

OUTBOARD PROFILE A1-A1

3	1. INCORP AS-BUILT MARK-UPS. 2. ADDED U.S.C.G. APPROVAL DATE, APPROVAL NUMBER, & VESSEL NAME. 3. REVERSED RESERVE BOLT BAY LOCATION ITEMS #1 & #2 PER CUSTOMER COMMENTS.	PKS 7-4F
2	1. REVERSED RESERVE BOLT BAY LOCATION ITEMS #1 & #2 PER CUSTOMER COMMENTS.	PKS 7-4F
1	2. ADDED RESERVATIONS & NOTE. 1. REVISED PER A.S. CHANGED DIMS. NO. 5150 NC 240-0005.	PKS 7-4F

RESERVATION A1-A1  
 ---RESERVE-BOLT-BAY-REVERSE---  
 ---REV-COMMENTS---

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		MARKING
FERRY DIVISION		MARKING
State Vehicle License No. NC 240-0005		MARKING
DATE OF DESIGN DATE OF CONSTRUCTION SCALE: 3/8" = 1'-0"		MARKING
SOUND CLASS FERRY OUTBOARD PROFILE		MARKING
SHEET NO. 1 OF 3		MARKING

NOTE A1-A1  
 1. THIS DRAWING IS FOR THE CEDAR ISLAND FERRY, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. DRAWING NUMBER NC-240-0005.



ITEM QTY	DESCRIPTION	MODEL	MFG	REMARKS	WT
1	MAIN PROPELLION ENGINE	3508 DITA	CATERPILLER	865 BHP @ 1200 RPM	
2	MAIN ENGINE REVERSE/REDUCTION GEAR	MG 540	TWIN DISC	3.26:1 RATIO	
3	BOW THRUSTER	HT-600	OMNITHRUSTER		
4	BOW THRUSTER ENGINE	3308B DITA	CATERPILLER	315 HP @ 2200 RPM	
5	BOW THRUSTER REDUCTION GEAR	MG 509-1	TWIN DISC	2.05:1 RATIO	
6	SHIP SERVICE GENERATOR SET	3304B DIT	CATERPILLER	105 KW, 120/208 VAC	
7	EMERGENCY GENERATOR SET	3304 NA	CATERPILLER	65 KW, 120/208 VAC	
8	DUAL STEERING HYDRAULIC SET		MATTHEWS MARINE SYS DING 3308-1510/1511		
9	SHIP'S SERVICE AIR COMPRESSORS		QUINCY	240 GAL @ 200 PSIG	
10	SHIP'S SERVICE AIR RECEIVERS	VX320	MANCHESTER	240 GAL 200 PSI WP	
11	BURGE PUMP, 1 X 1, CLOSE COUPLED	FLOWMAX 15	MP PUMPS	7.5 HP, 250 GPM @ 40' HEAD	
12	BURGE SUCTION STRAINER	MODEL 50	HAYWARD		
13	FRESH WATER PRESSURE SET TANK, BLADDER TYPE	CM 8033	CLAYTON MARK	33 GALLON	
14	FRESH WATER PRESSURE SET PUMP	SERIES 9151	MCDONALD	150 GPM	
15	WATER HEATER	EDUJ-20	A.G. SMITH	20 GAL, 2000W, 120V	
16	PAID CO2 CYLINDER, 100LB				
17	FUEL OIL DAY TANK (DMEZ GRN), 20 GAL			YARD FABRICATED	
18	FUEL OIL COOLER	CSZ-24 M4	DOUCETTE IND	OR EQUAL	
19	MAIN FUEL OIL FILTER	800D-20	MACOR		
20	STERN TUBE FLUSHING PUMP, 1 1/2x1 1/4, CLOSE CPLD	SERIES 80	MP PUMPS	2 HP, 55 GPM @ 65' TDH	
21	FIRE PUMP (BOW THRUSTER COMP) 1-1/2 x 3 - 10	3198 MT	GOLLUS	BELT DRIVEN	
22	STRAINER (BOW THRUSTER COMP)	MODEL 50	HAYWARD		
23	FIRE PUMP (ENGINE ROOM), 1-1/2 x 3 - 10	3198 MT	GOLLUS		
24	DUPLIX STRAINER (ENG RM FIRE PUMP)	MODEL 50	HAYWARD		
25	SEWAGE TREATMENT UNIT	RF-1000-M-GPBN-6	RED FOX	WITH ROTARY LOBE BLOWER	
26	ENGINE ROOM SUPPLY FANS	50-29-AN3	HARTZELL	1500 RPM, 208 VAC, 1/2 HP	
27	ENGINE ROOM EXHAUST FANS	44MDA-24-DK3	HARTZELL	1500 RPM, 208 VAC, 1/2 HP	
28	MSD COMPARTMENT VENT FAN	44MDA-12-D02	HARTZELL	3/4 HP, 208 VAC, 3000 RPM	
29	BOW THRUSTER COMPARTMENT VENT FAN	44MDA-24-DK3	HARTZELL	1500 RPM, 208 VAC, 1/2 HP	
30	AUX MACHINERY ROOM VENT FAN	44MDA-28-DJ4	HARTZELL	1500 RPM, 208 VAC, 1/2 HP	
31	A/C CHILLER UNIT	90HE80014-6	CARRIER	20 TON	
32	CHILLED WTR CIRC PMP, 1 1/2 x 1 1/2, CLOSE COUPLED	FLOWMAX 8	MP PUMPS	1.5 HP	
33	NOT USED				
34	CONDENSER WTR PMP, 1 1/2 x 1 1/2, CLOSE COUPLED	FLOWMAX 8	MP PUMPS	1.5 HP	
35	STRAINER (CONDENSER PUMPS)	MODEL 50	HAYWARD		
36	MAIN SWITCHBOARD	N.C. 2400-04 REV 1	IND. PWR. SYSTEMS	NON-PARALLEL	
37	EMERGENCY GENERATOR SWITCHBOARD	N.C. 2400-04 REV 1	IND. PWR. SYSTEMS		
38	ENGINEER'S CONTROL CONSOLE			YARD FABRICATED	
39	PAID CO2 CYLINDER, 50 LB				
40	FLUSHING WATER PRESS SET TANK, BLADDER TYPE	CM 800-3	CLAYTON MARK	33 GAL	
41	FLUSHING WATER PRESS SET PUMP	8151	MCDONALD	500 GPH	
42	IND BURGE MANIFOLD			YARD FABRICATED	
43	AFT BURGE MANIFOLD			YARD FABRICATED	
44	STEERING CONTROL UNITS			YARD FABRICATED	
45	STERN TUBE FLUSHING PUMP STRAINER	MODEL 50	HAYWARD		
46	BURGE-STRANER-FLUSHING-WATER-SYSTEM	MODEL 50	HAYWARD	MMS DRAWING NO'S 5305-1510 & 1511	
47	CATHODIC PROTECTION SYSTEM		ELECTRO-CATALYTIC		
48	BOW THRUSTER ENGINE FRONT FPO			YARD-FABRICATED	
49	FUEL-OIL-WATER-IMP			YARD FABRICATED	
50	LUBE OIL TANK, 75 GAL				

**GENERAL NOTES**

1. THIS DRAWING WAS DEVELOPED FROM NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DRAWING NUMBER NC-240-0013, MACHINERY ARRANGEMENT.

3.	APPROVED USCG IIR 16710/P000390	PER
2.	SERIAL: M-40791-1	REV
1.	REVISED DNG PER AS-BUILT MARK-UP.	IS
1.	REVISED DNG TO INCORPORATE OWNER COMMENTS.	THIS DRAWING
1.	COMPARISON.	DATE
No.	DESCRIPTION	BY DATE
	REVISIONS	

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MARKING INFORMATION  
MACHINERY ARRANGEMENT

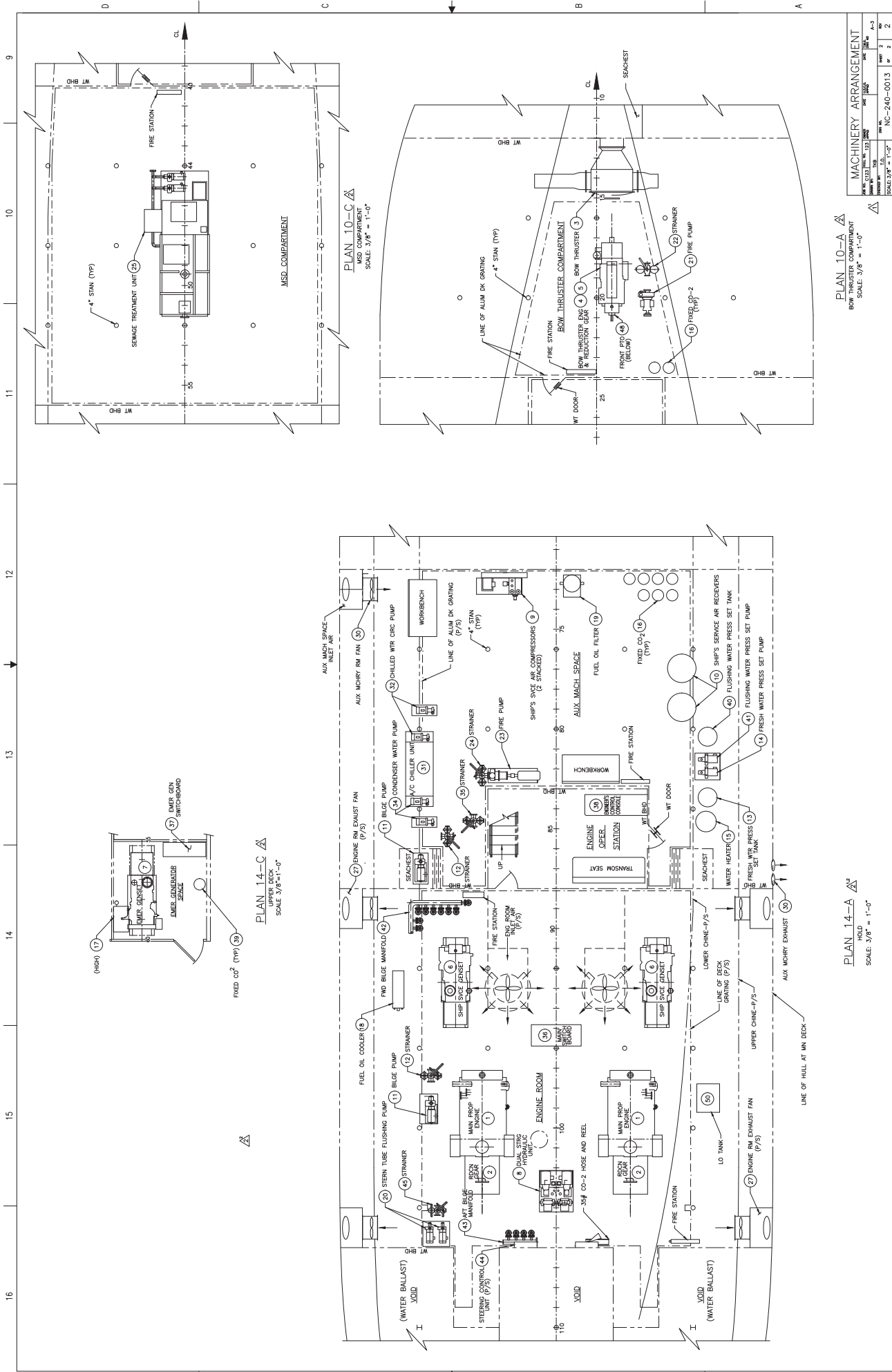
SCALE: 1"=10'-0"

DATE: 11/11/13

PROJECT NO: NC-240-0013

SCALE: 1"=10'-0"

**RESERVATIONS**  
 1- ENGINES-LOCATIONS-RESERVED;  
 2- PANELS-4-SWITCHBOARDS-RESERVED-RENDERING-INFO.



**MACHINERY ARRANGEMENT**

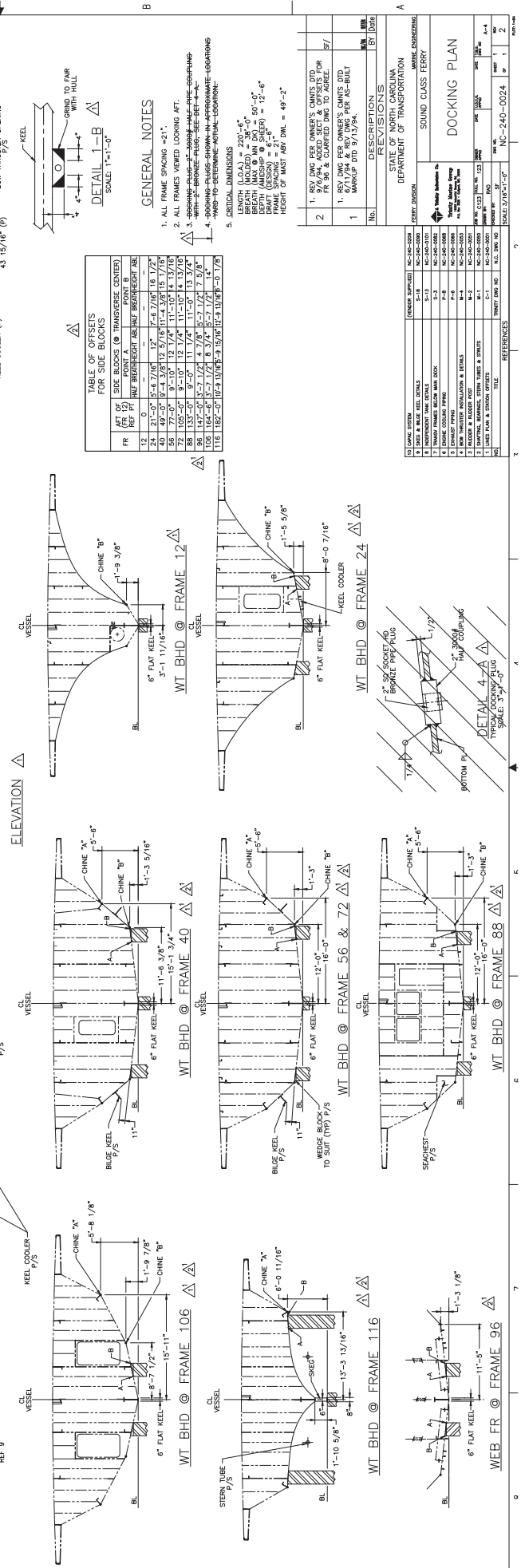
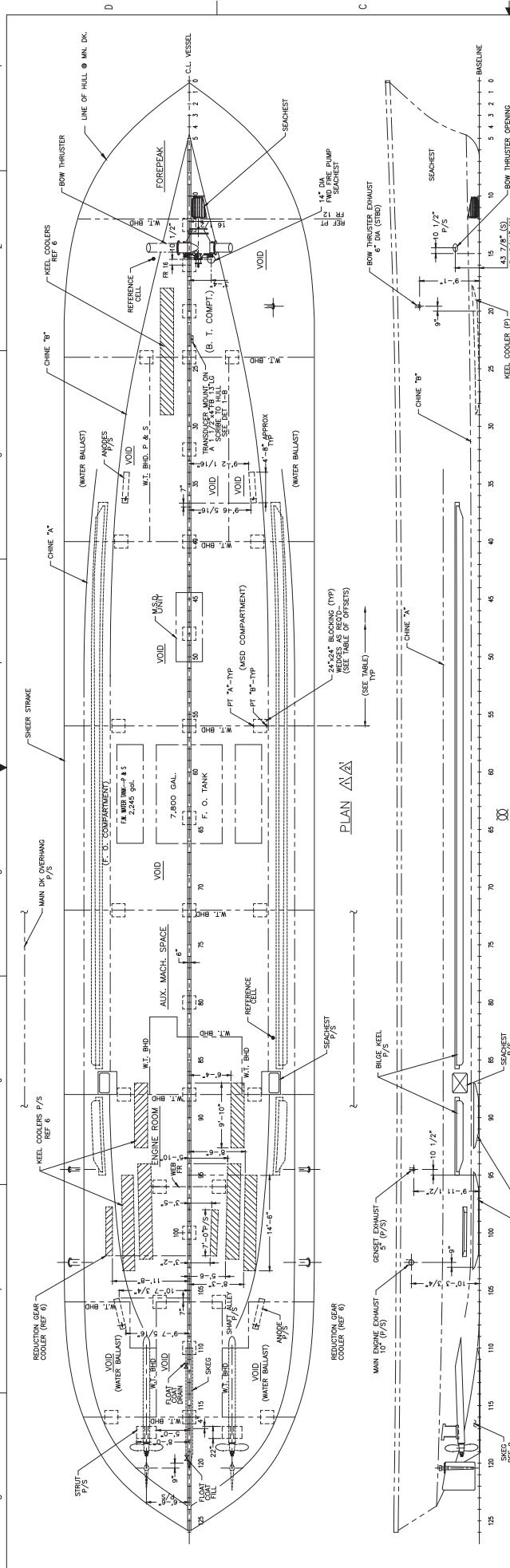
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**PLAN 10-A**  
BOW THRUSTER COMPARTMENT  
SCALE: 3/8" = 1'-0"

**PLAN 14-A**  
HOLD  
SCALE: 3/8" = 1'-0"

**PLAN 14-C**  
UPPER DECK  
SCALE: 3/8" = 1'-0"

10 11 12 13 14 15 16



**TABLE OF OFFSETS FOR SIDE BLOCKS**

FR	WT	BL	SE	KE	HT	HT	HT	HT	HT	HT
FR	WT	BL	SE	KE	HT	HT	HT	HT	HT	HT
12	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
56	77'-0"	9'-10"	12'-7/8"	11'-10 1/2"	13'-1/8"	13'-1/8"	13'-1/8"	13'-1/8"	13'-1/8"	13'-1/8"
68	137'-0"	9'-10"	11'-7/8"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"
88	137'-0"	3'-7 1/2"	4'-7/8"	9'-7 1/2"	9'-7 1/2"	9'-7 1/2"	9'-7 1/2"	9'-7 1/2"	9'-7 1/2"	9'-7 1/2"
108	184'-6"	5'-7 1/2"	8'-3/4"	8'-3/4"	8'-3/4"	8'-3/4"	8'-3/4"	8'-3/4"	8'-3/4"	8'-3/4"
118	185'-0"	10'-9 1/2"	10'-9 1/2"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"

**GENERAL NOTES**

- ALL FRAMES SPACING = 21".
- ALL FRAMES VIEWED LOOKING AFT.
- 3-BOLTING PLUG = 2" BORE, 1-1/2" DIA. HALF-PIPE COUPLING WITH 2" BORE, 1-1/2" DIA. HALF-PIPE COUPLING.
- 3-BOLTING PLUG = 2" BORE, 1-1/2" DIA. HALF-PIPE COUPLING WITH 2" BORE, 1-1/2" DIA. HALF-PIPE COUPLING.

5. CRITICAL DIMENSIONS

LENGTH (LOA) = 220'-6"

BREADTH (MAX) @ 20' = 56'-0"

DEPTH (MAX) @ 20' = 56'-0"

FRAME SPACING = 21"

HEIGHT OF MAST ABT DWL = 69'-2"

No.	REVISIONS	DATE	BY	CHK
1	REV. DWG PER OWNER'S COMMENTS AND PER AS-BUILT MARKUP DTD 9/13/98			
2	REV. DWG PER OWNER'S COMMENTS AND PER AS-BUILT MARKUP DTD 9/13/98			

**STATE OF NORTH CAROLINA**  
 DEPARTMENT OF TRANSPORTATION  
 MARINE DIVISION  
 SOUND CLASS FERRY  
**DOCKING PLAN**

Scale: 3/8" = 1'-0"

NO.	DESCRIPTION	DATE	BY	CHK
1	REV. DWG PER OWNER'S COMMENTS AND PER AS-BUILT MARKUP DTD 9/13/98			
2	REV. DWG PER OWNER'S COMMENTS AND PER AS-BUILT MARKUP DTD 9/13/98			

**REFERENCES**

1. STATE OF NORTH CAROLINA MARINE DIVISION

2. STATE OF NORTH CAROLINA MARINE DIVISION

3. STATE OF NORTH CAROLINA MARINE DIVISION

4. STATE OF NORTH CAROLINA MARINE DIVISION

5. STATE OF NORTH CAROLINA MARINE DIVISION

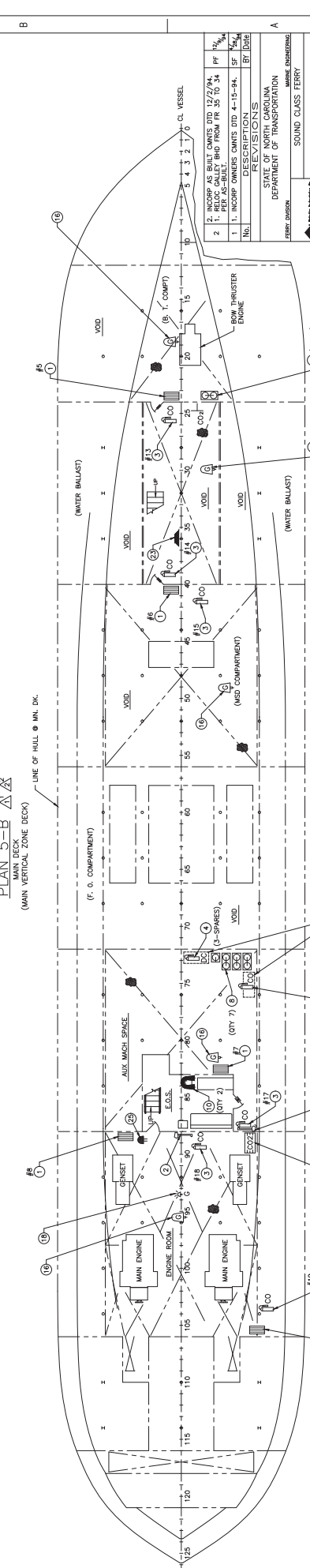
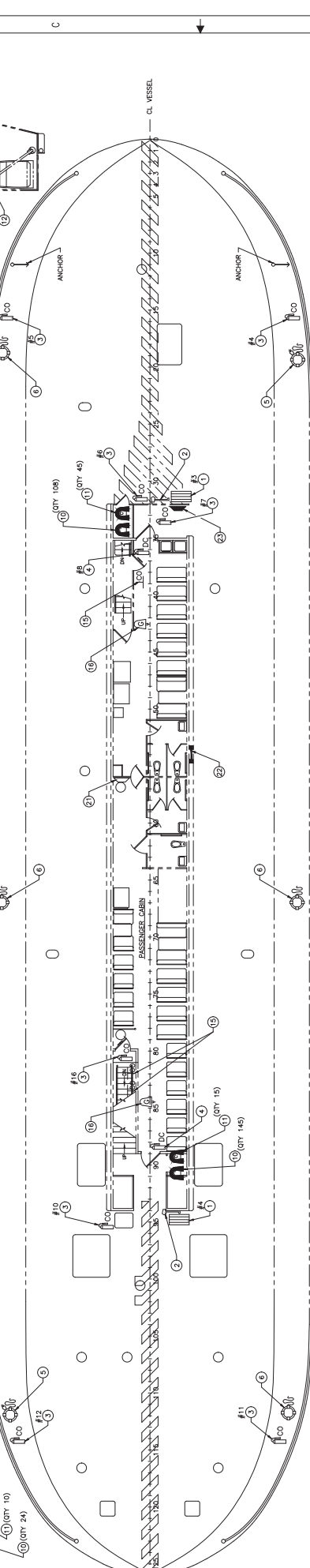
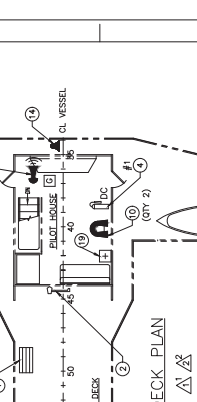
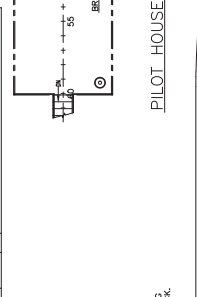
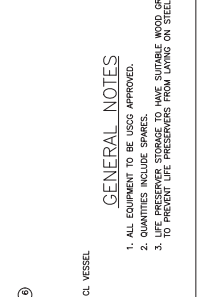
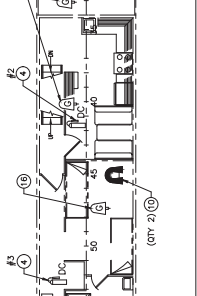
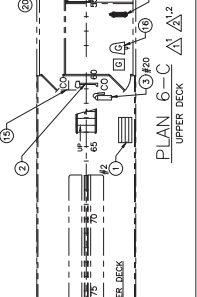
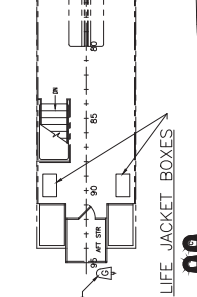
SYMBOL	QTY	DESCRIPTION
[Symbol]	1	SCOP STRETCHER
[Symbol]	2	EASY FOLD EMER STRETCHER KIT
[Symbol]	2	BASKET STRETCHER
[Symbol]	1	CO2 HOSE & REEL EXTINGUISHER, 30# B-II
[Symbol]	1	CO2 DISCHARGE ALARM

SYMBOL	QTY	DESCRIPTION
[Symbol]	12	GENERAL ALARM BELL
[Symbol]	2	GENERAL ALARM CONTACT MAKER
[Symbol]	1	GENERAL ALARM BELL
[Symbol]	1	AIR TOW HORN
[Symbol]	1	12" DIA SHIP'S BELL
[Symbol]	3	PULL BOX FOR CO2 SYSTEM

SYMBOL	QTY	DESCRIPTION
[Symbol]	86	CHILD LIFE PRESERVER
[Symbol]	1	12" RESCUE BOX W/ 1 PAIR OF OARS
[Symbol]	2	AND (2) 30 FT NYLON PANNERS
[Symbol]	1	50# FIXED CO2 BOTTLES
[Symbol]	1	ADULT LIFE PRESERVER

SYMBOL	QTY	DESCRIPTION
[Symbol]	4	30" RING BUOY W/ 5 PATRONS OF
[Symbol]	2	FLUORESCENT LINE ATTACHED
[Symbol]	1	LIFE RAFT SELF-INFLATING, 25 MAN
[Symbol]	1	100# FIXED CO2 BOTTLES
[Symbol]	1	50# FIXED CO2 BOTTLES
[Symbol]	1	ADULT LIFE PRESERVER

SYMBOL	QTY	DESCRIPTION
[Symbol]	9	FIRE STATION W/ 50 FT 1 1/2" HOSE & BACK W/ FSC NOZZLE & SPANNER
[Symbol]	6	FIRE AXE
[Symbol]	19	10# ABC FIRE EXTINGUISHER
[Symbol]	23	10# ABC FIRE EXTINGUISHER AND PORTABLE
[Symbol]	8	10# ABC FIRE EXTINGUISHER AND PORTABLE
[Symbol]	2	10# ABC FIRE EXTINGUISHER - QUIET PATRONS OF FLOATING LINE ATTACHED



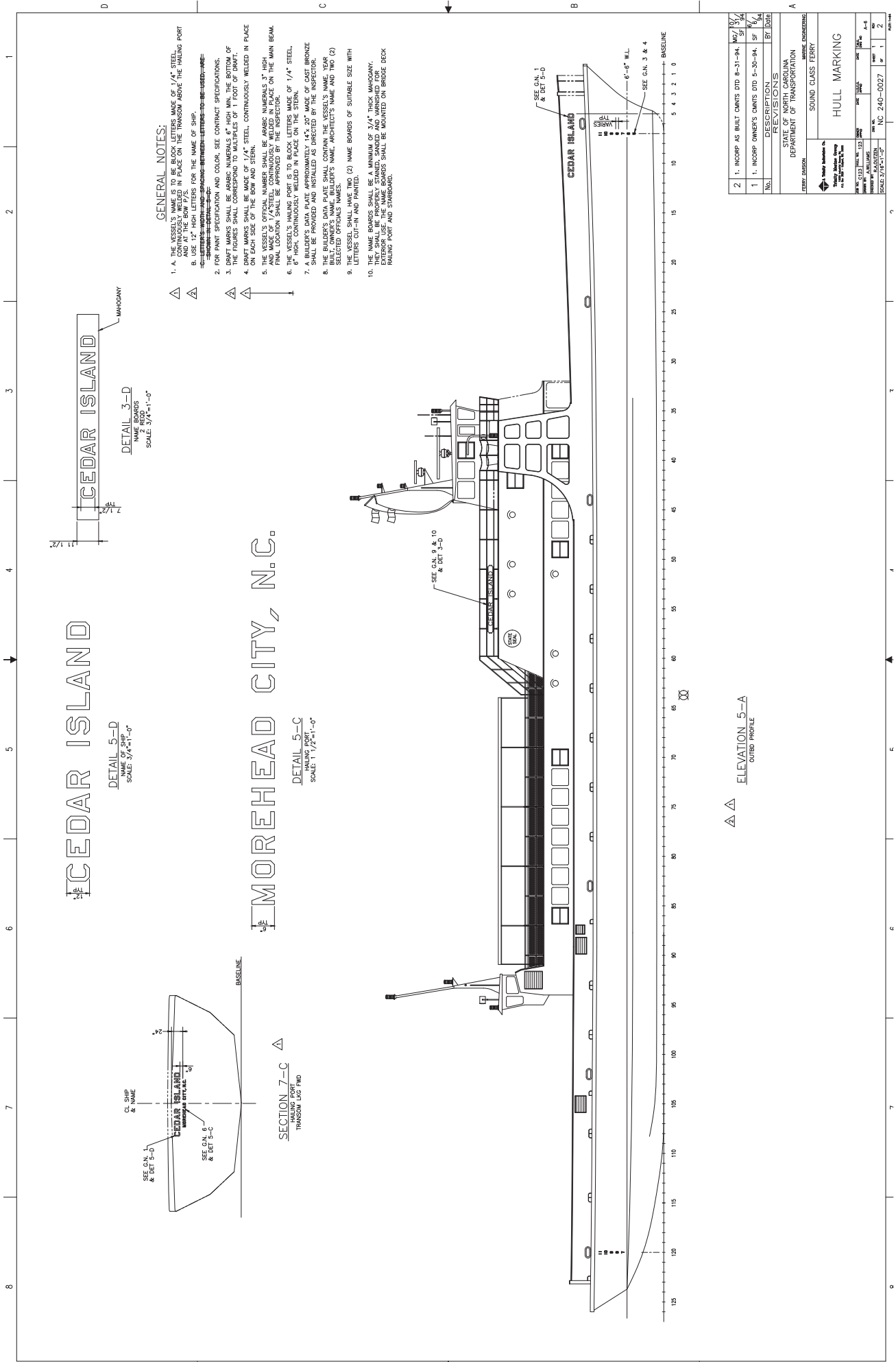
LIST OF EQUIPMENT			
SYMBOL	QTY	DESCRIPTION	REVISIONS
[Symbol]	1	SCOP STRETCHER	1
[Symbol]	2	EASY FOLD EMER STRETCHER KIT	1
[Symbol]	2	BASKET STRETCHER	1
[Symbol]	1	CO2 HOSE & REEL EXTINGUISHER, 30# B-II	1
[Symbol]	1	CO2 DISCHARGE ALARM	1
[Symbol]	12	GENERAL ALARM BELL	1
[Symbol]	2	GENERAL ALARM CONTACT MAKER	1
[Symbol]	1	GENERAL ALARM BELL	1
[Symbol]	1	AIR TOW HORN	1
[Symbol]	1	12" DIA SHIP'S BELL	1
[Symbol]	3	PULL BOX FOR CO2 SYSTEM	1
[Symbol]	86	CHILD LIFE PRESERVER	1
[Symbol]	1	12" RESCUE BOX W/ 1 PAIR OF OARS AND (2) 30 FT NYLON PANNERS	1
[Symbol]	1	50# FIXED CO2 BOTTLES	1
[Symbol]	1	ADULT LIFE PRESERVER	1
[Symbol]	9	FIRE STATION W/ 50 FT 1 1/2" HOSE & BACK W/ FSC NOZZLE & SPANNER	1
[Symbol]	6	FIRE AXE	1
[Symbol]	19	10# ABC FIRE EXTINGUISHER	1
[Symbol]	23	10# ABC FIRE EXTINGUISHER AND PORTABLE	1
[Symbol]	8	10# ABC FIRE EXTINGUISHER AND PORTABLE	1
[Symbol]	2	10# ABC FIRE EXTINGUISHER - QUIET PATRONS OF FLOATING LINE ATTACHED	1

GENERAL NOTES			
1.	ALL EQUIPMENT TO BE USCG APPROVED.		
2.	QUANTITIES INCLUDE SPARES.		
3.	LIFE PRESERVER STORAGE TO HAVE SUITABLE WOOD GRATING TO PREVENT LIFE PRESERVERS FROM LAYING ON STEEL DECK.		

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
SAFETY PLAN			
DATE	SCALE	PROJECT NO.	DATE
NOV 15, 2012	1/8" = 1'-0"	NC-240-0025	NOV 15, 2012
DESIGNED BY	CHECKED BY	APPROVED BY	DATE
J. B. WILSON	J. B. WILSON	J. B. WILSON	NOV 15, 2012
REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	IN CORP OWNERS COMMENTS DTD 4-15-94.		
2	RELOCATED LIFE PRESERVER STORAGE TO PER AB-BUILT.		
3	REVISIONS		



**GENERAL NOTES:**

1. A. THE VESSEL'S NAME IS TO BE BLOCK LETTERS MADE OF 1/4" STEEL CONTINUOUSLY WELDED IN PLACE ON THE TRANSOM ABOVE THE HAULING PORT AND STERN.
- B. USE 1/2" HIGH LETTERS FOR THE NAME OF SHIP.
- C. ~~LETTERS, MARKS AND SPACING BETWEEN LETTERS TO BE USED ARE:~~
2. FOR PAINT SPECIFICATION AND COLOR, SEE CONTRACT SPECIFICATIONS.
3. DRAFT MARKS SHALL BE ARABIC NUMERALS 4" HIGH MIN. THE BOTTOM OF THE FIGURES SHALL CORRESPOND TO MULTIPLES OF 1 FOOT OF DRAFT.
4. DRAFT MARKS SHALL BE MADE OF 1/4" STEEL, CONTINUOUSLY WELDED IN PLACE ON EACH SIDE OF THE BOW AND STERN.
5. ALL WEIGHTS OF OFFICIAL NUMBERS SHALL BE ARABIC NUMERALS 1" HIGH AND MADE OF 1/4" STEEL, CONTINUOUSLY WELDED IN PLACE ON THE MAIN BEAM. FINAL LOCATION SHALL BE APPROVED BY THE INSPECTOR.
6. THE VESSEL'S HAULING PORT IS TO BE BLOCK LETTERS MADE OF 1/4" STEEL, CONTINUOUSLY WELDED IN PLACE ON THE STERN.
7. THE HAULING PORT SHALL BE PAINTED IN WHITE OR LIGHT BRASS BRONZE. IT SHALL BE PROVIDED AND INSTALLED AS DIRECTED BY THE INSPECTOR.
8. THE BUILDER'S DATA PLATE SHALL CONTAIN THE VESSEL'S NAME, YEAR BUILT, OWNER'S NAME, BUILDER'S NAME, ARCHITECT'S NAME AND TWO (2) SERIAL NUMBERS.
9. THE VESSEL SHALL HAVE TWO (2) NAME BOARDS OF SUITABLE SIZE WITH LETTERS CUT-IN AND PAINTED.
10. THE NAME BOARDS SHALL BE A MINIMUM OF 3/4" THICK MANGANESE. THEY SHALL BE PROPERLY STAINED, SANDING AND VARNISHED FOR PROTECTION. THE NAME BOARDS SHALL BE MOUNTED ON BRIDGE DECK HAULING PORT AND STANDBARD.

