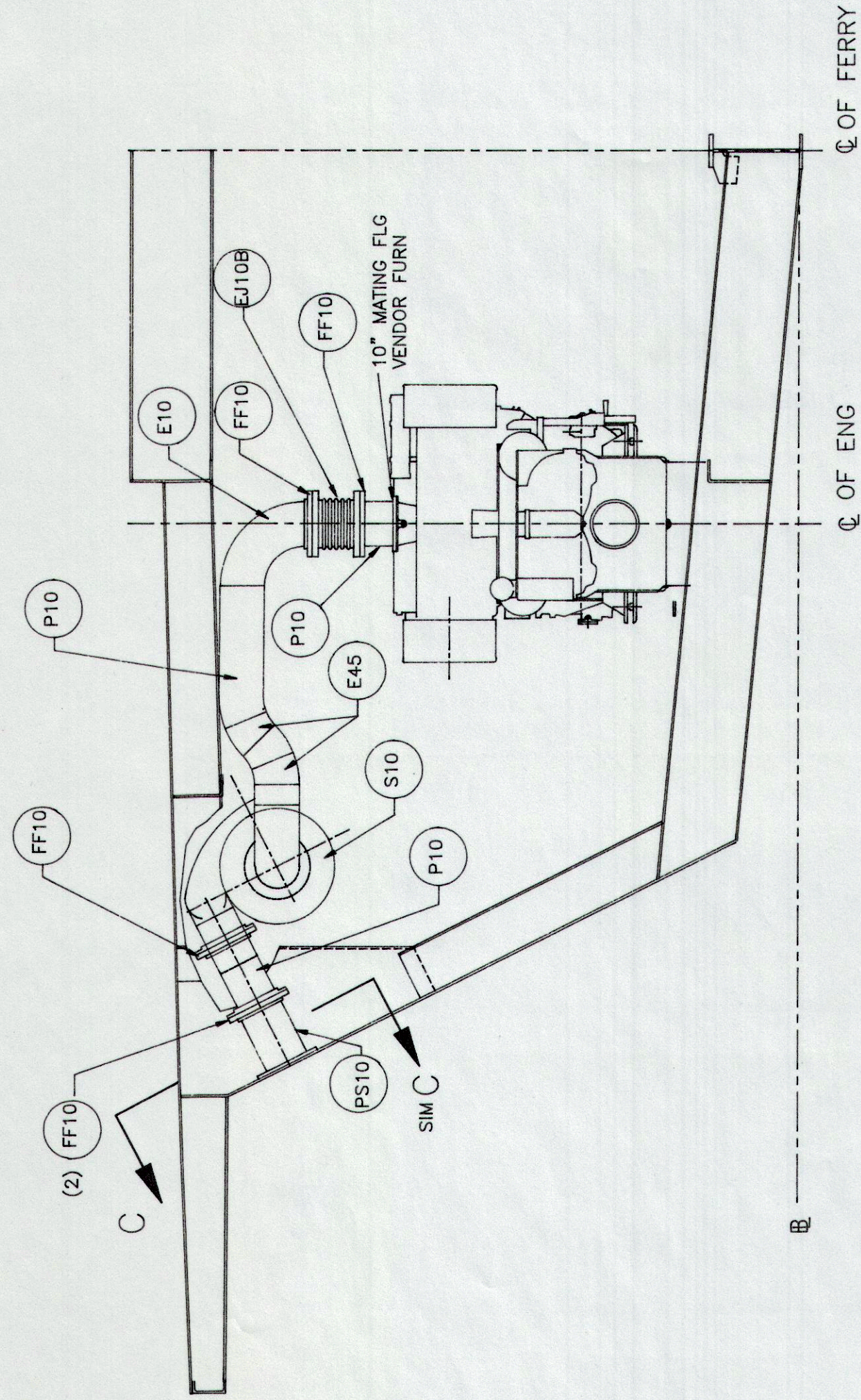
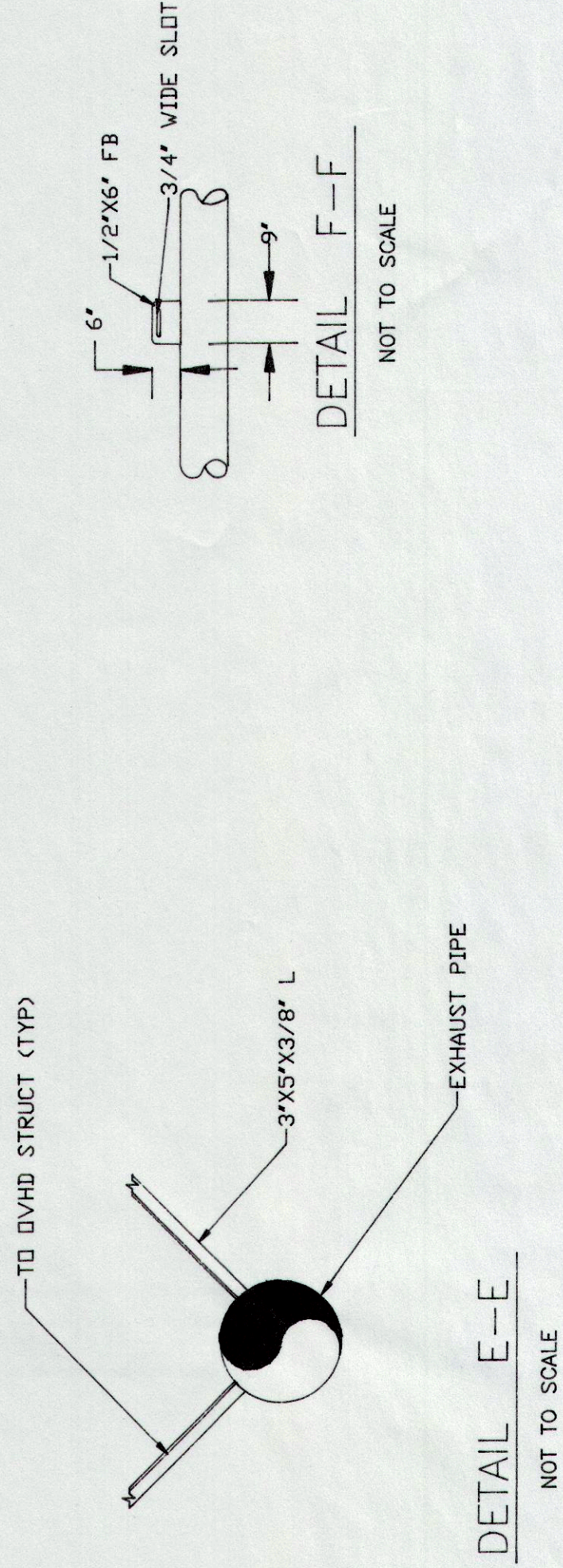
$K = 1.29$



		REV. BY: E.B.J.	NC-250-0011	0 REV.
		CHKD. R.S.D.		
		SCALE AS SHOWN		

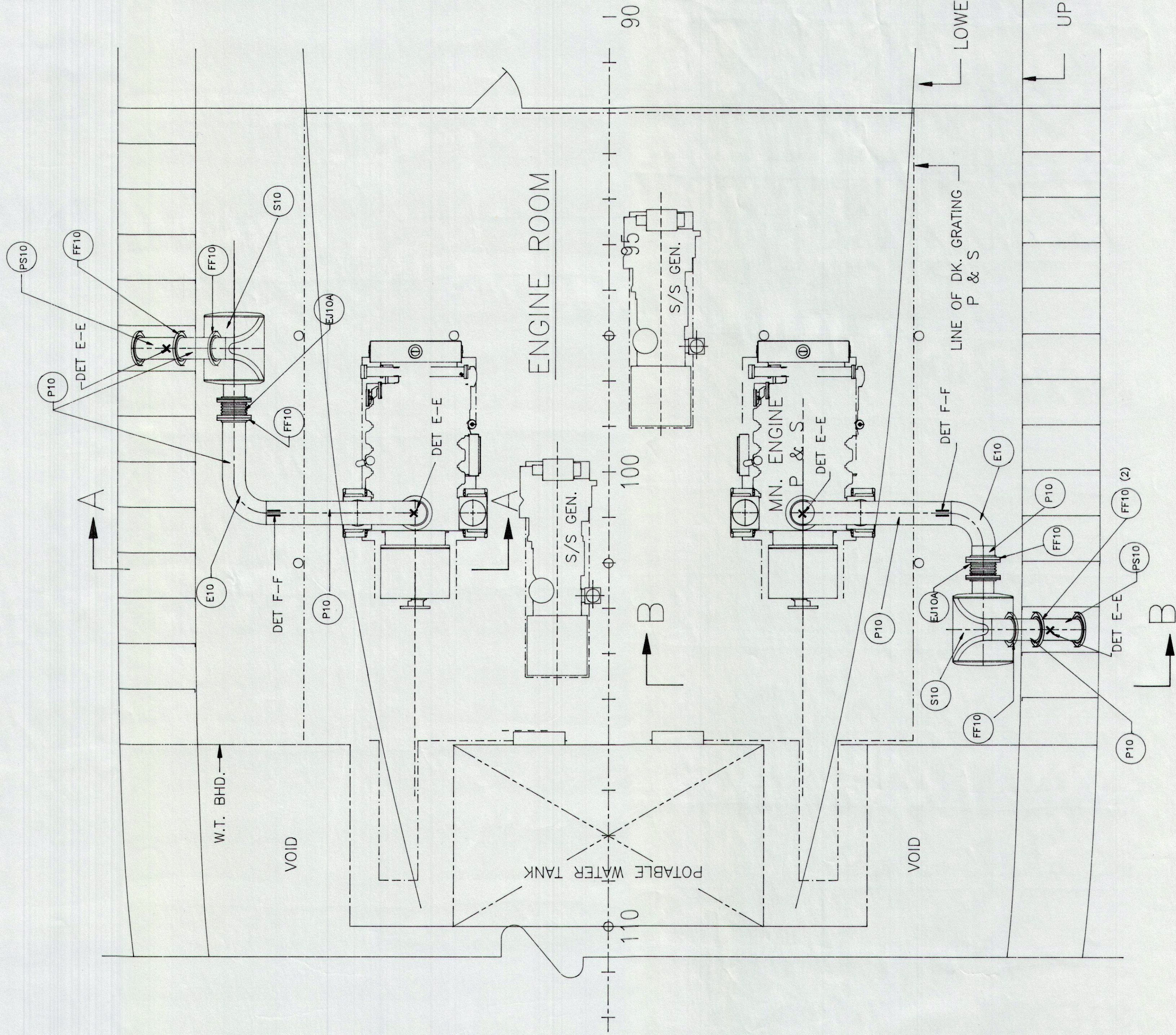
MATERIAL LIST

ITEM NBR	QTY/SIZE	DESCRIPTION	MATERIAL	SPEC NUMBER	PART NUMBER	REMARKS	UNIT WT
P-10	AR 10"	PIPE SCHEDULE 40	BLK STL	ASTM A106-72a		ANSI B36.10, GRADE B	
PS-10	AR 10"	PIPE SCHEDULE 80	316SST	ASTM A312		ANSI B36.19	
E-10	4 10"	ELBOW 90 SCH 40 LR BTWLD BLKSTL		ASTM A234		ANSI B16.9	
E-45	4 10"	ELBOW 45° SCH 40 LR BTWLD BLKSTL		ASTM A234		ANSI B16.9	
FF-10	12 10"	FLANGE 150# SLIP ON	FST	ASTM 105			
EJ10A	2 10"	EXPANSION JOINT FLANGED	VAR	COM	SP-0025- ST-MS	AMERICAN BOA	
EJ10B	2 10"	EXPANSION JOINT FLANGED	VAR	COM	SP-0025- ST-MS	AMERICAN BOA	
S-10	2 10"	SILENCER	STL	COM	TXS100FL	COWI FLANGED INLET FLANGED OUTLET	



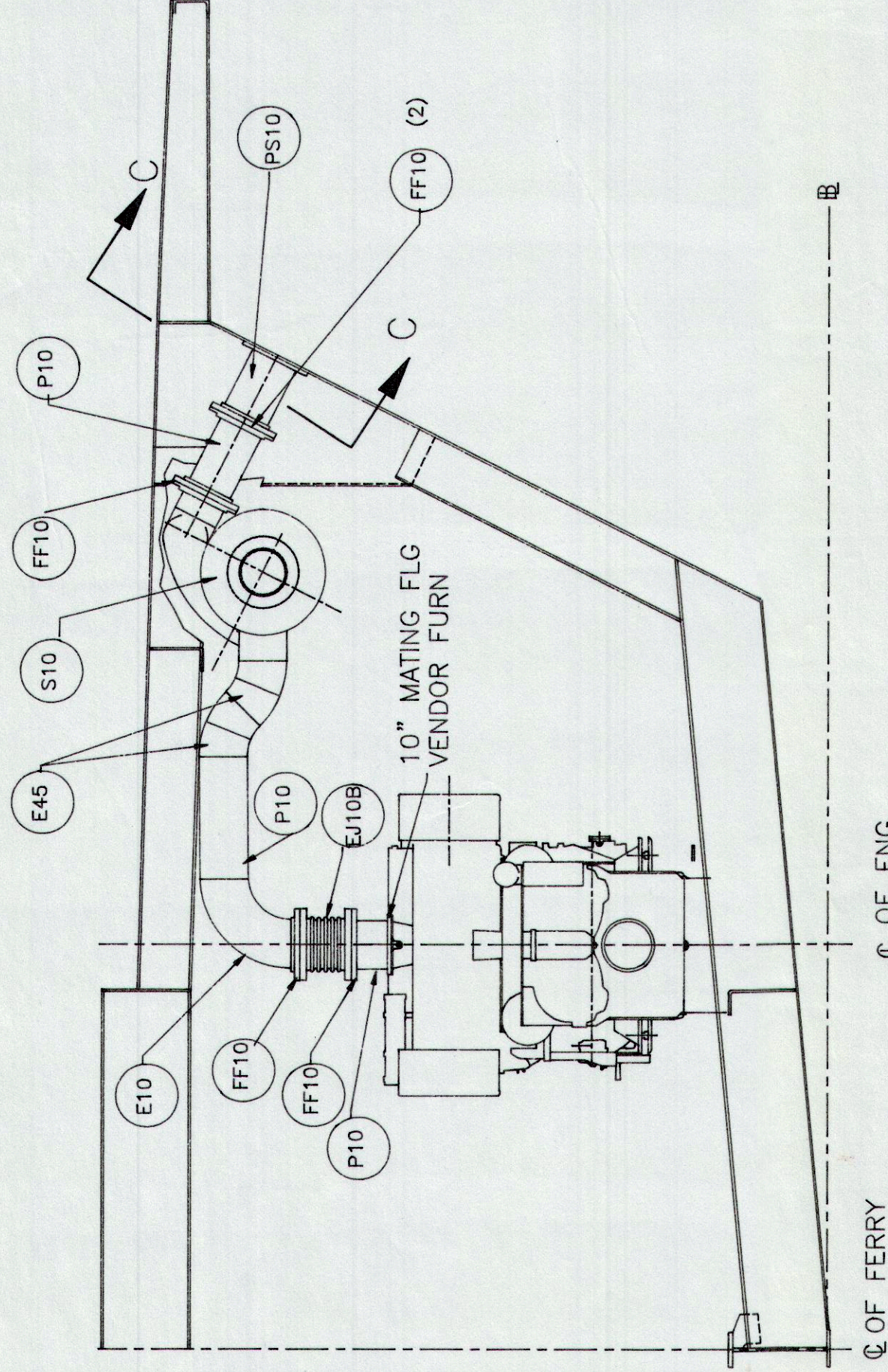
SECTION A-A

FR 102 PORT SIDE LOOKING FWD
3/8"=12"



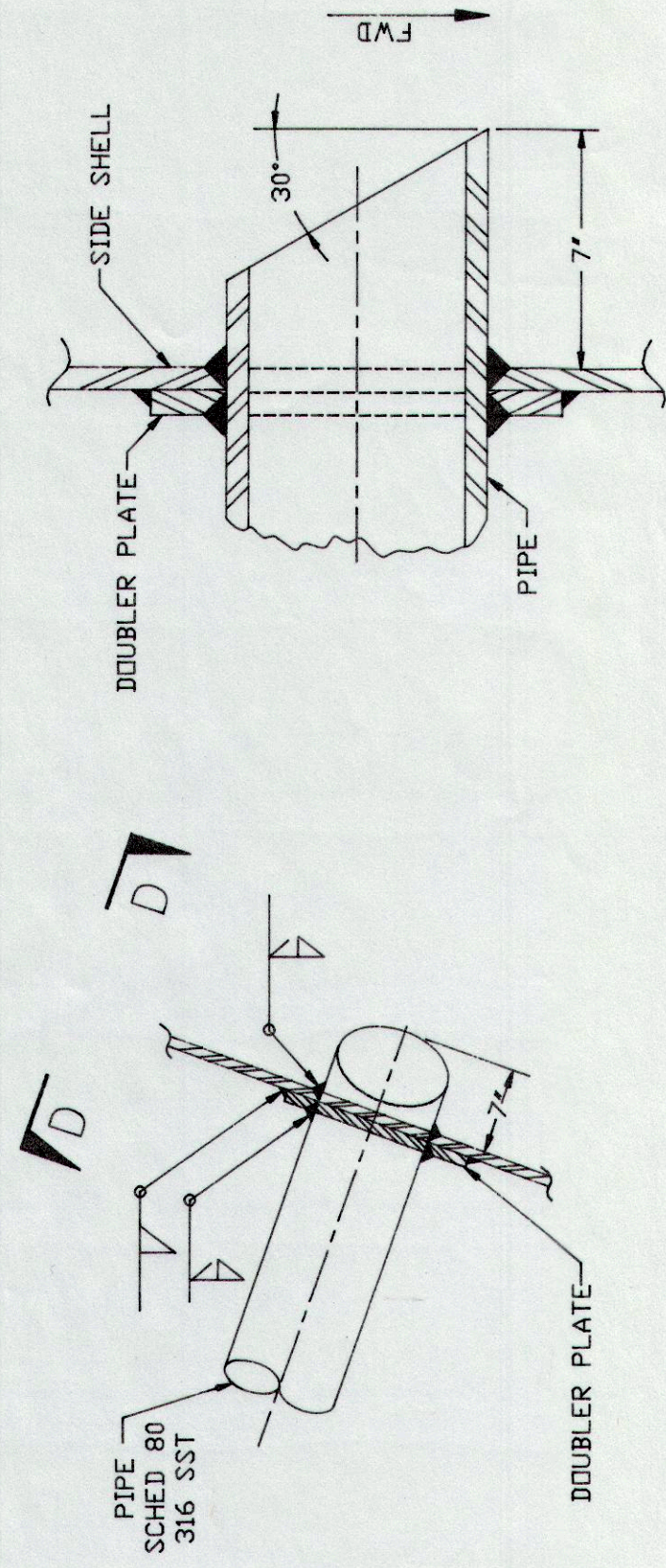
NOTES:

1. TEMPLATE ALL WORK FROM FERRY.
2. INSTALL "NON-ASBESTOS" INSULATION TO EXHAUST SYSTEM.
3. PROVIDE AND INSTALL INCOMBUSTIBLE PORTABLE BLANKETS ON SILENCERS, EXPANSION JOINTS, AND FLANGED CONNECTIONS.
4. GENERATOR EXHAUST WILL NOT BE REPLACED.



SECTION B-B

FR 104 STBD SIDE LOOKING FWD
3/8"=12"



- NOTE:
1. DOUBLER PLATE TO BE 1.5 TIMES THE AREA OF THE THINNESS AS PLATE REMOVED. SEE DETAIL 16-D.
 2. WELDS TO BE 1/2 THE THICKNESS OF THE THINNESS PLUS 1/16".