DETAIL 5-D  
NAME OF SHIP  
SCALE 3/4"=1'-0"

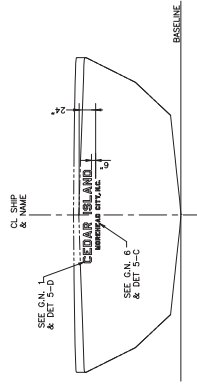


DETAIL 3-D  
NAME BOARDS  
SCALE 3/4"=1'-0"

DETAIL 5-C  
SCALE 1 1/2\"/>



SECTION 7-C  
HAULING PORT  
TRANSOM LUG FWD



ELEVATION 5-A  
OUTBOARD PROFILE

2	1. INCORP AS BUILT CANTS DTD 8-31-94	REV 10/94
1	1. INCORP OWNER'S CANTS DTD 5-30-94	SF 8/94
No.	REVISIONS	BY DATE

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MARKING INFORMATION  
SOUND CLASS FERRY

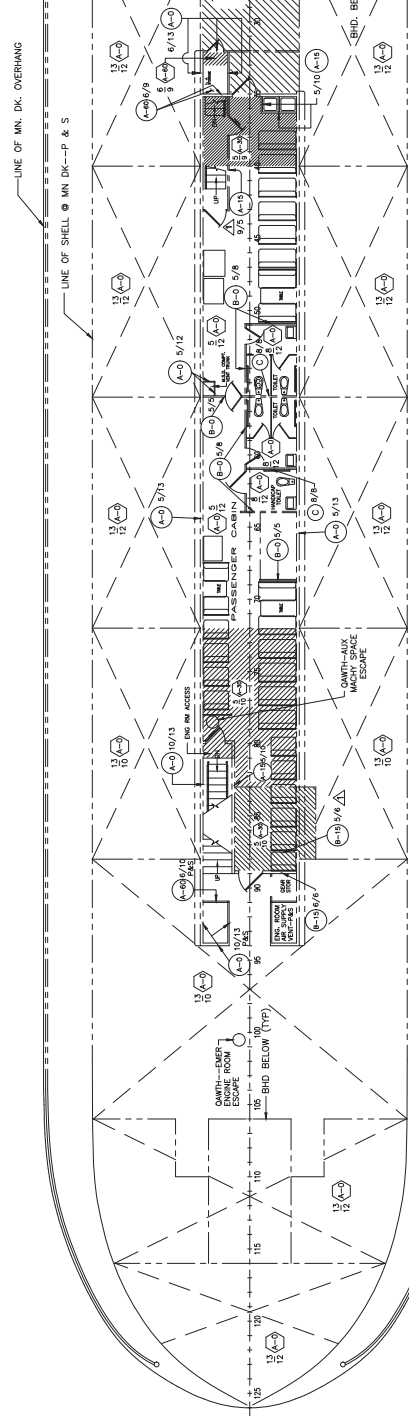
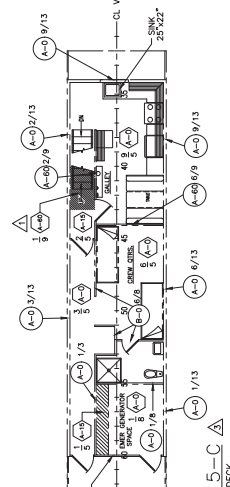
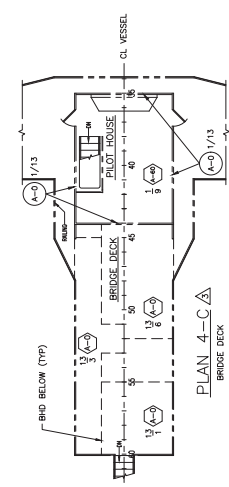
PROJECT NO.	DATE	SCALE	SHEET NO.
NC 240-0027	11/94	1/4\"/>	

**GENERAL NOTES**

1. THIS DRAWING SHALL BE IN ACCORDANCE WITH U.S.C.G. REGULATIONS.
2. ALL INTERIOR FINISHES SHALL BE NON-FLAMMABLE AND SHALL MEET U.S.C.G. 164.009 REQUIREMENTS. ALL INTERIOR SURFACES SHALL BE FINISHED WITH AN INCOMBUSTIBLE BOARD TYPE WITH A MINIMUM 7 LB./CU. FT. DENSITY TO MEET U.S.C.G. 164.007 REQUIREMENTS.
3. ALL THERMAL INSULATION SHALL BE CLOTH FIBER, INCOMBUSTIBLE, NON-FLAMMABLE, AND SHALL MEET U.S.C.G. 164.009 REQUIREMENTS.
4. ALL INSULATION SHALL BE INSTALLED ON WELDED STEEL PINS AND IN ALL SPACES WITH WELDED PINS SHALL BE COPIED. ALL WELDED PINS SHALL BE COPIED.
5. ALL INSULATION SHALL BE TARED AND SEALED AT ALL JOINTS WITH INCOMBUSTIBLE FIBERGLASS MATERIAL.
6. ALL BULKHEAD AND CEILING PANELS SHALL BE "WILSONART-900" SERIES PRESSURE LAMINATE CONFORMING TO U.S.C.G. 164.012/92/90 REQUIREMENTS. ALL BULKHEAD AND CEILING PANELS SHALL BE INSTALLED IN ACCORDANCE WITH U.S.C.G./N.A.V.I.C. 6-40.
7. ALL PASSENGER AND CREW SPACES ARE CONSIDERED AS HAVING INCOMBUSTIBLE VENEERS AND TRIM AND FIRE RESISTANT FURNISHINGS.
8. ALL PASSENGER AND CREW SPACES SHALL BE CLASSIFIED TO THE LATEST REVISION OF THE CLASSIFICATION TO WHICH IT IS ATTACHED. SEE 48 CFR 72.05.
9. INTERIOR DECK COVERING SHALL NOT EXCEED 3/8 INCH IN THICKNESS.

**DESIGNATION KEY**

- (A-0) = DECK DESIGNATION = 13 OVER
- (A-0) = DECK DESIGNATION = 12 OVER
- (A-0) = DECK DESIGNATION = 9/13 TO THIS SPACE ABOVE
- (A-0) = DECK DESIGNATION = 9/13 TO THIS SPACE BELOW



**PLAN 5-A**  
MAIN DECK  
(MAIN VERTICAL ZONE DECK)

NO.	REVISIONS	BY	DATE
1	ISSUED FOR CONSTRUCTION	JAS	10/1/78
2	REVISED TO REFLECT CHANGES	JAS	10/1/78
3	REVISED TO REFLECT CHANGES	JAS	10/1/78
4	REVISED TO REFLECT CHANGES	JAS	10/1/78
5	REVISED TO REFLECT CHANGES	JAS	10/1/78
6	REVISED TO REFLECT CHANGES	JAS	10/1/78
7	REVISED TO REFLECT CHANGES	JAS	10/1/78
8	REVISED TO REFLECT CHANGES	JAS	10/1/78
9	REVISED TO REFLECT CHANGES	JAS	10/1/78
10	REVISED TO REFLECT CHANGES	JAS	10/1/78

NO.	REVISIONS	BY	DATE
1	ISSUED FOR CONSTRUCTION	JAS	10/1/78
2	REVISED TO REFLECT CHANGES	JAS	10/1/78
3	REVISED TO REFLECT CHANGES	JAS	10/1/78
4	REVISED TO REFLECT CHANGES	JAS	10/1/78
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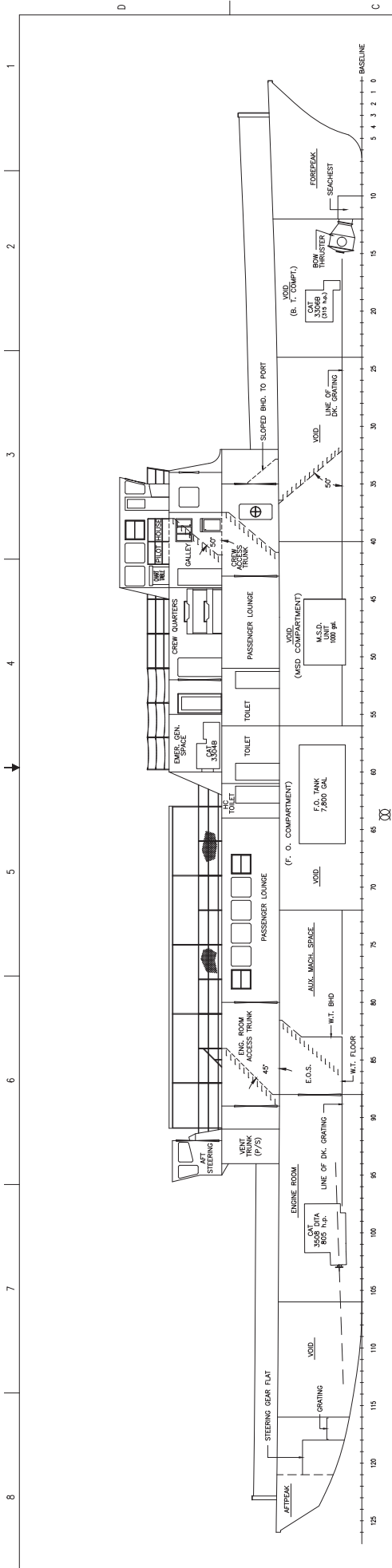
NO.	REVISIONS	BY	DATE
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NO.	REVISIONS	BY	DATE
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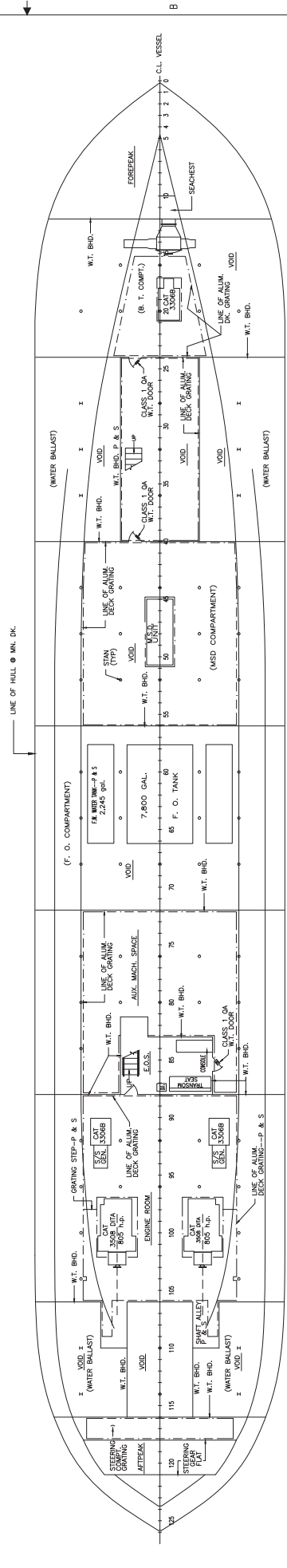
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2	REVISED TO REFLECT CHANGES	JAS	10/1/78
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NO.	REVISIONS	BY	DATE
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8	REVISED TO REFLECT CHANGES	JAS	10/1/78
9	REVISED TO REFLECT CHANGES	JAS	10/1/78
10	REVISED TO REFLECT CHANGES	JAS	10/1/78





INBOARD PROFILE A1:2.3



HOLD PLAN A1:1

No.	REVISIONS	BY	DATE
1	REVISION 1		
2	REVISION 2		

3. DELETED REV. 1.  
 2. REVISION 2: CHANGE: MOVING OF PASSENGER LOUNGE TO PORT SIDE. IN CALL TO IR 34. MSD UNIT ITEMS 1-3 PER AS BUILT MARK-UPS  
 2. ADDED RESERVATION & NOTE.  
 1. REVISED PER N.C. MARINE INC. FILED NC 240-0006

RESERVATION A1:2.3  
 \*\*RESERVED-RESERVE-BOW-DAWT-ASSEMBLY-  
 \*\*AND-LOCATION-

NOTE A1  
 1. THIS DRAWING WAS DEVELOPED FROM NORTH CAROLINA MARINE INC. DRAWING NUMBER NC-240-0006.

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 MARINE DIVISION

SOUND CLASS FERRY  
 INBOARD PROFILE  
 & HOLD

SCALE: 3/8" = 1'-0"  
 DRAWING NUMBER: NC-240-0006  
 SHEET: 1 OF 2

DATE: 10/11/11  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]



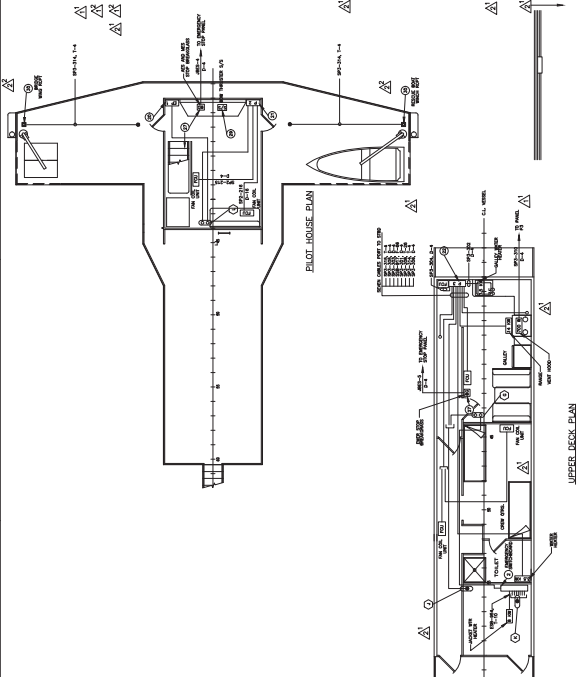




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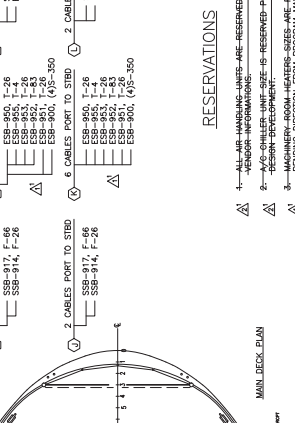
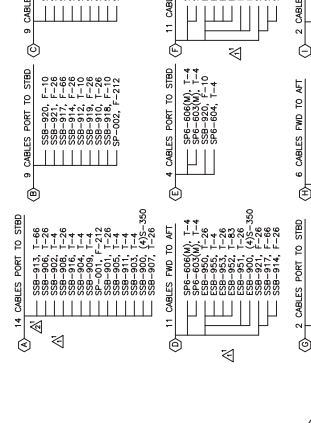
PARTS LIST

ITEM QTY	SIZE	DESCRIPTION	MANUFACTURER	PART NO.	REMARKS
1		MAIN SWITCHBOARD 208/120 VAC, 3-PHASE, 4-WIRE, 100 AMP, 15% OVERCURRENT PROTECTIVE 208 VAC, 1%.	MOORE	MOORE	
2		EMERGENCY SWITCHBOARD 208/120 VAC, 3-PHASE, 4-WIRE, 100 AMP, 15% OVERCURRENT PROTECTIVE 208 VAC, 1%.	MOORE	MOORE	
3		SHORE POWER SWITCH 208 VAC, 1%.	ITE OR ED		
4		SHORE POWER PLUS	RUSSELL & STOLL	RJ2044R	
5		SHORE POWER CABLE	RUSSELL & STOLL	JP2044R	
6	100'	SHORE POWER CABLE		4531/09455	
7		CONTROLLER EXHAUST FANS	SQUARE D		NOTES 3, 4, 5 AND 6
8		CONTROLLER SUPPLY FAN	SQUARE D		NOTES 3, 4, 5 AND 6
9		CONTROLLER BLURB PUMPS	SQUARE D		NOTES 3, 4, 5 AND 6
10		CONTROLLER STEEN TUBE FLUSH PUMP	SQUARE D		NOTES 3, 4, 5 AND 6
11		CONTROLLER AIR COMPRESSOR NO. 1	SQUARE D		NOTES 3, 4, 5 AND 6
12		CONTROLLER FRESH PUMP	SQUARE D		NOTES 3, 4, 5 AND 6
13		CONTROLLER CHILLED WATER PUMP	SQUARE D		NOTES 3, 4, 5 AND 6
14		CONTROLLER CONDENSER WATER PUMP	SQUARE D		NOTES 3, 4, 5 AND 6
15		CONTROLLER AIR MARKER VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
16		CONTROLLER BOW DAMP VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
17		CONTROLLER BOW THRUSTER VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
18		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
19		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
20		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
21		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
22		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
23		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
24		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
25		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
26		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
27		CONTROLLER ENGINE ROOM VENT FAN	SQUARE D		NOTES 3, 4, 5 AND 6
28		EMERGENCY STOP PANEL	ITE OR ED		
29		START/STOP PUSHBUTTON STATION	ITE OR ED		
30		WATERLOGIC 2 POLE, 3 WIRE	ITE OR ED		
31		VARIABLE FREQUENCY DRIVE 208 VAC, 1 1/2 HP, 100 AMP, 15% OVERCURRENT PROTECTIVE 208 VAC, 1 1/2 HP.	ITE OR ED		
32		VARIABLE FREQUENCY DRIVE 208 VAC, 1 1/2 HP, 100 AMP, 15% OVERCURRENT PROTECTIVE 208 VAC, 1 1/2 HP.	ITE OR ED		



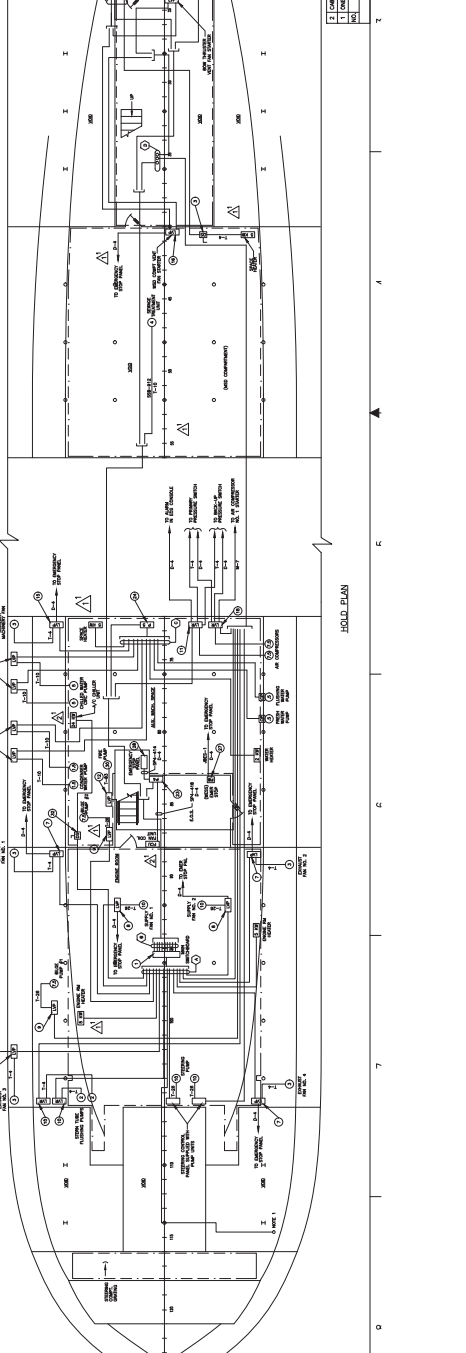
GENERAL NOTES:

- ALL CABLE ROUTED TO EQUIPMENT MOUNTED EXTERIOR SHALL BE ROUTED IN 316 STAINLESS STEEL PIPE AND THROUGH STUFFING TUBE AT DECK PENETRATION.
- ALL CABLE SHALL BE 7/10 TYPE UNLESS OTHERWISE STATED.
- ALL MOTOR STARTERS SHALL BE SQUARE D TYPE SDW-21.
- ALL MOTORS OVER 15 HORSE POWER SHALL BE PROVIDED WITH REDUCED VOLTAGE STARTERS AND AUTO TRANSFORMER TAPPING 50, 65 AND 80 PERCENT TAPS.
- ALL MOTOR CONTROLLERS SHALL BE PROVIDED WITH MOTOR OVERLOADS IN ACCORDANCE WITH 430.46 OR HIGH INDUCTANCE.
- ALL ELECTRICAL CONTROL DEVICES IN ACCORDANCE WITH SYMBOL DESCRIPTION AS SHOWN ON REFERENCE 1.
- ALL CABLE TO BE ROUTED IN CABLEWAY AS MUCH AS POSSIBLE. CABLEWAY SHALL BE IN ACCORDANCE WITH REFERENCE 2.
- ALL ELECTRICAL EQUIPMENT SHALL BE MOUNTED WITH VENTS AT 45 DEGREE ANGLE. VENTS SHALL BE IDENTIFIED ON ALL ELECTRICAL EQUIPMENT. VENTS AT SUFFICIENT INTERVALS TO ALLOW READY IDENTIFICATION OF CIRCUITS.
- ALL ELECTRICAL SWITCHGEAR AND MOTOR CONTROLLERS ARE DETAILED ON REFERENCE 1 AND SHOULD BE SUPPLIED IN ACCORDANCE WITH DETAILS SHOWN ON REFERENCE 1.
- START/STOP PUSHBUTTON STATIONS SHALL HAVE GREEN RUN INDICATION LIGHT.



RESERVATIONS

- ALL AIR HANDLING UNITS ARE RESERVED FOR FISHING.
- ALL AIR HANDLING UNITS ARE RESERVED FOR FISHING.
- ALL AIR HANDLING UNITS ARE RESERVED FOR FISHING.



No.	REVISIONS	BY	DATE
3	1. CORRECTED DRAWING FOR AIR-BLAST WIND-UP	EDM	10/2/78
2	1. UNCORRECTED DRAWING FOR AIR-BLAST WIND-UP	EDM	10/2/78
1	1. REVISED DRAWING FOR OWNER COMMENT IN LETTER OF 7/27/78	EDM	10/2/78

DATE	SCALE	PROJECT NO.	DATE
10/2/78	1/8" = 1'-0"	NC-240-0039	10/2/78

DATE	SCALE	PROJECT NO.	DATE
10/2/78	1/8" = 1'-0"	NC-240-0039	10/2/78

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DATE	SCALE	PROJECT NO.	DATE
10/2/78	1/8" = 1'-0"	NC-240-0039	10/2/78

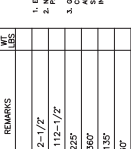
DATE	SCALE	PROJECT NO.	DATE
10/2/78	1/8" = 1'-0"	NC-240-0039	10/2/78



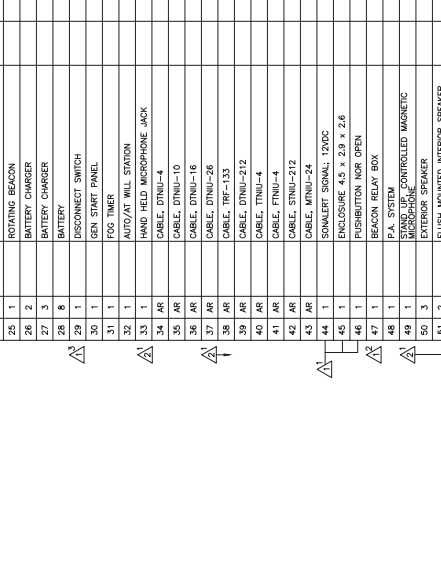


ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	MANUFACTURER	PART NO.	REMARKS	WT. LABEL
1	1		NAV LIGHTING PANEL	BRONZE	UL 1104	PENKO	8016-8016		
2	1		PORT SIDE LIGHT	BRONZE	UL 1104	PENKO	1164 RED BLB RED 112-1/2"		
3	1		STBD SIDE LIGHT	BRONZE	UL 1104	PENKO	1164 RED BLB WHITE 112-1/2"		
4	2		MASTHEAD LIGHTS	BRONZE	UL 1104	PENKO	1164 EOD BLB WHITE 125"		
5	2		ANCHOR LIGHTS	BRONZE	UL 1104	PENKO	1164 EOD BLB WHITE 162"		
6	1		STERN LIGHT	BRONZE	UL 1104	PENKO	1164 EOD BLB WHITE 135"		
7	2		NOT UNDER COMMAND LIGHTS	BRONZE	UL 1104	PENKO	1170 RED BLB RED 162"		
8	7		DUPLEX RECEPTACLE, WRTT, 2P3W	BRONZE	UL 20,98,498	PALLIUM	25246-125	15 AMP, SURFACE MOUNT	
9	3		SINGLE RECEPTACLE, WRTT, 2P3W	BRONZE	UL 20,98,498	PALLIUM	25238-125	15 AMP, SURFACE MOUNT	
10	16		METAL PLUG	BRONZE	UL 20,98,498	PALLIUM	25238-125	USE WITH 1/8" & 9"	
11	3		SOUND POWER PHONE			HOSE-MCGANN	SP-193		
12	1		SOUND POWER PHONE			HOSE-MCGANN	SU-193		
13	1		SOUND POWER PHONE			HOSE-MCGANN	SU-193		
14	2		SOUND POWER PHONE			HOSE-MCGANN	WT-198		
15	1		HEAD/CHEST SET			HOSE-MCGANN	33D		
16	1		PLUG			HOSE-MCGANN	529		
17	1		JACK BOX			HOSE-MCGANN	15-A		
18	2		SOUND POWER PHONE DISCONNECT SWITCH			HOSE-MCGANN	241-10F		
19	2		CONNECTION BOX	ALUMINUM	UL MARINE	PALLIUM	881A-120		
20	1		ROTATING BEACON			HOSE-MCGANN	870-126A	120 VAC AMBER	
21	1		GENERAL ALARM CONTACT MAKER			HENSCHEL	90-017 BF	PILOT HOUSE	
22	1		GENERAL ALARM CONTACT MAKER			HENSCHEL	90-017 B	EMERGENCY GENERATOR RM	
23	1		GENERAL ALARM PANEL			J-BOX	JR-DAT2E	14 CIRCUIT	
24	12		GENERAL ALARM BELL			HENSCHEL	20-163	TYPE 8	
25	1		ROTATING BEACON			HOSE-MCGANN	870-126A	120 VAC RED	
26	2		BATTERY CHARGER			LAMARCHE	M1-10-12V-D	GEN ALARM/EMER GEN	
27	3		BATTERY CHARGER			LAMARCHE	M1-20-24V-D	SS GEN/B.T.	
28	8		BATTERY			DELOO	761	W/BOXES	
29	1		DISCONNECT SWITCH			SIEMENS	NR321		
30	1		GEN START PANEL			Q-TECH		NOTE 3	
31	1		FOO TIMER			KAHLENBERG	M-411		
32	1		AUTO/AT WILL STATION			KAHLENBERG	M-40A		
33	1		HAND HELD MICROPHONE JACK			SWITCH GRANT	AKM	USED WITH ITEM NO. 32	
34	AR		CABLE, DTNHU-4			GAUBERT OR EGDTNHU-4		IEEE-45/USCG APPROVED	
35	AR		CABLE, DTNHU-10			GAUBERT OR EGDTNHU-10		IEEE-45/USCG APPROVED	
36	AR		CABLE, DTNHU-16			GAUBERT OR EGDTNHU-16		IEEE-45/USCG APPROVED	
37	AR		CABLE, DTNHU-26			GAUBERT OR EGDTNHU-26		IEEE-45/USCG APPROVED	
38	AR		CABLE, TRF-133			GAUBERT OR EGTRF-133		IEEE-45/USCG APPROVED	
39	AR		CABLE, DTNHU-212			GAUBERT OR EGDTNHU-212		IEEE-45/USCG APPROVED	
40	AR		CABLE, DTNHU-4			GAUBERT OR EGDTNHU-4		IEEE-45/USCG APPROVED	
41	AR		CABLE, DTNHU-4			GAUBERT OR EGDTNHU-4		IEEE-45/USCG APPROVED	
42	AR		CABLE, DTNHU-212			GAUBERT OR EGDTNHU-212		IEEE-45/USCG APPROVED	
43	AR		CABLE, WTRHU-24			GAUBERT OR EGWTRHU-24		IEEE-49/USCG APPROVED	
44	1		SIGNALER SIGNAL, 12VDC			NEWARK	847286	TYPE SC008L, STYLE C	
45	1		ENCLOSURE, 4.5 X 2.9 X 2.6			NOVAMAN OR EDLDT181		DRILL FOR ITEM 44	
46	1		POSITIONING NOR OPEN			SQUARE D OR ED		MAINTAINED CONTACTS	
47	1		BEACON RELAY BOX			T-BOX	120R-12	FOR GENERAL ALARM SYS	
48	1		P.A. SYSTEM			SHURE BROTHERS	NC 4449		
49	3		MICROPHONE, CONTROLLED MAGNETIC			SPECO	SPC-40RP		
50	3		EXTERIOR SPEAKER			SPECO	SB10T10FW		
51	2		FLUSH MOUNTED INTERIOR SPEAKER			ASTATIC	736L		
52	1		HAND HELD MICROPHONE			ASTATIC	736L		

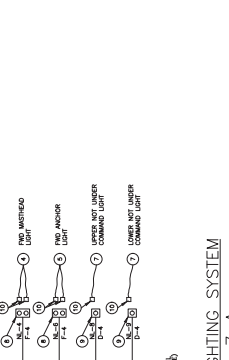
GENERAL NOTES:  
 1. EXACT LOCATION OF MOUNTING LIGHTS ARE SHOWN ON REFERENCE 2.  
 2. PANEL DETAILS MUST BE SUBMITTED FOR APPROVAL.  
 3. CONDUIT SHALL BE SCHEDULED SURFACE MOUNT, MIN. 12 WPL, 1/2" RIGID. ALL WIRING TO TERMINAL BLOCKS WITH PROTECTIVE HOUSING TO BE MOUNTED AS SHOWN. IN PLACE OF PANEL PANEL SHALL HAVE TOP AND BOTTOM PANEL ENTRY.



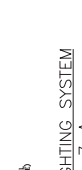
AIR HORN SYSTEM  
DETAIL 7-C



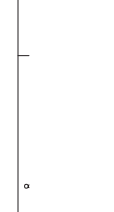
NAVIGATION LIGHTING SYSTEM  
DETAIL 7-A  
(SEE NOTE 9)



EMERGENCY GENERATOR START SYSTEM  
DETAIL 4-B



BOW THRUSTER START SYSTEM  
DETAIL 4-A



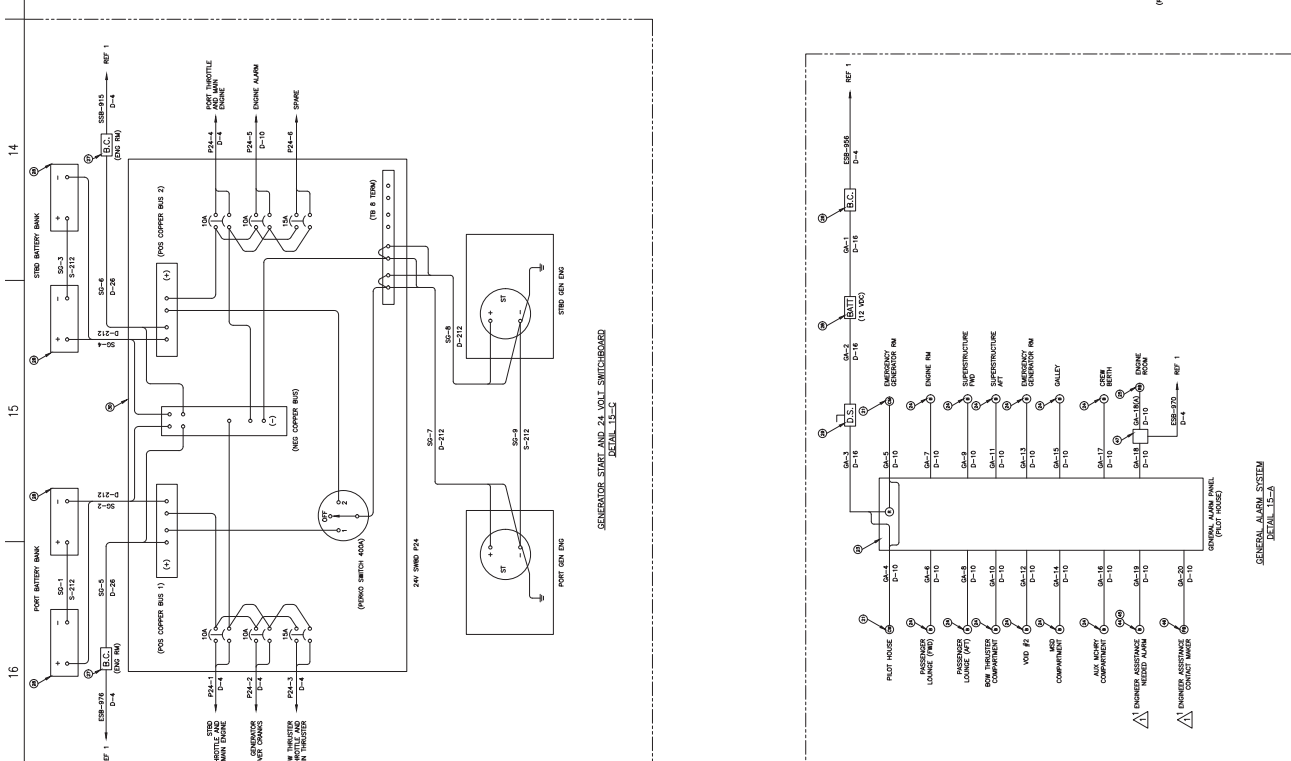
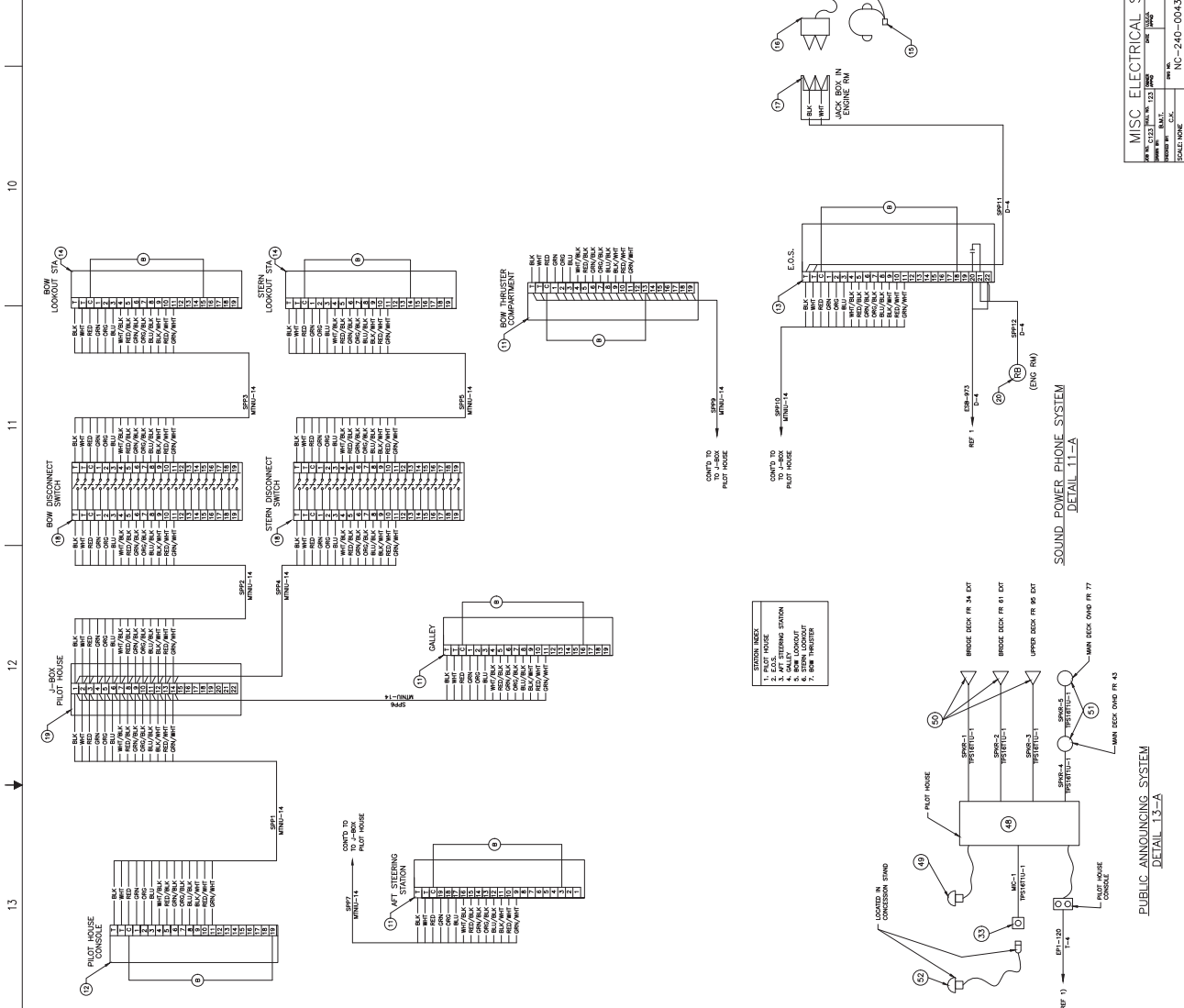
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 SOUND CLASS FERRY  
 MISCELLANEOUS ELECTRICAL SYSTEMS

Project No. NC-240-0043  
 Sheet No. 1 of 1

DATE: 10/1/88  
 DRAWN BY: J. L. BROWN  
 CHECKED BY: J. L. BROWN  
 APPROVED BY: J. L. BROWN

REVISIONS:  
 No. 1. REVISION: REVISIONS  
 No. 2. REVISION: REVISIONS





MISC ELECTRICAL SYSTEMS			
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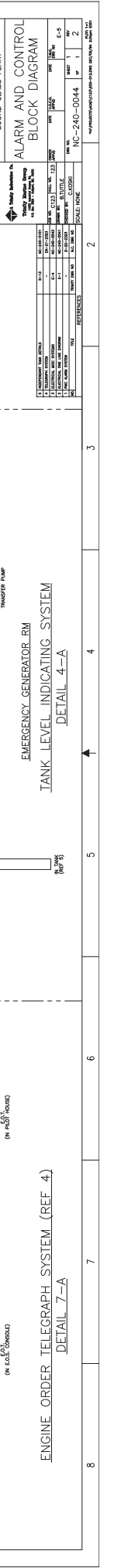
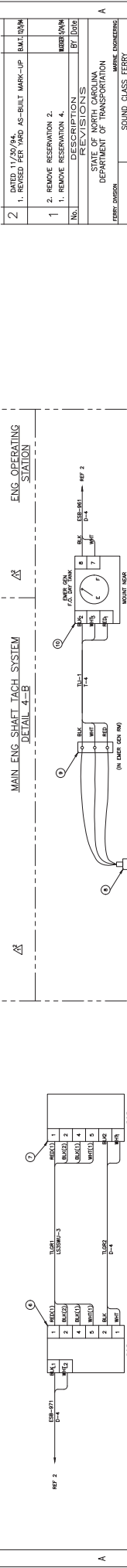
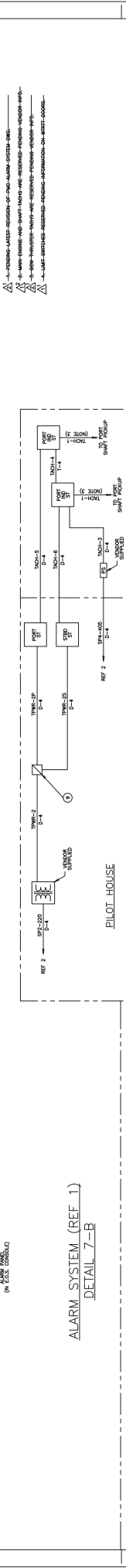
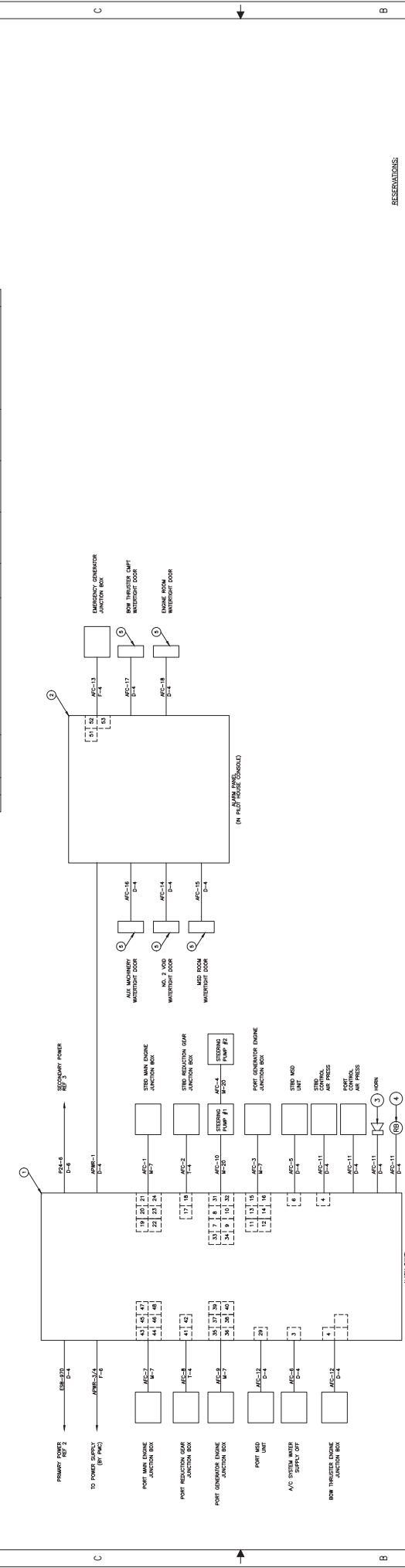
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D C B A

GENERAL NOTES

1. TO BE MAINTAINED IN THIS STATE, THESE ALARM PANELS CORRESPOND TO THE ORIGINAL DESIGN AND SHALL BE MAINTAINED AS SUCH.
2. THE ALARM PANELS ARE TO BE MAINTAINED IN THIS STATE AND SHALL BE MAINTAINED AS SUCH.
3. THE ALARM PANELS ARE TO BE MAINTAINED IN THIS STATE AND SHALL BE MAINTAINED AS SUCH.

QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	MANUFACTURER	PART NO.	REMARKS
1		ALARM PANEL	PKC				(E.O.S.)
2		ALARM HORN	PKC			8540-1312-2	(PILOT HOUSE)
3		ALARM HORN	PKC			8540-1402-2R	
4		ROTATING BEACON	PKC			9007-002D	BLUE
5		LIMIT SWITCH	PKC			8201-2110	
6		E.O.T. ENGINE RM	PKC			8201-2101	
7		E.O.T. PILOT HOUSE	PKC			8201-2101	
8		LEVEL SENSOR	GENS			AM 800	TYPE 3 W/BUNA-N FLOAT
9		CONNECTION BOX	PAULHIN			571 A	
10		ANALOG METER RECEIVER STATION	GENS			72515-0124	115 VAC, 50/60 HZ, 1/2" DIA. METAL CASE FOR 1" DIA. METAL PANEL
11	AR	CABLE DTNBU-4	GALBERT			DTNBU-4	IEEE-45
12	AR	CABLE DTNBU-6	GALBERT			DTNBU-6	IEEE-45
13	AR	CABLE FTNBU-4	GALBERT			FTNBU-4	IEEE-45
14	AR	CABLE FTNBU-4	GALBERT			FTNBU-4	IEEE-45
15	AR	CABLE MTNBU-7	GALBERT			MTNBU-7	IEEE-45
16	AR	CABLE MTNBU-20	GALBERT			MTNBU-20	IEEE-45



RESERVATIONS

- 1. TO BE MAINTAINED IN THIS STATE, THESE ALARM PANELS CORRESPOND TO THE ORIGINAL DESIGN AND SHALL BE MAINTAINED AS SUCH.
- 2. THE ALARM PANELS ARE TO BE MAINTAINED IN THIS STATE AND SHALL BE MAINTAINED AS SUCH.
- 3. THE ALARM PANELS ARE TO BE MAINTAINED IN THIS STATE AND SHALL BE MAINTAINED AS SUCH.

NO.	DESCRIPTION	DATE	BY
1	REMOVE RESERVATION 2.		
2	REMOVE RESERVATION 4.		

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
MARINE DIVISION

ALARM AND CONTROL BLOCK DIAGRAM

NC-240-0044

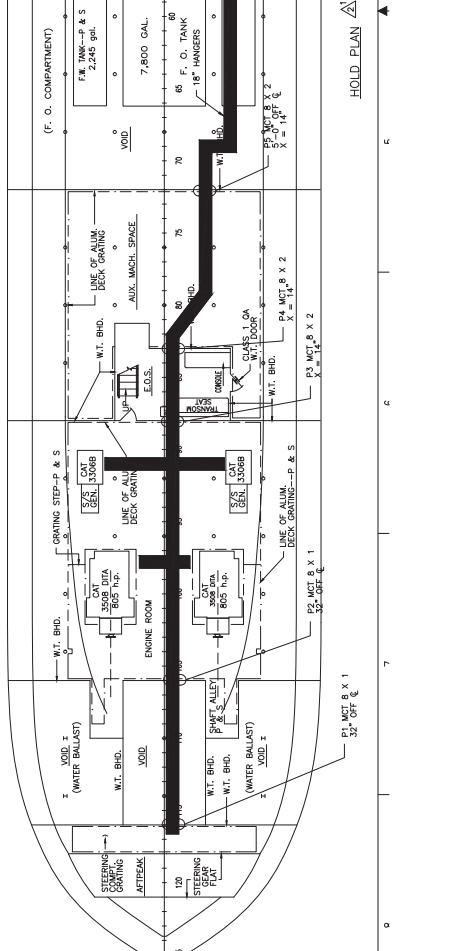
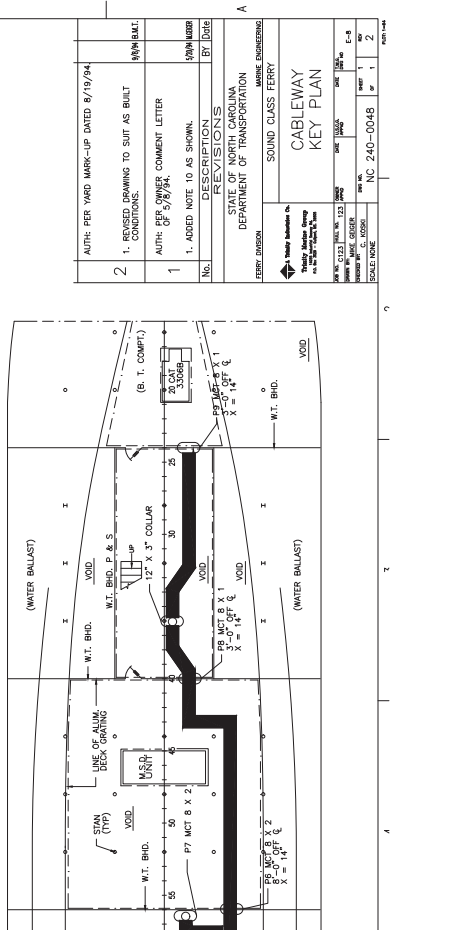
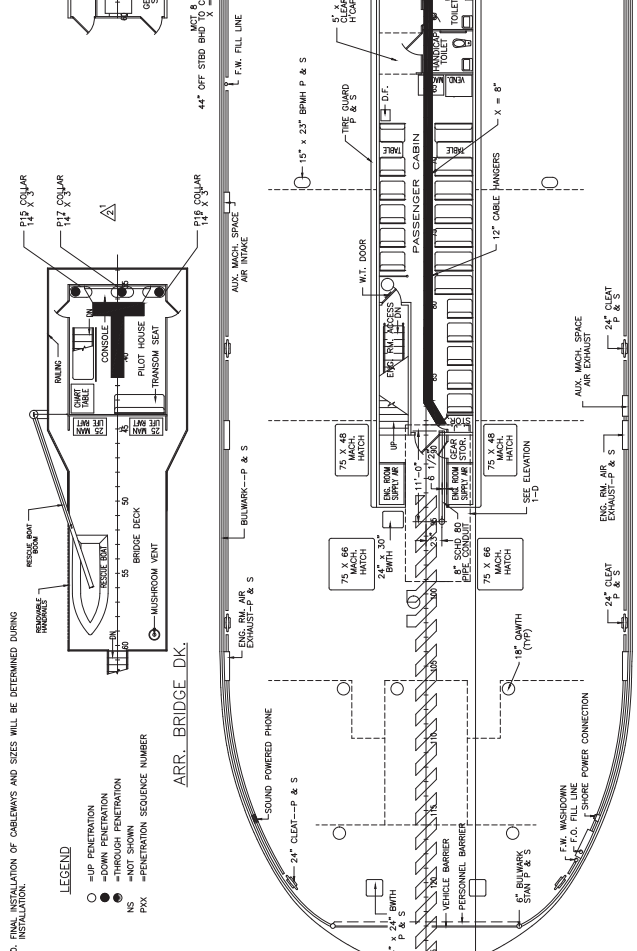
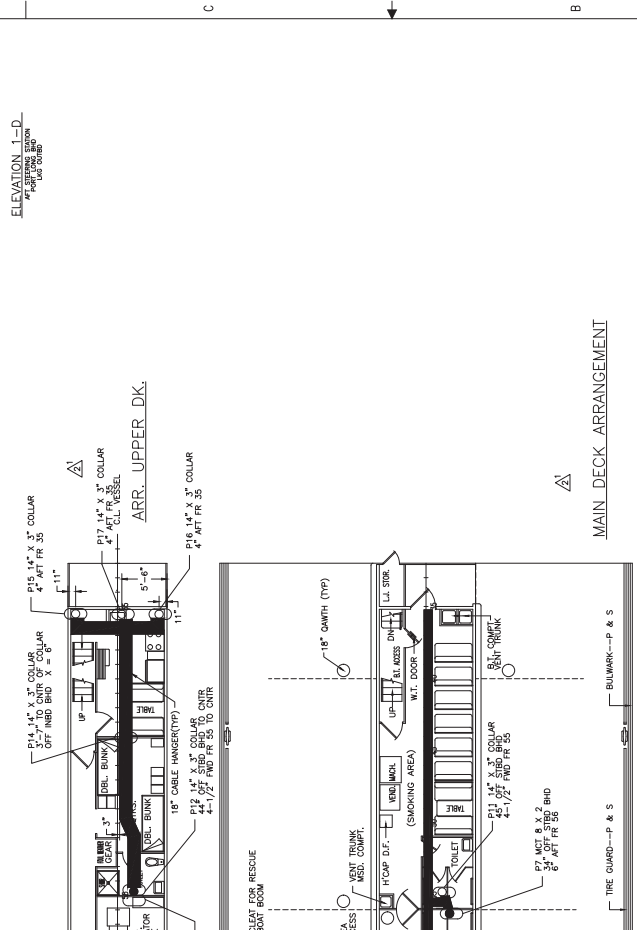
**GENERAL NOTES:**

1. ALL CABLES SHALL BE ROUTED IN CABLEWAY AS MUCH AS POSSIBLE.
2. ALL CABLE HANGERS SHALL BE SPACED NO GREATER THAN TWO FEET APART.
3. CABLE HANGERS SHALL BE KEPT AS CLOSE TO STEEL OVERHANG AS POSSIBLE. THROUGH THE BEAM IS ACCEPTABLE.
4. JOINER VENDOR SHALL BOX-IN ALL VEHICLE EXPOSED CABLE RUNS. (E. AT P7)
5. ALL CABLES REQUIRED TO BE ROUTED TO OVERHEAD OF PILOT HOUSE SHALL BE ROUTED BETWEEN WINDOWS WHERE PRACTICAL.
6. ALL CABLEWAYS ABOVE HOLD LEVEL SHALL BE ABOVE JOINER CEILING.
7. IF REQUIRED, TWO TIER CABLEWAY MAY BE USED.
8. FOR SMALLER CABLEWAY IN BECK HOUSE, (ITEM 10) 12" HANGERS MAY BE USED.
9. ALL CABLES ROUTED EXTERIOR TO BECK HOUSE SHALL BE INSTALLED IN ACCORDANCE WITH SPEC REQUIREMENTS.
10. FINAL INSTALLATION OF CABLEWAYS AND SIZES WILL BE DETERMINED DURING RECONSTRUCTION.

- LEGEND**
- UP PENETRATION
  - DOWN PENETRATION
  - THROUGH PENETRATION
  - NS NOT SHOWN
  - PKX - PENETRATION SEQUENCE NUMBER

**PARTS LIST**

NO.	QTY.	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	MANUFACTURER	PART NO.	REMARKS
1	5	8 X 1	MKT	ROX	S-8 X 1		TYPE S	
2	5	8 X 2	MKT	ROX	S-8 X 2		TYPE S	
3	AR	14 X 3	FLAT OVAL COLLAR	STEEL				FOR 8 MCT'S
4	AR	14 X 3	TOP PACKING	ROX				FOR 8 MCT'S
5	AR	14 X 3	COMPRESSION PLATE	ROX				FOR 8 MCT'S
6	AR	14 X 3	STAY PLATE	ROX				PURCHASE AS NEEDED
7	AR	18"	MODULES	R T & D	1-14			CUT TO FIT
8	AR	18"	HANGER DOWNCOMER	R T & D	R-8			2 PER HANGER
9	AR	12"	CABLE HANGER	R T & D	R-6			2 PER HANGER
10	AR	12"	CABLE HANGER	R T & D	R-6			2 PER HANGER



**REVISIONS**

No.	DATE	BY	DESCRIPTION
1	8/2/94	WMB/ML	1. REVISION DRAWING TO SUIT AS BUILT CONDITIONS.
2	8/19/94	WMB/ML	AUTH: PER WARD MARK-UP DATED 8/19/94.

**REVISIONS**

No.	DATE	BY	DESCRIPTION
1	8/2/94	WMB/ML	1. ADDED NOTE TO AS SHOWN.

**STATE OF NORTH CAROLINA**  
DEPARTMENT OF TRANSPORTATION  
MARINE DIVISION

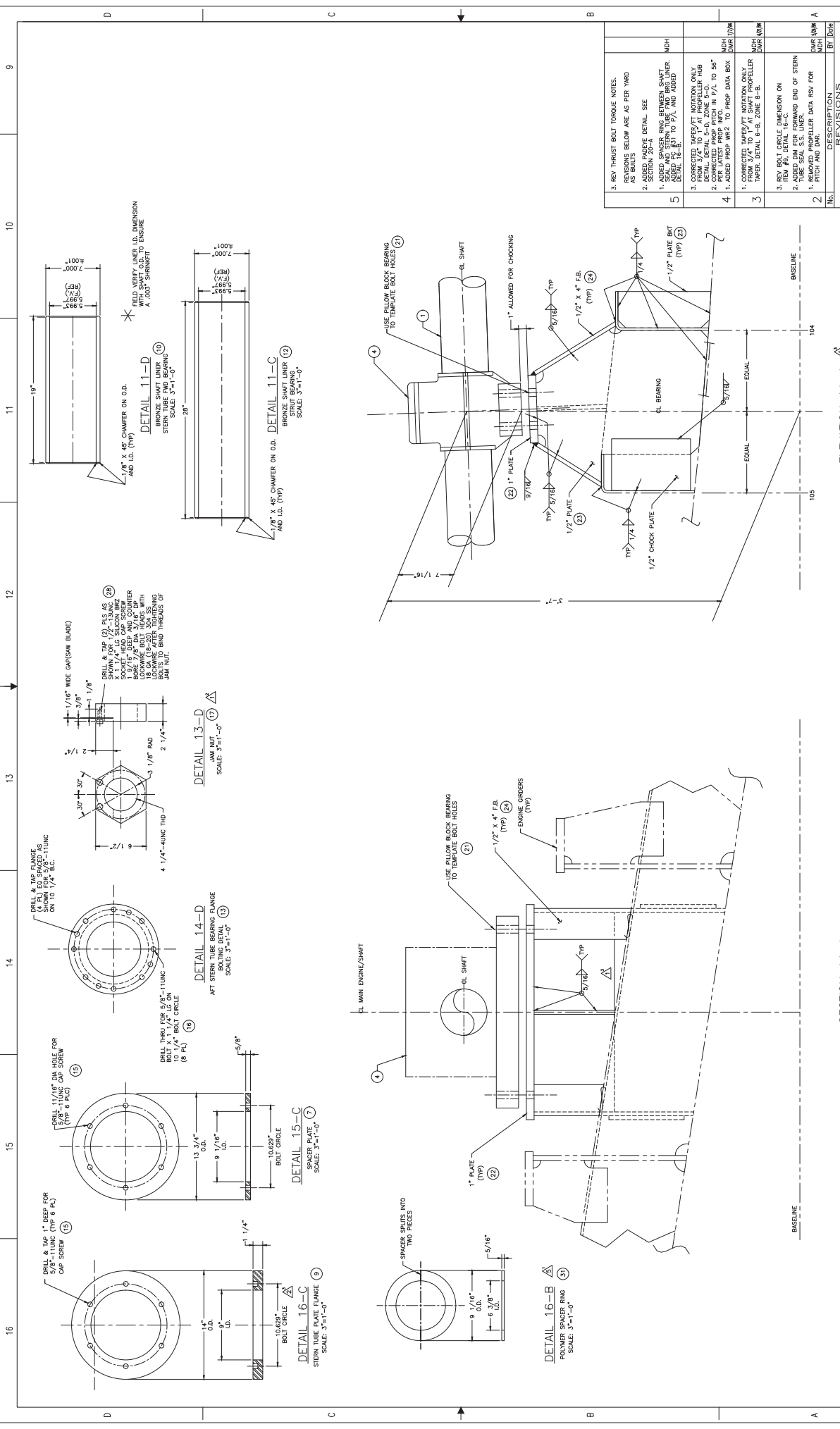
**PROJECT INFORMATION**

PROJECT NO.	NC 240-0048
SCALE	AS SHOWN
DATE	8/2/94
BY	WMB/ML
CHKD	WMB/ML
APP'D	WMB/ML
DATE	8/2/94

**CABLEWAY KEY PLAN**

**SOUND CLASS TERRY**





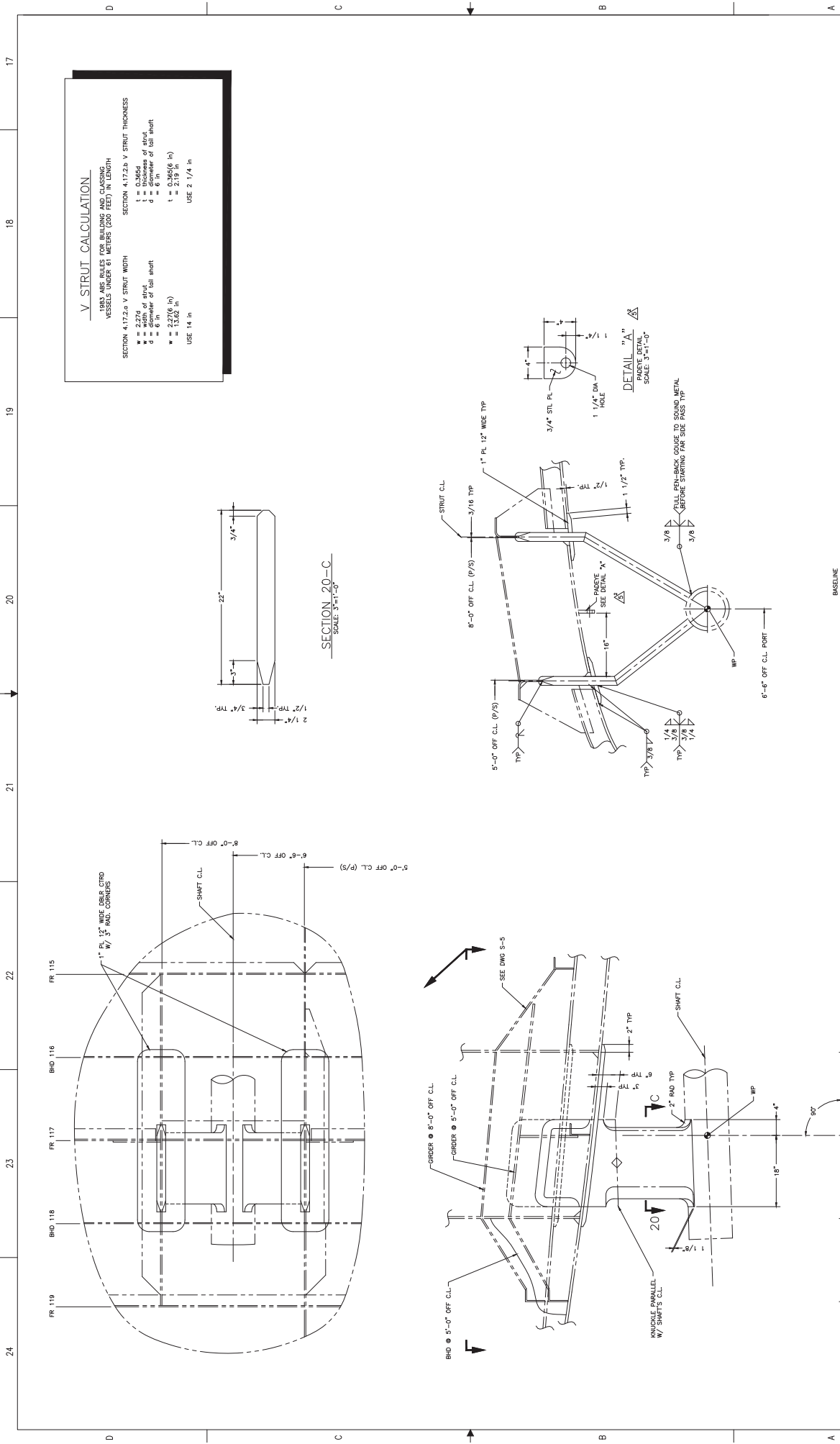
No.	DESCRIPTION	BY	DATE
1	REVISIONS BELOW ARE AS PER YARD AS BUILTS		
2	SECTION 11-11-D DETAIL SEE		
3	REV. THRUST BOLT TORQUE NOTES.		
4	1. CORRECTED TAPER/FIT NOTATION ONLY FROM 1/4" TO 1/4" AT SHFT PROPELLER TAPER. DETAIL 6-B, ZONE B-B.		
5	1. ADDED PROP WR2 TO PROP DATA BOX		
	2. CORRECTED PROP PITCH IN P/A TO 58"		
	3. CORRECTED TAPER/FIT NOTATION ONLY DETAIL 6-B, ZONE B-B.		
	4. ADDED STERN TUBE AND PROPELLER DETAIL 11-B		
	1. ADDED SPACER RING BETWEEN SHFT AND STERN TUBE AND PROPELLER DETAIL 11-B		
	2. SECTION 11-11-D DETAIL SEE		
	3. REV. THRUST BOLT TORQUE NOTES.		
	4. REVISIONS BELOW ARE AS PER YARD AS BUILTS		

SHAFTING, BEARINGS, STERN TUBES & STRUTS

SCALE: 3"=1'-0"

SECTION 14-A  
FR 105 PORT SIDE LAG PWD  
STBD SIDE OPP  
SCALE: 3"=1'-0"

ELEVATION 11-A  
SCALE: 3"=1'-0"



**V STRUT CALCULATION**  
 USE THESE RULES FOR BUILDING AND CLASSING VESSELS UNDER 61 METERS (200 FEET) IN LENGTH

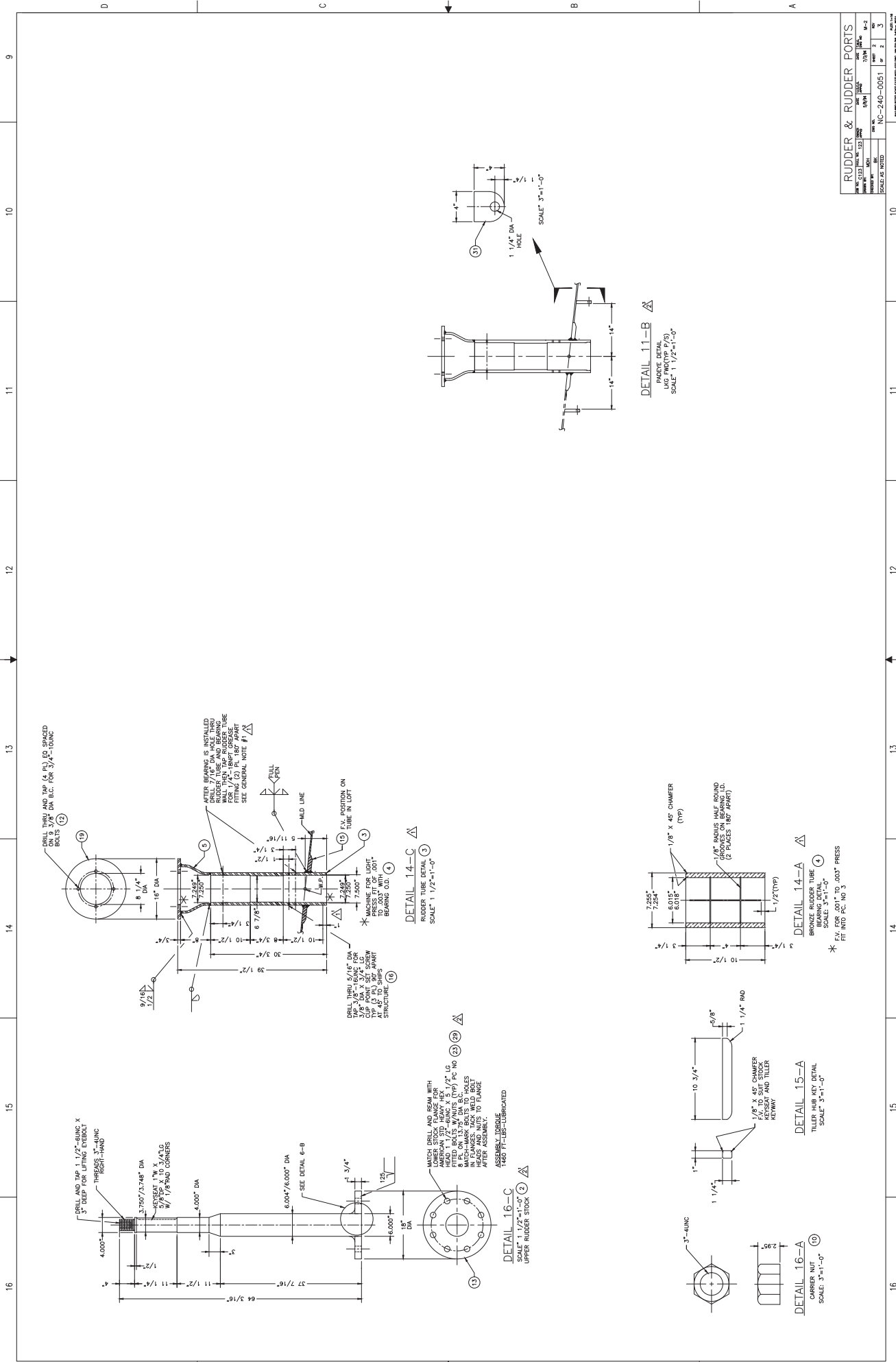
SECTION 4.17.2.a V STRUT WIDTH  
 $w =$  width of strut  
 $d =$  diameter of foil shaft  
 $w = 2.27(6 \text{ ft}) = 13.62 \text{ in}$   
 USE 14 in

SECTION 4.17.2.b V STRUT THICKNESS  
 $t =$  thickness of strut  
 $d =$  diameter of foil shaft  
 $t = 0.345(6 \text{ ft}) = 2.07 \text{ in}$   
 USE 2 1/4 in

SHAFTING BEARING, STERN TUBES & STRUTS		DATE	SCALE	NO.
REV. NO.	DATE	SCALE	NO.	
1				
2				
3				
4				
5				

SCALE AS NOTED





REVISIONS		DATE		BY		CHK		APP	
NO.	DESCRIPTION	DATE	BY	CHK	APP	NO.	DESCRIPTION	DATE	BY
1	ISSUED					1	ISSUED		
2						2			
3						3			

SCALE: AS NOTED

**RUDDER & RUDDER PORTS**

PROJECT NO. NC-240-0051

DATE: 11/11/10

SCALE: 1/2" = 1'-0"

**DETAIL 11-B**

RUDDER TUBE DETAIL

SCALE: 3" = 1'-0"

**DETAIL 14-C**

RUDDER TUBE DETAIL

SCALE: 1 1/2" = 1'-0"

**DETAIL 14-A**

BRASS BEARING DETAIL

SCALE: 3" = 1'-0"

\* F.V. FOR .001" TO .003" PRESS FIT INTO PC NO. 3

**DETAIL 15-A**

TITLER HUB KEY DETAIL

SCALE: 3" = 1'-0"