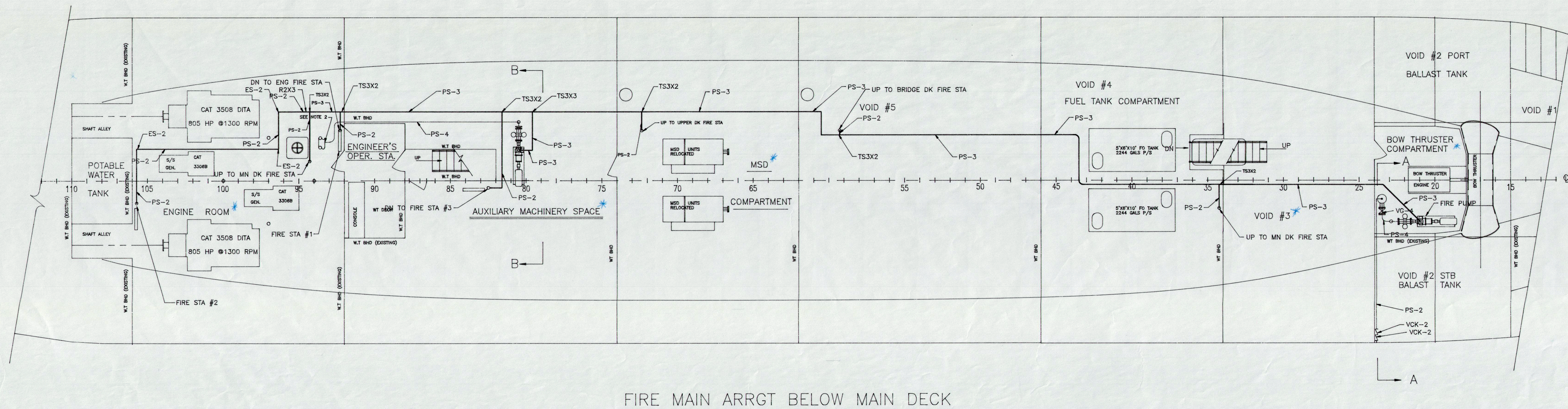
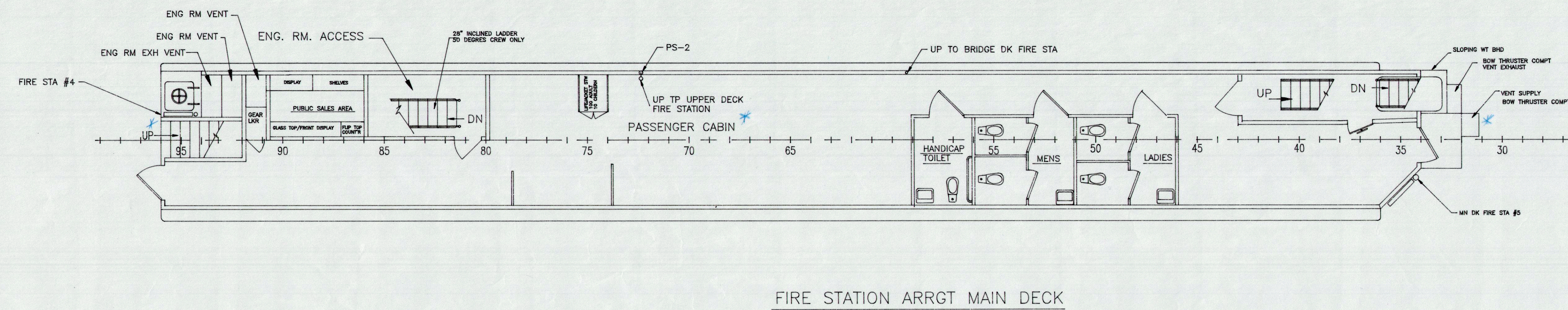
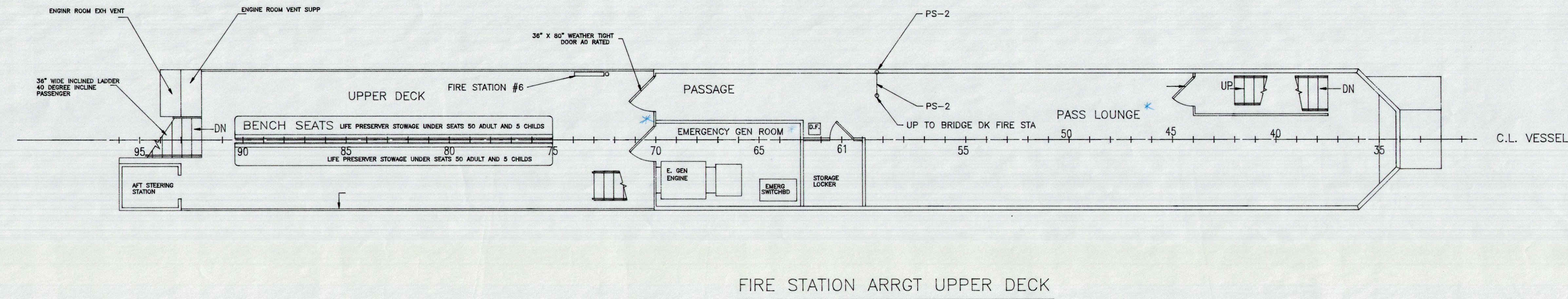
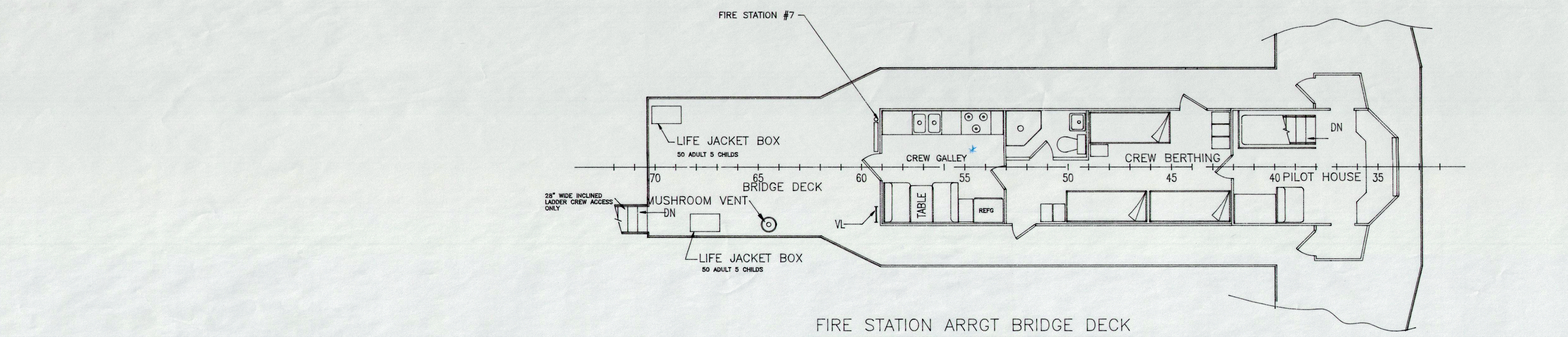
DETAIL C-C
DIVED DISCHARGE
SCALE: NONE

DETAIL D-D
SCALE: NONE

REFERENCES

1. DWG. NC 205-0006-----INBD. PROFILE & HOLD PLAN

No.	DESCRIPTION	BY	DATE
REVISIONS			
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION MAY 21, 1997	MARINE ENGINEERING		
CARTERET STRETCH			
MAIN ENGINE			
EXHAUST ARRGT & DETS			
APPROVALS			
SEAL	DOSSETT		
DRWN.	EBI 3/31/97		
CHECKED	AS SHOWN		
NC 250-0012			REV. 0



BILL OF MATERIAL						
PC NO	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC	REMARKS
PS 16	6FT	16"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	FWD SEACHEST
PS 4	A/R	4"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	
PS-3	A/R	3"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	
PS-2	A/R	2"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	
PS-1 1/2	A/R	1 1/2"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	
PS-1/2	A/R	1/2"	PIPE SCHEDULE 80 SEAMLESS	BLK STL	ASTM A53	
ES-4	A/R	4"	ELBOW 90° LR SCH 80 BWLD	STEEL	ASTM A234	GRADE B
ES-3	A/R	3"	ELBOW 90° LR SCH 80 BWLD	STEEL	ASTM A234	GRADE B
ES-2	A/R	2"	ELBOW 90° LR SCH 80 BWLD	STEEL	ASTM A234	GRADE B
E45-3	A/R	3"	ELBOW 45° LR SCH 80 BWLD	STEEL	ASTM A234	GRADE B
R4X3	A/R		4"X3" CONC REDUCER SCH 80 BWLD	STEEL	ASTM A234	GRADE B
R3X2	A/R		3"X2" CONC REDUCER SCH 80 BWLD	STEEL	ASTM A234	GRADE B
R3X1 1/2	A/R		3X1 1/2 CONC REDUCER SCH 80 BWLD	STEEL	ASTM A234	GRADE B
R2X1 1/2	A/R		2X1 1/2 CONC REDUCER SCH 80 BWLD	STEEL	ASTM A234	GRADE B
TS3X3	1	3X3X3	TEE SCH 80 BWLD	STEEL	ASTM A234	GRADE B
TS3X2	A/R	3X3X2	TEE SCH 80 BWLD	STEEL	ASTM A234	GRADE B
VBL-4	2	4"	VALVE BUTTERFLY 150# D.I.	D.I. BODY BRONZE DISC	A-395 CLA	REUSE EXISTING VLVS
VBL-3	A/R	3"	VALVE BUTTERFLY 150#	BRONZE BODY BRONZE DISC	B-62 CL A	
VCK3	2	3"	VALVE SWING CHECK 150# FLGD	BRONZE	B-62	
VCK2	2	2"	VALVE SWING CHECK 150# FLGD	BRONZE	B-62	
VAH1 1/2	8	1 1/2"	VALVE ANGLE HOSE 300# BRASS FEM INLET X MALE OUTLET HOSE 9 THD/IN WITH CAP & CHAIN	BRONZE	B-62	
BV 1/4	2	1/4"	BALL VALVE SCR'D	BRONZE	B-62	GAGE SHUT OFF VLV
VG-4	1	4"	VAVE GATE 150" OS&Y FLG'D	BRONZE	B-62	ISING STEM
FF-4	A/R	4"	FLANGE SLIP ON 150#	FRGD STL	A105	
FF-3	A/R	3"	FLANGE SLIP ON 150#	FRGD STL	A105	
FF-2	A/R	2"	FLANGE SLIP ON 150#	FRGD STL	A105	
FW-4	A/R	4"	FLANGE 150# BWLD	FRGD STL	A105	
FW-3	A/R	3"	FLANGE 150# BWLD	FRGD STL	A105	
FW-1 1/2	A/R	1 1/2"	FLANGE 150# BWLD	FRGD STL	A105	
PG-4	2	4"	4 1/4" PRESSURE GAGE 0-200 PSI	VAR	COM	LIQUID FILLED

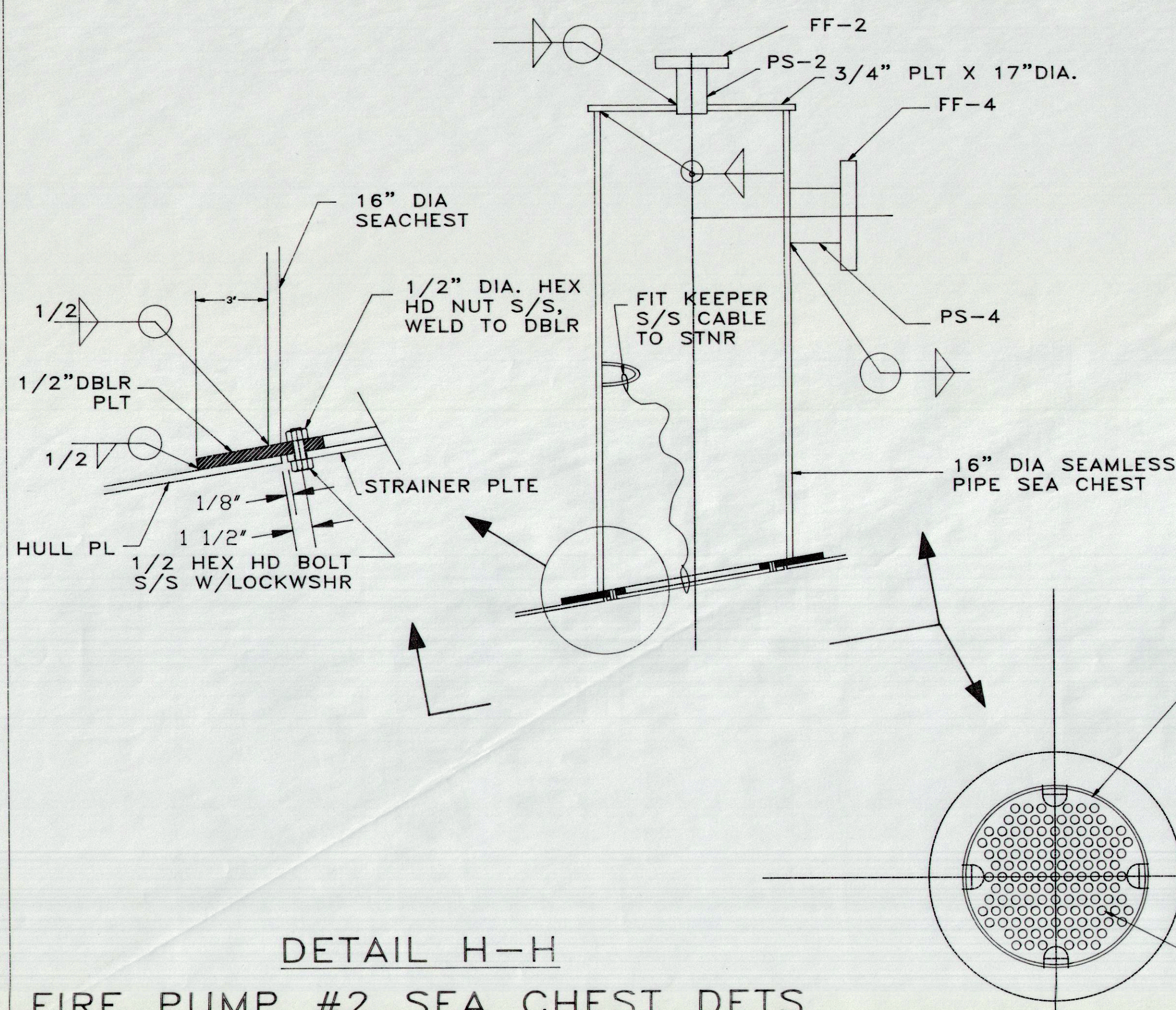
DUPLEX STRAINER DATA
 DUPLEX STRAINER BRZ WITH STAINLESS STEEL BASKETS W/ 9/64 PERF(51% OPEN AREA) HAYWARD MODEL NO 50. SEE NOTE 2.

FIRE PUMP DATA
 FIRE PUMP: TWO (2) INGERSOLL DRESSER PUMPS MODEL HOC2 3 X 1 1/2 X 8 MECHANICAL SEALS. 180 GPM @ 280 TDH 30 HP ELECTRIC MOTOR 208 VAC 3 PHASE @ 3600 RPMs.

GENERAL NOTES:

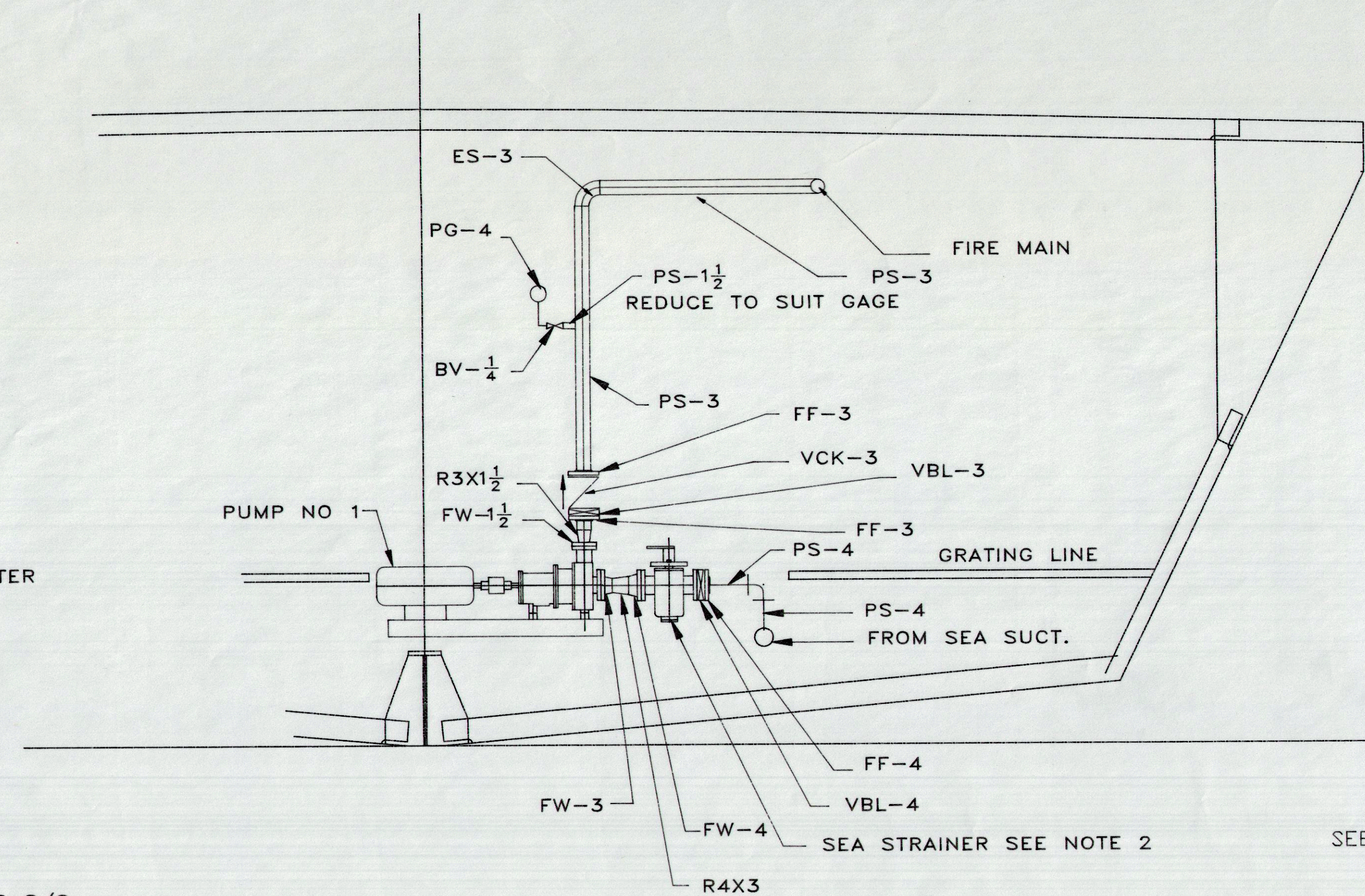
- TEMPLATE ALL WORK FROM FERRY.
- REMOVE EXISTING VALVES AND STRAINERS, CLEAN INSPECT, REPAIR, AND TEST AS REQUIRED. REINSTALL IN NEW FIRE MAIN SYSTEM.
- HOSE STATIONS SHALL BE FITTED WITH USCG APPROVED FIRE HOSE, 50 FEET SECTION, WITH BRASS NOZZLE, SPRAY OR SOLID STREAM (AKRON #2032) AND HOSE SPANNER WRENCH SECURED TO HOSE RACK.
- HYDROSTATICALLY TEST PIPING SYSTEM AND VLVS @ 1.5 TIMES MAXIMUM OPERATING PRESSURE BUT NOT LESS THAN 187 PSI.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION	MARINE ENGINEERING		
	M/V CARTERET STRETCH		
	FIREMAIN PIPING DIAGRAM AND DETAILS		
SEAL	APPROVALS		
DRWN. DOSSETT g/97			
CHKD.			
SCALE NOTED	NC250 - 0015 (A)		REV. 0

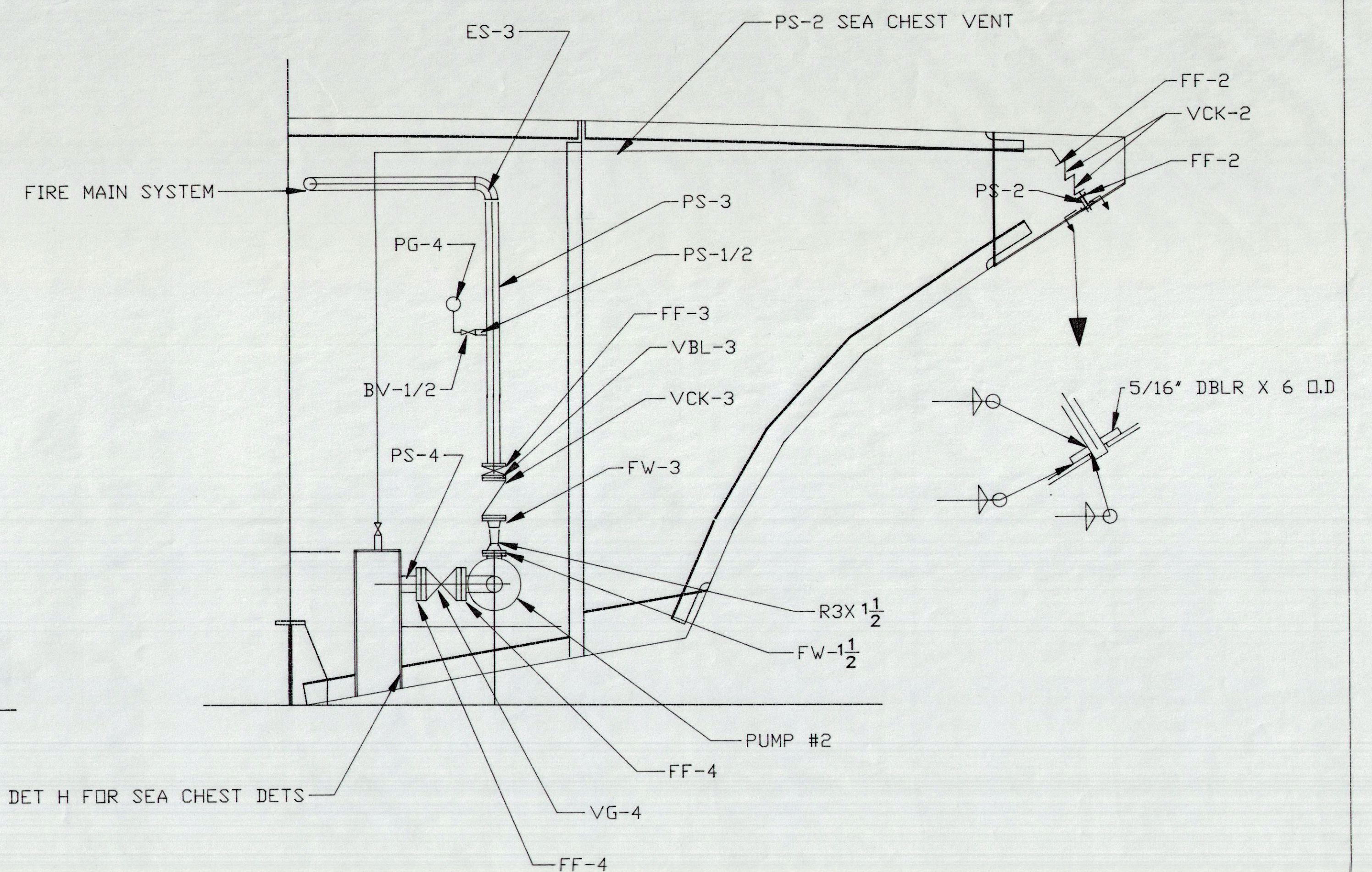


DETAIL H-H
FIRE PUMP #2 SEA CHEST DETS
SCALE 1-1/2"=12"