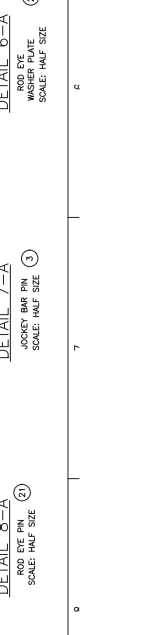
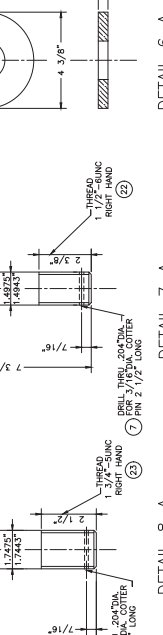
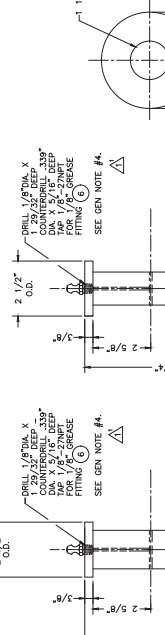
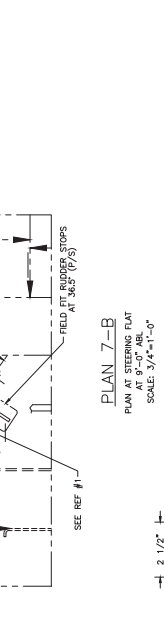
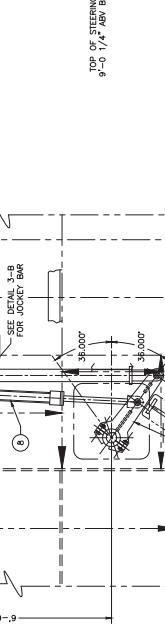
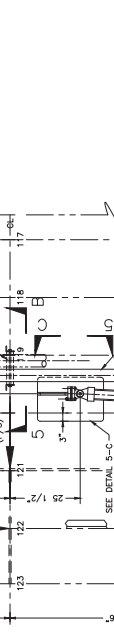
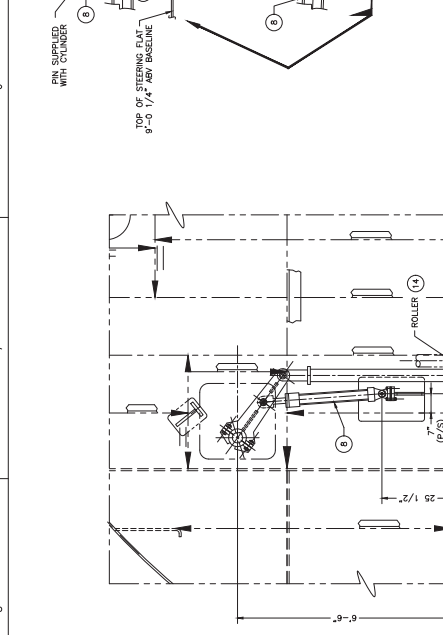
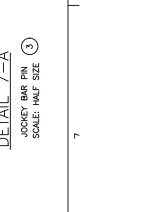
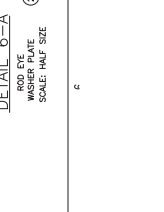
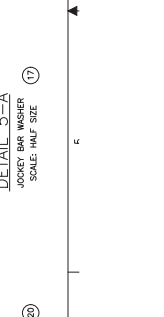
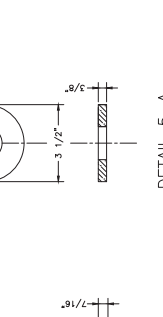
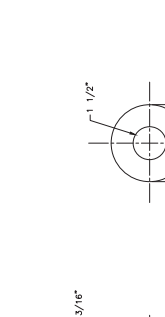
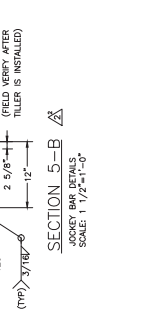
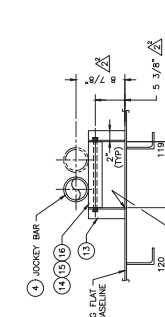
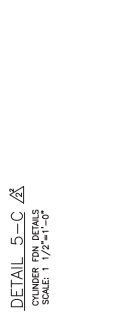
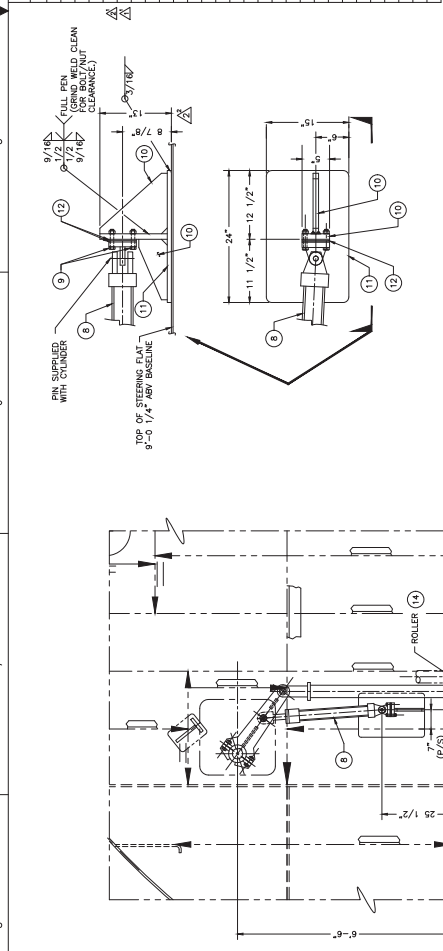
**DETAIL 16-C**

UPPER RUDDER STOCK

SCALE: 1 1/2" = 1'-0"



QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	GRADE	PART NO.	REMARKS	ISS. UNIT
1	1/2"	END PLATE	STL	ASE GR A				
2	1 1/2"	ROCKER BAR PLATE	STL	ASE GR A				
2	1 1/2"	ROCKER BAR PLATE	STL	ASE GR A				
2	1 1/2"	ROCKER BAR PLATE	STL	ASE GR A				
4	4"	ROCKER BAR	STL	ASE GR A				
6	4"	ROCKER BAR	STL	ASE GR A				
6	4"	ROCKER BAR	STL	ASE GR A				
7	4"	ROCKER BAR	STL	ASE GR A				
8	4"	ROCKER BAR	STL	ASE GR A				
9	4"	ROCKER BAR	STL	ASE GR A				
10	1"	THIN PLATE	STL	ASE GR A				
11	AR 3/4"	THIN PLATE	STL	ASE GR A				
12	AR 3/4"	THIN PLATE	STL	ASE GR A				
13	AR 3/4"	THIN PLATE	STL	ASE GR A				
14	AR 3/4"	THIN PLATE	STL	ASE GR A				
15	1 1/2"	ROCKER BAR ROLLER	BRZ	ASTM A499				
16	2	5/8"	STL	ASE GR A				
17	4	ROCKER BAR WASHER	BRZ	ASTM A499				
18	4	ROCKER BAR WASHER	BRZ	ASTM A499				
19	2	ROCKER BAR END BRG BUSHING	BRZ	ASTM A499				
20	2	ROCKER BAR END BRG WASHER	BRZ	ASTM A499				
21	1	3/4"	STL	ASE GR A				
22	1	3/4"	STL	ASE GR A				
23	1	3/4"	STL	ASE GR A				



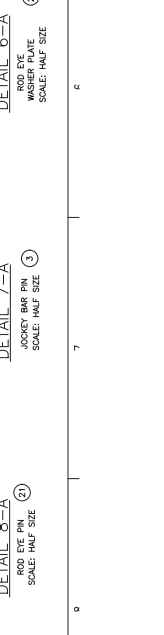
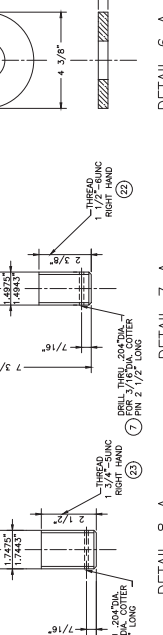
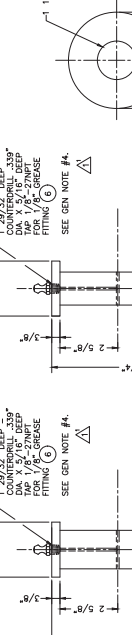
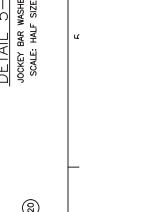
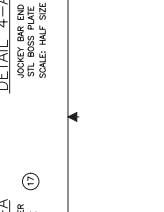
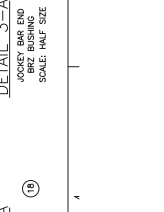
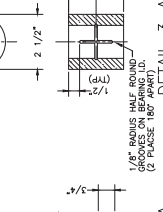
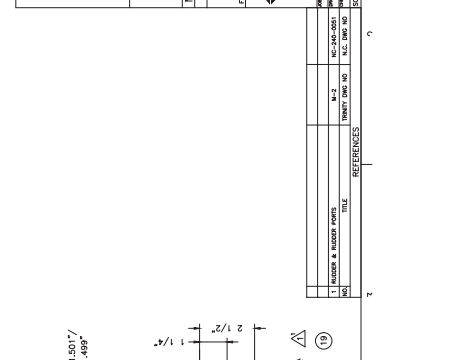
GENERAL NOTES:

- HYDRAULIC CYLINDER FOUNDATIONS, BRACKETS AND ADJACENT SHIPS STRUCTURE TO BE REINFORCED TO SUPPORT LOADS.
- FOR HYDRAULIC SYSTEM DETAILS REFER TO MATHEUS MARINE SYSTEM, INC. DIMS.
- SEE DRAWING M-2 FOR TILLER DETAILS.
- ALL DIMENSIONS ARE TO FACE UNLESS SHOWN OTHERWISE. DIMENSIONS TO FACE OF ALL PINS, BUSHINGS AND RODS SHALL BE INSTALLED IN ALL PINS, BUSHINGS AND RODS. LUBRICATION ACCESS POINTS SHALL BE ADJACENT TO MAIN DECK DECK JOINT PARTIES.

No.	DESCRIPTION	REVISED	BY	DATE
1	REVISIONS			
2	REVISIONS			

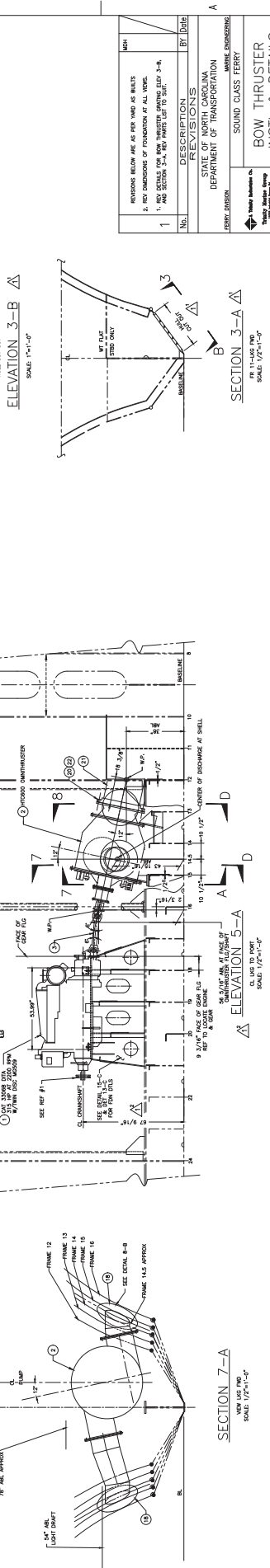
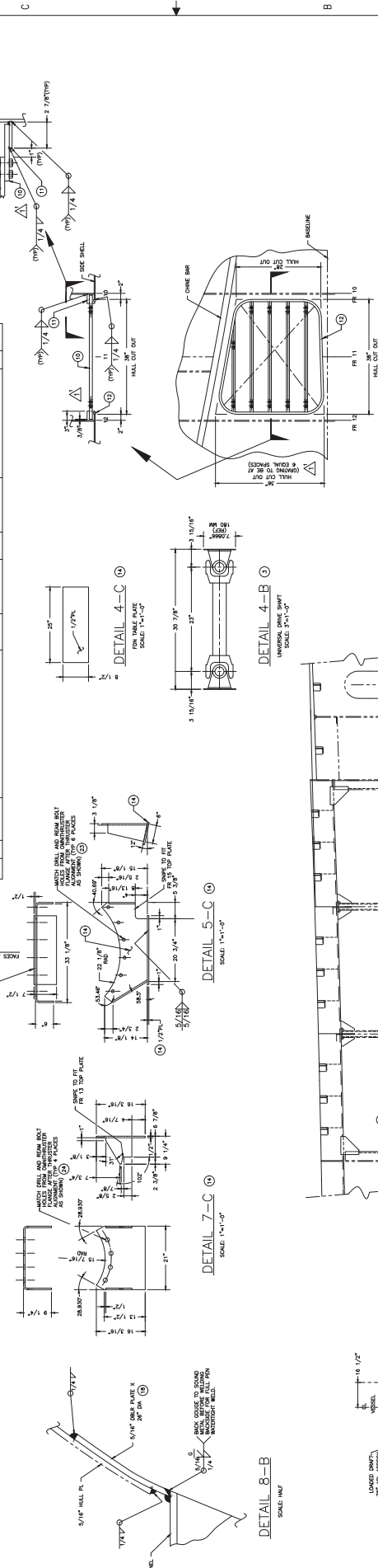
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE DIVISION

PROJECT: STEERING GEAR ARRANGEMENT  
DRAWING NO.: NC-240-0052  
SCALE: AS NOTED



1 2 3 4 5 6 7 8 9

QTY	SIZE	DESCRIPTION	SPEC NO.	UNIT	REMARKS
1	315 HP	OMNITHRUSTER		EA	
2	1	DRIVE SHAFT		EA	
3	1	FLAT BAR		EA	
4	AR 7/32" FL	FLAT BAR		EA	
5	AR 5/16" FL	FLAT BAR		EA	
6	AR 1/2" FL	FLAT BAR		EA	
7	AR 3/4" FL	FLAT BAR		EA	
8	AR 1/2" FL	BRACKET PLATE, 1/2" THK		EA	
9	AR 1/2" FL	BRACKET PLATE, 1/2" THK		EA	
10	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
11	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
12	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
13	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
14	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
15	AR 5/16" FL	FLAT BAR, 5/16" THK		EA	
16	AR	CHOCKFAST ORANGE		EA	
17	B 3/4"	DOUBLE, 5/16" THK X 26" DA		EA	
18	2 5/16" PL	DOUBLE, 5/16" THK X 26" DA		EA	
19	1 24"	FLANGE, FLAT FACE, 150#		EA	
20	1 24"	FLANGE, FLAT FACE, 150#		EA	
21	2 1 1/2"	BLK STL		EA	
22	2 1 1/2"	BLK STL		EA	
23	4 1"	STL		EA	
24	4 1"	STL		EA	

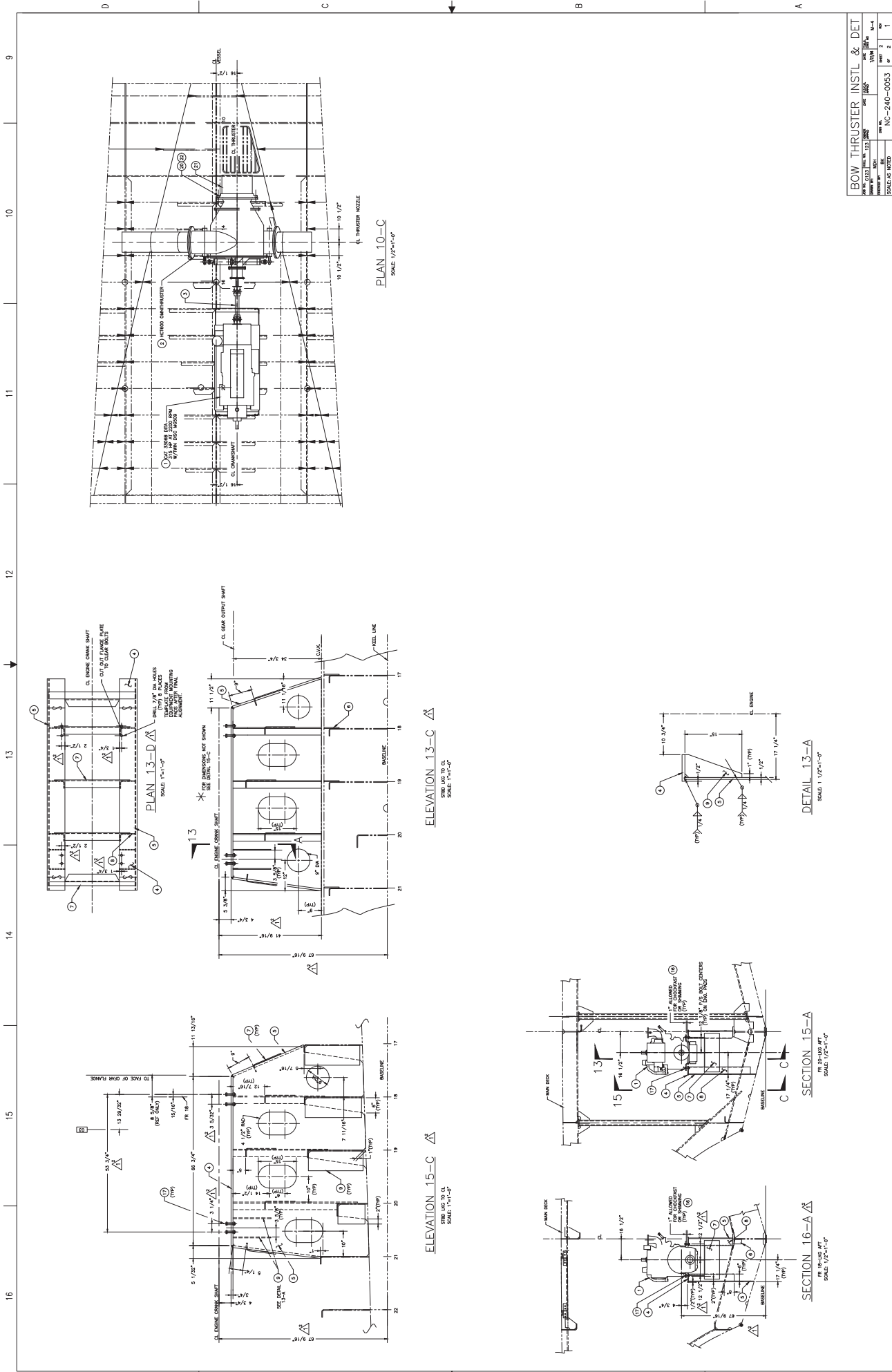


NO.	DESCRIPTION	BY	DATE
1	REVISIONS		

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

SECTION 3-A-A  
BOW THRUSTER  
INSTL & DETAILS

SCALE: AS NOTED



BOW THRUSTER INSTL & DET	
DATE	NO.
10/24/07	133
11/12/07	134
11/12/07	135
11/12/07	136
11/12/07	137
11/12/07	138
11/12/07	139
11/12/07	140
11/12/07	141
11/12/07	142
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11/12/07	200

SECTION 13-A  
SCALE 1/7\"/>

SECTION 15-A  
SCALE 1/7\"/>

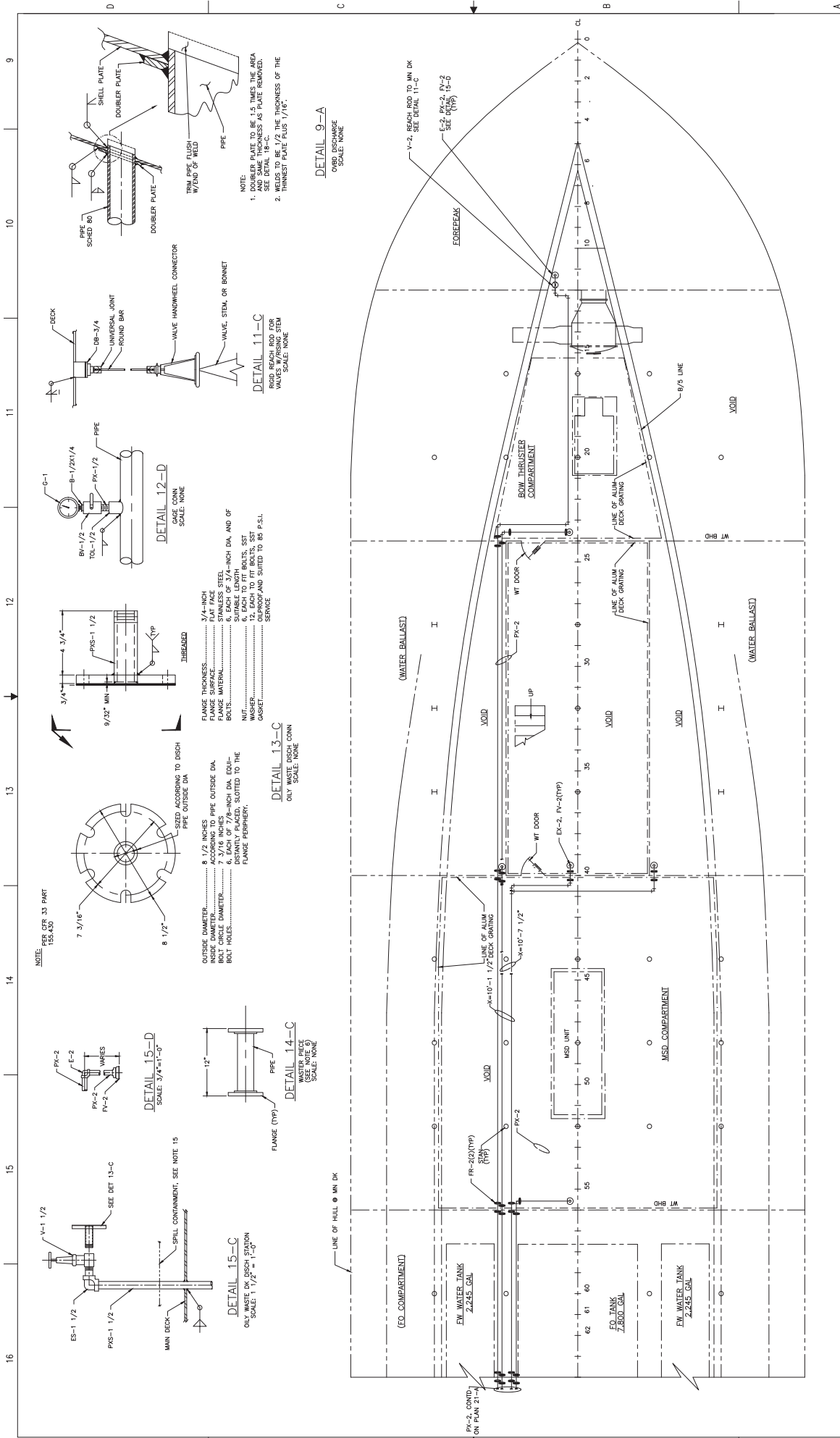
SECTION 16-A  
SCALE 1/7\"/>

ELEVATION 13-C  
SCALE 1/7\"/>

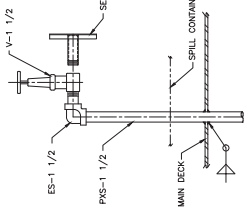
ELEVATION 15-C  
SCALE 1/7\"/>

SCALE AS NOTED

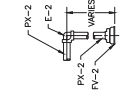




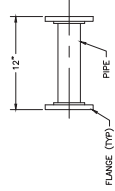
NOTE:  
PER CFR 33 PART  
155.430



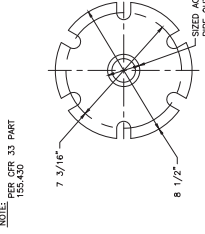
DETAIL 15-C  
ONLY WASTE DR DISCH STATION  
SCALE: 1 1/2"=1'-0"



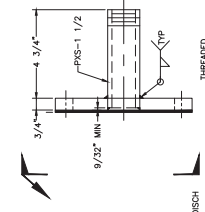
DETAIL 15-D  
SCALE: 3/4"=1'-0"



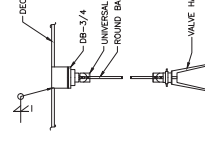
DETAIL 14-C  
SCALE: NONE



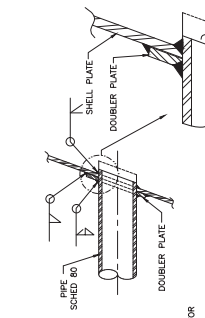
DETAIL 13-C  
SCALE: NONE



DETAIL 12-D  
SCALE: NONE



DETAIL 11-C  
SCALE: NONE

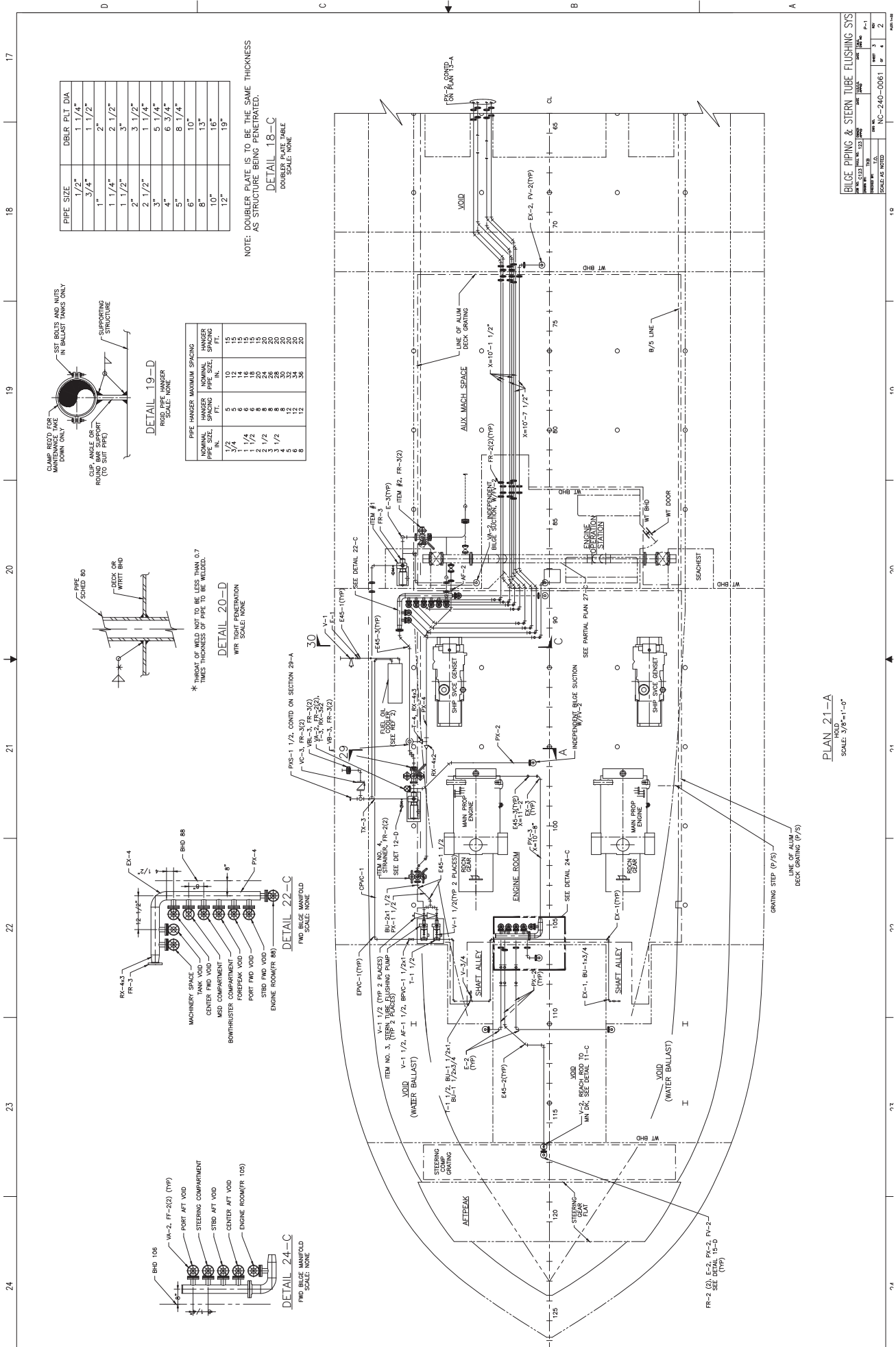


DETAIL 9-A  
SCALE: NONE

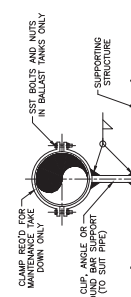
NOTE:  
1. DOUBLER PLATE TO BE 1.5 TIMES THE AREA AND SAME THICKNESS AS PLATE REMOVED. SEE DETAIL 9-A-C.  
2. THINNEST PLATE PLUS 1/16\".

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

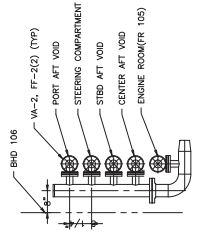
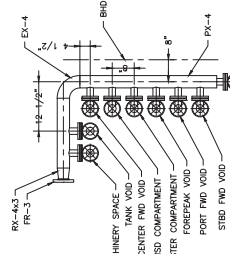
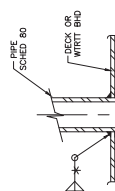
BILGE PIPING & STERN TUBE FLUSHING SYS			
NO.	DATE	BY	CHKD.
1	11/15/00	WJ	WJ
2	11/15/00	WJ	WJ
3	11/15/00	WJ	WJ
4	11/15/00	WJ	WJ
5	11/15/00	WJ	WJ
6	11/15/00	WJ	WJ
7	11/15/00	WJ	WJ
8	11/15/00	WJ	WJ
9	11/15/00	WJ	WJ
10	11/15/00	WJ	WJ
11	11/15/00	WJ	WJ
12	11/15/00	WJ	WJ
13	11/15/00	WJ	WJ
14	11/15/00	WJ	WJ
15	11/15/00	WJ	WJ
16	11/15/00	WJ	WJ



PIPE SIZE	DEBR PLT DIA
1/2"	1 1/4"
3/4"	1 1/2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"
12"	19"



PIPE HANGER MAXIMUM SPACING	NOMINAL PIPE SIZE	NOMINAL HANGER PIPE SIZE
15	1/2	1
12	3/4	1 1/4
10	1	1 1/2
8	1 1/4	2
6	1 1/2	2 1/2
5	2	3
4	2 1/2	3 1/2
3	3	4
2	3 1/2	5
1 1/2	4	6
1	5	8
3/4	6	10
1/2	8	13
3/8	10	16
1/4	12	19



NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

DETAIL 18-C  
DOUBLER PLATE TABLE  
SCALE: NONE

DETAIL 20-D  
WRT TIGHT PENETRATION  
SCALE: NONE

DETAIL 22-C  
FWD BILGE MANIFOLD  
SCALE: NONE

DETAIL 24-C  
FWD BILGE MANIFOLD  
SCALE: NONE

PLAN 21-A  
VOID  
SCALE: 3/8" = 1'-0"

BILGE PIPING & STERN TUBE FLUSHING SYS			
NO.	DATE	BY	CHKD
1			
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# GENERAL NOTES

1. PIPING SHALL BE LED DIRECTLY AND SHALL PIERCE TRANSVERSE WATERTIGHT BULKHEADS AS FAR INBOARD AND AS CLOSE UNDER DECKS NEAR THE TOP OF BULKHEADS AS PRACTICABLE.
2. MATERIALS FOR MACHINERY-AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) CODES AND STANDARDS.
3. PIPING SHALL INCLUDE VALVES, UNIONS, FLANGES AND FITTINGS NECESSARY TO ISOLATE AND/OR REMOVE ANY PIECE OF EQUIPMENT FOR REPAIRS WITHOUT DISRUPTING THE ENTIRE SYSTEM.
4. PIPING SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID WEIGHT OF PIPING BEING TRANSFERRED TO OTHER STRUCTURAL PARTS AND TO AVOID EXCESSIVE SHAKING, MINIMIZE EFFECTS OF VIBRATION, SHOCK, AND VESSEL MOTION.
5. HANGERS FOR COPPER PIPE SHALL BE LINED WITH LEAD OR NILOX.
6. GALVANIZED STEEL PIPING SHALL BE HOT DIPPED GALVANIZED WHEN WELDING OR OTHER ACTIVITY HAS RESULTED IN REMOVING MORE THAN 6" FROM THE END OF A PIPE SECTION. REPAIRS MAY BE MADE WITHIN 6" FROM THE END OF PIPES 3" AND ABOVE USING SACKETT; 2-1/2" AND LESS WITH GALVANITE, OR EQUIV.
7. SIZES 2-1/2" AND ABOVE MAY BE THREADED OR SOCKET WELDED FOR SIZES 2" AND BELOW AND FLANGED FOR SIZES 2-1/2" AND ABOVE.
8. UNLESS OTHERWISE SPECIFIED, VALVES SHALL BE OF THE PLANGED OR UNION NOT BONNET TYPE WITH RISING STEMS WITH THREADED EXTENSIONS TO THE VALVE BODY WHERE THREE OR MORE VALVES ARE LOCATED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.
9. OVERBOARD DISCHARGE LINES OR VALVES ATTACHED TO THE INSIDE OF THE HULL SHALL BE FITTED WITH DOUBLER FLANGES IN VIEW OF THE PROBATION TO MAINTAIN THE ORIGINAL STRENGTH AND INTEGRITY.
10. FROM THE SHELL PLATE OUTBOARD FOR THEIR ENTIRE LENGTH.
11. INCREASED JANKS IN PIPES SHALL BE REMOVED AFTER CUTTING AND THREATING. FITTINGS SHALL BE PIPED FROM PINS AND BURNS. JOINTS SHALL BE MADE WITH APPROVED PIPE JOINT COMPOUND APPLIED TO MALE THREADS. MALE THREADS EXPOSED TO THE SEA MUST BE MADE TIGHT.
12. ALL FASTENERS USED TO CONNECT VALVES TO SEA CHESTS SHALL BE STAINLESS STEEL.
13. SCHEDULE 80 PIPE MAY BE SUBSTITUTED FOR SCHEDULE 40 WHERE SPECIFIED.
14. PIPING SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 1.2 (M) OF THE SHIP'S SPECIFICATION.
15. FIXED CONTAINMENT COMPARTMENTS OF 1/2 BARREL CAPACITY SHALL BE PROVIDED AND SHALL HAVE A 3/4" DRAIN W/PLUG.
16. PIPING SHALL NOT BE ROUTED OVER SWITCHBOARD.

# RESERVATION

RESERVATION - NO RESERVED PARTS

ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	PART NO.	REMARKS	OR. PARTS
PK-2	AR	2"	PIPE, SCHED 80, SMLS	BLK STL	ASTM A-53		ANSI B36.10, GRADE B	5.02
PK-2	AR	1 1/2"	PIPE, SCHED 80, SMLS	BLK STL	ASTM A-53		ANSI B36.10, GRADE B	3.63
PK-2	AR	2 1/2"	PIPE, SCHED 80, SMLS	BLK STL	ASTM A-53		ANSI B36.10, GRADE B	
PK-2	AR	4"	PIPE, SCHED 80, SMLS	BLK STL	ASTM A-53		ANSI B36.10, GRADE B	
PK-2	AR	2 1/2"	PIPE, SCHED 80, SMLS	316L SS	ASTM A-312		ANSI B36.19	5.02
PK-2	AR	2"	PIPE, SCHED 80, SMLS	316L SS	ASTM A-312		ANSI B36.19	
PK-2	AR	1 1/2"	PIPE, SCHED 80, SMLS	316L SS	ASTM A-312		ANSI B36.19	
ESW-2	AR	2"	ELBOW, 90°, 3000#, SMLS	FST	ASTM A-105		ANSI B16.11	
ESW-2	AR	1 1/2"	ELBOW, 90°, XSTR, ENFLD	BLK STL	ASTM A-234		ANSI B16.9	
ESW-2	AR	4"	ELBOW, 90°, XSTR, ENFLD	BLK STL	ASTM A-234		ANSI B16.9	
ESW-2	AR	2 1/2"	ELBOW, 90°, XSTR, SMLS	316L SS	ASTM A-403		ANSI B16.9	
ESW-2	AR	1 1/2"	ELBOW, 90°, XSTR, SMLS	316L SS	ASTM A-403		ANSI B16.9	
ESW-2	AR	1 1/2"	ELBOW, 90°, XSTR, SMLS	316L SS	ASTM A-403		ANSI B16.9	
HC-1/2	AR	1 1/2"	HALF COUPLING, 3000#, THD	FST	ASTM A-105		ANSI B16.11	
HC-1/2	AR	1/2"	HALF COUPLING, 3000#, THD	FST	ASTM A-105		ANSI B16.11	
HC-1/2	AR	3/8"	HALF COUPLING, 3000#, THD	M GALV	ASTM A-197		ANSI B16.9	
RC-1	AR	2 1/2"	RN BEND, XSTR, ENFLD	316L SS	ASTM A-403		ANSI B16.9	
RC-2	AR	2"	RN BEND, XSTR, ENFLD	316L SS	ASTM A-403		ANSI B16.9	
RC-2	AR	1 1/2"	RN BEND, XSTR, ENFLD	316L SS	ASTM A-403		ANSI B16.9	
WC-2	AR	2"	VALVE, INVERTED KENT CHECK, THD	BRZ	ASTM B-62	479XK39	MASTER-CARR	---
WC-2	AR	1 1/2"	VALVE, INVERTED KENT CHECK, THD	BRZ	ASTM B-62	VC 100	HAYWARD, W/FLAME SCREEN	9.0
WC-2	AR	1 1/2"	VALVE, INVERTED KENT CHECK, THD	BRZ	ASTM B-62	VC 100	HAYWARD, W/FLAME SCREEN	
WC-2	AR	2"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62	B-120	STOCKHLM	
WC-2	AR	1 1/2"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62	B-120	STOCKHLM	
DC-1	AR	2"	DECK BOX	VAR	COML	DP-1B	HAYWARD, W/DECK PLUG	
DC-1	AR	2"	DECK BOX	VAR	COML	DP-1B	HAYWARD, W/DECK PLUG	
ESW-2	AR	3/8"	ELBOW, 90°, 3000#, SMLS	FST	ASTM A-105	479XK36	EDGE ERNST PRODUCTS	
ESW-2	AR	1 1/2"	ELBOW, 90°, 3000#, SMLS	FST	ASTM A-105		ANSI B16.11	
ESW-2	AR	1 1/2"	ELBOW, 90°, THD, 3000#	FST	ASTM A-105		ANSI B16.11	
ESW-2	AR	2"	ELBOW, 45°, XSTR, ENFLD	316L SS	ASTM A-403		ANSI B16.11	
ESW-2	AR	1 1/2"	ELBOW, 90°, THD, 3000#	316L SS	ASTM A-192		ANSI B16.11	
ESW-2	AR	2 1/2"	ELBOW, 90°, THD, 3000#	316L SS	ASTM A-192		ANSI B16.11	
ESW-2	AR	1 1/2"	COUPLING, 3000#, SMLS	316L SS	ASTM A-182		ANSI B16.11	
ESW-2	AR	1 1/2"	COUPLING, 3000#, SMLS	316L SS	ASTM A-182		ANSI B16.11	
ESW-2	AR	2"	CAP, 3000#, THD	M GALV	ASTM A-197		ANSI B16.9	

### SOUNDING TUBES

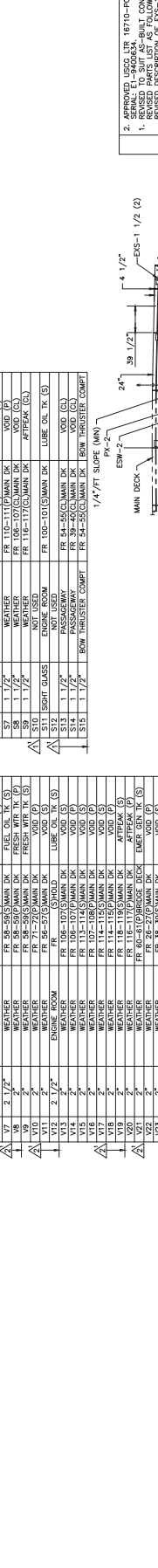
NO	SIZE	LOCATION	SERVICE
S1	1 1/2"	FR 10-11(C)MAN DK	FOREPEAK (S)
S2	1 1/2"	FR 46-47(M)MAN DK	VOID (S)
S3	1 1/2"	FR 71-72(M)MAN DK	VOID (S)
S4	1 1/2"	FR 72-73(M)MAN DK	VOID (S)
S5	1 1/2"	FR 86-87(S)MAN DK	FUEL OIL TR(S)
S6	1 1/2"	FR 98-99(S)MAN DK	VOID (S)
S7	1 1/2"	FR 110-111(M)MAN DK	VOID (S)
S8	1 1/2"	FR 100-107(C)MAN DK	VOID (S)
S9	1 1/2"	FR 110-111(C)MAN DK	Z/T FUEL (S)
S10	1 1/2"	NOT USED	
S11	1 1/2"	ENGINE ROOM	LUBE OIL TR (S)
S12	1 1/2"	PASSAGEWAY	VOID (S)
S13	1 1/2"	PASSAGEWAY	VOID (S)
S14	1 1/2"	FR 39-45(C)MAN DK	VOID (S)
S15	1 1/2"	BOX, TRANSDUCER COMPRT	FRONT TRANSDUCER COMPRT

### VENTS

NO	SIZE	LOCATION	SERVICE
V1	2"	FR 11-12(M)MAN DK	FOREPEAK (S)
V2	2"	FR 13-14(M)MAN DK	FOREPEAK (S)
V3	2"	FR 21-22(M)MAN DK	VOID (S)
V4	2"	FR 23-24(M)MAN DK	VOID (S)
V5	2"	FR 30-31(M)MAN DK	VOID (S)
V6	2"	FR 32-33(M)MAN DK	VOID (S)
V7	2 1/2"	FR 54-55(M)MAN DK	FUEL OIL TR (S)
V8	2"	FR 56-57(M)MAN DK	FRESH WTR TK (P)
V9	2"	FR 58-59(M)MAN DK	FRESH WTR TK (P)
V10	2"	FR 71-72(M)MAN DK	FRESH WTR TK (P)
V11	2"	FR 56-57(M)MAN DK	LUBE OIL TR (S)
V12	2"	FR 58-59(M)MAN DK	LUBE OIL TR (S)
V13	2"	FR 106-107(M)MAN DK	LUBE OIL TR (S)
V14	2"	FR 108-109(M)MAN DK	VOID (S)
V15	2"	FR 110-111(M)MAN DK	VOID (S)
V16	2"	FR 102-103(M)MAN DK	VOID (S)
V17	2"	FR 104-105(M)MAN DK	VOID (S)
V18	2"	FR 114-115(M)MAN DK	VOID (S)
V19	2"	FR 116-117(M)MAN DK	VOID (S)
V20	2"	FR 118-119(M)MAN DK	VOID (S)
V21	2"	FR 120-121(M)MAN DK	VOID (S)
V22	2"	FR 28-29(M)MAN DK	FOREPEAK (S)
V23	2"	FR 30-31(M)MAN DK	FOREPEAK (S)
V24	4"	FR 51-52(O)FIELD	VOID (S)

### FILLS

NO	SIZE	LOCATION	SERVICE
F1	1 1/2"	FR 85-86(O)MAN BECK	FRESH WATER FILL (S)
F2	1 1/2"	FR 87-88(O)MAN BECK	FRESH WATER FILL (S)
F3	1 1/2"	FR 117-118(S)MAN BECK	FUEL OIL FILL (S)
F4	1 1/2"	FR 117-118(S)MAN BECK	FUEL OIL FILL (S)



REVISIONS		DATE	
NO.	DESCRIPTION	BY	DATE
1	RESUB DIMS PER OWNER COMMENTS.		
2			

2. SERIAL NUMBER LIST 16710-POOD380 BC #1106  
 1. REVISED PARTS LIST AS FOLLOWS:  
 REVISED DESCRIPTION OF ESW-1 1/2, AND  
 REVISED DESCRIPTION FOR V-1 1/2, AND  
 FOR V-1 1/2 AND V-2 (WAS) B-105.  
 EXCEL-ESW-1 1/2, ESX-65-2, ESX-2,  
 ESX-1 1/2, ESX-2, ESX-2 1/2,  
 ESX-1 1/2, ESX-2, ESX-2 1/2.

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 HULL DIVISION  
 MARINE ENGINEERING

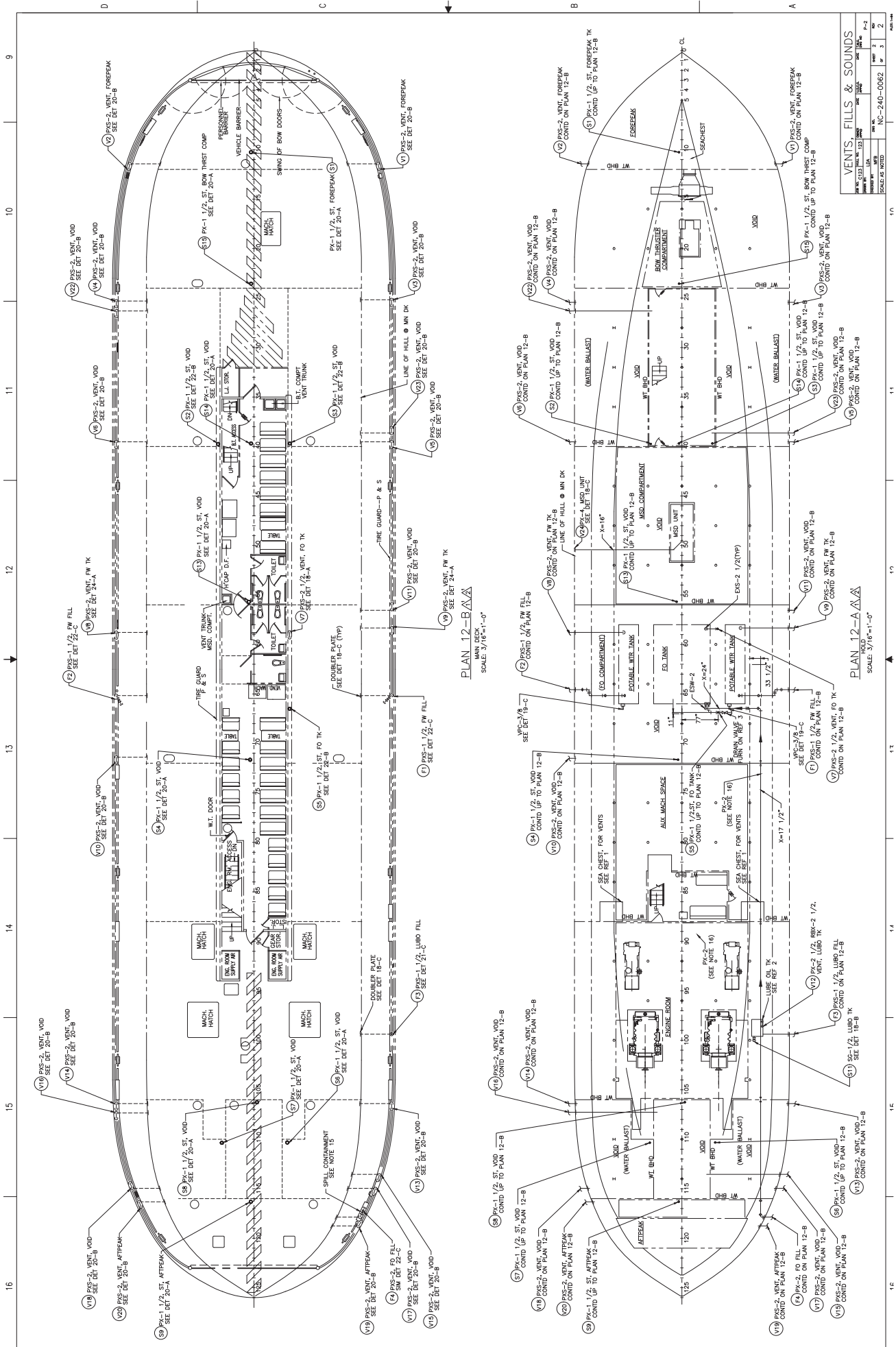
ENGINE NUMBER: NC-240-0064  
 HULL NUMBER: NC-240-0103  
 DRAWING NO: NC-240-0070  
 SHEET NO: 3 OF 2  
 SCALE: 1/2" = 1'-0"

### REFERENCES

NO.	TITLE
1	ASME BOILER AND PRESSURE VESSEL CODE, SECTIONS I, VIII, AND IX
2	ASME PIPING CODE, SECTIONS I, II, III, IV, V, VI, VII, VIII, AND IX
3	FUEL OIL PIPING
4	NC-240-0064
5	NC-240-0103
6	NC-240-0070
7	FRESHMAN SYSTEM
8	TRINITY DIMS NO
9	NC. DIMS NO

SECTION 3-A

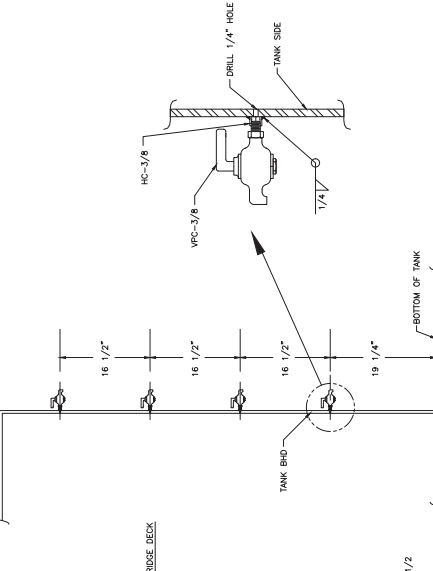
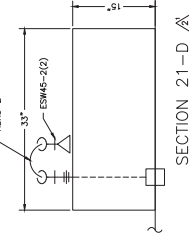
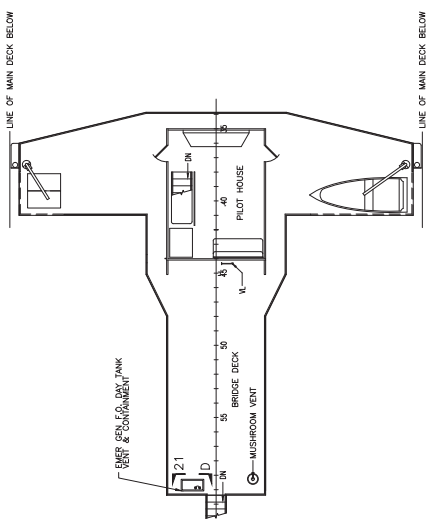




NO.	DATE	BY	CHKD.	APP'D.
1				
2				

NC-240-0062

24 23 22 21 20 19 18 17



PIPE SIZE	DBLR PIT DIA
1 1/2"	1 1/4"
3/4"	1 1/2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"
12"	19"

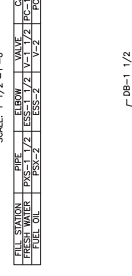
NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

DETAIL 18-C  
DOUBLER PLATE TABLE

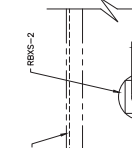
PLAN 23-C A  
SCALE 3/8"=1'-0"

PIPE	ELBOW	WALK	CLIP	COURBING
1/2"	1/2"	1/2"	1/2"	1/2"
3/4"	3/4"	3/4"	3/4"	3/4"
1"	1"	1"	1"	1"
1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
2"	2"	2"	2"	2"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3"	3"	3"	3"	3"
4"	4"	4"	4"	4"
5"	5"	5"	5"	5"
6"	6"	6"	6"	6"
8"	8"	8"	8"	8"
10"	10"	10"	10"	10"
12"	12"	12"	12"	12"

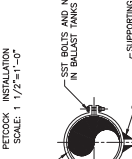
DETAIL 22-C A  
SCALE: 1 1/2"=1'-0"



DETAIL 21-C A  
SCALE: 1 1/2"=1'-0"



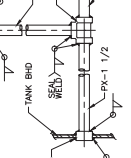
DETAIL 19-C A  
PERIODIC INSTALLATION  
SCALE: 1 1/2"=1'-0"



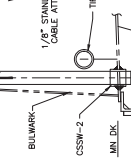
DETAIL 24-A A  
INVERTED VENT  
SCALE: 1 1/2"=1'-0"



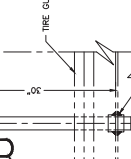
DETAIL 22-B A  
ALTERNATE SOUNDING TUBE  
SCALE: 1 1/2"=1'-0"



DETAIL 20-B A  
VENT FOR WOODS  
SCALE: 1 1/2"=1'-0"



DETAIL 19-B  
PIPE HANGER MAXIMUM SPACING  
SCALE: 1 1/2"=1'-0"



PIPE HANGER MAXIMUM SPACING	PIPE HANGER MAXIMUM SPACING	PIPE HANGER MAXIMUM SPACING	PIPE HANGER MAXIMUM SPACING	PIPE HANGER MAXIMUM SPACING
PIPE SIZE	PIPE SIZE	PIPE SIZE	PIPE SIZE	PIPE SIZE
IN.	IN.	IN.	IN.	IN.
1/2"	5	10	15	20
3/4"	6	12	18	24
1"	8	16	24	32
1 1/2"	10	20	30	40
2"	12	24	36	48
2 1/2"	14	28	42	56
3"	16	32	48	64
3 1/2"	18	36	54	72
4"	20	40	60	80
4 1/2"	22	44	66	88
5"	24	48	72	96
6"	28	56	84	112
8"	36	72	108	144
10"	44	88	132	176
12"	52	104	156	208

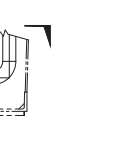
DETAIL 24-B A  
INVERTED VENT  
SCALE: 1 1/2"=1'-0"



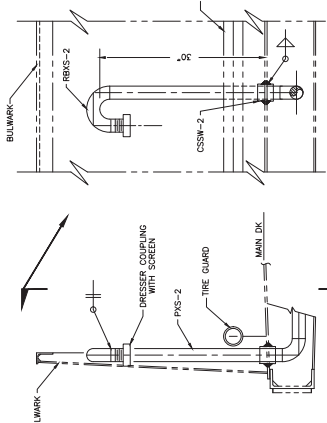
DETAIL 22-B A  
ALTERNATE SOUNDING TUBE  
SCALE: 1 1/2"=1'-0"



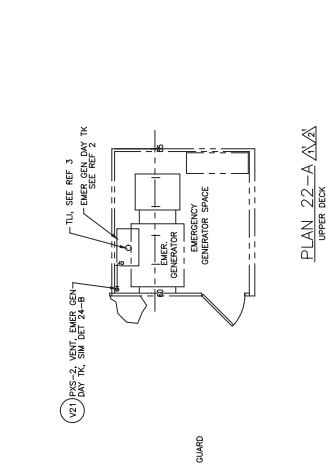
DETAIL 20-B A  
VENT FOR WOODS  
SCALE: 1 1/2"=1'-0"



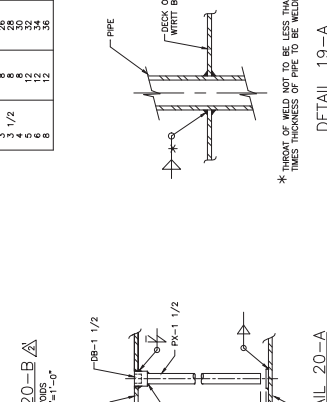
DETAIL 19-B  
PIPE HANGER MAXIMUM SPACING  
SCALE: 1 1/2"=1'-0"



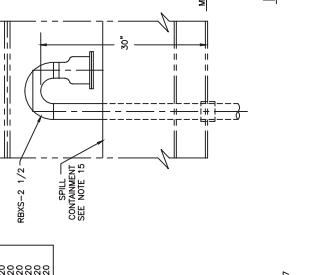
PLAN 22-A A  
UPPER DECK  
SCALE: 3/8"=1'-0"



DETAIL 20-A A  
SCALE: 1 1/2"=1'-0"



DETAIL 19-A A  
INVERTED VENT FOR WOODS  
SCALE: 1 1/2"=1'-0"



DETAIL 18-A A  
SCALE: 1 1/2"=1'-0"

VENTS, FILLS & SOUNDS	SCALE	NO.	REV.	DATE	BY	CHK.
VENTS, FILLS & SOUNDS	SCALE: 3/8"=1'-0"	NC-240-0062	1			
			2			
			3			
			4			

24 23 22 21 20 19 18 17

GENERAL NOTES

1. PIPING SHALL BE LED DIRECTLY TO THE PIPING TRANSVERSE BULKHEADS AS FAR INBOARD AS POSSIBLE AND AS CLOSE UNDER DECKS NEAR THE TOP OF BULKHEADS AS PRACTICABLE.
2. MATERIALS FOR MACHINERY AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE APPROPRIATE CODES AND STANDARDS.
3. PIPING SHALL INCLUDE VALVES, UNIONS, FLANGES AND FITTINGS NECESSARY TO ISOLATE AND/OR REMOVE ANY PIECE OF EQUIPMENT FOR REPAIRS WITHOUT DISRUPTING THE ENTIRE SYSTEM.
4. FLEXIBLE CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED TO AVOID VIBRATION MAY BE ENCOUNTERED.
5. PIPING SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID WEIGHT OF PIPING BEING TRANSFERRED TO VALVES AND FITTING AND TO AVOID EXCESSIVE STRAINS, MINIMIZE EFFECTS OF VIBRATION, SHOCK, AND EXCESSIVE WEIGHT.
6. HANGERS FOR COPPER PIPE SHALL BE USED WITH LEAD OR NILON.
7. GALVANIZED STEEL PIPING SHALL BE NOT PERMITTED CALVEZED WHEN WELDING OR OTHER ACTIVITY HAS BEEN PERFORMED ON THE END OF A PIPE SECTION. REPAIRS MAY BE MADE WITHIN 6" FROM THE END OF PIPES 3" AND ABOVE USING GALVALUED; 5-1/2" AND LESS WITH GALVALCOAT, OR EQUAL.
8. SIZES 1/2" AND ABOVE MAY BE THREADED OR SOCKET WELDED FOR SIZES 2" AND BELOW AND FLANGED FOR SIZES 2" AND ABOVE.
9. UNLESS OTHERWISE SPECIFIED, VALVES SHALL BE OF THE FLANGED OR UNION NUT BONNET TYPE WITH BISSING STEMS WITH THREADS EXTERNAL TO THE VALVE BODY, WHERE THREE OR MORE VALVES ARE LOCATED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.
10. OVERBOARD DISCHARGE LINES OR VALVES ATTACHED TO THE INSIDE OF THE HULL SHALL BE FITTED WITH DOUBLER PLATES IN WAY OF THE PENETRATION TO MAINTAIN THE ORIGINAL STRENGTH AND INTEGRITY.
11. ALL VENT PIPES AND JEL PIPES ETC. THAT PASS THROUGH THE SIDE SHELL PLATE SHALL BE STAINLESS STEEL FROM THE SHELL TO THE OUTBOARD FOR THEIR ENTIRE LENGTH.
12. ALL PIPING SHALL BE ISOLATED AND LAGGED AS NECESSARY TO PREVENT SWEATING OR TRANSFER OF HEAT.
13. THE INLET OF A RELIEF VALVE AND A PRESSURE CASE IN THE DISCHARGE SIDE AND A VALVED BYPASS AT THE INLET OF A RELIEF VALVE AND A PRESSURE CASE IN THE DISCHARGE SIDE AND A VALVED BYPASS.
14. THREADED JOINTS IN PIPES SHALL BE REMOVED AFTER CUTTING AND THREADING. FITTING SHALL BE FREE FROM FINES AND BURRS. JOINTS SHALL BE MADE WITH APPROVED PIPE JOINT COMPOUND APPLIED TO MALE THREADS AND TIGHTENED TO THE MANUFACTURER'S SPECIFICATION. THREADS TO BE FULL CUT AND HAVE NOT MORE THAN THREE THREADS EXPOSED AFTER JOINTS ARE MADE TIGHT.
15. PIPING SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 3.2 (M) OF THE SHIPS SPECIFICATION.
16. --- DENOTES HOT FRESH WATER PIPING  
--- DENOTES COLD FRESH WATER PIPING  
UNLESS NOTED OTHERWISE.
17. FITTINGS, FLANGES, VALVES, ETC. FURNISHED BY JONER CONTRACTOR.

18. --- GALV. PIPE-BOLTERS-WITH-CONCEALED-SPLICES-IN-THE-ACCOMMODATION-AND-SERVICE-AREAS-SHALL-BE WITHIN-BOLTERS-OR-FRAMES-OF-THE-DECK-PLATE

ITEM NO.	DESCRIPTION	MFG	MODEL	TYPE	SOON	SIZE	HEAD	SPW	DRN	ELED	DATA	REMARKS
1	FRESH WATER PUMP	MCDONALD	8151	1	1/4	65	FT	153	120	MC	60 IZ 14, 1/2 HP	
2	WATER HEATER	WATER HEATER	EDU-30	1	3/4"					120	MC	60 IZ 14, 8 KW
3	WATER HEATER	SPECIALTY	400-B	1	1/2"					208	MC	3.5 KW
4	HOSE REEL	SWAN	GD450	1	3/4"							OR EQUAL
5	HOSE REEL	SWAN	GD450	1	3/4"							
6	HOSE	HAYWARD	105-C	1	3/4"							
7	HOSE	HAYWARD	105-C	1	3/4"							
8	STRAINER-DUPLEX	AKFON	2032	1	1/2"							W/SCREEN, FIBER ADAPTER IN CENTER END, NOZZLE ON OTHER END, 1/2" MANDIBULAR DRIFT, 1/2" MANDIBULAR COUPLER, 3/4" DRIFT
9	NOZZLE, STREAM/SPRAY	AKFON	2032	1	1/2"							
10	WINDOW WIPER ASSY	MARTEC	---	---	---					115/120	MC	

EQUIPMENT LIST

ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	PART NO.	REMARKS
PS-2	AR	2"	PIPE, SCHED 80 SMLS	316L SST	ASTM A-312		ANSI B36.19
PS-1 1/2	AR	1 1/2"	PIPE, SCHED 80 SMLS	316L SST	ASTM A-312		ANSI B36.19
PS-1 1/4	AR	1 1/4"	PIPE, SCHED 80 SMLS	316L SST	ASTM A-312		ANSI B36.19
PS-1	AR	1"	PIPE, SCHED 80 SMLS	316L SST	ASTM A-312		ANSI B36.19
PS-3/8	AR	3/8"	PIPE, SCHED 80 SMLS	316L SST	ASTM A-312		ANSI B36.19
ESWS-2	AR	2"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ESWS-1 1/2	AR	1 1/2"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ESWS-1 1/4	AR	1 1/4"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ESWS-1	AR	1"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ESWS-3/8	AR	3/8"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
CPVC-1 1/2	AR	1 1/2"	PIPE, SCHED 80	CPVC	ASTM D-1785		ANSI B16.22
CPVC-1 1/4	AR	1 1/4"	PIPE, SCHED 80	CPVC	ASTM D-1785		ANSI B16.22
CPVC-1	AR	1"	PIPE, SCHED 80	CPVC	ASTM D-1785		ANSI B16.22
CPVC-3/8	AR	3/8"	PIPE, SCHED 80	CPVC	ASTM D-1785		ANSI B16.22
ADP-1 1/2	AR	1 1/2"	ADAPTER, SOCKET/FIT	CPVC	ASTM D-2487		
ADP-1 1/4	AR	1 1/4"	ADAPTER, SOCKET/FIT	CPVC	ASTM D-2487		
ADP-1	AR	1"	ADAPTER, SOCKET/FIT	CPVC	ASTM D-2487		
ADP-3/8	AR	3/8"	ADAPTER, SOCKET/FIT	CPVC	ASTM D-2487		
QD-1 1/2	3	1 1/2"	QUICK DISCONNECT, MPT	SST	COML	633-B	OPW-KAMLOK
QD-1 1/4	3	1 1/4"	QUICK DISCONNECT, MPT	SST	COML	634-A	OPW-KAMLOK
B-1 1/2	AR	1 1/2"	BALL VALVE, 150#, THD	M	ASTM A-197		ANSI B16.3
B-1 1/4	AR	1 1/4"	BALL VALVE, 150#, THD	M	ASTM A-197		ANSI B16.3
B-1	AR	1"	BALL VALVE, 150#, THD	M	ASTM A-197		ANSI B16.3
B-3/8	AR	3/8"	BALL VALVE, 150#, THD	M	ASTM A-197		ANSI B16.3
CS-1	AR	1"	COUPLING, 3000#, THD	M	ASTM A-197		ANSI B16.3
CS-1/4	AR	1/4"	COUPLING, 3000#, THD	M	ASTM A-197		ANSI B16.3
ES-1 1/2	AR	1 1/2"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ES-1 1/4	AR	1 1/4"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ES-1	AR	1"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
ES-3/8	AR	3/8"	ELBOW, 90°, 3000#, SWID	SST	ASTM A-403		ANSI B16.11
VS-1 1/2	AR	1 1/2"	VALVE, SOLENOID, 150#, THD	VAR	COML	2165	MCQUIRE
VS-1 1/4	AR	1 1/4"	VALVE, SOLENOID, 150#, THD	VAR	COML	2165	MCQUIRE
VS-1	AR	1"	VALVE, SOLENOID, 150#, THD	VAR	COML	2165	MCQUIRE
VS-3/8	AR	3/8"	VALVE, SOLENOID, 150#, THD	VAR	COML	2165	MCQUIRE
AP	AR	1/4"	PLATE	STL	ASTM A-36		
VS-1 1/2	AR	1 1/2"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62		ANSI B16.3
VS-1 1/4	AR	1 1/4"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62		ANSI B16.3
VS-1	AR	1"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62		ANSI B16.3
VS-3/8	AR	3/8"	VALVE, GATE, 150#, THD	BRZ	ASTM B-62		ANSI B16.3
RS-1 1/2	AR	1 1/2"	REDUCING, 150#, THD	GALV M	ASTM A-197		ANSI B16.11
RS-1 1/4	AR	1 1/4"	REDUCING, 150#, THD	GALV M	ASTM A-197		ANSI B16.11
RS-1	AR	1"	REDUCING, 150#, THD	GALV M	ASTM A-197		ANSI B16.11
RS-3/8	AR	3/8"	REDUCING, 150#, THD	GALV M	ASTM A-197		ANSI B16.11

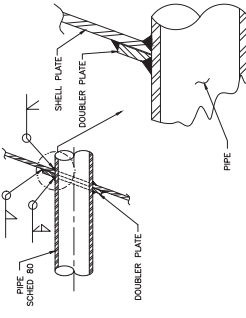
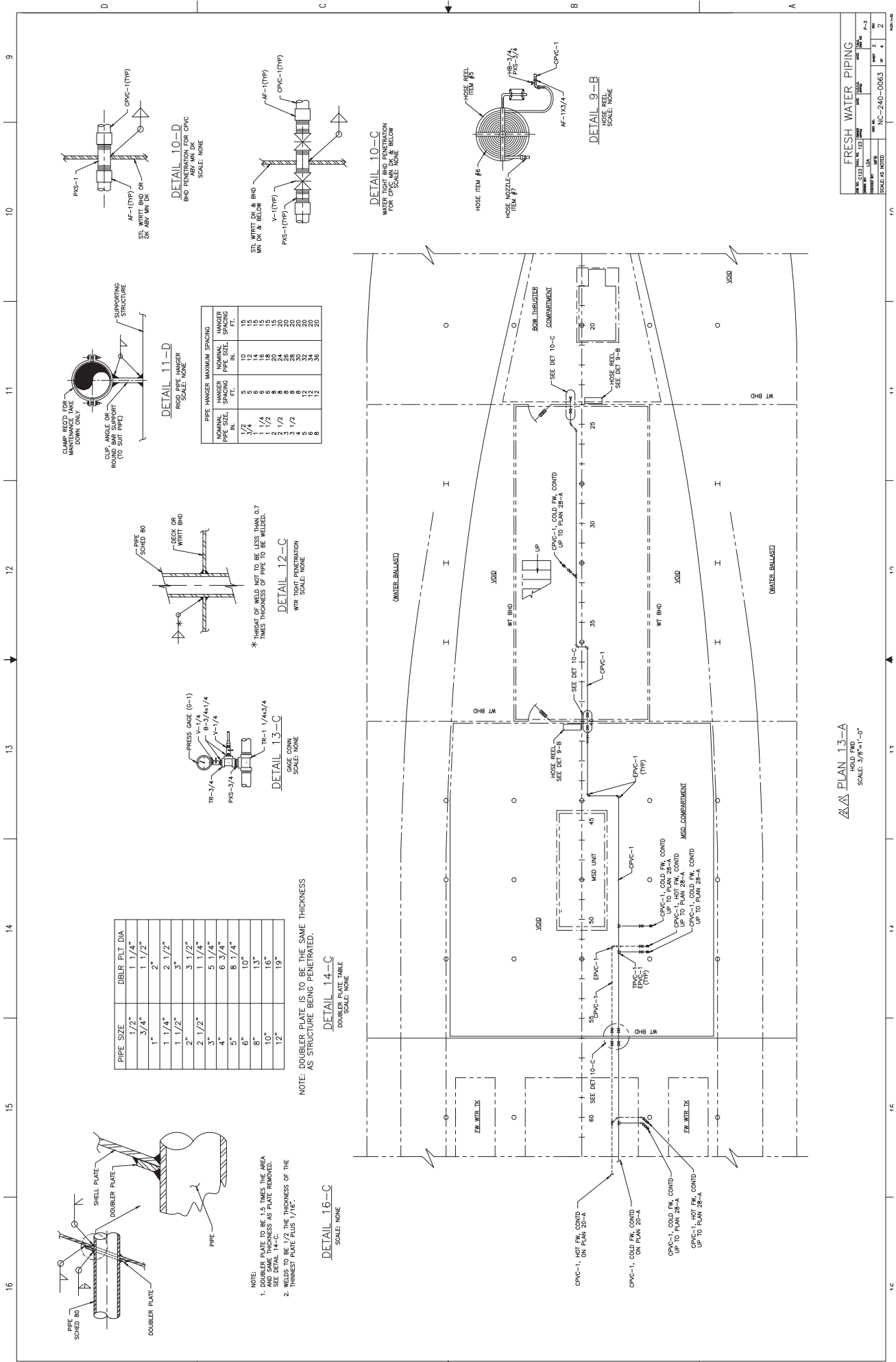
NO.	DESCRIPTION	REV	DATE	BY	CHKD
2	1. REVISED DWG PER "AS-BUILT" CONDITIONS.				
1	1. INC REVIEW COMMENTS FROM LETTER DATED 15 MAR 84.				

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MARK: FRESH WATER
SCALE: NONE
DATE: 11/23/83
PROJECT: NC-240-0063
SCALE: NONE

REFERENCES	1. NEWMARK'S MARINE STANDARDS
	2. MARINE PIPING SYSTEM
	3. MARINE PIPING SYSTEM
	4. MARINE PIPING SYSTEM
	5. MARINE PIPING SYSTEM
	6. MARINE PIPING SYSTEM
	7. MARINE PIPING SYSTEM
	8. MARINE PIPING SYSTEM
	9. MARINE PIPING SYSTEM
	10. MARINE PIPING SYSTEM

REVISIONS	NO. <td>DESCRIPTION </td>	DESCRIPTION
1	1	INCORPORATE COMMENTS FROM LETTER DATED 15 MAR 84
2	2	REVISED DWG PER "AS-BUILT" CONDITIONS

DATE	11/23/83
PROJECT	NC-240-0063
SCALE	NONE
SCALE NAME	NONE
SCALE NUMBER	NONE
SCALE LETTER	NONE
SCALE NUMBER	NONE
SCALE LETTER	NONE



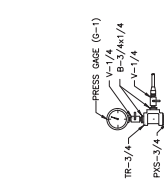
NOTE:  
 1. DOUBLER PLATE TO BE 1.5 TIMES THE SPA AND SAME THICKNESS AS PLATE REMOVED.  
 2. WELD TO BE 1/4" MIN THICKNESS OF THE THINNEST PLATE PLUS 1/16".