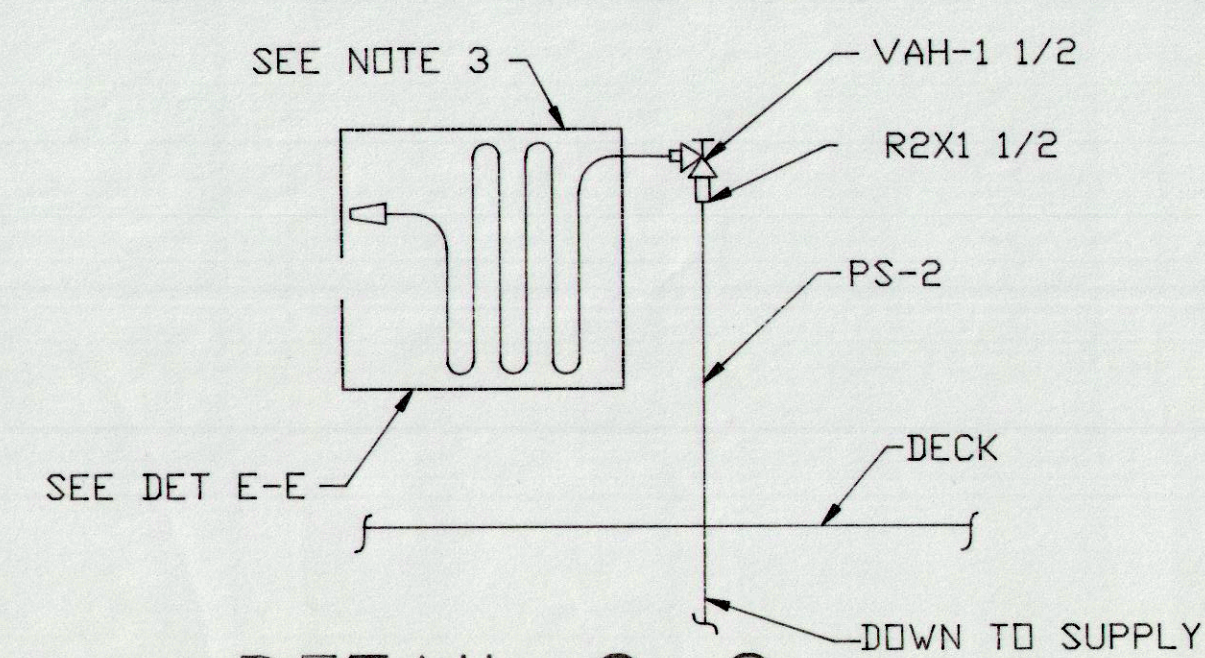
5/16" STRAINER PLT 316 S/S
DRILL 127 3/4" DIA HOLES
15/16" ON CENTER
AREA REQ'D
INSIDE AREA 4" PIPE = 11.496 SQ IN
4 TIMES = 45.98 SQ IN
3/4" HOLE AREA = .4418 SQ IN
127 X .4418 = 56.1086 SQ IN



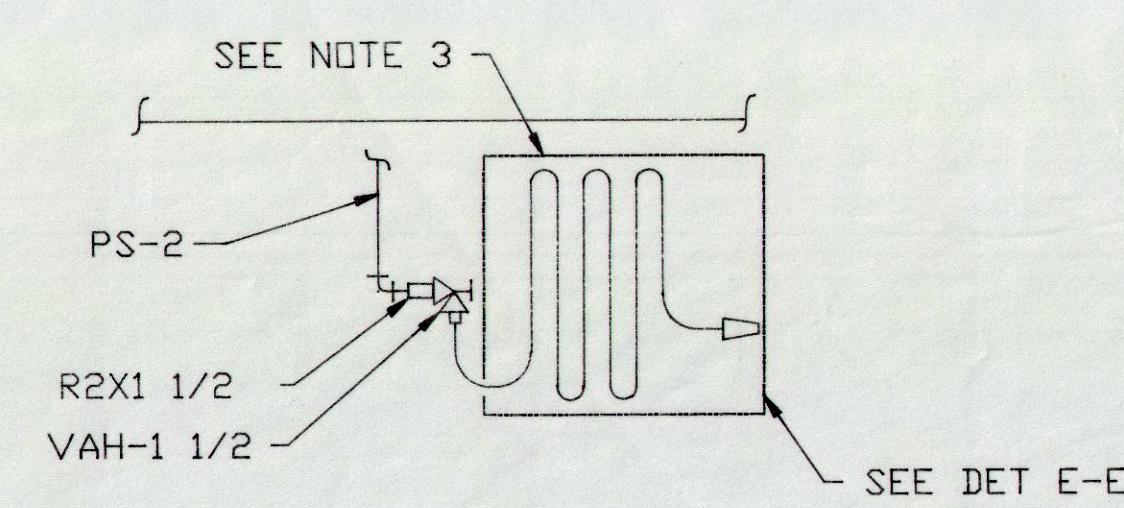
SECTION B-B
PORT SIDE LOOKING AFT
SCALE 1/2" = 12



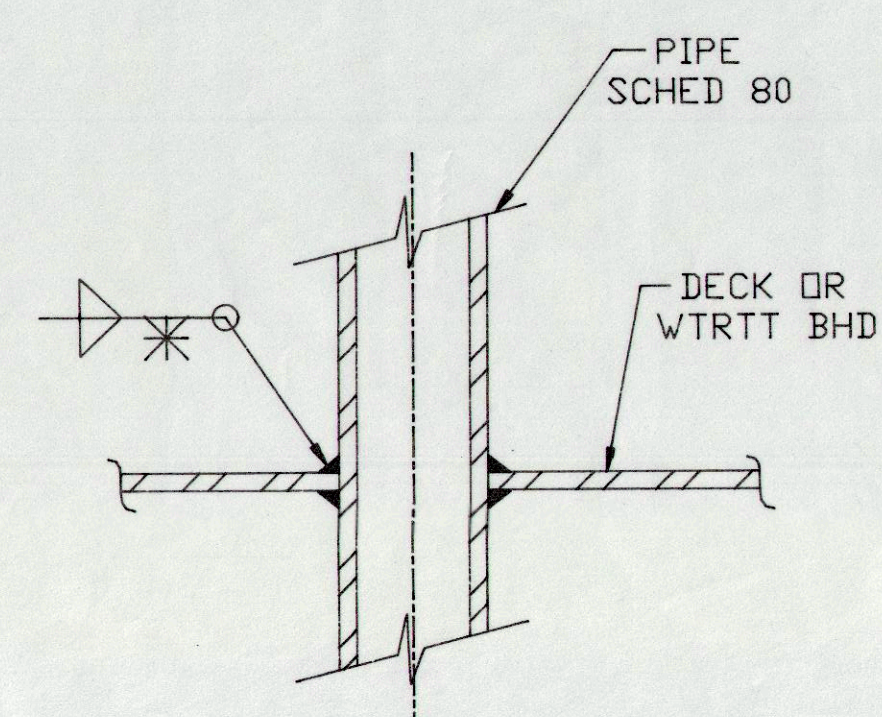
SECTION A-A
STBD SIDE LOOKING FWD
SCALE 1/2" = 12



DETAIL G-G
FIRE STA BOTTOM PIPING
SCALE NONE

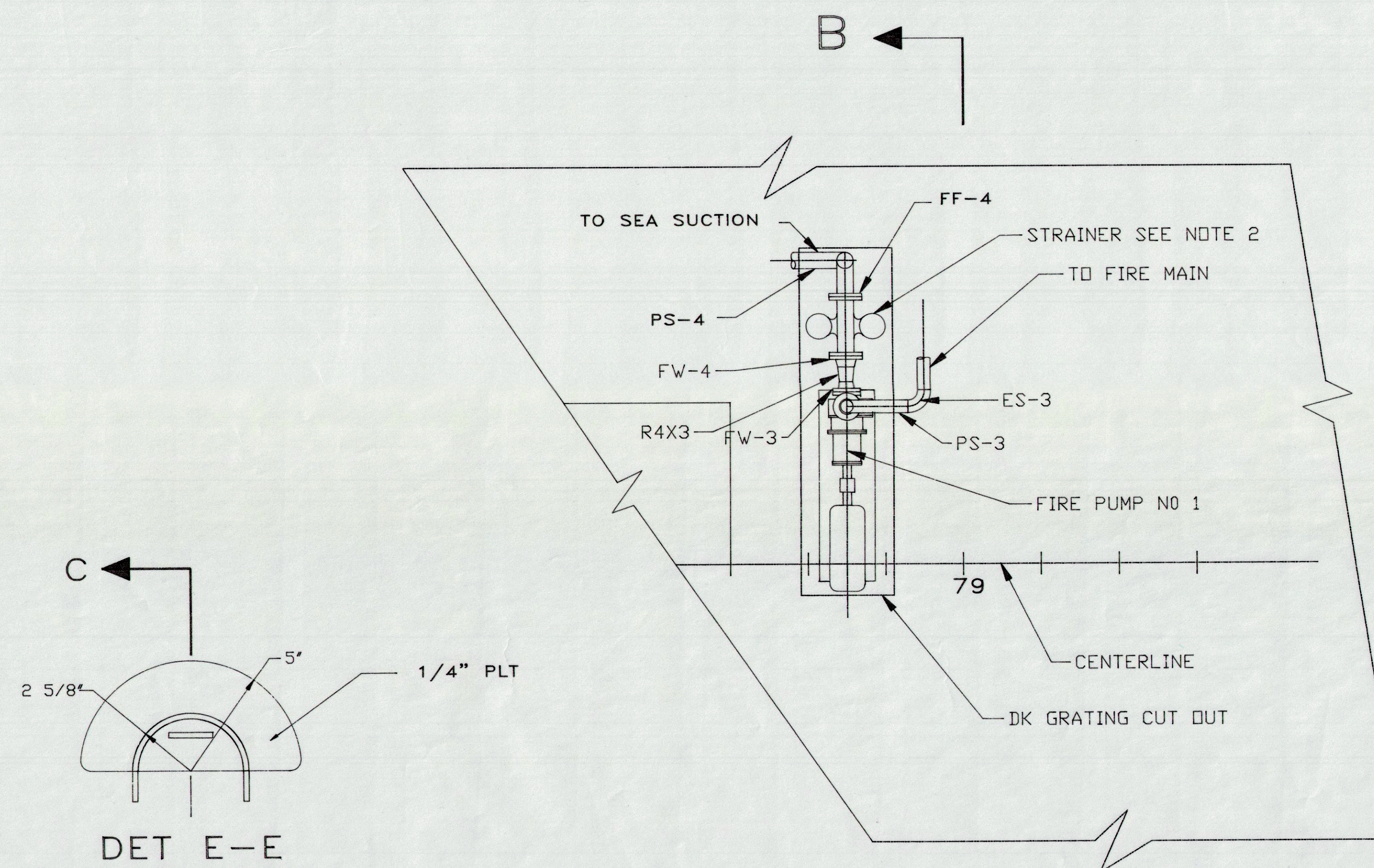


DETAIL F-F
FIRE STA TOP PIPING
SCALE NONE

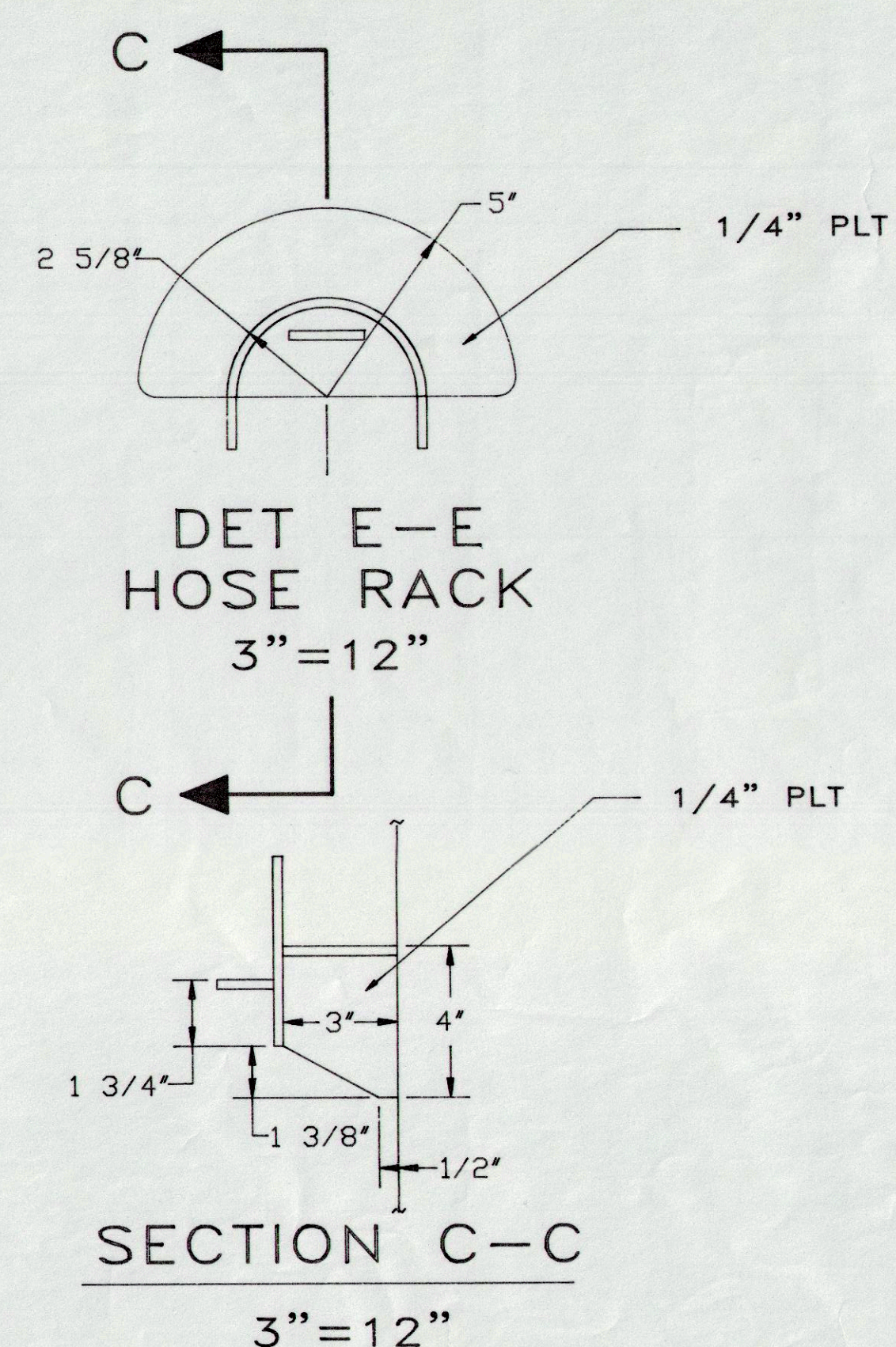


*THROAT OF WELD NOT TO BE LESS THAN 0.7 TIMES THICKNESS OF PIPE TO BE WELDED.

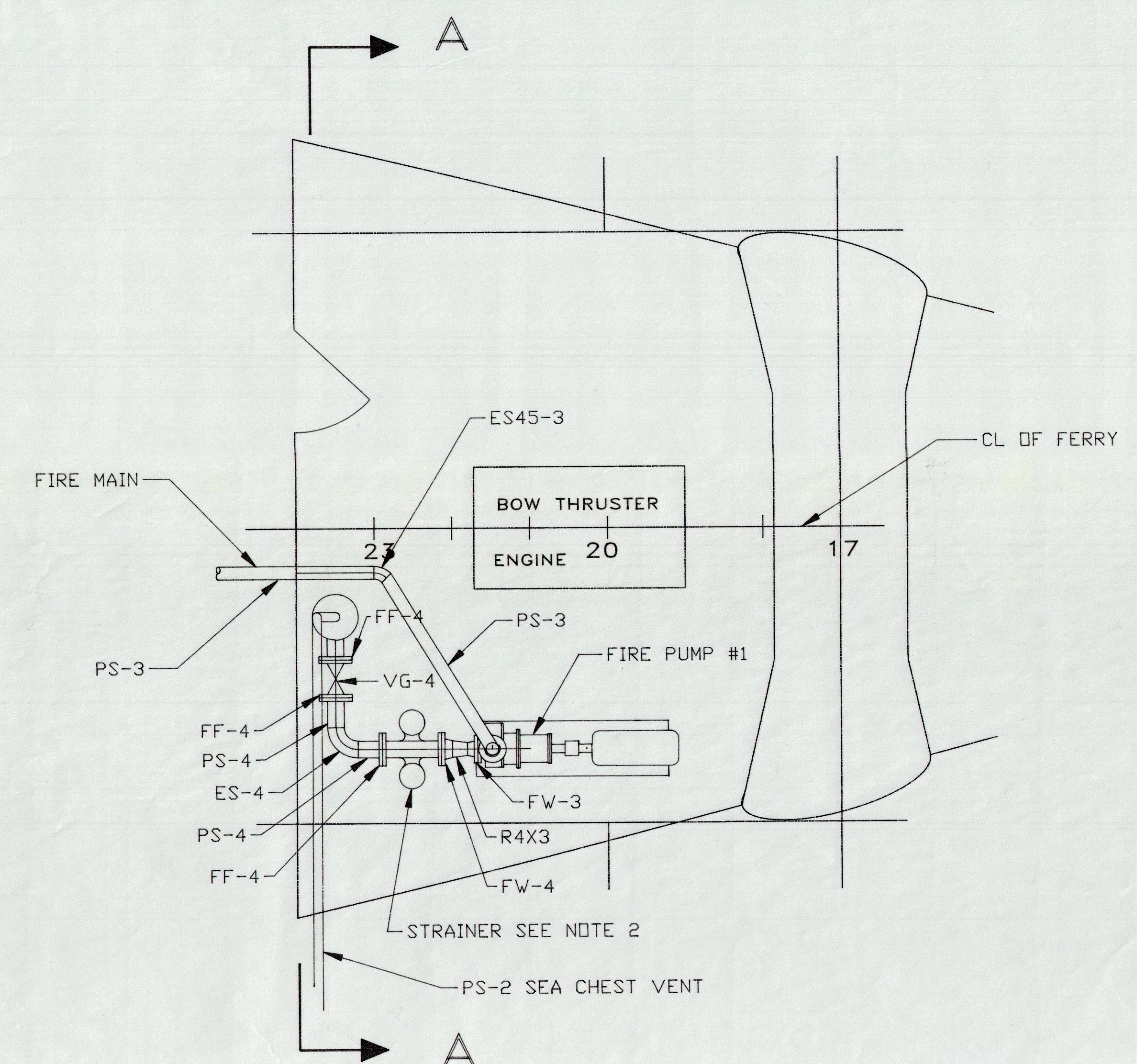
DETAIL D-D
WTR TIGHT PENETRATION
SCALE: NONE



PLAN VIEW FIRE PUMP #1
AUX MACHY SPACE
SCALE 1/2" = 12



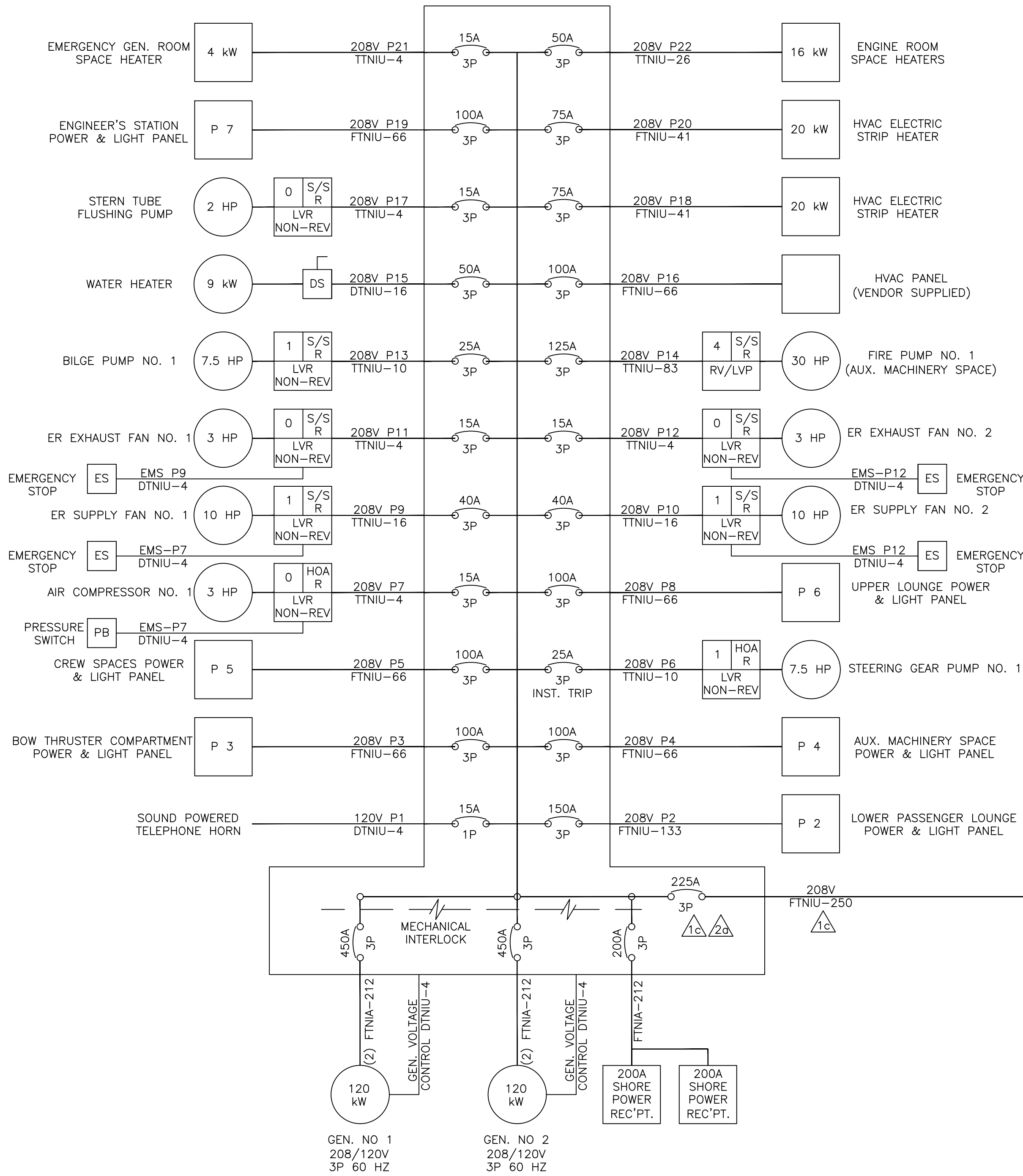
SECTION C-C
3"=12"



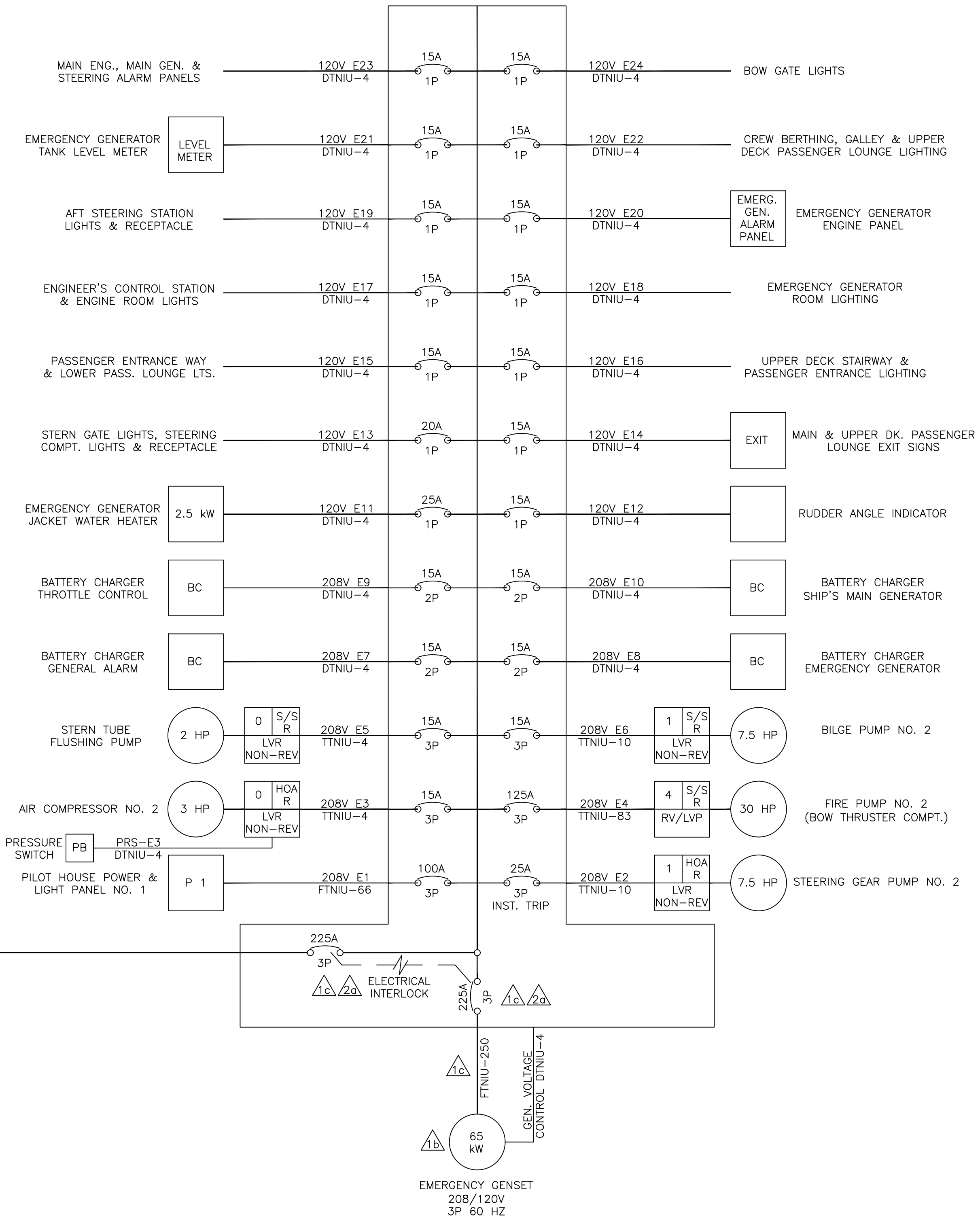
PLAN VIEW FIRE PUMP #2
BOW THRUSTER COMPT
SCALE 1/2" = 12

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY DIVISION 6/87		MARINE ENGINEERING M/V CARTERET STRETCH	
SEAL DRWN. DOSSETT		FIREMAIN PIPING DIAGRAM AND DETAILS	
CHKD. CARTERET, FIRMANN		APPROVALS	
SCALE NOTED		NC250-0015 (B) 0	
		REV.	

REVISIONS			
REVISION	DESCRIPTION	DATE	BY
1	a. DRAWING WAS REPRODUCED IN AUTOCAD DUE TO LOST ORIGINAL FILE.	10-16-2006	JD WALDREP
1	b. UPGRADED EMERGENCY GENERATOR CAPACITY FROM 50kW TO 65 kW.	10-16-2006	JD WALDREP
1	c. CHANGED BREAKER AND WIRE SIZES TO SUIT UPGRADED CAPACITY AT EMERG. GEN.	10-16-2006	JD WALDREP
2	a. CHANGED BREAKER FROM 250 TO 225 TO AVOID MAJOR MODIFICATIONS TO BOARD.	2-13-2007	JD WALDREP



MAIN SWITCHBOARD



EMERGENCY SWITCHBOARD

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
FERRY DIVISION	MARINE ENGINEERING
CARTERET STRETCH	
ELEMENTARY WIRING DIAGRAM	
APPROVALS	
SEAL	
DRWN. DOSSETT	
CHKD.	
SCALE 1 = 1	NC 250-0022
	2



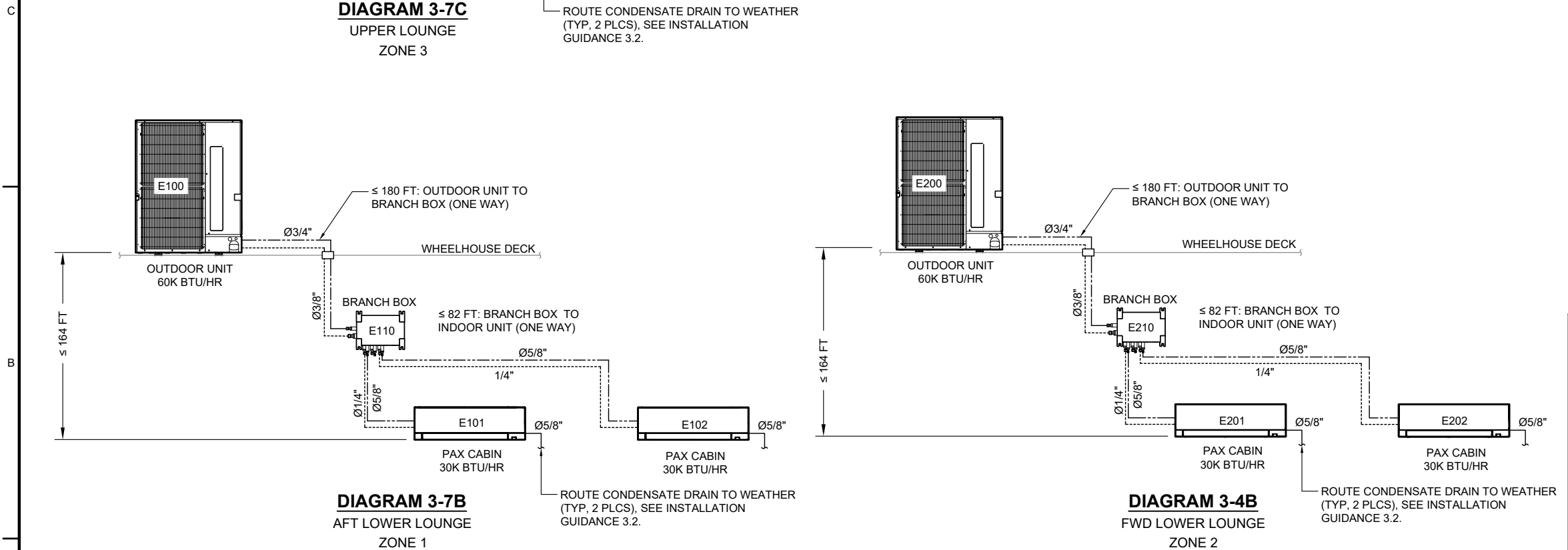
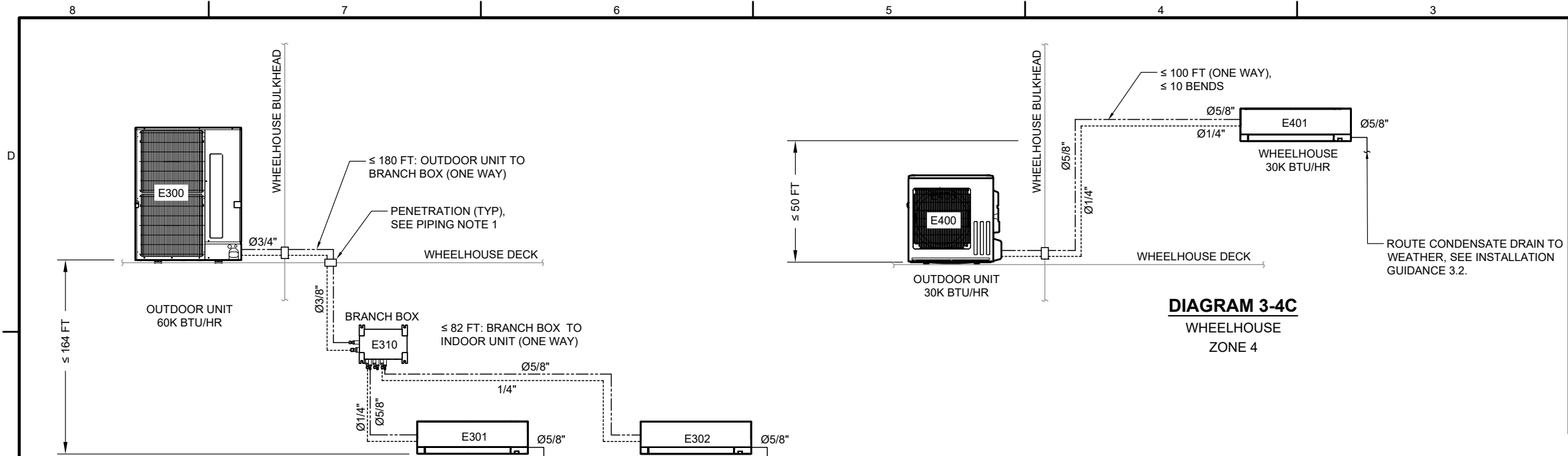
BOW THRUSTER COMPARTMENT
POWER & LIGHT PANEL P-3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
FERRY DIVISION	MARINE ENGINEERING
CARTERET STRETCH	
PANEL BOARDS	
SEAL	APPROVALS
DRWN. DOSSETT	
CHKD.	
SCALE NONE	NC 250-0023
	REV. 0

							GENERAL NOTES		
							1. THIS DRAWING IS A DIAGRAMMATIC ILLUSTRATION OF HVAC SYSTEM INSTALLATIONS, AND DOES NOT REPRESENT THE FULL EXTENT OF THE WORK. EXACT ARRANGEMENTS AND PIPE/CABLE ROUTING SHALL BE DEVELOPED BY THE CONTRACTOR IN ACCORDANCE WITH EQUIPMENT MANUFACTURER INSTALLATION GUIDANCE. 2. SYSTEM DESIGN, MATERIAL, INSTALLATION, TESTING, AND QUALITY OF WORK SHALL BE IN ACCORDANCE WITH THE REGULATORY REQUIREMENTS OF THE U.S. COAST GUARD (USCG). 3. SYSTEM INSTALLATION SHALL PERMIT CLEAR PASSAGE ALONG WALKWAYS AND LADDERWAYS; CLEAR ACCESS FOR OPERATION AND ROUTINE MAINTENANCE; CLEAR ACCESS TO ALL DOORS, HATCHES, AND OPENINGS. 4. BULKHEAD MOUNTED INDOOR UNITS SHALL BE LOCATED AS HIGH AS PRACTICAL.		
EQUIPMENT LIST									
ZONE	EQUIP ID	DESCRIPTION	CAPACITY/RATING	MFR	MODEL	SERVING			
ZONE 1	511-E100	HEAT PUMP OUTDOOR UNIT #1	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 1			
	511-E110	BRANCH BOX #1	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 1			
	511-E101	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	LOWER LOUNGE, AFT			
	511-E102	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	LOWER LOUNGE, AFT			
	511-E130	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 1			
ZONE 2	511-E200	HEAT PUMP OUTDOOR UNIT #2	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 2			
	511-E210	BRANCH BOX #2	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 2			
	511-E201	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	LOWER LOUNGE, FORWARD			
	511-E202	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	LOWER LOUNGE, FORWARD			
	511-E230	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 2			
ZONE 3	511-E300	HEAT PUMP OUTDOOR UNIT #3	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 3			
	511-E310	BRANCH BOX #3	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 3			
	511-E301	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	UPPER LOUNGE			
	511-E302	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	UPPER LOUNGE			
	511-E330	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 3			
ZONE 4	511-E400	HEAT PUMP OUTDOOR UNIT #4	30,000 BTU/HR	MITSUBISHI	MUZ-GX30NL	ZONE 4			
	511-E401	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	WHEELHOUSE			
	511-E430	CIRCUIT BREAKER	25A	SQUARE D	QO225GFI	ZONE 4			
ZONE 5	511-E500	HEAT PUMP OUTDOOR UNIT #5	15,000 BTU/HR	MITSUBISHI	MUZ-GX15NL	AUXILIARY MACHINERY ROOM			
	511-E501	INDOOR UNIT, WALL MOUNT	15,000 BTU/HR	MITSUBISHI	MLZ-GX15NL	EOS			
	511-E520	CONDENSATE PUMP	1/9 HP	LIBERTY PUMPS	LCU-15S	AUXILIARY MACHINERY ROOM			
	511-E521	SAFETY DISCONNECT SWITCH	30A	LEVITON	LDS30-AX	CONDENSATE PUMP			
	511-E530	CIRCUIT BREAKER	20A	SQUARE D	QO220GFI	ZONE 5			
	511-E531	CIRCUIT BREAKER	15A	SQUARE D	QO115	CONDENSATE PUMP BREAKER			
							REVISIONS		
							ZONE	REV	DESCRIPTION
								△	INITIAL RELEASE
								△	1. UPDATED ELECTRICAL FEEDER CIRCUITS
									2. UPDATED CONDENSATE PUMP CIRCUIT BREAKER
							SHT 7		
							SHT 1, 7		
							SHEET LIST		
							SHT	TITLE	
							1	COVER SHEET	
							2	MATERIAL SCHEDULE	
							3	PIPING SCHEMATIC	
							4	EOS PIPING SCHEMATIC & DETAILS	
							5	WHEELHOUSE AND UPPER LOUNGE ARRANGEMENTS	
							6	LOWER LOUNGE AND EOS ARRANGEMENTS	
							7	ELECTRICAL	
							REFERENCES		
							1. MITSUBISHI ELECTRIC, DOCUMENT NO. JG79N716H03, <i>INSTALLATION MANUAL MSZ-GX18/24/30/36NL, MSY-GX18/24/30/36NL</i>, 2025. 2. MITSUBISHI ELECTRIC, DOCUMENT NO. M-P0956A, <i>DATA BOOK MODEL MXZ-SM 36/48/60NL-U1, MXZ-SM36/42/48NLHZ-U1</i>, FEBRUARY 2025. 3. MITSUBISHI ELECTRIC, DOCUMENT NO. OBD950, <i>TECHNICAL AND SERVICE MANUAL MSZ-GX06/09/12/15/18/24/30/36NL, MSY-GX09/12/15/18/24/30/36NL</i>, 2025. 5. MITSUBISHI ELECTRIC, <i>MSZ-GX15NL & MUZ-GX15NL</i>, 2025. 6. MITSUBISHI ELECTRIC, <i>MSZ-GX30NL & MUZ-GX30NL</i>, 2025. 7. MITSUBISHI ELECTRIC, <i>MXZ-SM60NL</i>, 2025.		
							NORTH CAROLINA DEPARTMENT OF TRANSPORTATION MANNS HARBOR, NC		
							M/V CARTERET HVAC MODIFICATIONS COVER SHEET		
							Glostén More than DESIGN. 1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T +1 206.624.7850 GLOSTEN.COM		
							Drawn AHN/HKC	Checked CJF	Approved MSM
							Scale AS NOTED	Drawing Number 25057.01-511-01	Issue Date 2026/07/29
								Sheet 1	Revision A

[illegible]



- ### PIPING NOTES
- WHERE COPPER OR PLASTIC PIPING PENETRATES BULKHEADS OR DECKS, STEEL PENETRATION SLEEVES WITH SLIPSIL SEALING PLUGS OR RISE/NOFIRNO SEALING SHALL BE USED TO MAINTAIN THE WATERTIGHT, FUMETIGHT, AND FIRE RATING OF THE BOUNDARY PER REGULATORY BODY REQUIREMENTS. INSTALL PIPING TRANSITS IN ACCORDANCE WITH MANUFACTURER'S APPROVED INSTALLATION DETAILS.
 - SYSTEM INSTALLATION SHALL COMPLY WITH THE FOLLOWING ASTM SHIPBUILDING AND MARINE TECHNOLOGY STANDARDS:
 - RIGID PIPE HANGERS SHALL BE IN ACCORDANCE WITH ASTM F708. EXCEPTION: PARAGRAPH 1.3 IS NOT APPLICABLE.
 - GAGE BOARD ASSEMBLIES SHALL BE IN ACCORDANCE WITH ASTM F707. INSTALL TYPE 1 (3-1/2 SIZE), GRADE A.
 - INSTRUMENTATION PIPING ASSEMBLIES SHALL BE IN ACCORDANCE WITH ASTM F721. EXCEPTION: INSTALL 1/2-INCH ROOT VALVE WITH ≤ 4 INCH STAND OFF. FINAL BRANCH SIZING WILL BE DEPENDENT ON INSTRUMENTATION SELECTED.
 - PIPE WELDING SHALL BE IN ACCORDANCE WITH ASTM F722. EXCEPTION: NON-CONSUMABLE BACKING RINGS AND MITERED JOINTS NOT PERMITTED.
 - VALVE LABEL PLATES SHALL BE IN ACCORDANCE WITH ASTM F992. INSTALL TYPE 1, GRADE E, CLASS 2, LETTER SIZE 2, PLATE SIZE TO SUIT.
 - SPRAY SHIELDS FOR MECHANICAL JOINTS SHALL BE IN ACCORDANCE WITH ASTM F1138. EXCEPTION: REGULATORY BODY APPROVED ALTERNATIVES MAY BE SUBSTITUTED.
 - PIPE RUNS BETWEEN WATERTIGHT BULKHEADS SHALL HAVE AT LEAST ONE EXPANSION BEND.
 - GALVANIC ISOLATION KITS SHALL BE PROVIDED FOR FLANGED PIPING JOINTS OF DISSIMILAR METALS.