DETAIL 16-C  
 SCALE: NONE

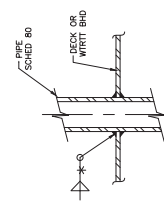
PIPE SIZE	DBLR PLT DIA
1/2"	1 1/4"
3/4"	1 1/2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"
12"	19"

NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

DETAIL 14-C  
 DOUBLE END VIEW  
 SCALE: NONE

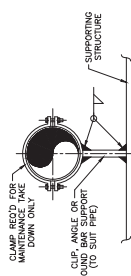


DETAIL 13-C  
 GAGE CORN  
 SCALE: NONE



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

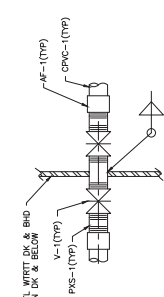
DETAIL 12-C  
 WRT  
 SCALE: NONE



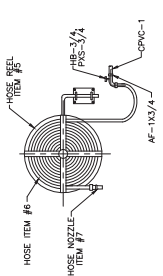
DETAIL 11-D  
 RIGID PIPE HANGER  
 SCALE: NONE

NO. NAME	MAXIMUM SPACING	NO. MAXIMUM SPACING	PIPE SIZE	MAXIMUM SPACING	FT.
1	3/4"	5	1/2"	10	15
2	1"	6	3/4"	14	15
3	1 1/4"	6	1"	18	15
4	1 1/2"	6	1 1/4"	18	15
5	2"	6	2"	20	20
6	2 1/2"	6	2 1/2"	20	20
7	3"	6	3"	20	20
8	3 1/2"	6	3 1/2"	20	20
9	4"	6	4"	20	20
10	5"	6	5"	20	20
11	6"	6	6"	20	20
12	8"	6	8"	20	20
13	10"	6	10"	20	20

DETAIL 10-D  
 BRD PERMANENT PIPE CPVC  
 ASBY WRTY BHD  
 SCALE: NONE



DETAIL 10-C  
 WRTY BHD PERMANENT PIPE CPVC  
 ASBY WRTY BHD  
 SCALE: NONE

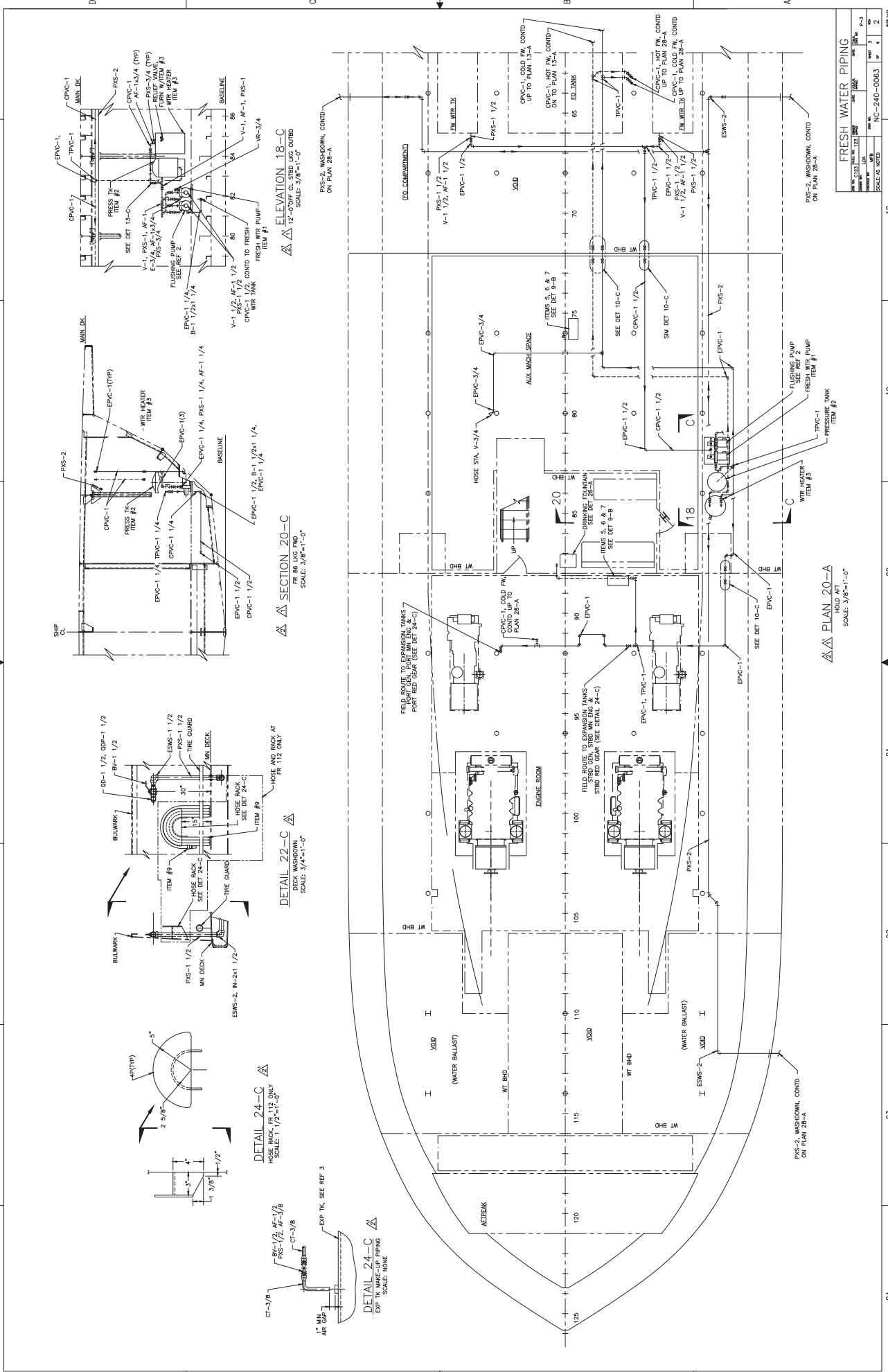


DETAIL 9-B  
 SCALE: NONE

PLAN 13-A  
 HOLD PWD  
 SCALE: 3/8"=1'-0"

FRESH WATER PIPING  
 SHEET NO. 133  
 DATE 11/16/00  
 DRAWN BY: LJA  
 CHECKED BY: LJA  
 SCALE: AS NOTED  
 NC-240-0063  
 SHEET 3 OF 2

17 18 19 20 21 22 23 24



FRESH WATER PIPING			
REV. NO.	DATE	BY	CHKD.
1			
2			
3			
4			
SCALE: AS NOTED			
NC-240-0063			

PLAN 20-A  
HOLD AFT  
SCALE: 3/8"=1'-0"

ELEVATION 18-C  
12'-0" OFF DL SIBO LAG OUTLET  
SCALE: 3/8"=1'-0"

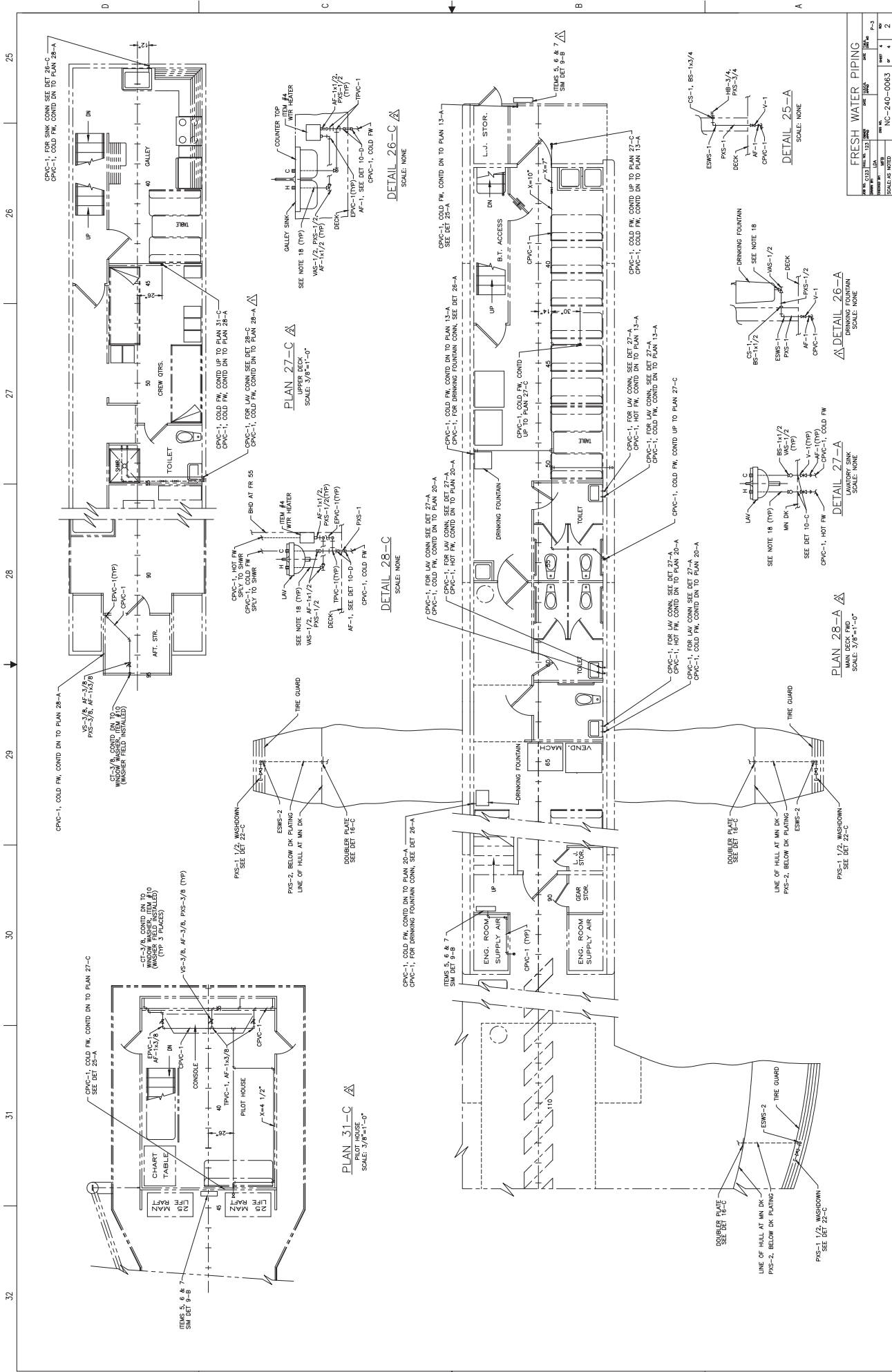
SECTION 20-C  
FR 86 LAG PUMP  
SCALE: 3/8"=1'-0"

DETAIL 22-C  
EXHAUST WASHDOWN  
SCALE: 3/4"=1'-0"

DETAIL 24-C  
HOSE BACK, FR 112 ONLY  
SCALE: 1 1/2"=1'-0"

DETAIL 24-C  
EXP TK MAKE-UP PIPING  
SCALE: NONE

17 18 19 20 21 22 23 24



NO.	DATE	BY	CHKD.	SCALE	DESCRIPTION
1					
2					

FRESH WATER PIPING  
 NC-240-0063  
 SCALE: NONE

DETAIL 25-A  
 SCALE: NONE

DETAIL 26-A  
 SCALE: NONE

DETAIL 27-A  
 SCALE: NONE

DETAIL 28-A  
 SCALE: 3/8"=1'-0"

PLAN 26-A  
 SCALE: 3/8"=1'-0"

PLAN 27-C  
 SCALE: 3/8"=1'-0"

PLAN 28-C  
 SCALE: 3/8"=1'-0"

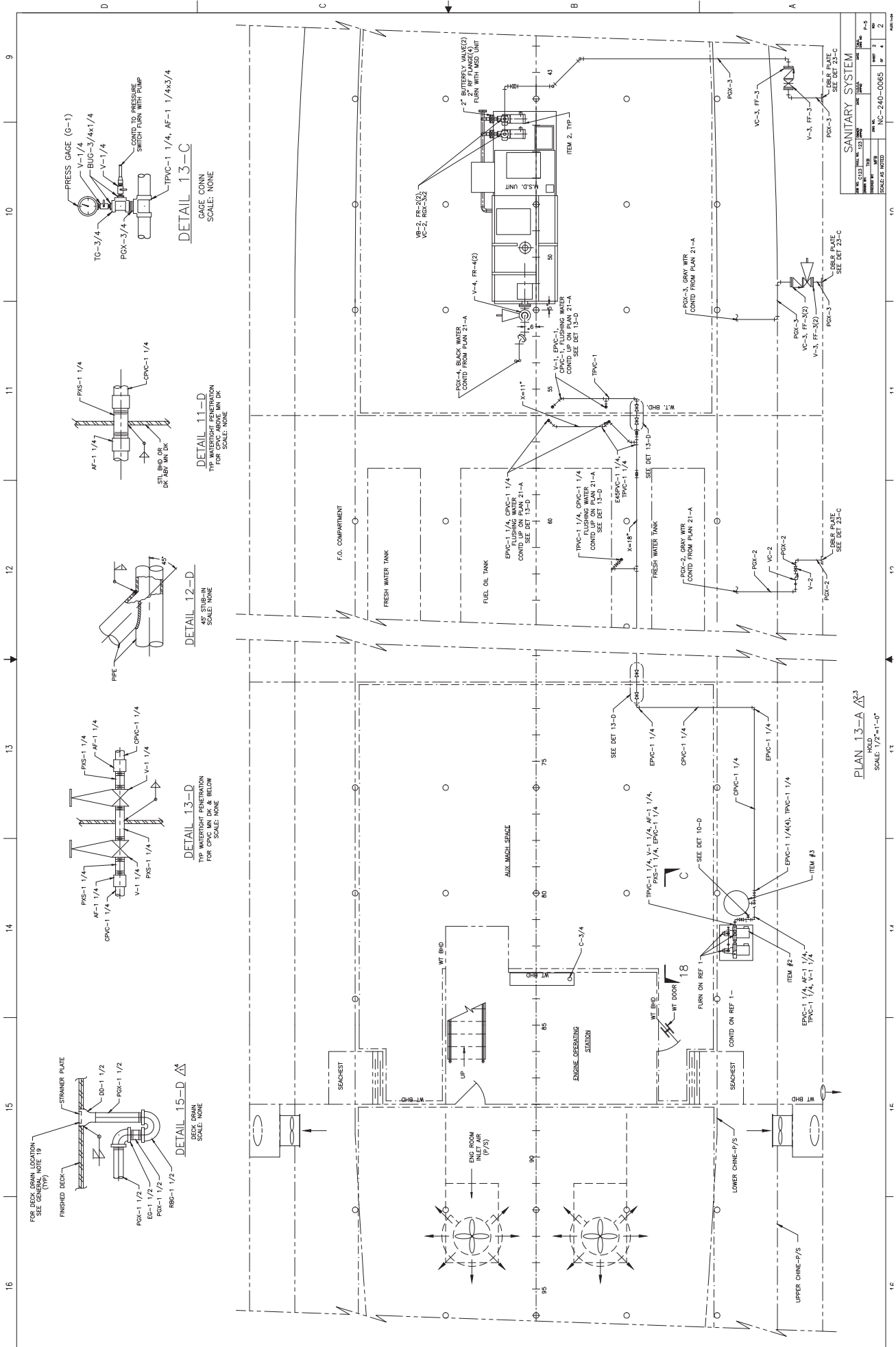
PLAN 31-C  
 SCALE: 3/8"=1'-0"

DETAIL 26-C  
 SCALE: NONE

DETAIL 27-A  
 SCALE: NONE

DETAIL 28-A  
 SCALE: 3/8"=1'-0"





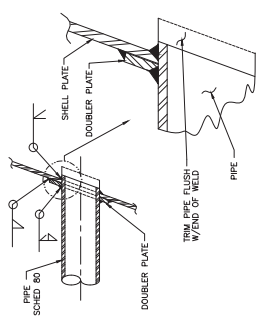
NO.	REV.	DATE	BY	CHKD.	APP.
1					
2					
3					
4					
5					

**SANITARY SYSTEM**  
 DRAWING NO. 13-A  
 SHEET NO. 1 OF 2  
 SCALE: AS SHOWN  
 NC-240-0065

**PLAN 13-A**  
 HOLD  
 SCALE: 1/2"=1'-0"



17 18 19 20 21 22 23 24



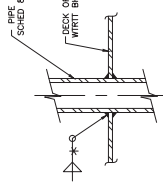
NOTE:  
 1. DOUBLER PLATE TO BE 1.5 TIMES THE AREA AND SAME THICKNESS AS PLATE REMOVED. SEE DETAIL 22-C.  
 2. MINIMUM PIPE THICKNESS OF THE THINNESS PIPE PLUS 1/16".

DETAIL 23-C  
 OVED DISCHARGE  
 SCALE: NONE

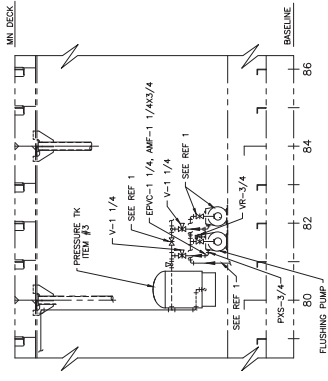
PIPE SIZE	DBLR PLT DIA
1/2"	1 1/4"
3/4"	1 1/2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"
12"	19"

NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

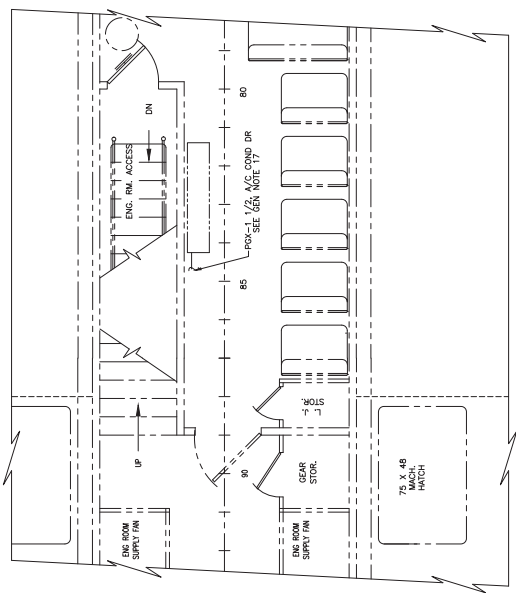
DETAIL 22-C  
 DOUBLER PLATE TABLE  
 SCALE: NONE



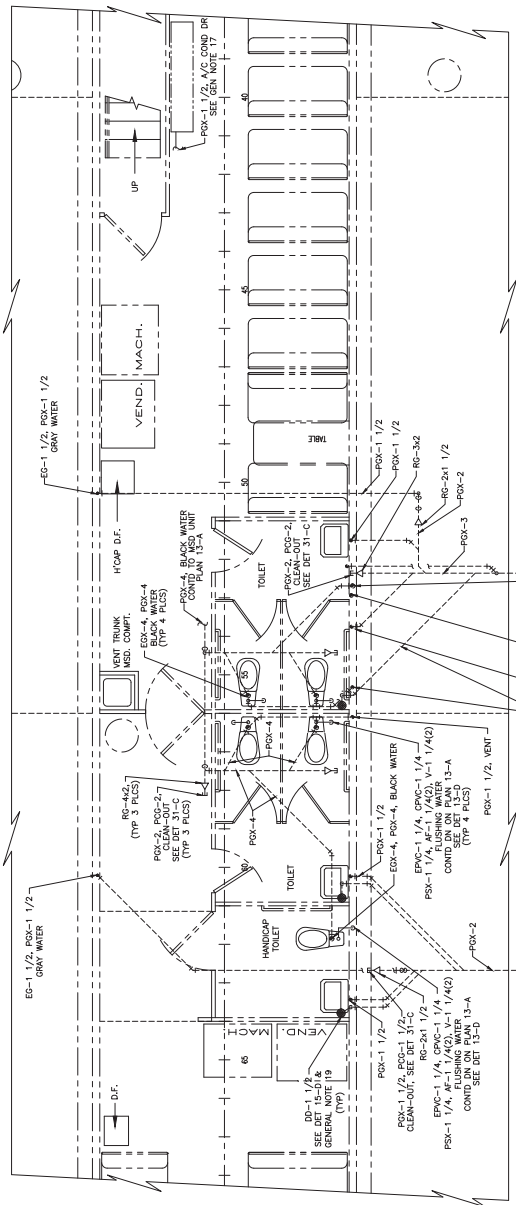
\* THROAT OF WELD NOT TO BE LESS THAN 0.7 TIMES THICKNESS OF PIPE TO BE WELDED.  
 DETAIL 20-C  
 W/RT PENETRATION  
 SCALE: NONE



SECTION 18-C  
 12'-0" OFF CL STRD JAG OUTDR  
 SCALE: 3/8"=1'-0"



PLAN 21-A  
 MAIN DECK  
 SCALE: 1/2"=1'-0"

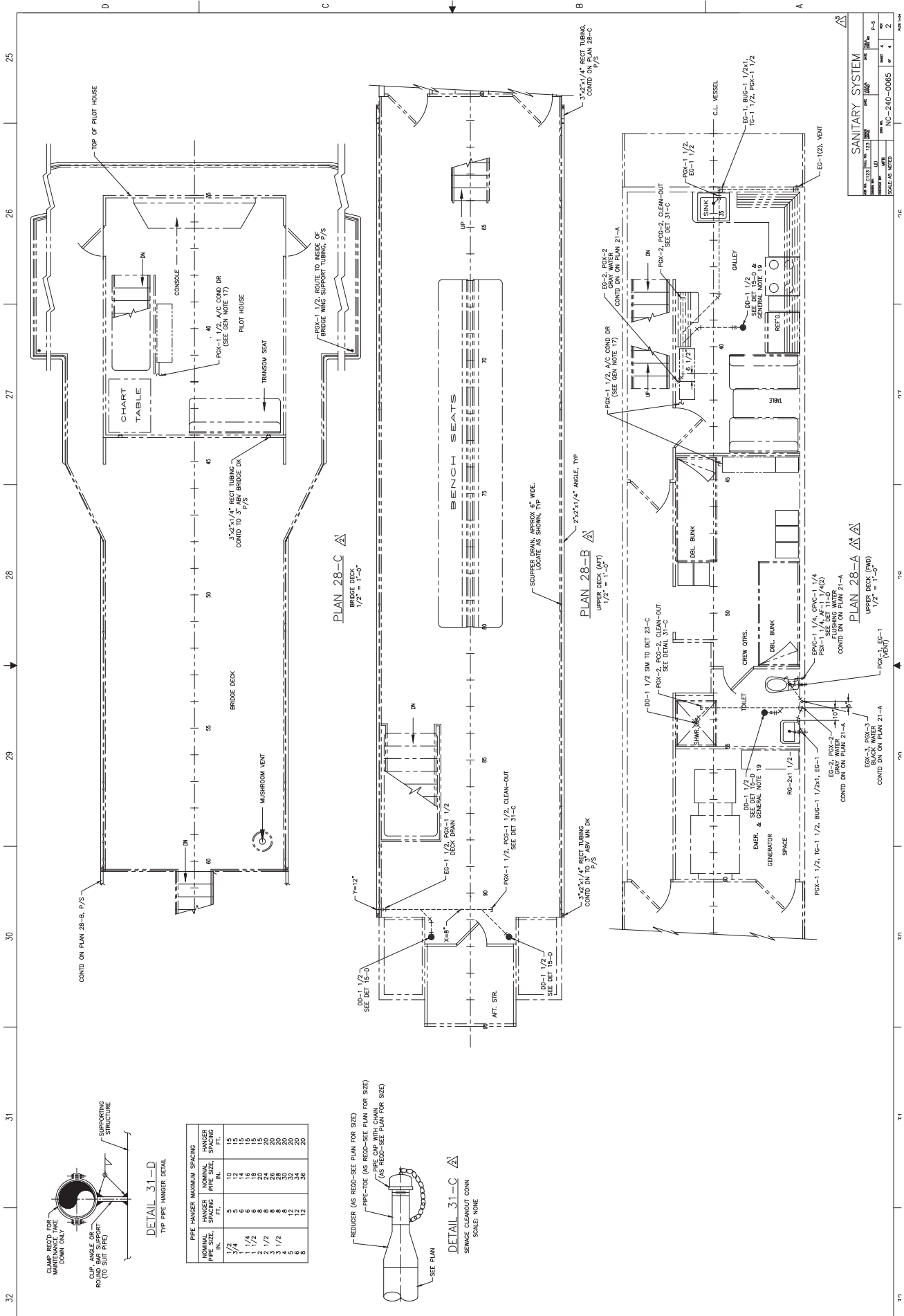


PLAN 20  
 SANITARY SYSTEM  
 SCALE: 1/2"=1'-0"

NO.	DATE	BY	CHKD	APP'D
1				
2				
3				
4				

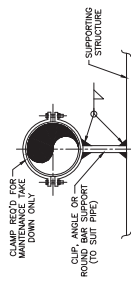
SCALE: AS NOTED

NC-240-0065

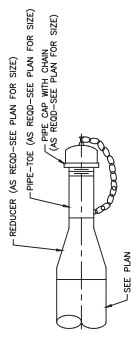


**SANITARY SYSTEM**

DATE	NO.	REV.	BY	APP.
12/15/11	133	1	WJ	WJ
12/15/11	133	2	WJ	WJ
12/15/11	133	3	WJ	WJ
12/15/11	133	4	WJ	WJ
12/15/11	133	5	WJ	WJ
12/15/11	133	6	WJ	WJ
12/15/11	133	7	WJ	WJ
12/15/11	133	8	WJ	WJ
12/15/11	133	9	WJ	WJ
12/15/11	133	10	WJ	WJ
12/15/11	133	11	WJ	WJ
12/15/11	133	12	WJ	WJ
12/15/11	133	13	WJ	WJ
12/15/11	133	14	WJ	WJ
12/15/11	133	15	WJ	WJ
12/15/11	133	16	WJ	WJ
12/15/11	133	17	WJ	WJ
12/15/11	133	18	WJ	WJ
12/15/11	133	19	WJ	WJ
12/15/11	133	20	WJ	WJ
12/15/11	133	21	WJ	WJ
12/15/11	133	22	WJ	WJ
12/15/11	133	23	WJ	WJ
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12/15/11	133	33	WJ	WJ
12/15/11	133	34	WJ	WJ
12/15/11	133	35	WJ	WJ
12/15/11	133	36	WJ	WJ
12/15/11	133	37	WJ	WJ
12/15/11	133	38	WJ	WJ
12/15/11	133	39	WJ	WJ
12/15/11	133	40	WJ	WJ
12/15/11	133	41	WJ	WJ
12/15/11	133	42	WJ	WJ
12/15/11	133	43	WJ	WJ
12/15/11	133	44	WJ	WJ
12/15/11	133	45	WJ	WJ
12/15/11	133	46	WJ	WJ
12/15/11	133	47	WJ	WJ
12/15/11	133	48	WJ	WJ
12/15/11	133	49	WJ	WJ
12/15/11	133	50	WJ	WJ
12/15/11	133	51	WJ	WJ
12/15/11	133	52	WJ	WJ
12/15/11	133	53	WJ	WJ
12/15/11	133	54	WJ	WJ
12/15/11	133	55	WJ	WJ
12/15/11	133	56	WJ	WJ
12/15/11	133	57	WJ	WJ
12/15/11	133	58	WJ	WJ
12/15/11	133	59	WJ	WJ
12/15/11	133	60	WJ	WJ
12/15/11	133	61	WJ	WJ
12/15/11	133	62	WJ	WJ
12/15/11	133	63	WJ	WJ
12/15/11	133	64	WJ	WJ
12/15/11	133	65	WJ	WJ
12/15/11	133	66	WJ	WJ
12/15/11	133	67	WJ	WJ
12/15/11	133	68	WJ	WJ
12/15/11	133	69	WJ	WJ
12/15/11	133	70	WJ	WJ
12/15/11	133	71	WJ	WJ
12/15/11	133	72	WJ	WJ
12/15/11	133	73	WJ	WJ
12/15/11	133	74	WJ	WJ
12/15/11	133	75	WJ	WJ
12/15/11	133	76	WJ	WJ
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12/15/11	133	81	WJ	WJ
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12/15/11	133	84	WJ	WJ
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12/15/11	133	86	WJ	WJ
12/15/11	133	87	WJ	WJ
12/15/11	133	88	WJ	WJ
12/15/11	133	89	WJ	WJ
12/15/11	133	90	WJ	WJ
12/15/11	133	91	WJ	WJ
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12/15/11	133	93	WJ	WJ
12/15/11	133	94	WJ	WJ
12/15/11	133	95	WJ	WJ
12/15/11	133	96	WJ	WJ
12/15/11	133	97	WJ	WJ
12/15/11	133	98	WJ	WJ
12/15/11	133	99	WJ	WJ
12/15/11	133	100	WJ	WJ



PIPE HANGER MAXIMUM SPACING	HANGER NOMINAL PIPE SIZE, IN.	HANGER NOMINAL PIPE SIZE, FT.
5	10	15
6	12	15
8	16	15
10	20	15
12	24	15
14	28	20
16	32	20
18	36	20
20	40	20
22	44	20
24	48	20
26	52	20
28	56	20
30	60	20



**GENERAL NOTES**

- MATERIALS FOR MACHINERY AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE APPROPRIATE SPECIFICATIONS.
- PIPEWORK SHALL INCLUDE WAKES, ANKLE FLANGES AND FITTINGS NECESSARY TO EQULATE AND/OR REMOVE ANY PIECE OF EQUIPMENT FOR REPAIRS WITHOUT DISRUPTING THE ENTIRE SYSTEM.
- FLEXIBLE CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED WHERE VIBRATION AND THERMAL EXPANSION MAY BE ENCOUNTERED.
- PIPEWORK SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID DEFLECT OF PIPING BEING TRANSFERRED TO MACHINERY FITTINGS AND TO AVOID EXCESSIVE STRESS, UNWELDED EFFECTS OF VIBRATION, SHOCK, AND VESSEL MOTION.
- ALL PIPING SHALL BE INSULATED AND LAGGED AS NECESSARY TO PREVENT SWEATING OR TRANSFER OF HEAT.
- SCHEDULE 80 PIPE MAY BE SUBSTITUTED FOR SCHEDULE 40 WHERE SPECIFIED.
- ITEMS LISTED IN PARTS LIST ARE TO BE ORDERED AND FINISHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 3.2 (W) OF THE SHIP'S SPECIFICATION.
- ITEMS LISTED IN PARTS LIST ARE "OR EQUAL" FOR PROCUREMENT PURPOSES.
- LOCATION OF HARD MOUNTS (DET 22-A) ARE SHOWN AS 'X' ON THE PIPE.
- EACH SILENCER TO BE SUPPORTED BY DET 22-A AND DET 23-A.
- LOCATION OF GUESSES (DET 23-A) ARE SHOWN AS '---' ON THE PIPE, AND ARE TO BE INSTALLED AS NOTED.
- LOCAL LOW POINTS TO BE FITTED WITH DRAINS.

ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	COSE CODE	PART NO.	REMARKS	US UNITS
P-10	AR	10"	PIPE, SCHED 40	BLK STL	ASTM A-106-72#			ANSI B36.10, GRADE B	
P-6	AR	6"	PIPE, SCHED 40	BLK STL	ASTM A-106-72#			ANSI B36.10, GRADE B	
P-4	AR	5"	PIPE, SCHED 40	BLK STL	ASTM A-106-72#			ANSI B36.10, GRADE B	
P-4	AR	4"	PIPE, SCHED 40	BLK STL	ASTM A-106-72#			ANSI B36.10, GRADE B	
PS-10	AR	10"	PIPE, SCHED 80	316 SST	ASTM A-312			ANSI B36.19	
PS-6	AR	6"	PIPE, SCHED 80	316 SST	ASTM A-312			ANSI B36.19	
PS-4	AR	5"	PIPE, SCHED 80	316 SST	ASTM A-312			ANSI B36.19	
PS-4	AR	4"	PIPE, SCHED 80	316 SST	ASTM A-312			ANSI B36.19	
E-10	2	10"	ELBOW, STD WT, 90°, LR, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
E-6	2	6"	ELBOW, STD WT, 90°, LR, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
E-5	2	5"	ELBOW, STD WT, 90°, LR, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
E-4	2	4"	ELBOW, STD WT, 90°, LR, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
ESR-10	2	10"	ELBOW, STD WT, 90°, SR, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
ES-4	1	4"	ELBOW, 90°, LR, BTM/LD	316 SST	ASTM A-312			ANSI B16.9	
EAS-10	4	10"	ELBOW, STD WT, 45°, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
EAS-6	1	6"	ELBOW, STD WT, 45°, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
EAS-5	2	5"	ELBOW, STD WT, 45°, BTM/LD	BLK STL	ASTM A-234			ANSI B16.9	
R-605	1	6"x4"	REDUCER, CONC., STD WT	BLK STL	ASTM A-234			ANSI B16.9	
R-544	2	5"x4"	REDUCER, CONC., STD WT	BLK STL	ASTM A-234			ANSI B16.9	
FF-10	12	10"	FLANGE, FT, 150#, SLIP-ON	FST	ASTM A-105			ANSI B16.9	
FF-6	6	6"	FLANGE, FT, 150#, SLIP-ON	FST	ASTM A-105			ANSI B16.9	
FF-5	12	5"	FLANGE, FT, 150#, SLIP-ON	FST	ASTM A-105			ANSI B16.9	
FF-4	7	4"	FLANGE, FT, 150#, SLIP-ON	FST	ASTM A-105			ANSI B16.9	
EJ-10A	2	10"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-10B	2	10"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-6A	1	6"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-6B	1	6"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-5A	2	5"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-5B	2	5"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-4A	1	4"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
EJ-4B	1	4"	EXPANSION JOINT, FLGD	VAR	COML			AMERICAN BDA	
S-10A	1	10"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
S-10B	1	10"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
S-6	1	6"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
S-5A	1	5"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
S-5B	1	5"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
S-4	1	4"	SILENCER	STL	COML			COML VENDOR SUPPLIED	
HC-2	AR	2"	HALF COUPLING, 3000#, THD	FST	ASTM A-105			ANSI B16.11	
HC-1/2	AR	1/2"	HALF COUPLING, 3000#, THD	FST	ASTM A-105			ANSI B16.11	
PP-2	AR	2"	PIPE FLUG, 3000#, THD	FST	ASTM A-105			ANSI B16.11	
PP-1/4	AR	1/4"	PIPE FLUG, 3000#, THD	SST	ASTM A-182			ANSI B16.11, TYP 304L	
BS-720/4	AR	1/2"x1/4"	BUSHING, 3000#, THD	SST	ASTM A-182			ANSI B16.11, TYP 304L	
WS-4	1	4"	WEATHER STOP, HEAVY DUTY	SST	COML				
①	AR	1/2"	PLATE, 20-4#	STL	ASTM A-36				
②	AR	-	ANGLE 3"x5"x1/8"	STL	ASTM A-36				
③	AR	5/8"	BOLT, HEX HD	STL	COML				

**PARTS LIST**

1 2 3 4 5 6 7 8

2. APPROVED USCS IIR 16710-060390  
 2.1. REVERSED TO SUIT AS-BUILT CONDITIONS. BOWEN  
 1. INCORPORATED OWNER COMMENTS. CLAYTON  
 REVISIONS  
 BT DDB

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 MARINE ENGINEERING  
 SOUND CLASS FERRY  
 EXHAUST SYSTEM

DATE: 08/12/2014 11:13 AM  
 DRAWN BY: JAZ  
 CHECKED BY: JAZ  
 PROJECT NO: NC-240-0666  
 SHEET NO: 4  
 TOTAL SHEETS: 4

1. MACHINERY APPROVED TITLE  
 2. MACHINERY APPROVED TITLE  
 3. MACHINERY APPROVED TITLE  
 4. MACHINERY APPROVED TITLE

REFERENCES

8 7 6 5 4 3 2 1

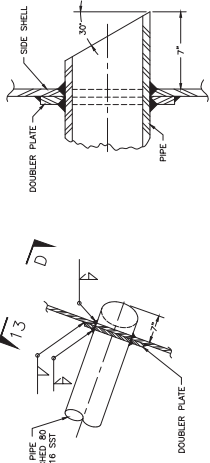
**DOUBLER PLATE TABLE**

PIPE SIZE	DBL PLT DIA
1/2"	1 1/4"
3/4"	1 1/2"
1"	1 3/4"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4 1/4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"

NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

**DETAIL 16-D**

SCALE: NONE



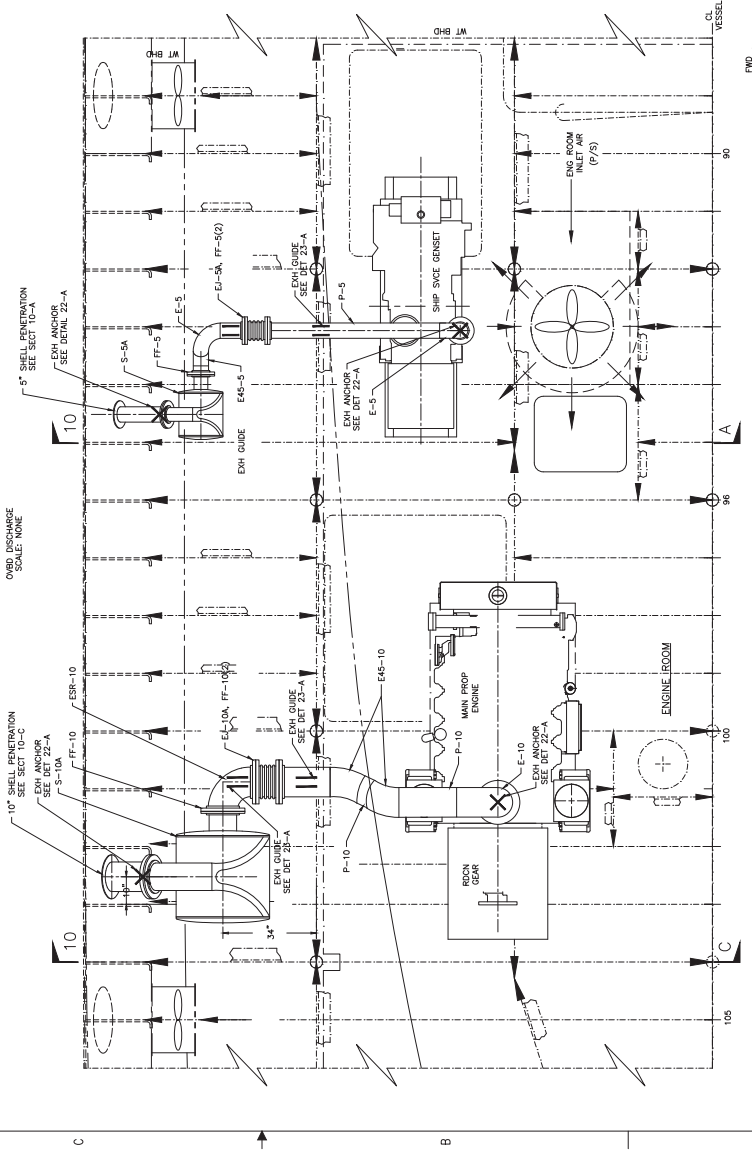
**DETAIL 13-D**

SCALE: NONE

- DOUBLER PLATE TO BE 1.5 TIMES THE AREA SEE DETAIL 14-D AS PLATE REMOVED.
- WELDS TO BE 1/2 THE THICKNESS OF THE THINNEST PLATE PLUS 1/16".