SYMBOL LIST	
SYMBOL	DESCRIPTION
	GATE VALVE
	BALL VALVE
	CHECK VALVE
	UNION ADAPTER
	DRAIN CONNECTION
	DECK/BULKHEAD PENETRATION (SEE PIPING NOTE 1)
	OVERBOARD DISCHARGE
	CHANGE IN MATERIAL STL = CARBON STEEL CPVC = MARINE GRADE CPVC PLASTIC
	REFRIGERATION, LIQUID, COPPER
	REFRIGERATION, GAS, COPPER
	CONDENSATE DRAIN, CPVC

- ### INSTALLATION GUIDANCE (SEE REF. 2)
- | | | |
|---|---|--|
| <p>1. EQUIPMENT INSTALLATION (ONE-WAY) PIPING LENGTHS PER MXZ-SM60NL OUTDOOR UNIT SHALL BE IN ACCORDANCE WITH MITSUBISHI REQUIREMENTS FOR A BRANCH BOX METHOD APPLICATION, INCLUDING:</p> <ol style="list-style-type: none">TOTAL PIPING LENGTH SHALL BE ≤ 492 FT.FARTHEST PIPING LENGTH SHALL BE ≤ 262 FT.TOTAL PIPING LENGTH BETWEEN OUTDOOR UNIT AND BRANCH BOXES SHALL BE ≤ 180 FT.PIPING LENGTH BETWEEN THE FIRST BRANCH JOINT AND FARTHEST BRANCH BOX SHALL BE ≤ 98 FT.FARTHEST PIPING LENGTH AFTER BRANCH BOX SHALL BE ≤ 82 FT.TOTAL PIPING LENGTH BETWEEN BRANCH BOXES AND INDOOR UNITS SHALL BE ≤ 312 FT. | <p>2. EQUIPMENT INSTALLATION (ONE-WAY) PERMISSIBLE HEIGHT DIFFERENCE PER OUTDOOR UNIT SHALL BE IN ACCORDANCE WITH MITSUBISHI REQUIREMENTS FOR A BRANCH BOX METHOD APPLICATION, INCLUDING:</p> <ol style="list-style-type: none">MAXIMUM HEIGHT DIFFERENCE BETWEEN OUTDOOR UNIT AND INDOOR UNIT<ol style="list-style-type: none">WHEN THE OUTDOOR UNIT IS SET HIGHER THAN THE INDOOR UNIT: 164 FT.WHEN THE OUTDOOR UNIT IS SET LOWER THAN THE INDOOR UNIT: 131 FT.MAXIMUM HEIGHT DIFFERENCE BETWEEN OUTDOOR UNIT AND BRANCH BOX<ol style="list-style-type: none">WHEN THE OUTDOOR UNIT IS SET HIGHER THAN THE BRANCH BOX: 164 FT.WHEN THE OUTDOOR UNIT IS SET LOWER THAN THE BRANCH BOX: 131 FT.MAXIMUM HEIGHT DIFFERENCE BETWEEN BRANCH BOX AND INDOOR UNIT: 49 FT.MAXIMUM HEIGHT DIFFERENCE BETWEEN INDOOR UNITS: 39 FT.NUMBER OF BENDS SHALL BE ≤ 15. | <p>3. PIPING</p> <ol style="list-style-type: none">REFRIGERANT PIPING SHALL BE COPPER TUBING PER MATERIALS SCHEDULE ON SHEET 1.CONDENSATE DRAIN PIPING SHALL SLOPE AT A MINIMUM OF 1/4 IN PER FOOT.SPARE BRANCH BOX CIRCUITS SHALL BE CAPPED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. |
|---|---|--|

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION MANNS HARBOR, NC					
M/V CARTERET HVAC MODIFICATIONS PIPING SCHEMATIC					
		More than DESIGN.		1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T+1 206.624.7850 GLOSTEN.COM	
Drawn AHN/HKC	Checked CJF	Approved MSM	Size B	Issue Date 2026/07/29	Revision
Scale AS NOTED	Drawing Number 25057.01-511-01		Sheet 3	of 7	A

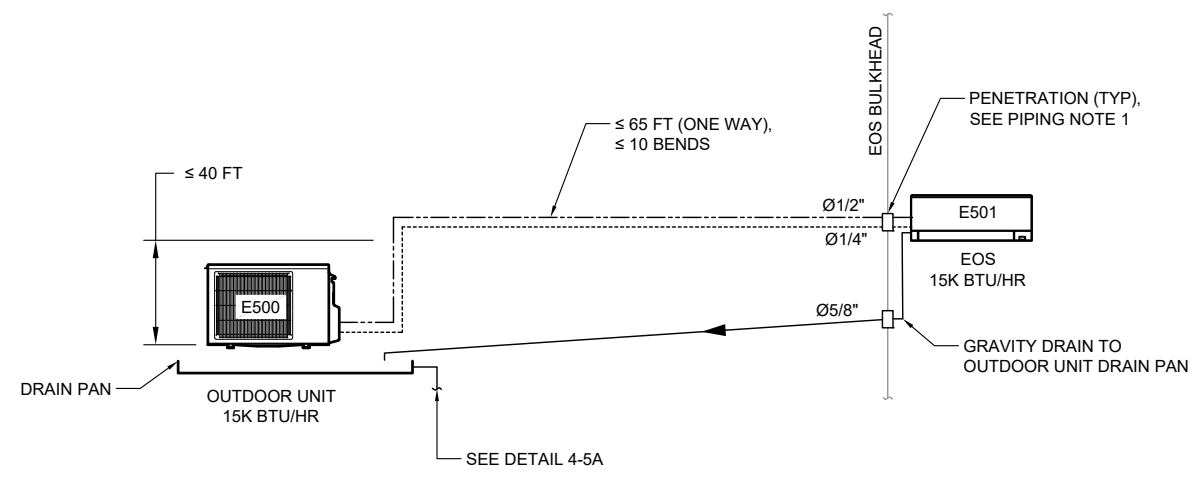
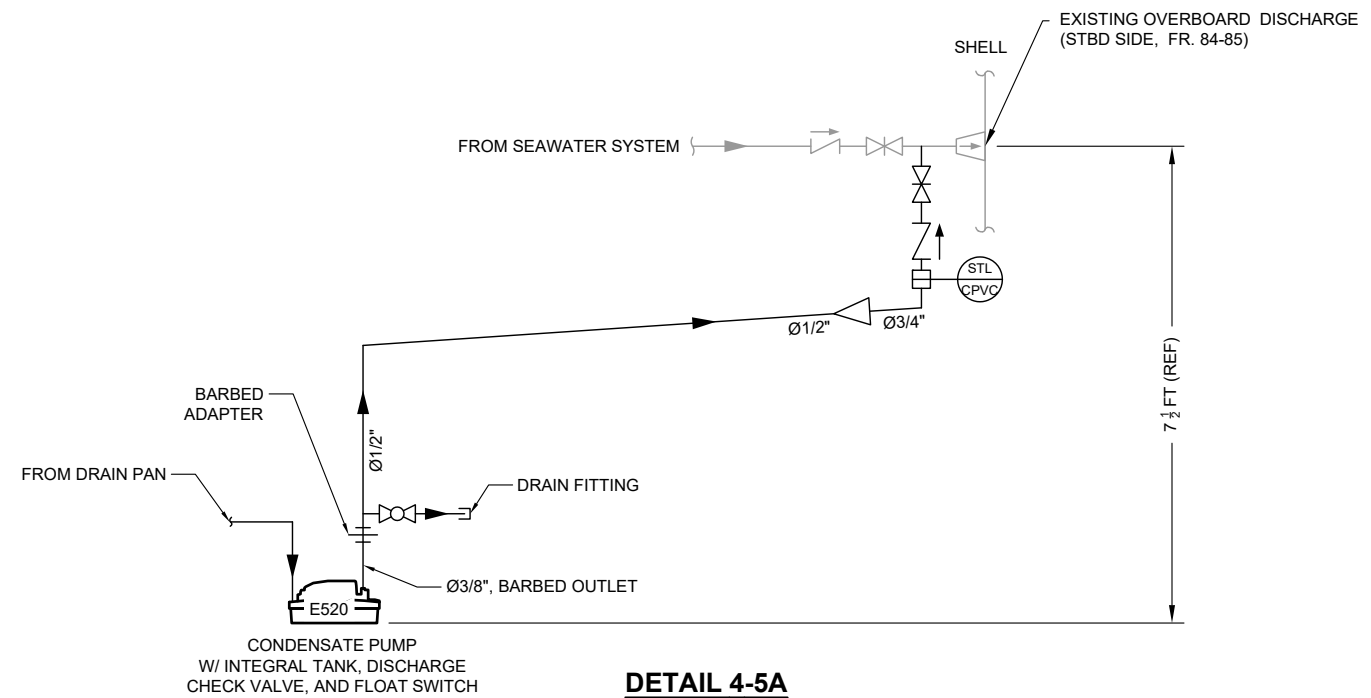
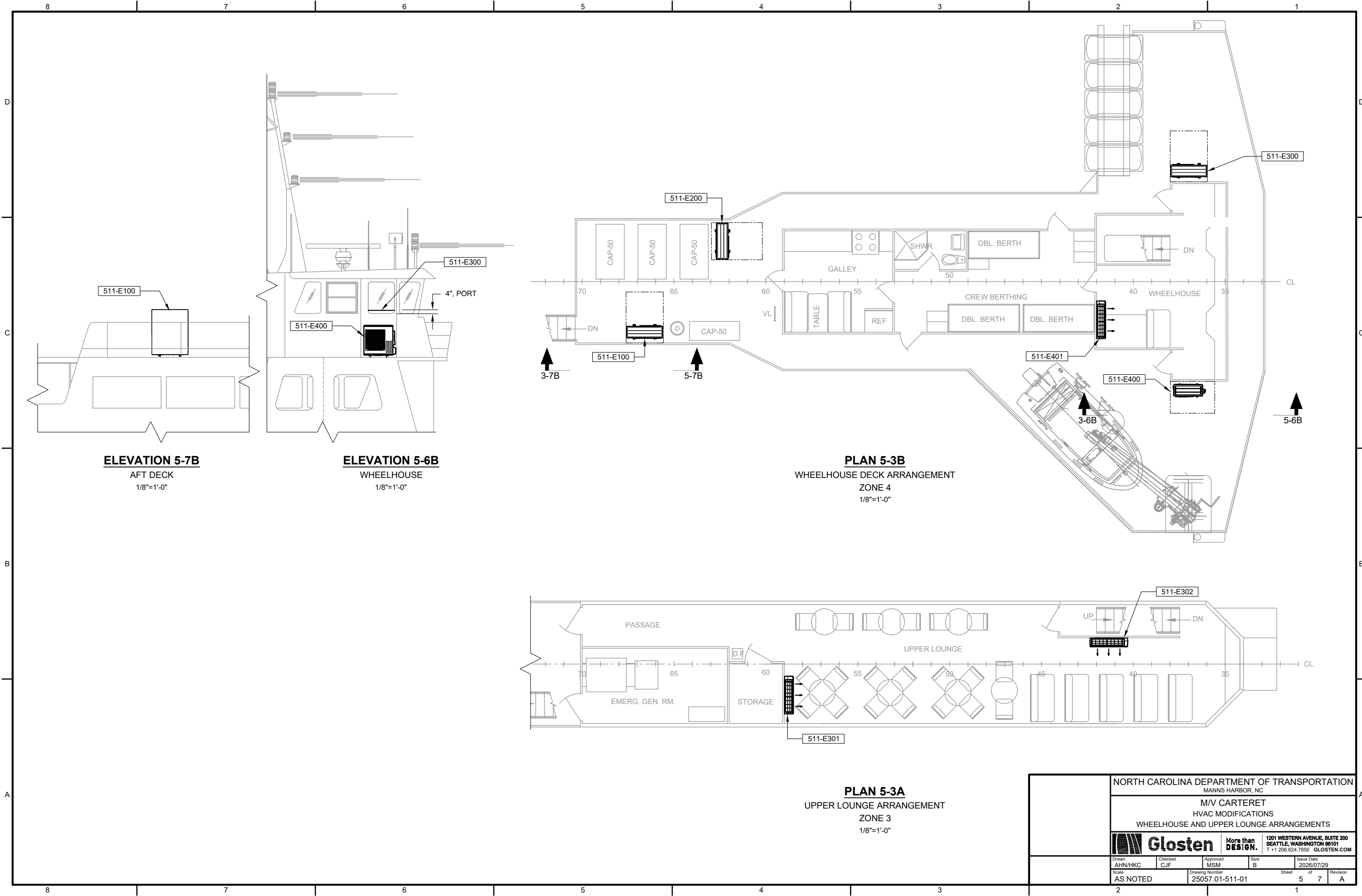


DIAGRAM 4-5C
EOS
ZONE 5

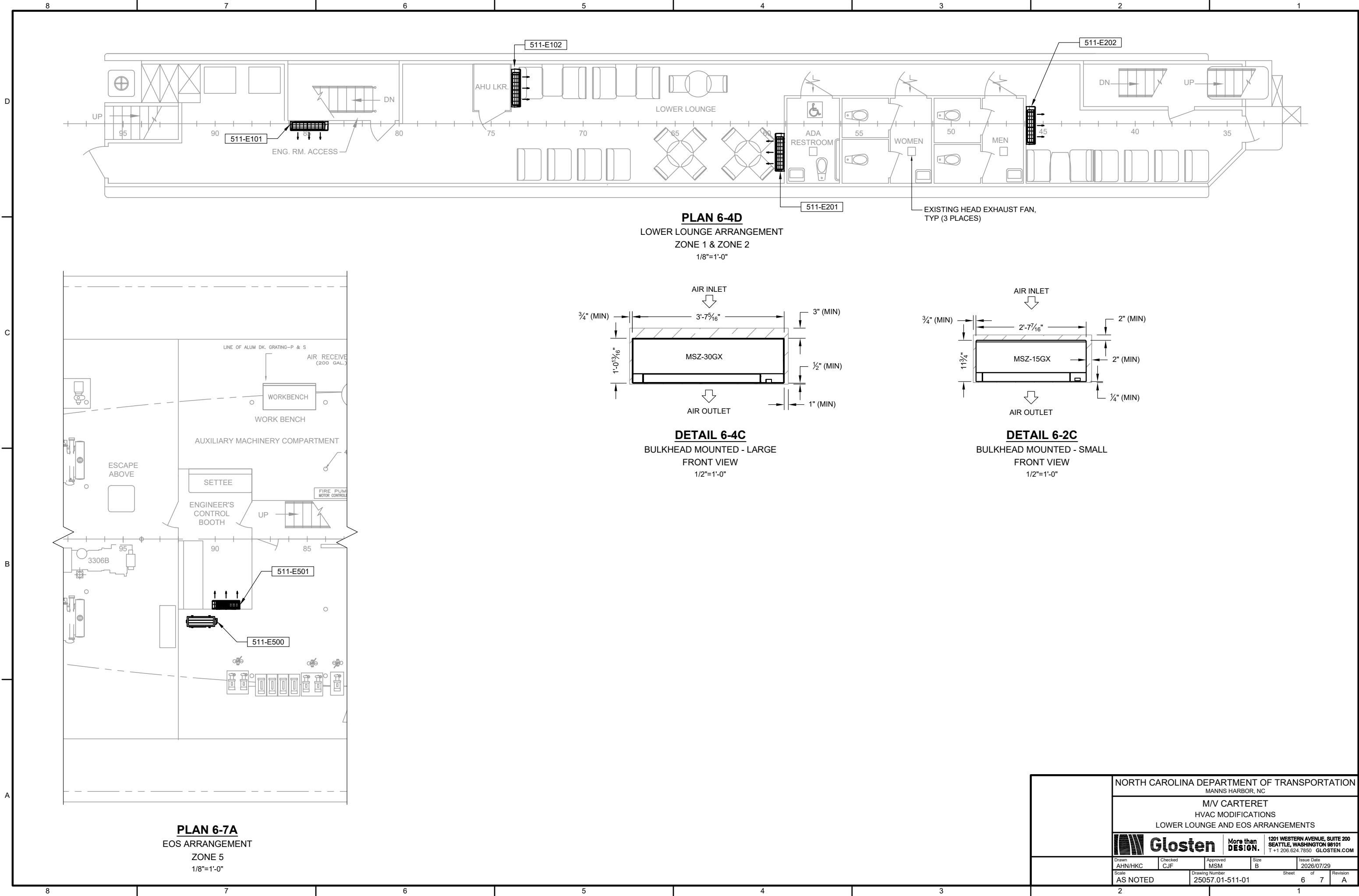


DETAIL 4-5A
CONDENSATE DRAIN

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION MANN'S HARBOR, NC				
M/V CARTERET HVAC MODIFICATIONS EOS PIPING SCHEMATIC & DETAILS				
 Glostén		More than DESIGN.		1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T +1 206.624.7850 GLOSTEN.COM
Drawn AHN/HKC	Checked CJF	Approved MSM	Size B	Issue Date 2026/07/29
Scale AS NOTED		Drawing Number 25057.01-511-01		Sheet 4 of 7 Revision A



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION MANN'S HARBOR, NC				
M/V CARTERET HVAC MODIFICATIONS WHEELHOUSE AND UPPER LOUNGE ARRANGEMENTS				
 Glosthen		More than DESIGN. 1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T +1 206.624.7850 GLOSTEN.COM		
Drawn AHN/HKC	Checked CJF	Approved MSM	Size B	Issue Date 2026/07/29
Scale AS NOTED		Drawing Number 25057.01-511-01		Sheet 5 of 7 Revision A



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION MANN'S HARBOR, NC					
M/V CARTERET HVAC MODIFICATIONS LOWER LOUNGE AND EOS ARRANGEMENTS					
		More than DESIGN.		1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T +1 206.624.7850 GLOSTEN.COM	
Drawn AHN/HKC	Checked CJF	Approved MSM	Size B	Issue Date 2026/07/29	
Scale AS NOTED		Drawing Number 25057.01-511-01		Sheet 6	Revision A

D	8			7			6			5			4			3					
	PANEL LOAD SUMMARY																				
	PANEL	TRIP (A)	CIRCUIT ID	REMOVE							INSTALL							LOAD CHANGE	PANEL		
				PH	VOLTS	TRIP (A)	DESCRIPTION	kVA	EQUIPMENT	CABLE	BREAKER	PH	VOLTS	TRIP (A)	DESCRIPTION	kVA	EQUIPMENT	CABLE		BREAKER	kVA
	MAIN SWITCHBOARD	450	21	3	208	80	HVAC PANEL	-21.6	YES	YES	NO	-	-	-	-	-	-	-	-	-57.6	MAIN SWITCHBOARD
			23	3	208	80	CIRCULATION HEATER 1	-18.0	YES	YES	NO	-	-	-	-	-	-	-	-		
			25	3	208	80	CIRCULATION HEATER 2	-18.0	YES	YES	NO	-	-	-	-	-	-	-	-		
	P-2 (LOWER LOUNGE)	225	20	1	120	20	LOWER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-	-2.6	P-2 (LOWER LOUNGE)
			21	1	120	20	LOWER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-		
	P-5 (CREW SPACE)	100	5, 7	1	120	20	WHEELHOUSE HVAC	-2.6	YES	YES	YES	1	208	25	ZONE 4	+3.5	YES	YES	YES	+0.9	P-5 (CREW SPACE)
P-6 (UPPER LOUNGE)	100	3	1	120	20	UPPER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-	+10.5	P-6 (UPPER LOUNGE)	
		5, 7	1	208	20	UPPER LOUNGE HVAC	-2.3	YES	YES	YES	1	208	50	ZONE 3	+4.7	YES	YES	YES			
		11, 13	-	-	-	-	-	-	-	-	1	208	50	ZONE 2	+4.7	YES	YES	YES			
		12, 14	-	-	-	-	-	-	-	-	1	208	50	ZONE 1	+4.7	YES	YES	YES			
P-7 (EOS)	100	17, 19	-	-	-	-	-	-	-	-	1	208	20	ZONE 5	+1.1	YES	YES	YES	+1.3	P-7 (EOS)	
		16	-	-	-	-	-	-	-	-	1	120	15	CONDENSATE PUMP	+0.2	YES	YES	YES			

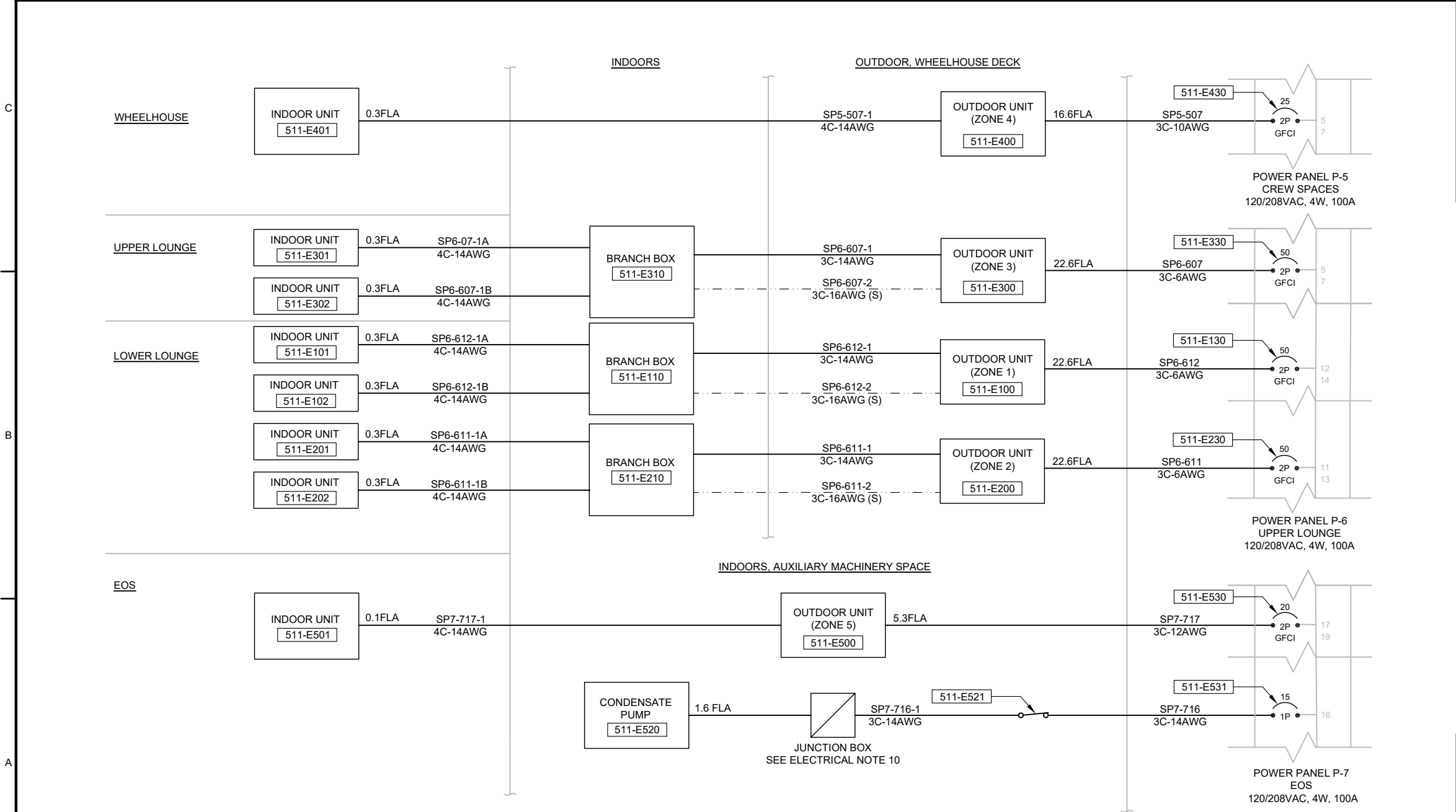


DIAGRAM 7-5A
ELECTRICAL INSTALLATIONS

ELECTRICAL NOTES

- CABLE AND PIPING INSTALLATIONS IN ACCOMMODATIONS AND COMMON SPACES SHALL BE OBSCURED BEHIND BULKHEAD LININGS AND SUSPENDED CEILINGS.
- NYLON OR BRASS CABLE STUFFING TUBES OR MULTI-CABLE TRANSITS SHALL BE USED WHEN PENETRATING ELECTRICAL ENCLOSURES OR JUNCTION BOXES. STEEL KICKPIPPES WITH BRASS STUFFING GLANDS OR MULTI-CABLE TRANSITS SHALL BE INSTALLED AT ALL DECK AND BULKHEAD PENETRATIONS. WATERTIGHT AND STRUCTURAL FIRE BOUNDARY RATINGS SHALL BE MAINTAINED.
- ALL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH IEEE-45, IEEE-142, AND IEEE-518 (INsofar AS IT MAY APPLY). EQUIPMENT GROUNDS SHALL BE CARRIED BACK TO THE RESPECTIVE POWER PANEL.
- ALL CABLES SHALL BE TESTED FOR INSULATION RESISTANCE (MEGGERED). CABLES MUST MEET IEEE-45.6, CLAUSE 5.1. TEST RESULTS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE. NO CABLE SPLICING IS ALLOWED.
- CABLES SHALL BE SIZED IN ACCORDANCE WITH IEEE-45 AND THE APPLICABLE REGULATORY BODY. CABLE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP AND/OR CABLE BANKING, AS NECESSARY, TO MEET REGULATORY REQUIREMENTS. CABLE SIZES SHOWN ARE FOR 50C AMBIENT TEMPERATURE AND ALL CABLES 1AWG AND SMALLER ARE DOUBLE BANKED. MOTOR CIRCUIT CABLES UPSTREAM OF AN OVERLOAD RELAY ARE SIZED BASED ON THE OVERLOAD SETTING, ASSUMING 125% OF THE MOTOR'S FULL LOAD CURRENT.
- ALL EQUIPMENT SHOWN SHALL BE NEW.
- ELECTRICAL EQUIPMENT SHALL ADHERE TO THE FOLLOWING CONSTRUCTION STANDARDS/REGULATIONS, WITH MARINE SUPPLEMENTS AS APPLICABLE:
 - CIRCUIT BREAKERS - UL489SA
 - ENCLOSURES - NEMA 250
 - CABLES - IEEE-45 OR IEC 60092-35313.
- LOADS ON DISTRIBUTION POWER AND LIGHTING PANELS SHALL BE BALANCED TO WITHIN 15 PERCENT WHEREVER POSSIBLE.
- NEW EQUIPMENT UTILIZES INVERTERS AND GFCI CIRCUIT BREAKERS SHALL BE SUITABLE FOR THE ASSOCIATED HIGHER HARMONICS.
- STRIPPED WIRE CONDENSATE PUMP INSTALLATION SHALL BE IN ACCORDANCE WITH LIBERTY PUMPS INSTALLATION REQUIREMENTS, UTILIZE AN APPROPRIATE ENCLOSURE OR JUNCTION BOX, AND COMPLY WITH THE NEC AND APPLICABLE CODES. PUMP WIRING IS AS FOLLOWS:
 - GREEN IS GROUND
 - BLACK IS LINE
 - WHITE IS NEUTRAL (115V)

CABLE TYPE KEY

CABLE DESIGNATION: 3C-6AWG (FR+S)

BASE CABLE
MODIFIER(S)

BASE CABLE

SYMBOL	DESCRIPTION
XC-YYAWG (S)	MULTI-CONDUCTOR POWER/CONTROL CABLE X = NUMBER OF CONDUCTORS C = INDICATES INDIVIDUAL CONDUCTORS YY = CONDUCTOR SIZE AWG = AMERICAN WIRE GAUGE (S) = SHIELDED
----	SIGNAL CABLE (IEEE-45 OR IEC 60092-35313)
———	POWER CABLE (IEEE-45 OR IEC 60092-35313)

ELECTRICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
xx • yp •	CIRCUIT BREAKER (UL 489SA) (XX = TRIP RATING, Y = POLE NUMBER) GFCI = GROUND FAULT CIRCUIT INTERRUPT
○ — ○	SAFETY DISCONNECT SWITCH (NORMALLY CLOSED)
P1-1 3C-6AWG	CABLE ID NUMBER CABLE TYPE
511-E100	EQUIPMENT ID NUMBER

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANN'S HARBOR, NC

M/V CARTERET
HVAC MODIFICATIONS
ELECTRICAL

Glost More than DESIGN. 1201 WESTERN AVENUE, SUITE 200
SEATTLE, WASHINGTON 98101
T +1 206.624.7850 GLOSTEN.COM

Drawn AHN/HKC	Checked CJF	Approved MSM	Size B	Issue Date 2026/07/29
Scale AS NOTED	Drawing Number 25057.01-511-01	Sheet 7	of 7	Revision A

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: (206) 815-6795
Email: msc@uscg.mil

16710/P002602/acb

Serial: E1-2602524

August 14, 2026

North Carolina Department of Transportation

Attn: Mr. Jeremy Remme

8550 Shipyard Road

Manns Harbor, NC 27953

jjremme@ncddot.gov

Subj: CARTERET, O.N. 928441
Moss Point Marine Hull No. 1140
207.5' x 50.0' x 12.5' Passenger Ferry (H)
HVAC Piping Modifications

Ref: (a) Glosten Dwg. No. 25057.01-511-01, Rev. A, "HVAC Modifications," 7 sheets, dated July 29, 2026
(b) Navigation and Vessel Inspection Circular (NVIC) 10-92, Change 2, "Coast Guard Recognition of Registered Professional Engineer Certification of Compliance with Coast Guard Requirements"

Dear Mr. Remme:

We received reference (a), submitted by your correspondence dated July 30, 2026 (MSC Document No. 2614836), under the provisions of reference (b). Reference (a) has received partial technical review by the Marine Safety Center for compliance with 46 CFR Subchapter H. Reference (a) is **Approved in accordance with NVIC 10-92, CH2**. The installation, workmanship and testing shall be accomplished to the satisfaction of the cognizant Officer in Charge, Marine Inspection (OCMI). Other plans submitted with your letter, not specifically addressed herein, will be the subject of separate correspondence from the Marine Safety Center. The scope of our review is limited to the items specifically stated in your correspondence dated July 30, 2026. The following comment applies:

Reference (a)

1. The scope of our review is limited to the HVAC piping system only and does not include the HVAC units and other electrical components depicted on your plan.

As with all plans and calculations submitted under the provisions of reference (b), the primary responsibility for accuracy and compliance with applicable regulatory requirements rests with the certifying Professional Engineer. Our approval does not in any way limit the authority of the OCMI to require correction of material, design, equipment, construction, installation, etc. that are found not to be in compliance with Coast Guard requirements.

Subj: CARTERET, O.N. 928441
HVAC Piping Modifications

16710/P002602/acb
Serial: E1-2602524
August 14, 2026

As an agreed-upon condition of 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 P002602. Please ensure that all future correspondence includes the Project Number and the Official Number that appears in the subject line.

Please contact LT Anna Beck at (571) 614-1205 with questions concerning our review.

Sincerely,

M. J. BISHOP
Lieutenant, U. S. Coast Guard
Chief, Machinery Branch
By direction

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

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: (206) 815-6795
Email: msc@uscg.mil

16710/P002602/zws
Serial: E2-2602525
August 17, 2026

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

Subj: CARTERET, O.N. 928441
Moss Point Marine Hull No. 1140
207.50' x 50.00' x 12.50' Passenger Vessel (H)
Electrical One-Line Diagram and Load Analysis

Ref: (a) NCDOT Dwg. No. NC 250-0022, Rev. 4, "Elementary Wiring Diagram," 2 sheets,
dated July 16, 2026
(b) NCDOT Doc. No. NC 250-0024, Rev. 5, "Electrical Load Analysis," 10 sheets, dated
July 23, 2026
(c) Navigation and Vessel Inspection Circular (NVIC) 10-92, Change 2, "Coast Guard
Recognition of Registered Professional Engineer Certification off Compliance with
Coast Guard Requirements"
(d) Your letter dated July 30, 2026

Dear Mr. Remme:

We received references (a) and (b), submitted by your correspondence dated July 30, 2026 (MSC Document No. 2614836), under the provisions of reference (c). References (a) and (b) have received partial technical review by the Marine Safety Center for compliance with 46 CFR Subchapter H. Reference (a) is **Approved in accordance with NVIC 10-92, CH2**. The installation, workmanship and testing shall be accomplished to the satisfaction of the cognizant Officer in Charge, Marine Inspection (OCMI). Reference (b) is **Examined in accordance with NVIC 10-92, CH2**. Supporting calculations or plans such as these are not normally approved; however, we used the information to verify the vessel's compliance with appropriate regulations. Other plans submitted with your letter, not specifically addressed herein, will be the subject of separate correspondence from the Marine Safety Center. The scope of our review is limited to the items specifically stated in reference (d).

As with all plans and calculations submitted under the provisions of reference (c), the primary responsibility for accuracy and compliance with applicable regulatory requirements rests with the certifying Professional Engineer. Our approval does not in any way limit the authority of the OCMI to require correction of material, design, equipment, construction, installation, etc. that are found not to be in compliance with Coast Guard requirements.

Subj: CARTERET, O.N. 928441
Electrical One-Line Diagram and Load Analysis

16710/P002602/zws
Serial: E2-2602525
August 17, 2026

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).

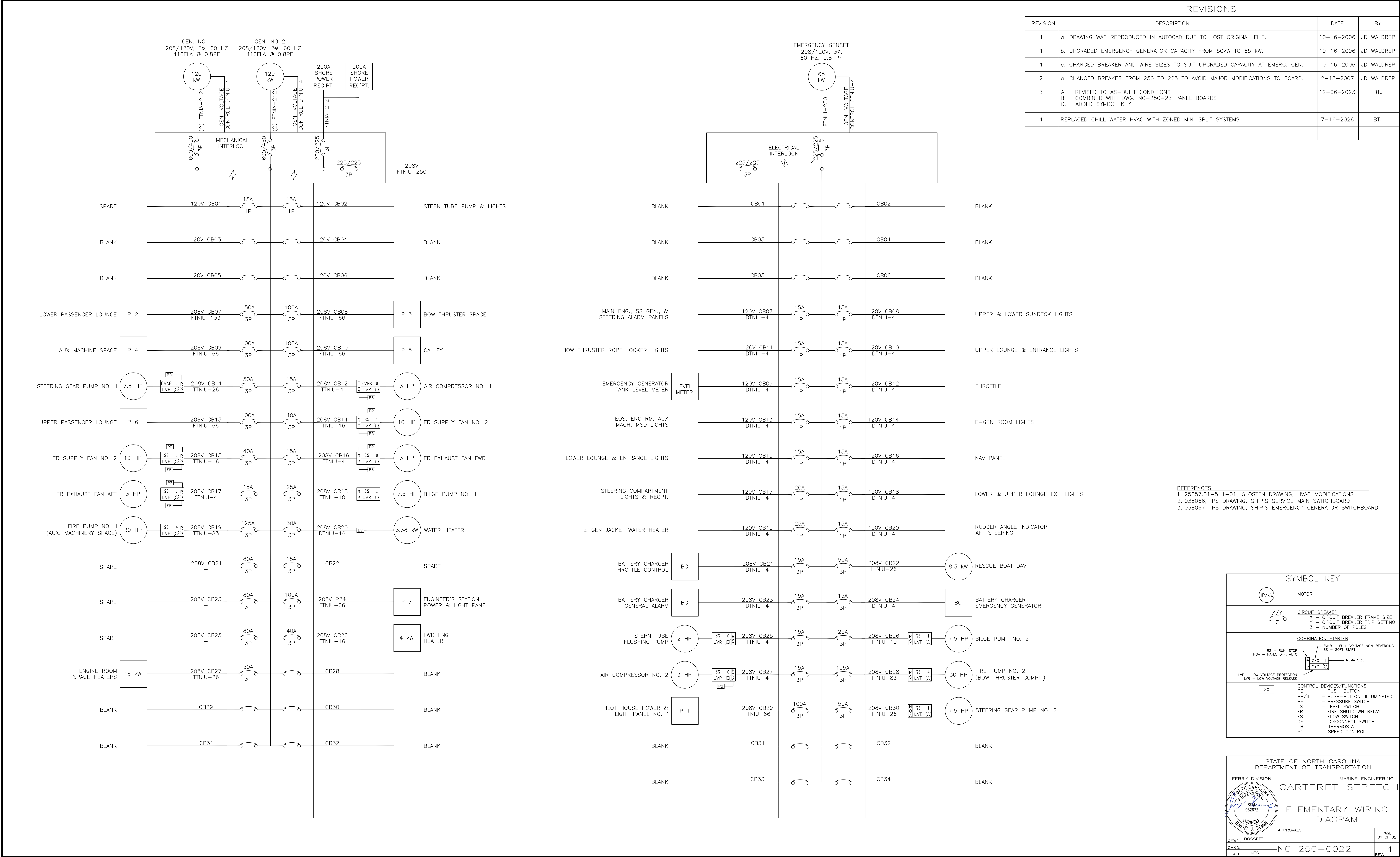
Our Project Number for this vessel is P002602. Please ensure that all future correspondence includes the Project Number and the Official Number that appears in the subject line.

Please contact Mr. Zenas Saephan at Zenas.W.Saephan@uscg.mil with questions concerning our review.

Sincerely,

C. A. PALMIERI
Lieutenant Commander, U. S. Coast Guard
Chief, Electrical Branch
By direction

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



REVISIONS			
REVISION	DESCRIPTION	DATE	BY
1	a. DRAWING WAS REPRODUCED IN AUTOCAD DUE TO LOST ORIGINAL FILE.	10-16-2006	JD WALDREP
1	b. UPGRADED EMERGENCY GENERATOR CAPACITY FROM 50kW TO 65 kW.	10-16-2006	JD WALDREP
1	c. CHANGED BREAKER AND WIRE SIZES TO SUIT UPGRADED CAPACITY AT EMERG. GEN.	10-16-2006	JD WALDREP
2	a. CHANGED BREAKER FROM 250 TO 225 TO AVOID MAJOR MODIFICATIONS TO BOARD.	2-13-2007	JD WALDREP
3	A. REVISED TO AS-BUILT CONDITIONS B. COMBINED WITH DWG. NC-250-23 PANEL BOARDS C. ADDED SYMBOL KEY	12-06-2023	BTJ
4	REPLACED CHILL WATER HVAC WITH ZONED MINI SPLIT SYSTEMS	7-16-2026	BTJ

- REFERENCES
- 1. 25057.01-511-01, GLOSTEN DRAWING, HVAC MODIFICATIONS
 - 2. 038066, IPS DRAWING, SHIP'S SERVICE MAIN SWITCHBOARD
 - 3. 038067, IPS DRAWING, SHIP'S EMERGENCY GENERATOR SWITCHBOARD

SYMBOL KEY	
	MOTOR
	CIRCUIT BREAKER X - CIRCUIT BREAKER FRAME SIZE Y - CIRCUIT BREAKER TRIP SETTING Z - NUMBER OF POLES
	COMBINATION STARTER RS - RUN, STOP HON - HAND, OFF, AUTO FVNR - FULL VOLTAGE NON-REVERSING SS - SOFT START NEMA SIZE
	CONTROL DEVICES/FUNCTIONS PB - PUSH-BUTTON PB/IL - PUSH-BUTTON, ILLUMINATED PS - PRESSURE SWITCH LS - LEVEL SWITCH FR - FIRE SHUTDOWN RELAY FS - FLOW SWITCH DS - DISCONNECT SWITCH TH - THERMOSTAT SC - SPEED CONTROL

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FERRY DIVISIONMARINE ENGINEERING