**DETAIL 14-D**

SCALE: NONE

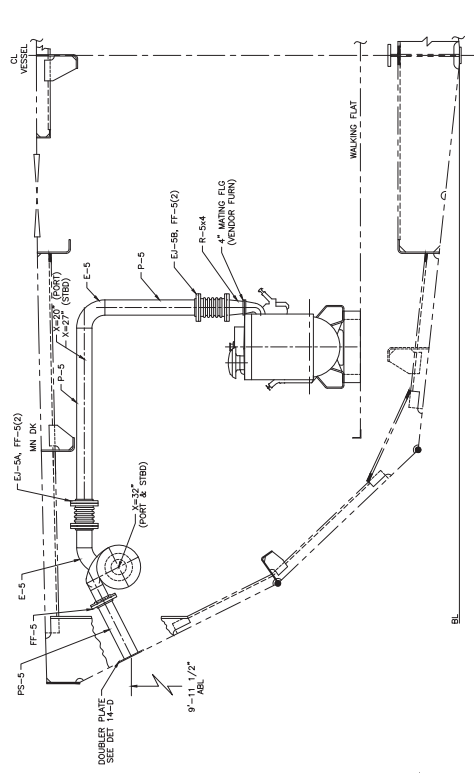


**PLAN 14-A**

SCALE: 3/4" = 1'-0"

**SECTION 10-C**

FR 104 LRG FWD  
SCALE: 3/4" = 1'-0"



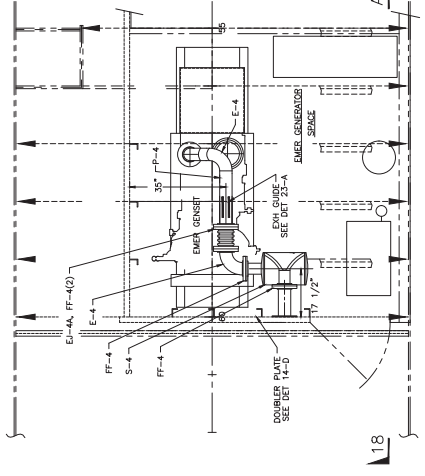
**SECTION 10-A**

FR 104 LRG FWD  
SCALE: 3/4" = 1'-0"

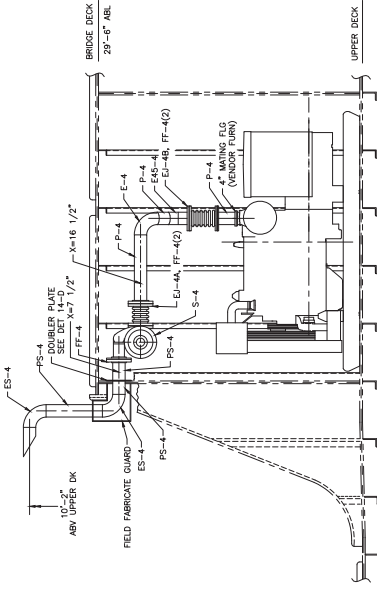
NO.	DATE	BY	CHK	APP	REV
1					1
2					2
3					3
4					4
5					5

NC-240-0066

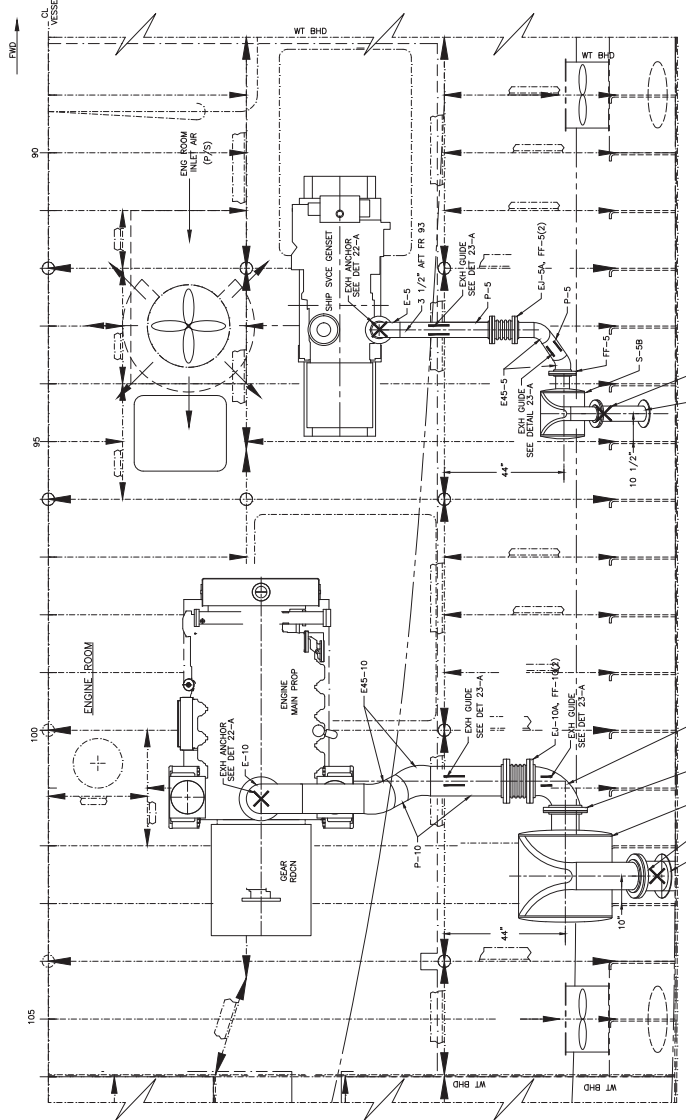
EXHAUST PIPING			
NO.	DATE	BY	CHKD.
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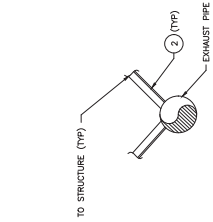
PLAN 18-C  
UPPER DECK  
SCALE 3/4"=1'-0"



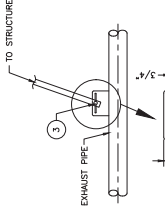
ELEVATION 18-A  
5'-0" OFF CL. (S)  
SCALE 3/4"=1'-0"



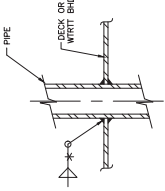
PLAN 22-B  
SCALE 3/4"=1'-0"



DETAIL 22-A  
SCALE NONE



DETAIL 23-A  
SCALE NONE

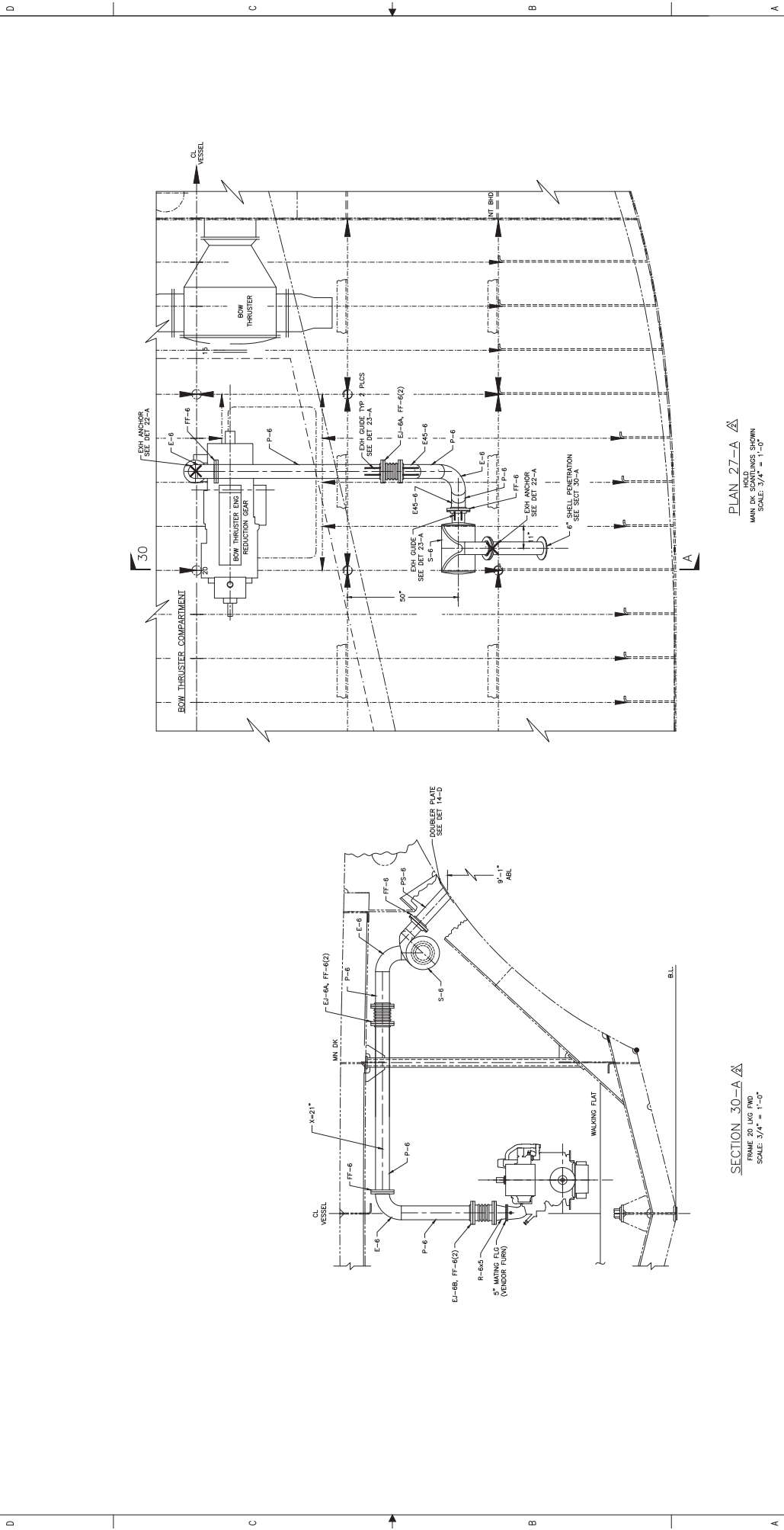


DETAIL 24-A  
SCALE NONE

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

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25 26 27 28 29 30 31 32



**PLAN 27-A**  
 EXHAUST PIPING  
 MAIN DK. SCANTLING SHOWN  
 SCALE: 3/4" = 1'-0"

**SECTION 30-A**  
 EXHAUST PIPING  
 FRAME 20 LUG FWD  
 SCALE: 3/4" = 1'-0"

EXHAUST PIPING		DATE		DRAWN BY		CHECKED BY	
NO. 133	133	133	133	133	133	133	133
REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
SCALE AS NOTED		NC-240-0066		P. 4		P. 2	

**GENERAL NOTES**

1. PIPING SHALL BE Laid DIRECTLY AND SHALL PERFORM TRANSVERSE WATER-TIGHT BULKHEADS AS FAR INBOARD AND AS CLOSE UNDER DECKS NEAR THE TOP OF BULKHEADS AS PRACTICABLE.
2. MATERIALS FOR MACHINERY AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE APPLICABLE CODES AND STANDARDS.
3. PIPING SHALL INCLUDE VALVES, UNIONS, FLANGES AND FITTINGS NECESSARY TO ISOLATE AND/OR REMOVE ANY PIECE OF EQUIPMENT FOR REPAIRS WITHOUT DISRUPTING THE ENTIRE SYSTEM.
4. PIPING CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED WHERE VIBRATION MAY BE ENCOUNTERED. TRANSMISSION TO VALVES AND FITTING AND TO AVOID EXCESSIVE STRAINS, MINIMIZE EFFECTS OF VIBRATION.
5. PIPING SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID WEIGHT OF PIPING BEING TRANSMITTED TO VALVES AND FITTING AND TO AVOID EXCESSIVE STRAINS, MINIMIZE EFFECTS OF VIBRATION.
6. DESTROYED GAZING SHALL BE NOT BORES, GALVANIZED WHEN WEARS OR OTHER ACTIVITY HAS BEEN WITHIN 6" FROM THE END OF PIPES 3" AND ABOVE USING "GALWELD", 2-1/2" AND LESS WITH "GALVONIC", OR EQUAL.
7. UNLESS OTHERWISE SPECIFIED, VALVES SHALL BE OF THE FLANGED OR UNION END BOLLING TYPE WITH BOLLING FOR THE SAME SERVICE THEY SHALL BE COMBINED INTO A MANHOLE. VALVES SHALL BE READY ACCESSIBLE AND INSTALLED TO CLOSE AGAINST PRESSURE.
8. AT THE INBOARD END OF VALVE AND PRESSURE GAUGE, THERE SHALL BE PROVISION FOR A STRAINER.
9. FITTINGS SHALL BE REMOVED AFTER CUTTING AND THREADING. FITTING SHALL BE FREE FROM FINES AND BURRS. JOINTS SHALL BE MADE WITH APPROVED PNEUMATIC COMPOUND APPLIED TO MALE THREADS AND SHALL BE TIGHT. JOINTS SHALL BE MADE WITH APPROVED PNEUMATIC COMPOUND APPLIED TO MALE THREADS. THREE THREADS EXPOSED AFTER JOINTS ARE MADE TIGHT.
10. PIPING SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 3.2 (M) OF THE SHIPS SPECIFICATION.

**PARTS LIST**

ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	GRADE	REMARKS
POX-2	AR	2"	PIPE, SCHED 80, SMLS	GALV STL	ASTM A-53		ANSI BSA.10, GRADE B
POX-1	AR	1 1/2"	PIPE, SCHED 80, SMLS	GALV STL	ASTM A-53		ANSI BSA.10, GRADE B
POX-3/4	AR	3/4"	PIPE, SCHED 80, SMLS	GALV STL	ASTM A-53		ANSI BSA.10, GRADE B
POX-1/2	AR	1/2"	PIPE, SCHED 80, SMLS	GALV STL	ASTM A-53		ANSI BSA.10, GRADE B
CSW-1	AR	1 1/2"	COUPLING, 3000# SMD	FST	ASTM A-105		ANSI B16.11
CSW-2	AR	2"	ELBOW, 90°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
ESW-1	AR	1 1/2"	ELBOW, 90°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
ESW-1	AR	1"	ELBOW, 90°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
ESW-3/4	AR	3/4"	ELBOW, 90°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
ESW-1/2	AR	1/2"	ELBOW, 90°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
ESW-2	AR	2"	ELBOW, 45°, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
CT-1/2	AR	1/2"	TUBE, TYPE "K", HARD	COOPER	ASTM B-88		ANSI B16.11
TSW-2	AR	2"	TEE, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
TSW-1	AR	1 1/2"	TEE, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
T-3/4	AR	3/4"	TEE, 3000# SMD, GALV	FST	ASTM A-105		ANSI B16.11
B-3/4	AR	3/4"	BOLLING, 3000# TID, GALV	FST	ASTM A-105		ANSI B16.11
B-1/2	AR	1/2"	BOLLING, 3000# TID, GALV	FST	ASTM A-105		ANSI B16.11
B-29/32	AR	1/32"	BOLLING, 3000# TID, GALV	FST	ASTM A-105		ANSI B16.11
AD-1/2	AR	1/2"	ADAPTER, G X MPT	COOPER	ASTM B-16.22		ANSI B16.11
IN-21	AR	2"x1 1/2"	INSERT, 3000# SMD	FST	ASTM A-105		ANSI B16.11
IN-21/2	AR	2"x1 1/2"	INSERT, 3000# SMD	FST	ASTM A-105		ANSI B16.11
IN-1/2	AR	1 1/2"	INSERT, 3000# SMD	FST	ASTM A-105		ANSI B16.11
IN-29/32	AR	29/32"	INSERT, 3000# SMD	FST	ASTM A-105		ANSI B16.11
G-1	2	1 1/4"	GAGE, PRESS. 4 1/2" DIA	VAR	COML		6-1084-04-0/00 ASHROFT, D-400 PSI
G-2	1	1 1/4"	GAGE, PRESS. 4 1/2" DIA	VAR	COML		6-1084-04-0/00 ASHROFT, D-300 PSI
VR-3/4A	4	3/4"	VALVE, RELIEF, SET AT 250 PSI, TID	BRZ	ASTM B-283		CONSOLIDATED
VR-3/4B	1	3/4"	VALVE, RELIEF, SET AT 165 PSI, TID	BRZ	ASTM B-283		CONSOLIDATED
VA-3/4	1	3/4"	VALVE, NEEDLE, 200#, TID	BRZ	ASTM B-61		LUNKEMEIER
VPR-2	1	2"	VALVE, PRESS REGULATING, TID	BRZ	ASTM B-61		TYPE D SPECIAL ORDER PER W/O
VCL-1/2	1	1/2"	VALVE, CHECK, AIR C/PRESS	BRZ	ASTM B-61		LUNKEMEIER
VCL-3/4	1	3/4"	VALVE, CHECK, AIR C/PRESS	BRZ	ASTM B-61		LUNKEMEIER
BW-2	8	2"	VALVE, BALL, 400#, TID	SST	ASTM A-351		2"9-11-37-52/25 BALL VALVE, A
BW-1/2	2	1 1/2"	VALVE, BALL, 400#, TID	SST	ASTM A-351		1 1/2"9-11-38-52/25 BALL VALVE, A
BW-3/4	1	3/4"	VALVE, BALL, 400#, TID	SST	ASTM A-351		3/4"9-11-38-52/25 BALL VALVE, A
BW-1/2	11	1/2"	VALVE, BALL, 400#, TID	SST	ASTM A-351		1/2"9-11-38-52/25 BALL VALVE, A
WP-1	1	1"	WEIR, 1" DIA	BRZ	ASTM B-62		1" DIA WEIR, 1" DIA
WP-2	1	1"	WEIR, 1" DIA	BRZ	ASTM B-62		1" DIA WEIR, 1" DIA
ST-2	3	2"	STRAINER, WKT, TYPE, 300#, TID	BRZ	ASTM B-62		80
QD-1/2	6	1/2"	QUICK, DISCONNECT	COML	VAR		QD-101-08-06 AEROCOUP
HA-1	2	1 1/2"	HOSE, ASSY	VAR	COML		2898-24 AEROCOUP W/AS-1905S-24 D END
A-1	2	1/2"	ADAPTER, 3" SWELAMPIT	STL	COML		2021-20-24 AEROCOUP
HA-2	3	2"	HOSE, ASSY	VAR	COML		2851-32 AEROCOUP W/411-32S D END
A-2	2	1 1/2"	ADAPTER, 3" SWELAMPIT	STL	COML		2021-24-24 AEROCOUP
A-3	4	2"	ADAPTER, 3" SWELAMPIT	STL	COML		2021-32-32 AEROCOUP
USW-3/4	AR	3/4"	UNION, 3000# SMD	FST	ASTM A-105		ANSI B16.11
E-2	AR	2"	ELBOW, 90°, 2000#, TID	FST	ASTM A-105		ANSI B16.11
ES-2	AR	2"	ELBOW, 45°, 2000#, TID	FST	ASTM A-105		ANSI B16.11
FR-2	AR	2"	FLANGE, SUP-8N, 150#, RF	FST	ASTM A-105		ANSI B16.5

**EQUIPMENT LIST**

NO	DESCRIPTION	MFG	MODEL	TYPE	HP	WGT (LBS)	GVW (LBS)	ELEC. DATA	REMARKS
1	COMPRESSOR	QUINCY	ED40	THD	1 1/4"		7 1/2 HP		705 PSI BOLLING, 200 PSI BOLLING
2	AIR RECEIVER	MANCHESTER	40024	THD	3"				340 GAL, 300 PSI BOLLING (VERTICAL)
3	AIR HORN	KALEBERG	213C	THD					

2. REVISED TO AS-BUILT CONDITIONS. REVISED TO SERIAL E-1-900576.

1. INITIAL ISSUE.

DESCRIPTION: COMPRESSED AIR PIPING SYSTEM

REVISIONS: B1 D01E

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SCALE: NONE

DATE: 11/15/2024

PROJECT: NC-240-0067

DATE: 11/15/2024

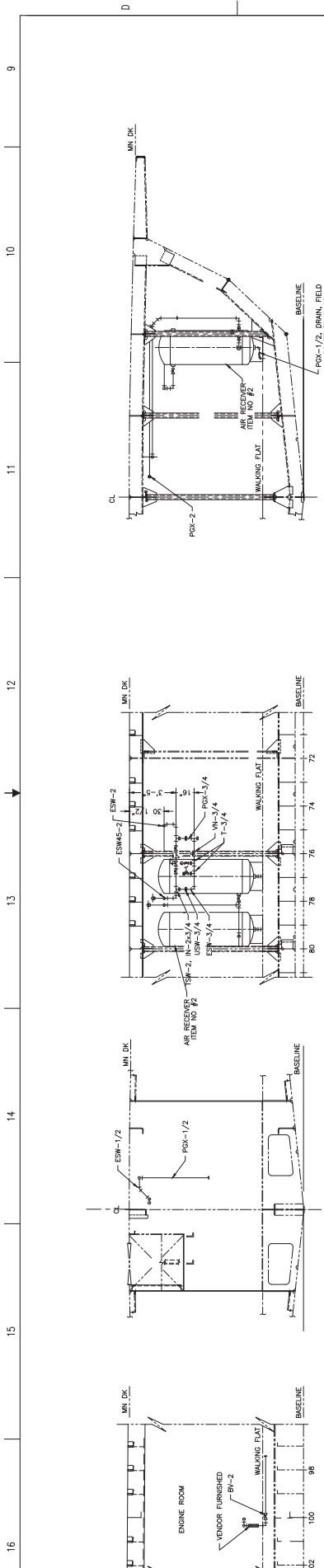
SCALE: NONE

DATE: 11/15/2024

SCALE: NONE

**RESERVATIONS**

SELECTION OF KALEBERG AIR HORN

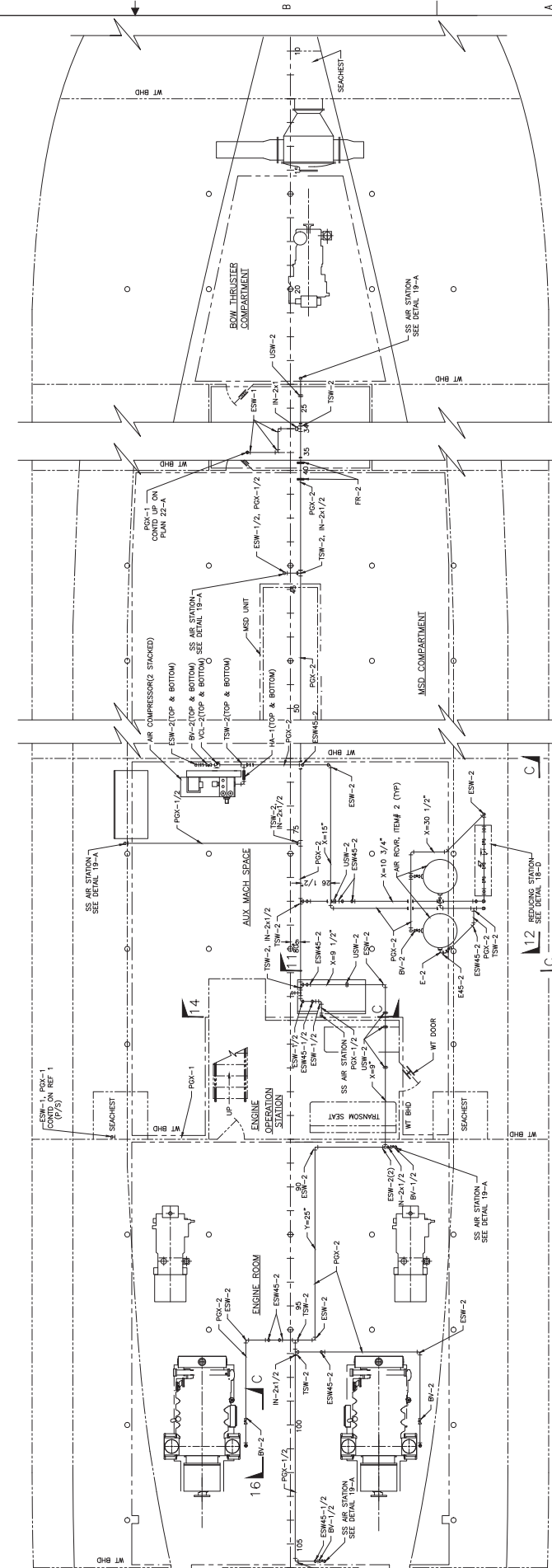


SECTION 11-C  
 AIR PIPING  
 SCALE 3/8" = 1'-0"

ELEVATION 12-C  
 17' 11" HIGH  
 SCALE 3/8" = 1'-0"

SECTION 14-C  
 AIR PIPING  
 SCALE 3/8" = 1'-0"

ELEVATION 16-C  
 AIR PIPING  
 SCALE 3/8" = 1'-0"



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

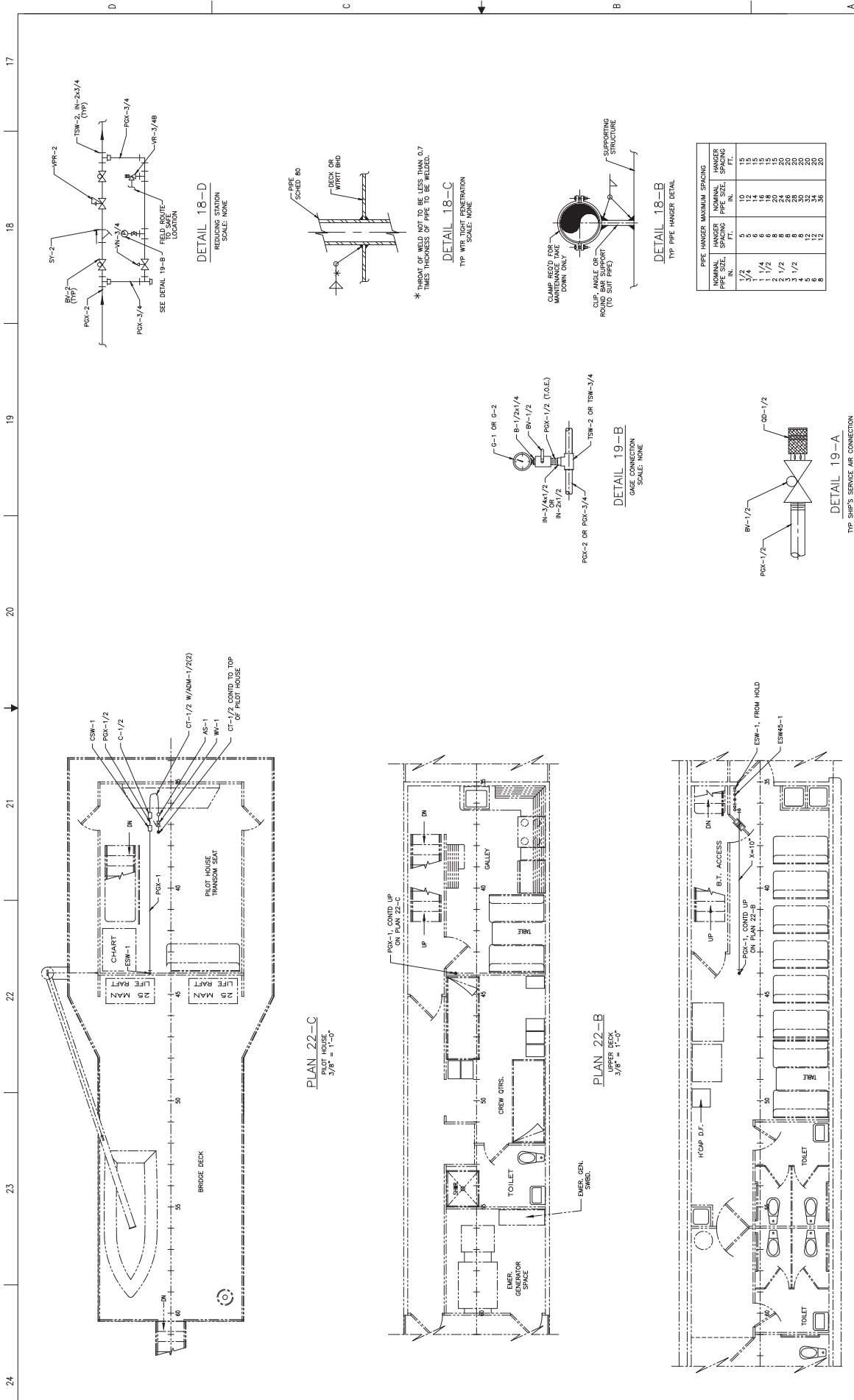
COMPRESSED AIR PIPING SYS

NO.	REV.	DATE	BY	CHKD.
1	1	11/11/11	...	...
2	1	...	...	...
3	1	...	...	...
4	1	...	...	...

SCALE: AS NOTED

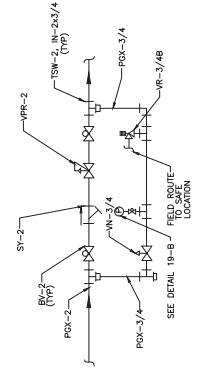
NC-240-0067



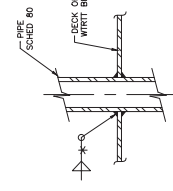


24 23 22 21 20 19 18 17

A B C D

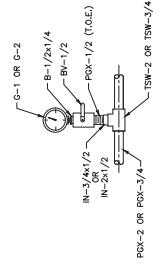


DETAIL 18-D  
REDUCING STATION  
SCALE: NONE

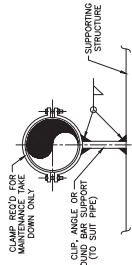


DETAIL 18-C  
WIRT TIGHT PENETRATION  
SCALE: NONE

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

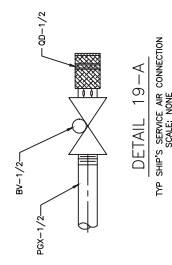


DETAIL 19-B  
GAS CONNECTION  
SCALE: NONE



DETAIL 18-B  
TIP PIPE HANGER DETAIL

PIPE HANGER MAXIMUM SPACING	
NOMINAL PIPE SIZE, IN.	NOMINAL HANGER SPACING, FT.
3/4	5
1	6
1 1/4	6
1 1/2	6
2	8
2 1/2	8
3	10
3 1/2	12
4	12
6	12
8	12
10	12
12	12
14	12
16	12
18	12
20	12
22	12
24	12
26	12
28	12
30	12
32	12
34	12
36	12
40	12
42	12
44	12
48	12
54	12
60	12



DETAIL 19-A  
SHIP'S SERVICE AIR CONNECTION  
SCALE: NONE

PLAN 22-C  
PILOT HOUSE  
3/8" = 1'-0"

PLAN 22-B  
UPPER DECK  
3/8" = 1'-0"

PLAN 22-A  
MAIN DECK  
3/8" = 1'-0"

COMPRESSED AIR PIPING SYS

DESIGN NO.	123		
DATE	1/24/00		
SCALE	AS SHOWN		
PROJECT NO.	NC-240-0067		
REV	NO.	DATE	BY
1	3	1	2
2	3	1	2

GENERAL NOTES

1. PIPING SHALL BE LINED DIRECTLY AND SHALL BESE TRANSVERSE WATERIGHT BULKHEADS AS FAR INBOARD AND AS CLOSE UNDER DECKS NEAR THE TOP OF BULKHEADS AS PRACTICABLE.
2. MATERIALS FOR MACHINERY AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE CURRENT ISSUE OF U.S. COAST GUARD REGULATIONS, 46 CFR SUBCHAPTER F.
3. PIPING SHALL INCLUDE VALVES, BOWNS, FLANGES AND FITTINGS NECESSARY TO ISOLATE AND/OR REMOVE EXCESSIVE STRAINS, MANUAZE EFFECTS OF VIBRATION, SHOCK, AND VESSEL MOTION.
4. FLEXIBLE CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED WHERE VIBRATION MAY BE ENCOUNTERED.
5. FLEXIBLE CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED WHERE VIBRATION MAY BE ENCOUNTERED. ATTENTION TO VALVES AND FITTINGS AND TO AVOID EXCESSIVE STRAINS, MANUAZE EFFECTS OF VIBRATION, SHOCK, AND VESSEL MOTION.
6. ALL PIPING SHALL BE INSULATED AND LAGGED AS NECESSARY TO PREVENT SWEATING OR TRANSFER OF HEAT. REDUCING VALVES AND ALL OTHER PRESSURE AND FLOW CONTROL DEVICES SHALL BE PROVIDED WITH A STRAINER AT THE INLET, A RELIEF VALVE AND A PRESSURE GAGE IN THE DISCHARGE SIDE, AND A VALVED BYPASS.
7. PIPING SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 3.2.
8. COOLER BLEED VENTS ARE TO BE INSTALLED ON HIGH SIDES OF ALL COOLERS. SEE DETAIL 23-B.
9. A PRESSURE TAP SHALL BE PROVIDED ON THE VALVE & GUAGE LINE OF EACH GEAR OIL HEAT EXCHANGER, USING A BALL VALVE WITH FLUG AS SHOWN ON DETAIL 19-C.