CARTERET STRETCH

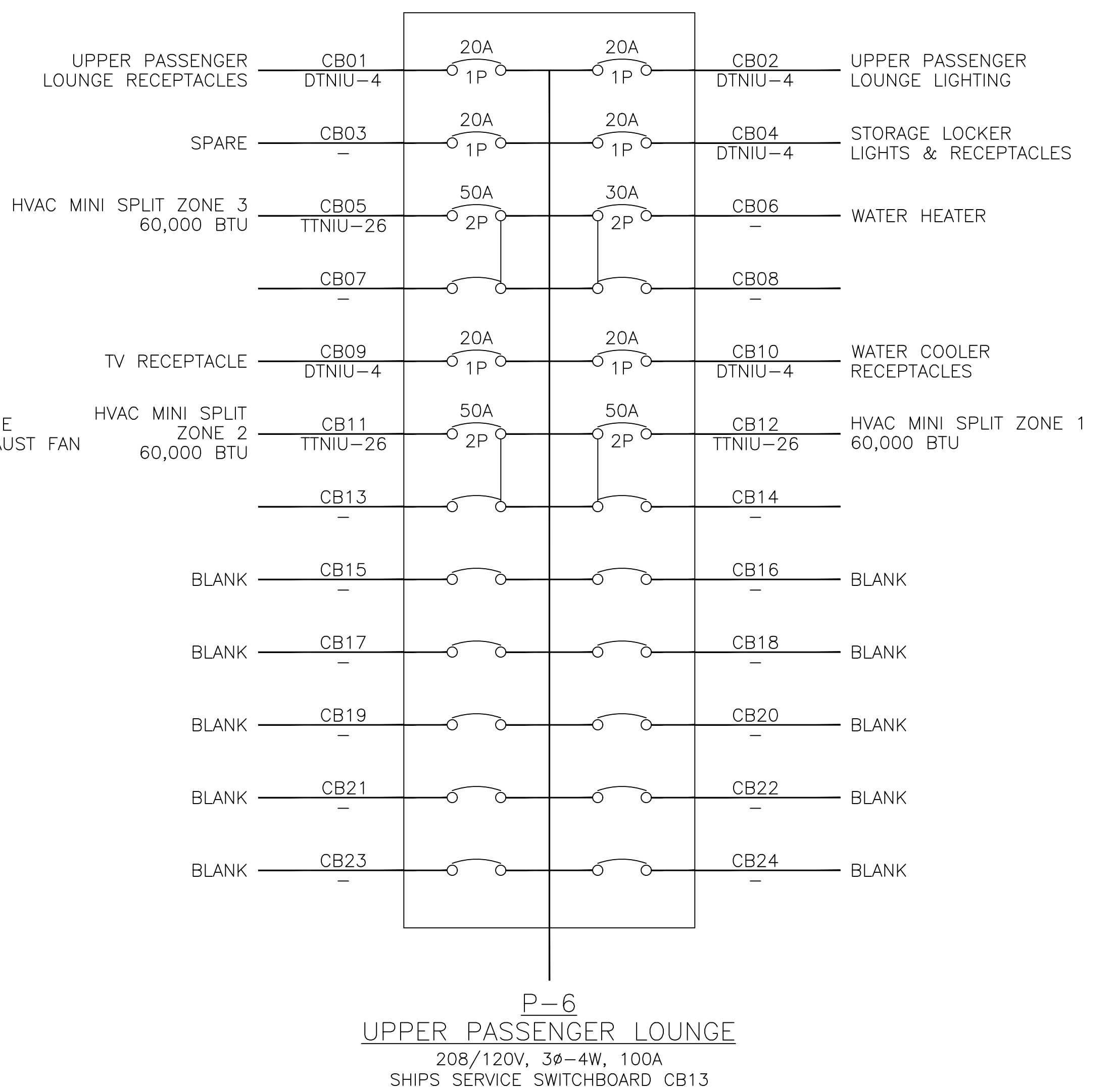
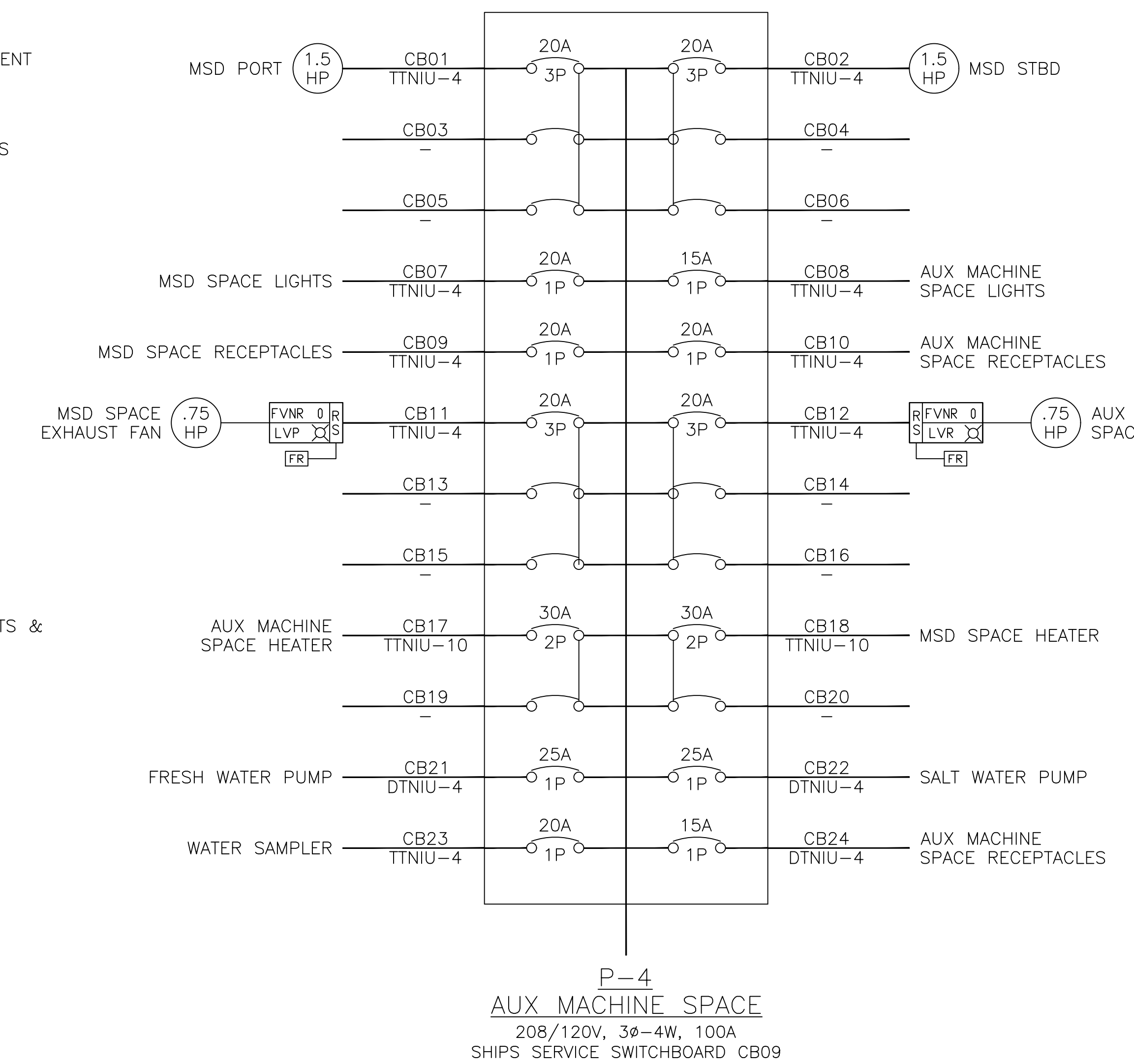
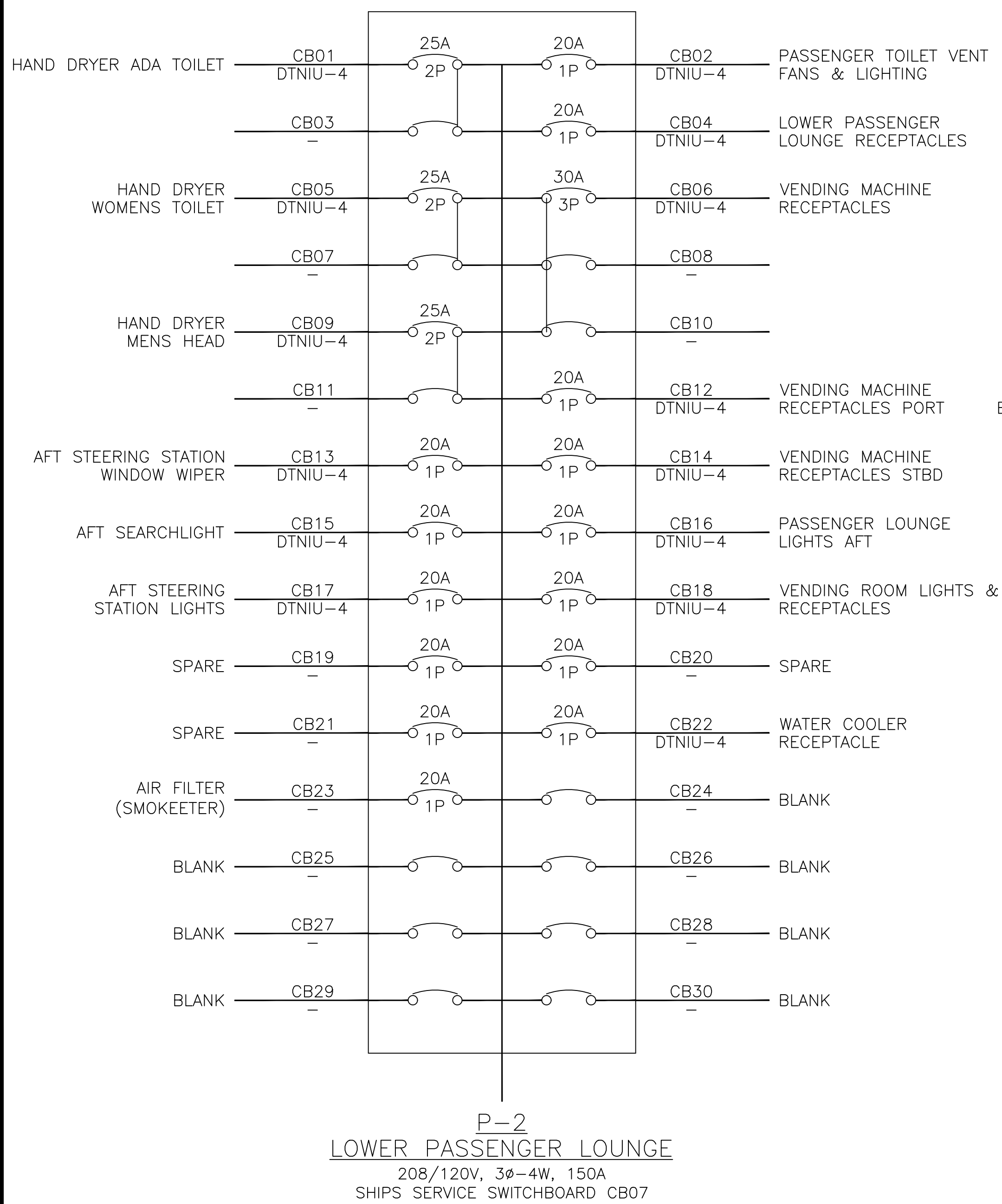
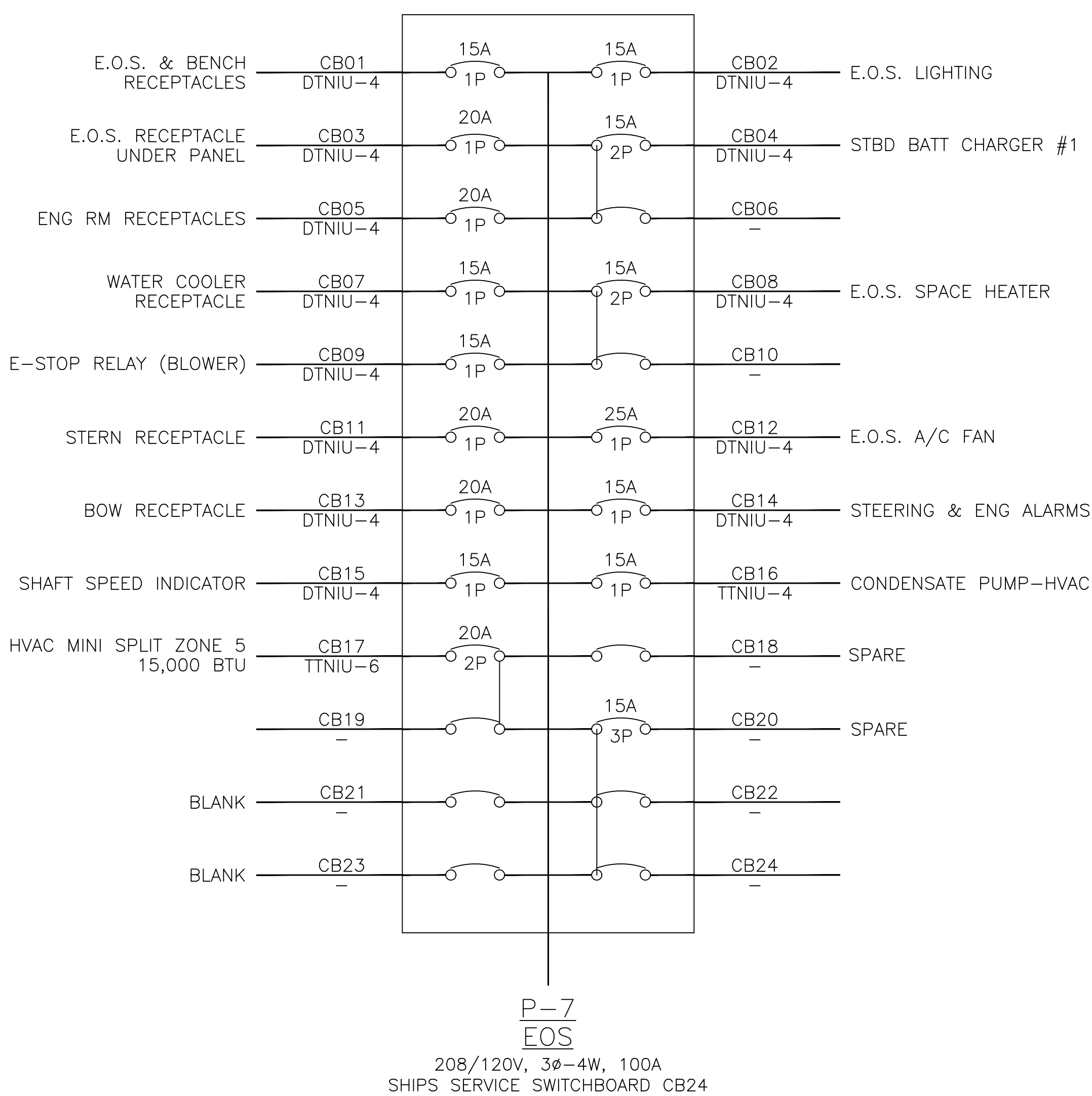
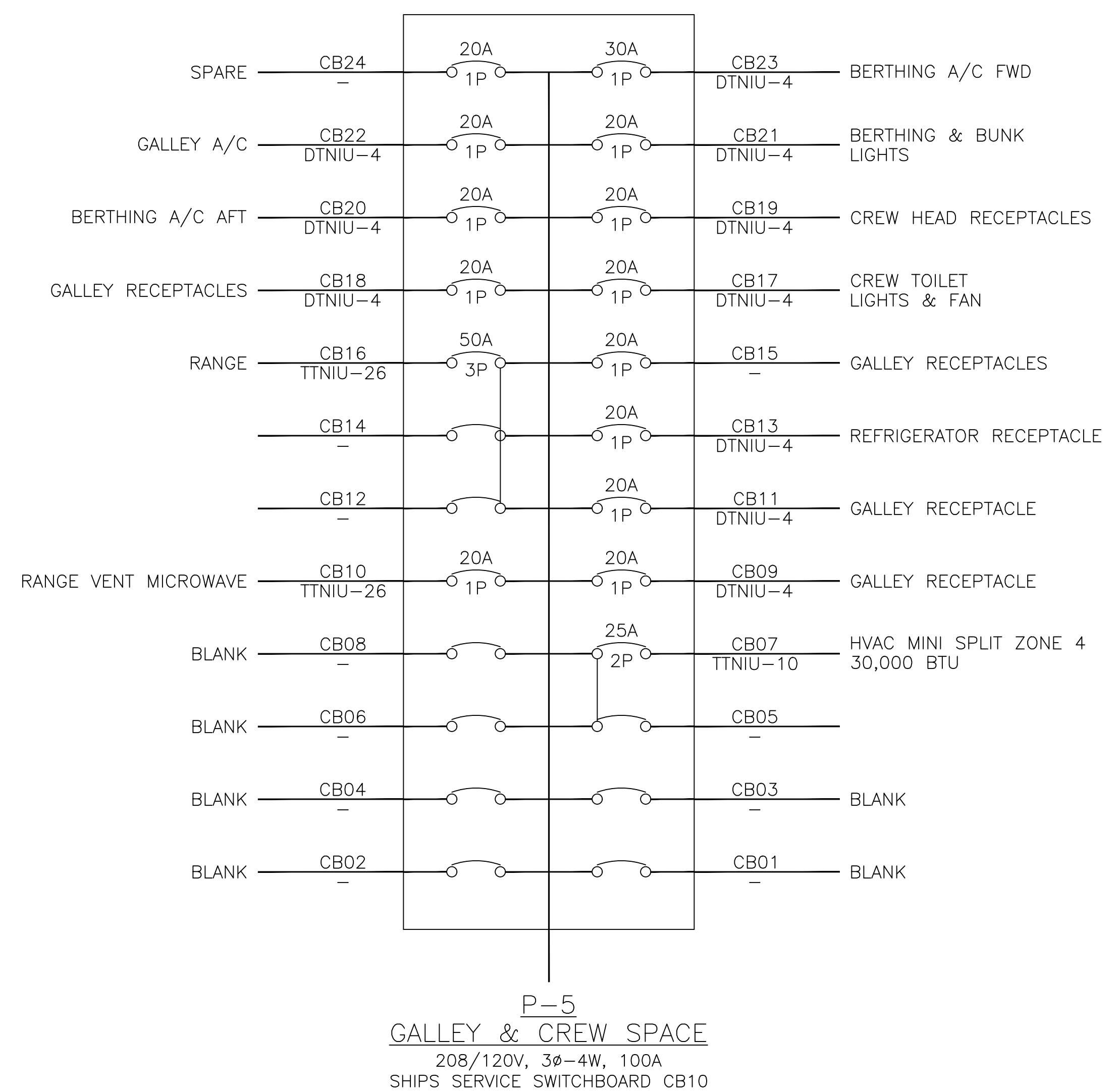
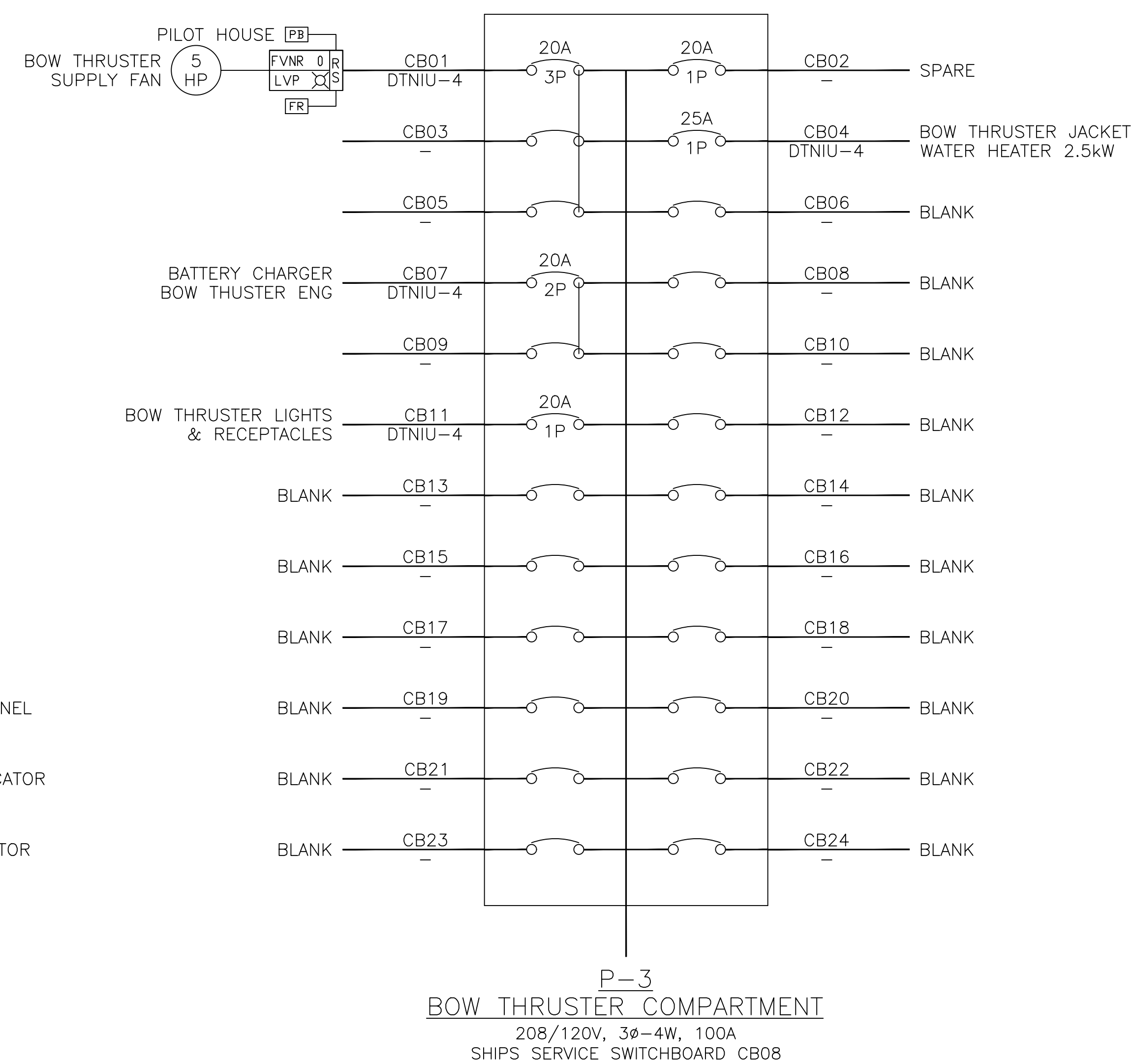
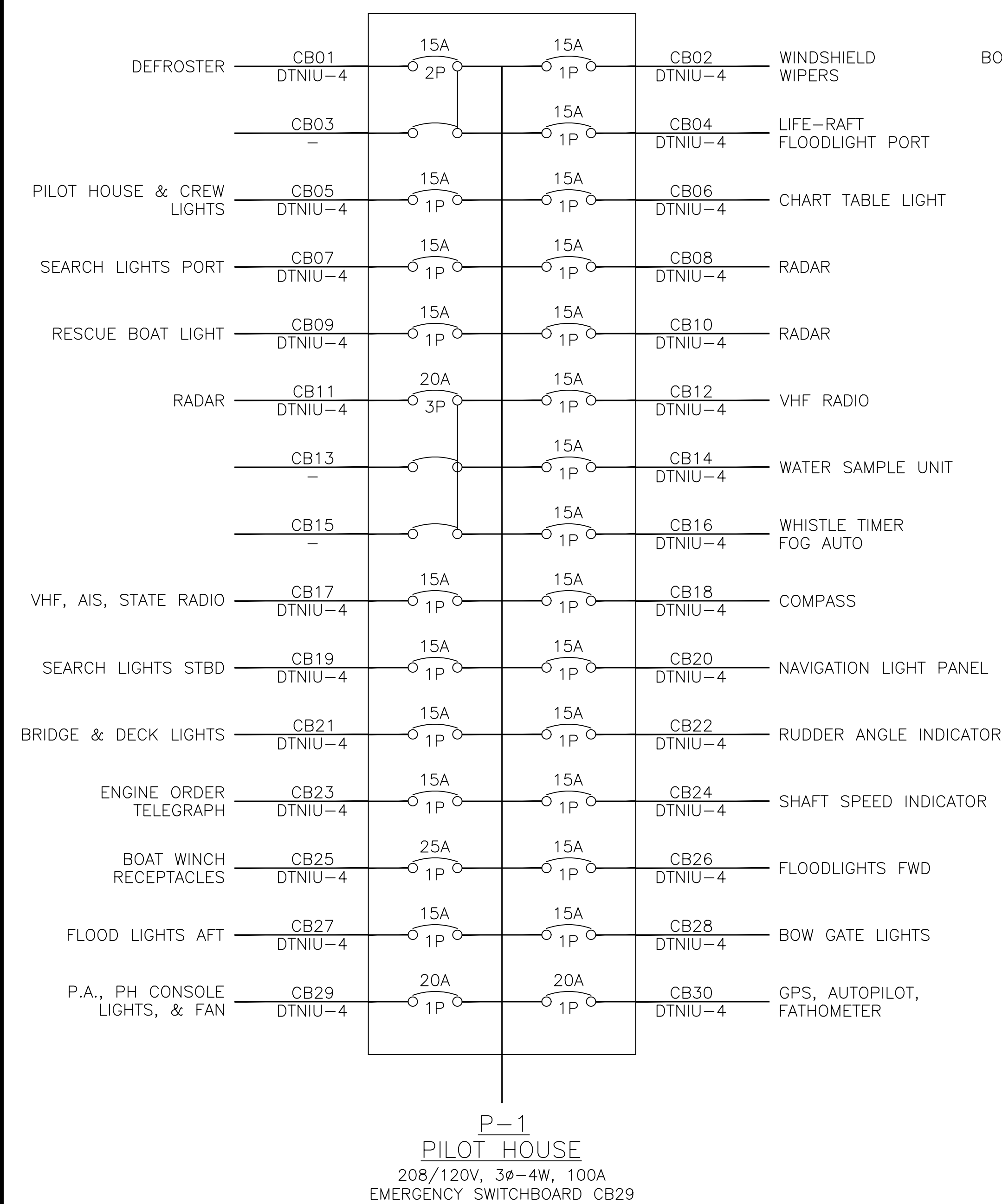
ELEMENTARY WIRING
DIAGRAM

APPROVALS

DRWN: DOSSETT
CHKD:
SCALE: NTS

NC 250-0022

PAGE 01 OF 02
REV. 4



No.	DATE	DESCRIPTION	BY
		Changed Data for the following: Engine room heaters, E.O.S. heaters, Vent duct heaters, and Passenger toilet heaters.	BY
1	1-Mar-1992		HM
2	14-Jan-1992	Added rescue boat davit input capacity (8.3 kW)	BTJ
3	17-Nov-2014	Converted from drawing to Excel and arranged as per Electrical One Line drawing NC-230-34	BTJ
4	20-Sep-2023	Updated load factors	BTJ
		Removed chillwater HVAC equipment. Installed mini split systems.	
5	23-Jul-2026	New HVAC items highlighted in Blue. Old items have been struck through and factor values reduced to zero	BTJ



MAIN SWITCHBOARD

CB No.	DESCRIPTION	INPUT QTY	HP	kW	CONN LOAD	CRUISE - SUMMER		CRUISE - WINTER		EMERGENCY	
						FACTOR	LOAD	FACTOR	LOAD	FACTOR	LOAD
1	Spare	1									
2	Stern Tube Pump & Lights	1	2.00	1.49	1.49	1	1.49	1	1.49		
3	Blank	1									
4	Blank	1									
5	Blank	1									
6	Blank	1									
7	P-2 - Lower Passenger Lounge	1		8.07	8.04		1.95		1.95		
8	P-3 - Bow Thruster Space	1		8.27	8.27		3.60		3.00		
9	P-4 - Aux Machine Space	1		16.50	16.50		0.53		0.53		
10	P-5 - Galley	1		22.40	22.40		7.16		7.16		
11	Steering Gear No 1	1	7.50	5.59	5.59	0.3	1.68	0.3	1.68		
12	Air Compressor No 1	1	3.00	2.24	2.24	0.1	0.22	0.1	0.22		
13	P-6 - Upper Passenger Lounge	1		18.14	18.14		10.56		10.56		
14	Engine Room Supply Fan No 1	1	10.00	7.46	7.46	0.90	6.71	0.90	6.71		
15	Engine Room Supply Fan No 2	1	10.00	7.46	7.46	0.9	6.71	0.9	6.71		
16	Engine Room Exhaust Fan FWD	1	3.00	2.24	2.24	0.9	2.01	0.9	2.01		
17	Engine Room Exhaust Fan AFT	1	3.00	2.24	2.24	0.9	2.01	0.9	2.01		
18	Bilge Pump No 1	1	7.50	5.59	5.59	0.1	0.56	0.1	0.56		
19	Fire Pump No 1 (Aux Machine Space)	1	30.00	22.37	22.37		0.00		0.00		
20	Water Heater	1		3.38	3.38	0.5	1.69	0.5	1.69		
21	HVAC Panel (Vendor Supplied)	0		18.00	0.00	0.7	0.00	0.7	0.00		
22	Spare	1									
23	HVAC Electric Strip Heater	0		20.00	0.00	0.5	0.00	0.5	0.00		
24	P-7 - EOS	1		3.70	3.70		1.10		1.10		
25	HVAC Electric Strip Heater	0		20.00	0.00	0.2	0.00	0.2	0.00		
26	Heater Eng Rm FWD	1		4.00	4.00	1	4.00	1	4.00		
27	Heater Eng Rm	1		16.00	16.00		0.00		0.00		
28	Blank	1									
29	Blank	1									
30	Blank	1									
31	Blank	1									
32	Blank	1									
	Emergency Board	1		0.00	64.06		17.69		20.69		
	Total			215.13	221.17		69.69		72.09		
	Available				120.00		120.00		120.00		
	Remainder						42%		40%		



EMERGENCY SWITCHBOARD

CB No.	DESCRIPTION	INPUT QTY	HP	kW	CONN LOAD	CRUISE - SUMMER		CRUISE - WINTER		EMERGENCY	
						FACTOR	LOAD	FACTOR	LOAD	FACTOR	LOAD
1	Blank										
2	Blank										
3	Blank										
4	Blank										
5	Blank										
6	Blank										
7	ME SS Gen & E-Gen Alarm Panel	1		0.50	0.50	0.2	0.10	0.2	0.10	0.2	0.10
8	Sundeck Lights, Upper & Lower	1		0.04	0.04	0.6	0.02	0.6	0.02	0.4	0.02
9	E-Gen Tank Level Meter	1		0.06	0.06	0.6	0.04	0.6	0.04	0.4	0.02
10	Upper Lounge & Entrance Lights	1		0.40	0.40	0.4	0.16	0.4	0.16	0.4	0.16
11	Bowthruster & Rope Locker Lights	1		0.06	0.06	0.6	0.04	0.6	0.04	0.4	0.02
12	Throttle	1		0.04	0.04	0.6	0.02	0.6	0.02	0.4	0.02
13	Lighting - EOS, Eng Rm, Aux Mach, MSD	1		0.04	0.04	0.9	0.04	0.9	0.04	0.9	0.04
14	E-Gen Rm Lights	1		0.04	0.04	0.6	0.02	0.6	0.02	0.6	0.02
15	Lower lounge & Entrance Lights	1		0.04	0.04	0.9	0.04	0.9	0.04	0.9	0.04
16	Navigation Light Panel	1		0.15	0.15	0.6	0.09	0.6	0.09	0.6	0.09
16	Lights Upper & Lower Lounge	1		0.40	0.40	0.1	0.04	0.1	0.04	0.1	0.04
17	Steering Compartment Lights & Recpt	1		0.20	0.20	0.2	0.04	0.2	0.04	0.9	0.18
19	E-Gen Jacket Water Heater	1		3.00	3.00	0	0.00	1	3.00	0	0.00
20	Rudder Angle Indicator & Transmitter	1		0.50	0.50	0.2	0.10	0.2	0.10	0.2	0.10
21	Battery Charger - Throttle Control	1		0.75	0.75	0.2	0.15	0.2	0.15	0	0.00
22	Rescue Boat Davit	1		8.30	8.30	0	0.00	0	0.00	0	0.00
23	Battery Charger - General Alarm	1		0.75	0.75	0.2	0.15	0.2	0.15	0.2	0.15
24	Battery Charger - Emergency Generator	1		0.75	0.75	0.2	0.15	0.2	0.15	0.2	0.15
25	Stern Tube Flushing Pump No 2	1	2.00	1.49	1.49	0.5	0.75	0.5	0.75	0.5	0.75
26	Bilge Pump No 2	1	7.50	5.59	5.59	0.1	0.56	0.1	0.56	0.1	0.56
27	Air Compressor No 2	1	3.00	2.24	2.24	0.1	0.22	0.1	0.22	0.1	0.22
28	Fire Pump No 2	1	30.00	22.37	22.37	0.4	8.95	0.4	8.95	0.4	8.95
29	P-1 - Plthouse Panel	1		10.77	10.77	1	4.34	1	4.34	1	4.34
30	Steering Gear No 2	1	7.50	5.59	5.59	0.3	1.68	0.3	1.68	0.3	1.68
31	Blank										
31	Spare										
32	Blank										
33											
34	Blank										
kW Available = 65					64.06		17.69		20.69		17.64
	Available				65.00						
	Remainder				1.4%						



Emergency connected load is less than generator output per 46CFR 112.05-5(a)
Factors shown are per NAVSEA Naval Sea Systems Command

PILOTHOUSE EMERGENCY PANEL

Electrical Load Analysis

P-1

[illegible]

P-2

Electrical Load Analysis

[illegible]

P-3

[illegible]

P-4

CB No.	DESCRIPTION	INPUT QTY	HP	kW	CONN LOAD	CRUISE - SUMMER		CRUISE - WINTER		EMERGENCY	
						FACTOR	LOAD	FACTOR	LOAD	FACTOR	LOAD
1	MSD Port (3p)	1	1.50	1.12	1.12	0.2	0.22	0.2	0.22		
2	MSD Stbd (3p)	1	1.50	1.12	1.12	0.2	0.22	0.2	0.22		
3	CB No. 1	1									
4	CB No. 2	1									
5	CB No. 1	1									
6	CB No. 2	1									
7	MSD Space Lights	1		0.40	0.40	0.2	0.08	0.2	0.08		
8	Aux Machine Space Lights	1		0.40	0.40		0.00		0.00		
9	MSD Space Receptacles	1		0.20	0.20		0.00		0.00		
10	Aux Machine Space Receptacles	1		0.20	0.20		0.00		0.00		
11	MSD Space Exhaust Fan (3P)	1	0.75	0.56	0.56		0.00		0.00		
12	Aux Machine Space Fan (3P)	1	0.75	0.56	0.56		0.00		0.00		
13	CB No. 11										
14	CB No. 12										
15	CB No. 11										
16	CB No. 12										
17	Aux Machine Space Heater (2P)	1		5.00	5.00		0.00		0.00		
18	MSD Space Heater (2P)	1		6.00	6.00		0.00		0.00		
19	CB No. 17										
20	CB No. 18										
21	Fresh Water Pump	1	0.50	0.37	0.37		0.00		0.00		
22	Salt Water Pump	1	0.50	0.37	0.37		0.00		0.00		
23	Water Sampler	1			0.00		0.00		0.00		
24	Aux Machine Space Receptacles	1		0.20	0.20		0.00		0.00		
				16.50	16.50		0.53		0.53		

GALLEY
P-5

Electrical Load Analysis

[illegible]

Electrical Load Analysis

P-6

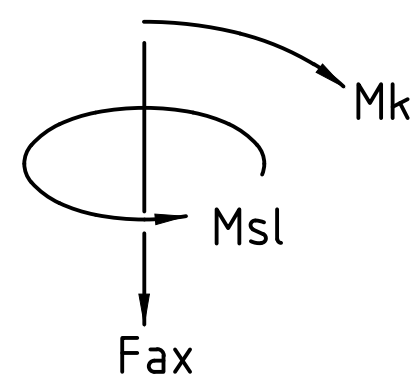
[illegible]

Electrical Load Analysis

Diagram showing the foundations of a boat chock on a deck. The chock is 220 units high and 10 units wide. The distance from the chock to the centerline (C.L. boat) is 855 units. The distance from the chock to the edge of the deck is 25 units. The text indicates that the foundations of the boat chock are to be welded on the deck by yard.

Diagram of the front view of the assembly. Callout 17 points to the front plate, callout 18 points to the front plate screw, and callout 19 points to the front plate.

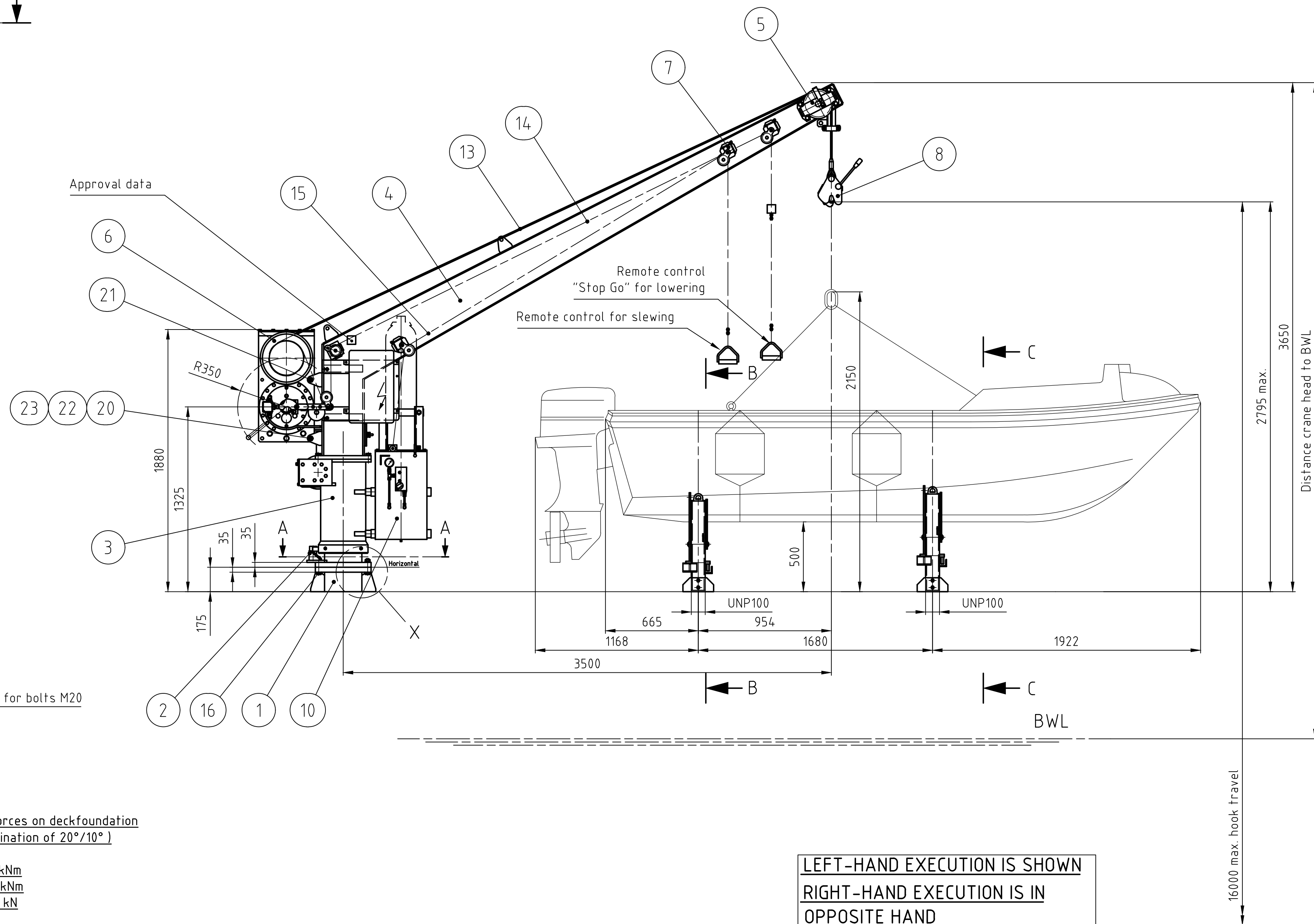
Technical drawing of a circular base plate for a power supply unit. The drawing shows a circular plate with a central hole for a cable, surrounded by 12 holes for bolts. Dimensions include a pipe size of 267x14,2, a central hole diameter of P.C. 350, and an outer diameter of 400. Labels indicate "Electric cable for power supply" and "12 holes Ø23 for bolts M20".



$M_k = 55 \text{ kNm}$
 $M_{sl} = 18 \text{ kNm}$
 $F_{ax} = 25 \text{ kN}$

Technical drawing showing the side view of the machine with dimensions and components labeled:

- Dimensions (mm): 1002, 456, 356, 498.
- Curved dimensions: R730, R1270, R675.
- Labels:
 - Boarding instruction plate
 - Starterbox with push buttons
 - Slewing direction in stored power mode 180° max. (slewing angle max. 315°)
- Callouts: 11, 9.



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

Diagram illustrating the left-hand execution for the 100m start. The boat is shown from a top-down perspective, moving in the direction of the arrow labeled "Sailing direction". The start line is indicated by a horizontal line. The boat's path is shown as a dashed arc with a radius of R3500. The distance from the start line to the beginning of the arc is labeled "800 min.". An arrow points to the start of the arc with the text "Left-hand execution".

Tensioning torque recommendations [Nm]				
Oil lubricated		MoS2 lubricated		
	(8.8)	(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				

						437	1047
23	6	Washer A21	St.	DIN 125			
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.0121	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/qusset	4-0346				37

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.

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

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

TOTAL MASS OF SYSTEM: 1400 kg

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

WINCH TYPE:	n.a.
HOISTING/LOWERING SPEED:	- m/min
WIRE ROPE SIZE:	- mm
MINIMUM REQUIRED BREAKING LOAD:	- kN
TYPE OF WINCH:	-
OIL QUANTITY:	- l
POWER CONSUMPTION:	- kW
NOMINAL CURRENT:	- A
STARTING CURRENT:	- A

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.

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

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

ITEM	QUANT	DESCRIPTION						MATERIAL	REMARKS	MASS P	MASS S
T	SZ	L	H	C	D	A					