RESERVATIONS

1-ENGINE CONNECTIONS-RESERVED-PENDING-VENDOR-INFORMATION-  
 2-REDUCING GEAR-COOLING-CIRCUIT-AND-AUX-EXP-TK-LEVEL-  
 3-ARMY-RESERVED-PENDING-VENDOR-INFORMATION-

GRIDCOOLER DATA

NO.	EQUIPMENT	MODEL	TYPE	UFG	QUANTITY
1	MAIN ENGINE	D1418BU	GRID	FERNSTRUM	2
2	GENERATOR	B1468R	GRID	FERNSTRUM	2
3	BOW THRUSTER	D1418BU	GRID	FERNSTRUM	1
4	REDN GEAR	B64-68	GRID	FERNSTRUM	2

PARTS LIST

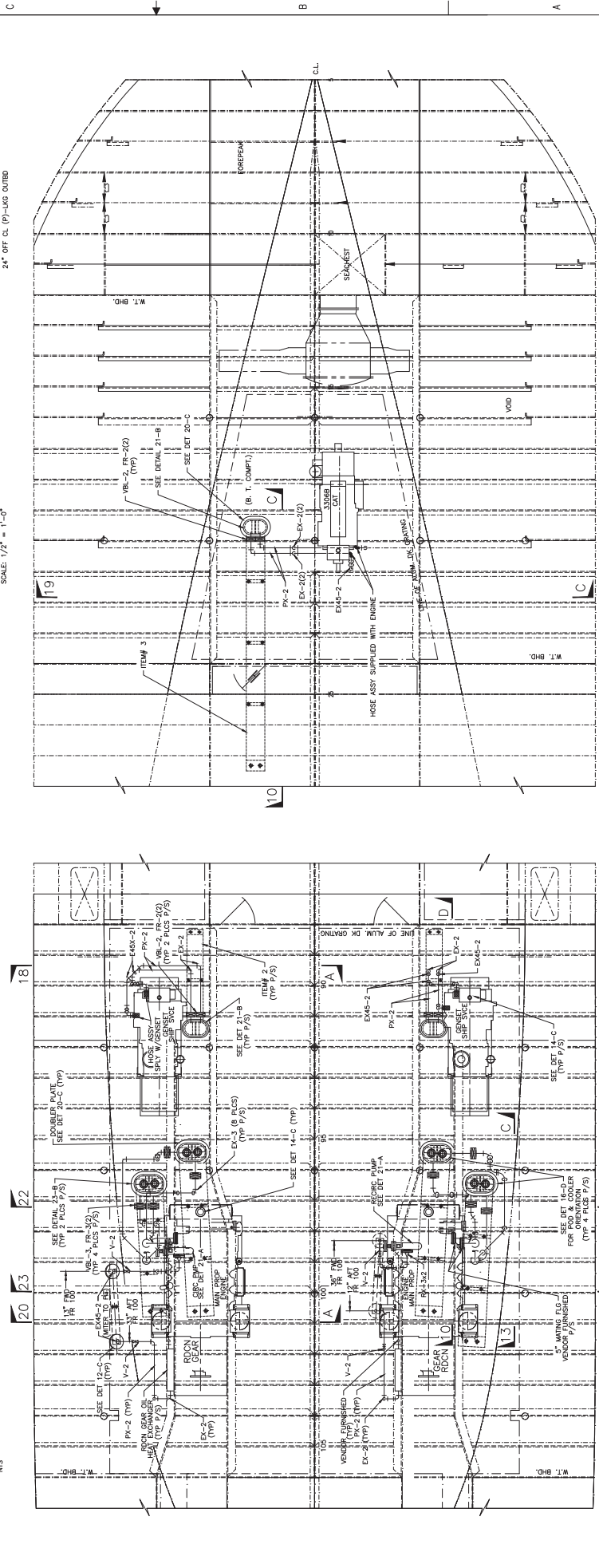
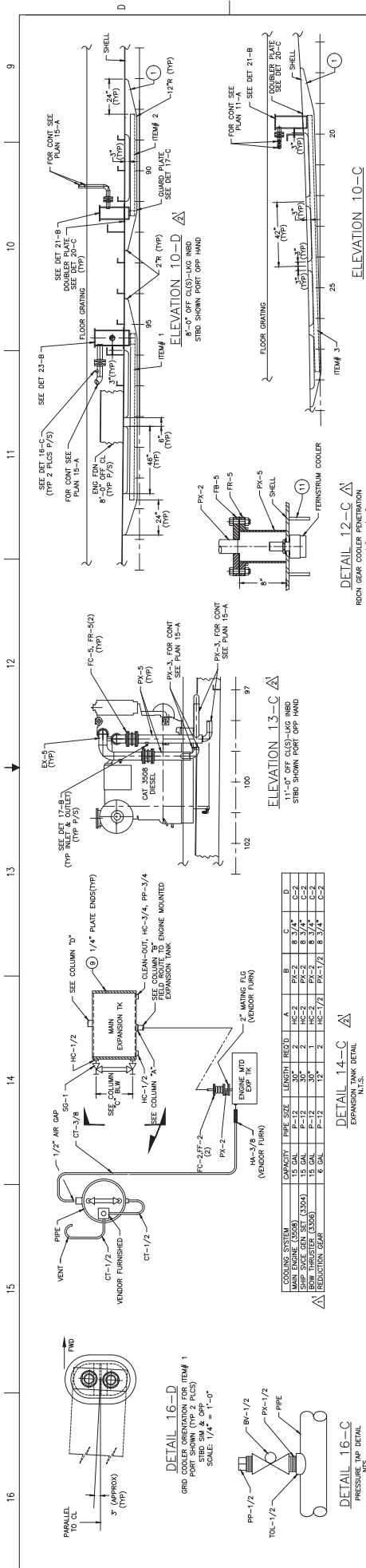
ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC. NO.	GRADE	PART NO.	REMARKS	UFG
PK-12	AR	10"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-10	AR	8"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-8	AR	6"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-6	AR	4"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-4	AR	3"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-3	AR	2"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-2	AR	1 1/2"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
PK-1	AR	1"	PIPE, SCHED 20, SMLS	BLK STL	ASTM A-53			ANSI B36.10, GRADE B	
EX-5	AR	3/8"	ELEW, 90°, XSTR, BTHLD	COPPER	ASTM B-88			TYPE "K"	
EX-4	AR	5"	ELEW, 90°, XSTR, BTHLD	BLK STL	ASTM A-234			ANSI B16.9	
EX-3	AR	3"	ELEW, 90°, XSTR, BTHLD	BLK STL	ASTM A-234			ANSI B16.9	
EX-2	AR	5"	ELEW, 45°, XSTR, BTHLD	BLK STL	ASTM A-234			ANSI B16.9	
EX-1	AR	3"	ELEW, 45°, XSTR, BTHLD	BLK STL	ASTM A-234			ANSI B16.9	
FR-2	AR	4"	FLANGE, RF, SUP-ON, 150#	FST	ASTM A-105			ANSI B16.5	
FR-1	AR	3"	FLANGE, RF, SUP-ON, 150#	FST	ASTM A-105			ANSI B16.5	
FT-2	10	2"	FLANGE, FT, SUP-ON, 150#	FST	ASTM A-105			ANSI B16.5	
VB-3	8	3"	VALVE, BTHL, 200#, LUG TYPE	SS	ASTM A-351		22925-9814311 DEMCO		
VB-2	6	2"	VALVE, BTHL, 200#, LUG TYPE	SS	ASTM A-351		22925-9814316 DEMCO		
BR-1/2	8	1/2"	BRZ BALL, 250#, THD	BRZ	ASTM B-62		70-103	APOLLO	
BR-1	8	1/2"	BRZ BALL, 250#, THD	BRZ	ASTM B-62				
PR-1/2	AR	1/2"	PIPE FLUG, 50, HD, 300#, THD	M	ASTM A-107			ANSI B16.3	
PR-1	AR	1/2"	PIPE FLUG, 50, HD, 300#, THD	M	ASTM A-107			ANSI B16.3	
HC-3/4	AR	3/4"	HALF COUPLING, THREADED, 3000#	FST	ASTM A-105			ANSI B16.11	
HC-1/2	AR	1/2"	HALF COUPLING, THREADED, 3000#	FST	ASTM A-105			ANSI B16.11	
SG-1	5	1/2"	SIGHT GLASS ASSEMBLY	VAR	COML		20-251-03	CONBRACO	
FC-5	4	5"	FLEX CONNECTION	VAR	ASTM F-1123		1915	GENERAL RUBBER	
FC-2	5	2"	FLEX CONNECTION	VAR	ASTM F-1123		1915	GENERAL RUBBER	
TC-3/4	B	3/4"	THRED-O-LET, 3000#	STL	COML				
TC-1/2	B	1/2"	THRED-O-LET, 3000#	STL	COML				
TH-3/4	B	3/4"	THRED-O-LET, 3000#	STL	COML				
TH-1/2	B	1/2"	THRED-O-LET, 3000#	STL	COML				
BU-1/2	AR	1/2"	BUSHING, HEX HD, 3000#, THD	FST	ASTM A-105			ANSI B16.9	
C-2	AR	2"	COUPLING, THREADED, 3000#	FST	ASTM A-105			ANSI B16.11	
1	AR	3/4"	PLATE, 20.4#	STL	ASTM A-36				
2	AR	3/8"	PLATE, 15.2#	STL	ASTM A-36				
3	AR	5/8"	FLAT BAR	STL	ASTM A-36				
4	AR	1/2"	FLAT BAR	STL	ASTM A-36				
5	AR	1/2"	BOLT, HEX HD, 1/2-13UNC-2A	COML				U.S. 1 1/2" W/NUTS	
6	AR	1/2"	BOLT, HEX HD, 1/2-13UNC-2A	COML				U.S. 1 1/2" W/NUTS	
7	AR	1/2"	WASHER & NUT	COML				U.S. 1 1/2" W/NUTS	
8	AR	1/2"	WASHER & NUT	COML				U.S. 1 1/2" W/NUTS	
9	AR	1/4"	PLATE, 10.2#	STL	ASTM A-36				
10	AR	5/16"	PLATE, 12.7#	STL	ASTM A-36				
11	AR	1/2"	PLATE, 20.4#	STL	ASTM A-36				

RESERVATIONS

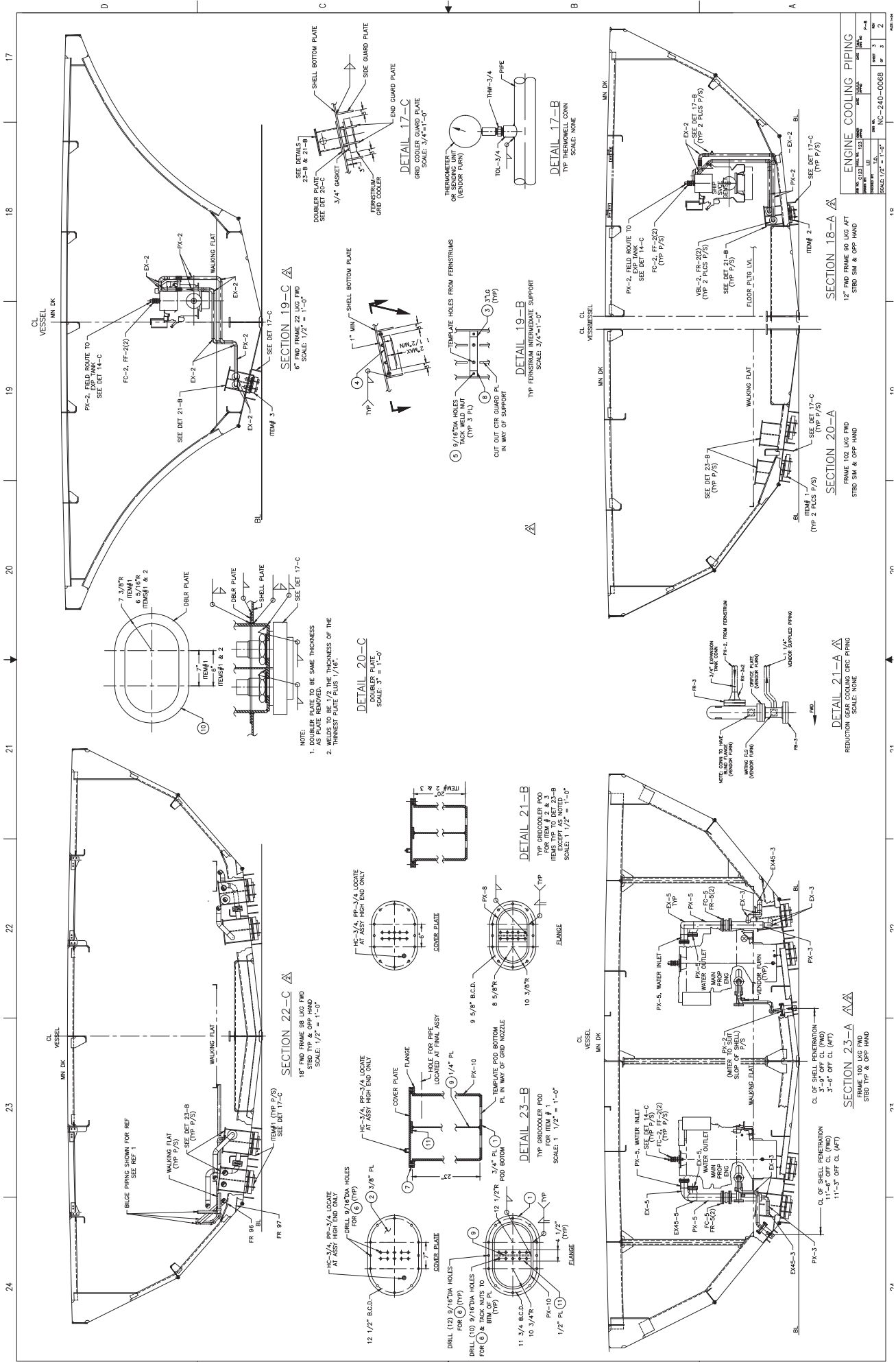
- 1-ENGINE CONNECTIONS-RESERVED-PENDING-VENDOR-INFORMATION-  
 2-REDUCING GEAR-COOLING-CIRCUIT-AND-AUX-EXP-TK-LEVEL-  
 3-ARMY-RESERVED-PENDING-VENDOR-INFORMATION-

2.	APPROVE, USCG, LTR, 16710/P000360	DATE	
1.	REVISION, DWG REV AS-BUILT CONDITIONS	DATE	
1.	INCORPORATED OWNER COMMENTS	DATE	
REVISIONS			
REVISED BY			
REVISED DATE			
REVISED SHEET NO.			
REVISED TOTAL SHEETS			
STATE OF NORTH CAROLINA			
DEPARTMENT OF TRANSPORTATION			
MARINE ENGINEERING			
SOUND CLASS FERRY			
ENGINE COOLING PIPING			
DRAWING NUMBER			
SCALE			
DATE			
BY			
CHECKED BY			
APPROVED BY			
PROJECT NO.			
SHEET NO.			
TOTAL SHEETS			
DRAWING TITLE			

1	ENGINE COOLING PIPING	SCALE	DATE
2	ENGINE COOLING PIPING	SCALE	DATE
3	ENGINE COOLING PIPING	SCALE	DATE
4	ENGINE COOLING PIPING	SCALE	DATE



ENGINE COOLING PIPING		SCALE: 1/2" = 1'-0"	
NO. OF SHEETS	3	SHEET NO.	1
TOTAL NO. OF SHEETS	3	DATE	11/10/00
PROJECT NO.	NC-240-0068	DESIGNER	...
CLIENT	...	CHECKER	...
DATE	...	APPROVER	...



ENGINE COOLING PIPING			
NO.	REV.	DATE	BY
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SECTION 18-A  
12" FWD FRAME 90 LAG FWD  
STRIP SIM & OPP HAND  
SCALE: 1/2" = 1'-0"

SECTION 19-C  
6" FWD FRAME 22 LAG FWD  
SCALE: 1/2" = 1'-0"

SECTION 20-C  
FRAME 102 LAG FWD  
STRIP SIM & OPP HAND  
SCALE: 1/2" = 1'-0"

SECTION 21-A  
REDUCTION GEAR COOLING CIRC PIPING  
SCALE: NONE

SECTION 22-C  
18" FWD FRAME 88 LAG FWD  
STRIP TYP & OPP HAND  
SCALE: 1/2" = 1'-0"

SECTION 23-A  
FRAME 100 LAG FWD  
STRIP TYP & OPP HAND  
SCALE: 1/2" = 1'-0"

DETAIL 17-B  
TYP THERMOWELD JOINT  
SCALE: NONE

DETAIL 17-C  
GRIND COOLER WALKING FLAT  
SCALE: 3/4" = 1'-0"

DETAIL 19-B  
TYP FERNSTRIM INTERMEDIATE SUPPORT  
SCALE: 3/4" = 1'-0"

DETAIL 20-C  
SCALE: 3" = 1'-0"

DETAIL 21-B  
TYP GRIND COOLER POD  
ITEMS TYP TO DET 23-B  
SCALE: 1 1/2" = 1'-0"

DETAIL 23-B  
TYP GRIND COOLER POD  
SCALE: 1 1/2" = 1'-0"

DETAIL 21-A  
SCALE: NONE

SCALE: 1 1/2" = 1'-0"

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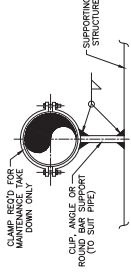
8 7 6 5 4 3 2 1

**GENERAL NOTES**

1. PIPING SHALL BE Laid DIRECTLY AND SHALL PERCE TRANSVERSE WATERTIGHT BULKHEADS AS FAR INBOARD AND AS CLOSE UNDER DECKS NEAR THE TOP OF BULKHEADS AS PRACTICABLE.
2. MATERIALS FOR MACHINERY AND EQUIPMENT SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE CURRENT ISSUE OF U.S. COAST GUARD REGULATIONS, 46 CFR SUBCHAPTER F.
3. ALL PIPING TO BE INSTALLED SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE CODES AND REGULATIONS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE CODES AND REGULATIONS.
4. FLEXIBLE CONNECTIONS TO MACHINERY COMPONENTS SHALL BE USED WHERE VIBRATION MAY BE ENCOUNTERED.
5. PIPING SHALL BE SECURED BY SUPPORTS AND LARGES CO. AS TO ALSO BEHIND OF PIPING BEANS TRANS. MOUNTED TO VALVES AND FITTING AND TO AVOID EXCESSIVE STAINS, MINIMIZE EFFECTS OF VIBRATION, SHOCK, AND VESSEL MOTION.
6. ALL PIPING SHALL BE CLEANED AND FLUSHED AFTER FABRICATION IN ACCORDANCE WITH PARAGRAPH 3.2.
7. ITEMS LISTED IN PARTS LIST ARE "FOR EQUAL" FOR PROCUREMENT PURPOSES.
8. SYSTEM WAMP IS 1510 PSI AS SET BY THE CROSS COLLIER RELIEF VALVE.
9. ALL WELDING COMPONENTS, ETC. EXCEPT FOR PIPE, HOSES AND FITTINGS ARE FURNISHED BY MATHERS MARINE SYSTEMS.
10. PROVIDE EXPANSION/PRESSURE OFFSETS OR LOOPS IN PIPING BETWEEN FRAMES 106 AND 116.

**PARTS LIST**

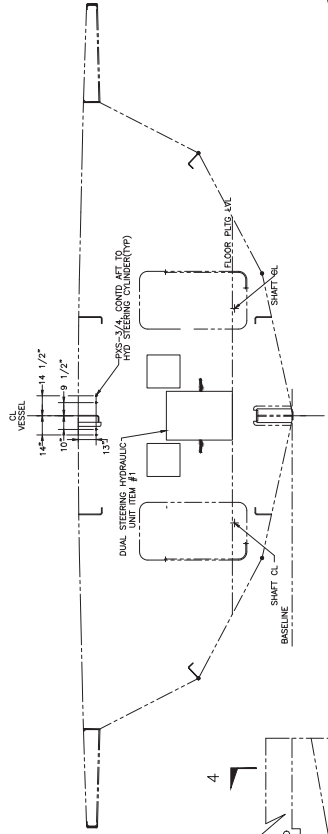
NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC NO.	UNIT	REMARKS
1	8	3/4"	PIPE, SCH40 STD. SMLS	316L-SST	ASTM A-312	FT.	ANSI B16.19
2	1	3/4"	ELBOW, 90°, 5000# SMD	316L-SST	ASTM A-403	PC	ANSI B16.11
3	1	3/4"	ADAPTER, SMD x MALE 3" JIC	316L-SST	COML	PC	APPROXIMATE
4	1	8	HOSE, ASST	VAR	COML	PC	MAXIMUM 15' x 1/2" ID x 3/4" O.D.



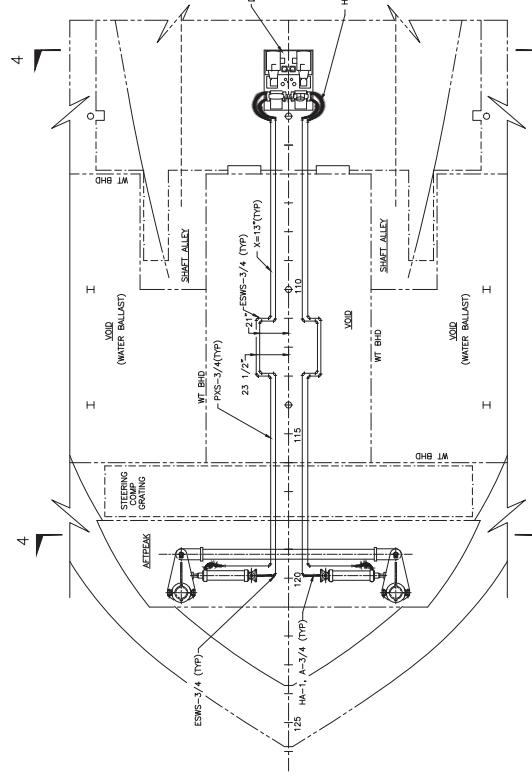
**DETAIL 16-D**  
RING AND HANGER  
SCALE: NONE

**PIPE HANGER MAXIMUM SPACING**

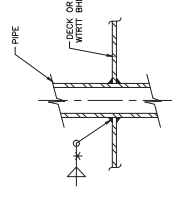
NOMINAL PIPE SIZE, IN.	HANGER SPACING, FT.	NOMINAL PIPE SIZE, IN.	HANGER SPACING, FT.
3/4"	3	12	15
1"	4	14	15
1 1/2"	6	16	15
2"	8	18	15
2 1/2"	10	20	20
3"	12	22	20
3 1/2"	14	24	20
4"	16	26	20
4 1/2"	18	28	20
5"	20	30	20
5 1/2"	22	32	20
6"	24	34	20



**SECTION 4-B**  
FOR USE WITH PLAN 7-A  
SCALE: 3/8"=1'-0"



**PLAN 7-A**  
HOLD  
SCALE: 3/8"=1'-0"



**DETAIL 14-C**  
WRTT BHD.  
SCALE: NONE

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

2.	APPROVED USCG LIR 16710/P000390	RI
2.	1. SPECIAL E-1-9401395	1/2/26
1.	INC. FINAL AS-BUILT CONDITIONS.	1/1
1.	INCORPORATED OWNER COMMENTS.	1/1
REVISIONS		
NO.	DESCRIPTION	BY DATE
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
MARINE ENGINEERING		
HYDRAULIC STEERING SYSTEM		
SCALE: NONE	SCALE: NONE	SCALE: NONE
NO. 1	NO. 2	NO. 3
NO. 4	NO. 5	NO. 6
NO. 7	NO. 8	NO. 9
NO. 10	NO. 11	NO. 12

**EQUIPMENT LIST**

NO.	QTY	DESCRIPTION	MFG	MODEL	TYPE	UNIT	HP	IPM	ELEC. DATA	REMARKS
1	1	DUAL HYDRAULIC STEERING UNIT	MATHERS	ESMS-3/4	ITEM #	PC				SYS DWG 3205-1510/1511

**REFERENCES**

1.	MATHERS & COMPANY'S BLOCK DRAWING	E-3	NO. NC-240-0041
2.	STEERING GEAR ASSEMBLY	E-2	NO. NC-240-0042
3.	STEERING GEAR ASSEMBLY	E-1	NO. NC-240-0043
4.	STEERING GEAR ASSEMBLY	E-4	NO. NC-240-0044
5.	STEERING GEAR ASSEMBLY	E-5	NO. NC-240-0045
6.	STEERING GEAR ASSEMBLY	E-6	NO. NC-240-0046
7.	STEERING GEAR ASSEMBLY	E-7	NO. NC-240-0047
8.	STEERING GEAR ASSEMBLY	E-8	NO. NC-240-0048
9.	STEERING GEAR ASSEMBLY	E-9	NO. NC-240-0049
10.	STEERING GEAR ASSEMBLY	E-10	NO. NC-240-0050
11.	STEERING GEAR ASSEMBLY	E-11	NO. NC-240-0051
12.	STEERING GEAR ASSEMBLY	E-12	NO. NC-240-0052
13.	STEERING GEAR ASSEMBLY	E-13	NO. NC-240-0053
14.	STEERING GEAR ASSEMBLY	E-14	NO. NC-240-0054
15.	STEERING GEAR ASSEMBLY	E-15	NO. NC-240-0055
16.	STEERING GEAR ASSEMBLY	E-16	NO. NC-240-0056
17.	STEERING GEAR ASSEMBLY	E-17	NO. NC-240-0057
18.	STEERING GEAR ASSEMBLY	E-18	NO. NC-240-0058
19.	STEERING GEAR ASSEMBLY	E-19	NO. NC-240-0059
20.	STEERING GEAR ASSEMBLY	E-20	NO. NC-240-0060

GENERAL NOTES

- 1. PIPING SHALL BE LED DIRECTLY AND SHALL PERCE TRANSVERSE BURHEADS AS FAR INBOARD AND AS CLOSE UNDER DECKS NEAR THE TOP OF BURHEADS AS PRACTICABLE.
2. PIPING SHALL INCLUDE VALVES, UNIONS, FLANGES AND FITTINGS NECESSARY TO ISOLATE AND/OR REMOVE ANY PIECE OF EQUIPMENT FOR REPAIR WITHOUT DISRUPTING THE ENTIRE SYSTEM.
3. PIPING SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID WEIGHT OF PIPING BEING TRANSFERRED TO THE VALVE BODY. WHERE THREE OR MORE VALVES ARE LOADED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.
4. OVERBOARD DISCHARGE LINES OR VALVES ATTACHED TO THE INSIDE OF THE HULL SHALL BE FITTED WITH DOUBLER PLATES IN WAY OF THE PENETRATION TO MAINTAIN THE ORIGINAL STRENGTH AND INTEGRITY.
5. ALL FASTENINGS USED TO CONNECT VALVES TO SEA CHESTS SHALL BE STAINLESS STEEL.
6. UNLESS OTHERWISE SPECIFIED, VALVES SHALL BE OF THE FLANGED OR UNION NUT BONNET TYPE WITH RISING STEMS WITH THREADE EXTERNAL TO THE VALVE BODY. WHERE THREE OR MORE VALVES ARE LOADED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.
7. PIPING SHALL BE SECURED BY SUPPORTS AND HANGERS SO AS TO AVOID WEIGHT OF PIPING BEING TRANSFERRED TO THE VALVE BODY. WHERE THREE OR MORE VALVES ARE LOADED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.
8. OVERBOARD DISCHARGE LINES OR VALVES ATTACHED TO THE INSIDE OF THE HULL SHALL BE FITTED WITH DOUBLER PLATES IN WAY OF THE PENETRATION TO MAINTAIN THE ORIGINAL STRENGTH AND INTEGRITY.
9. ALL FASTENINGS USED TO CONNECT VALVES TO SEA CHESTS SHALL BE STAINLESS STEEL.
10. UNLESS OTHERWISE SPECIFIED, VALVES SHALL BE OF THE FLANGED OR UNION NUT BONNET TYPE WITH RISING STEMS WITH THREADE EXTERNAL TO THE VALVE BODY. WHERE THREE OR MORE VALVES ARE LOADED TOGETHER AND INSTALLED TO CLOSE AGAINST PRESSURE.

- 11. ITEMS LISTED IN THE PARTS LIST ARE "OR EQUAL" FOR PROCUREMENT PURPOSES, EXCEPT FOR PUMPS AND VALVES. (M) OF THE SHIPS SPECIFICATION.
12. ALL HOSE THREADS SHALL BE "NPT" 1 1/2" HAS 9 THREADS PER INCH, 1.39" MALE OD.
13. SEE REF. 2.

Table with 10 columns: ITEM, QTY, DESCRIPTION, MFG, MODEL, TYPE, SIZE, HEAD, (GPM) (FH), (DIN), (IP) (DIN), (M) (DIN), REMARKS. Includes items like 1 FIRE PUMP, 2 FIRE PUMP, 3 STRAINER, DUPLEX.

EQUIPMENT LIST
ITEM QTY DESCRIPTION MFG MODEL TYPE SIZE HEAD (GPM) (FH) (DIN) (IP) (DIN) (M) (DIN) REMARKS

Table with 10 columns: ITEM, QTY, DESCRIPTION, MFG, MODEL, TYPE, SIZE, HEAD, (GPM) (FH), (DIN), (IP) (DIN), (M) (DIN), REMARKS. Includes items like 1 FIRE PUMP, 2 FIRE PUMP, 3 STRAINER, DUPLEX.

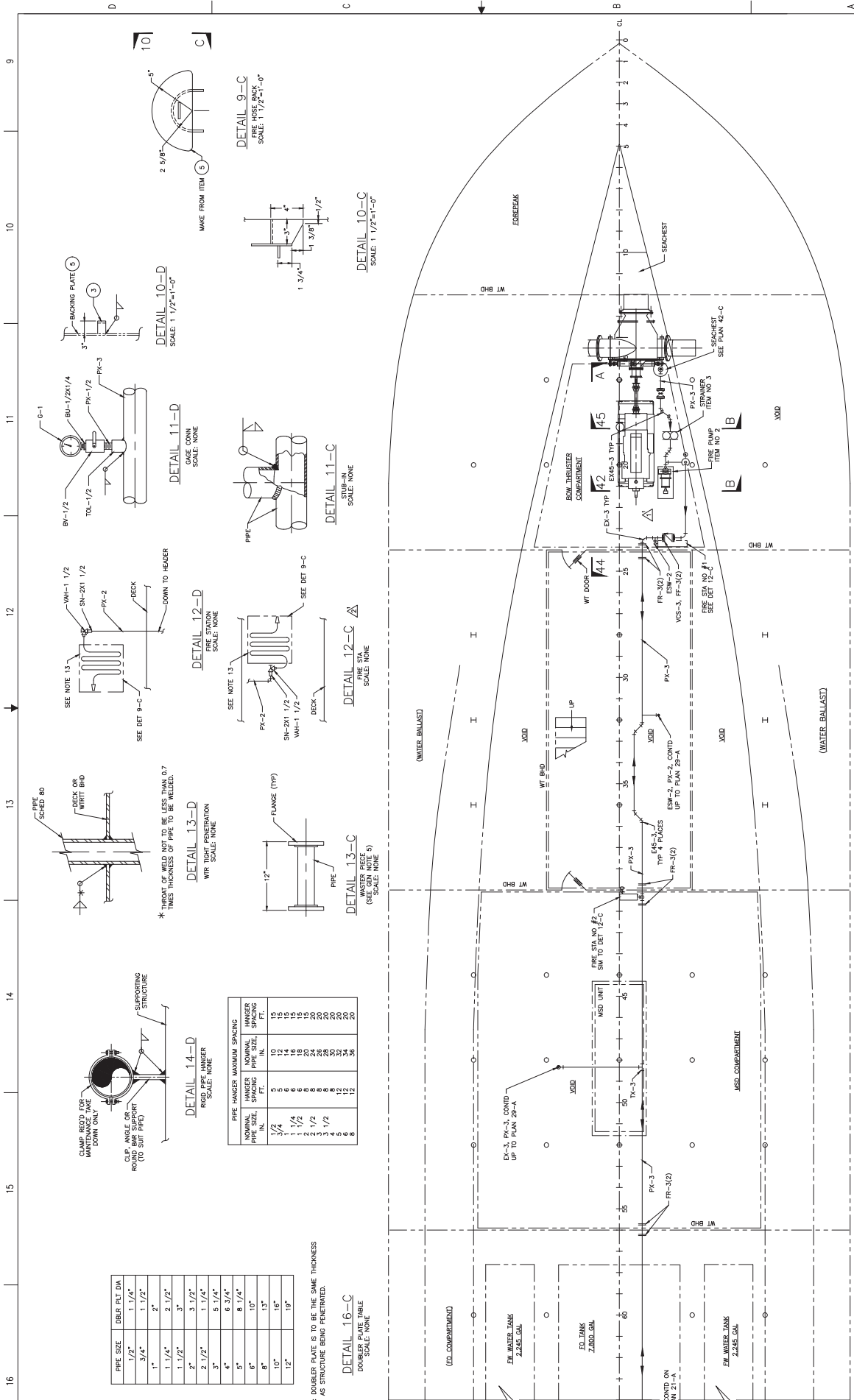
14" PIPE SEACHEST STRAINER PLATE CALCULATIONS
INTERNAL AREA OF 8" SCHED 80 PIPE = 45.668 SQ. IN.
ACTUAL OPEN AREA = 282.188 SQ. IN. TOTAL OPEN AREA OF STRAINER PLATE = 318.856 SQ. IN.

RESERVATIONS
6 CHILLED WATER SYSTEM
5 BELGE PIPING & STEIN TUBE FLUSHING
4 COMPRESSED AIR PIPING SYSTEM
3 MACHINERY ARRANGEMENT
2 SAFETY PLAN
1 TRANSVERSE FRAMES BELOW MAIN DECK

REFERENCES
SCALE: 1" = 10'-0"
DRAWING NO. NC-240-0070

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FIREMAIN SYSTEM

REVISIONS
1. REVISION: ADDS 8" OR 10" DIA. PIPING TO EXISTING SYSTEM.
2. REVISION: ADDS 8" OR 10" DIA. PIPING TO EXISTING SYSTEM.



PIPE SIZE	DRIP PLY DIA.
1/2"	1 1/4"
3/4"	1 1/2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
2 1/2"	4"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	10"
8"	13"
10"	16"
12"	19"

PIPE HANGER MAXIMUM SPACING	
PIPE SIZE	SPACING
1/2"	5
3/4"	6
1"	8
1 1/4"	10
1 1/2"	12
2"	15
2 1/2"	18
3"	24
3 1/2"	28
4"	30
5"	34
6"	38

NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

**DETAIL 16-C**  
DOUBLER PLATE TABLE  
SCALE: NONE

**DETAIL 13-D**  
W/RT TIGHT PENETRATION  
SCALE: NONE

**DETAIL 13-C**  
MASTER PIPE (SEE GEN NOTE 5)  
SCALE: NONE

**DETAIL 12-D**  
PIPE STATION  
SCALE: NONE

**DETAIL 12-C**  
PIPE STA  
SCALE: NONE

**DETAIL 11-D**  
PIPE HANGER  
SCALE: NONE

**DETAIL 11-C**  
STOP  
SCALE: NONE

**DETAIL 10-D**  
SCALE: 1 1/2"=1'-0"

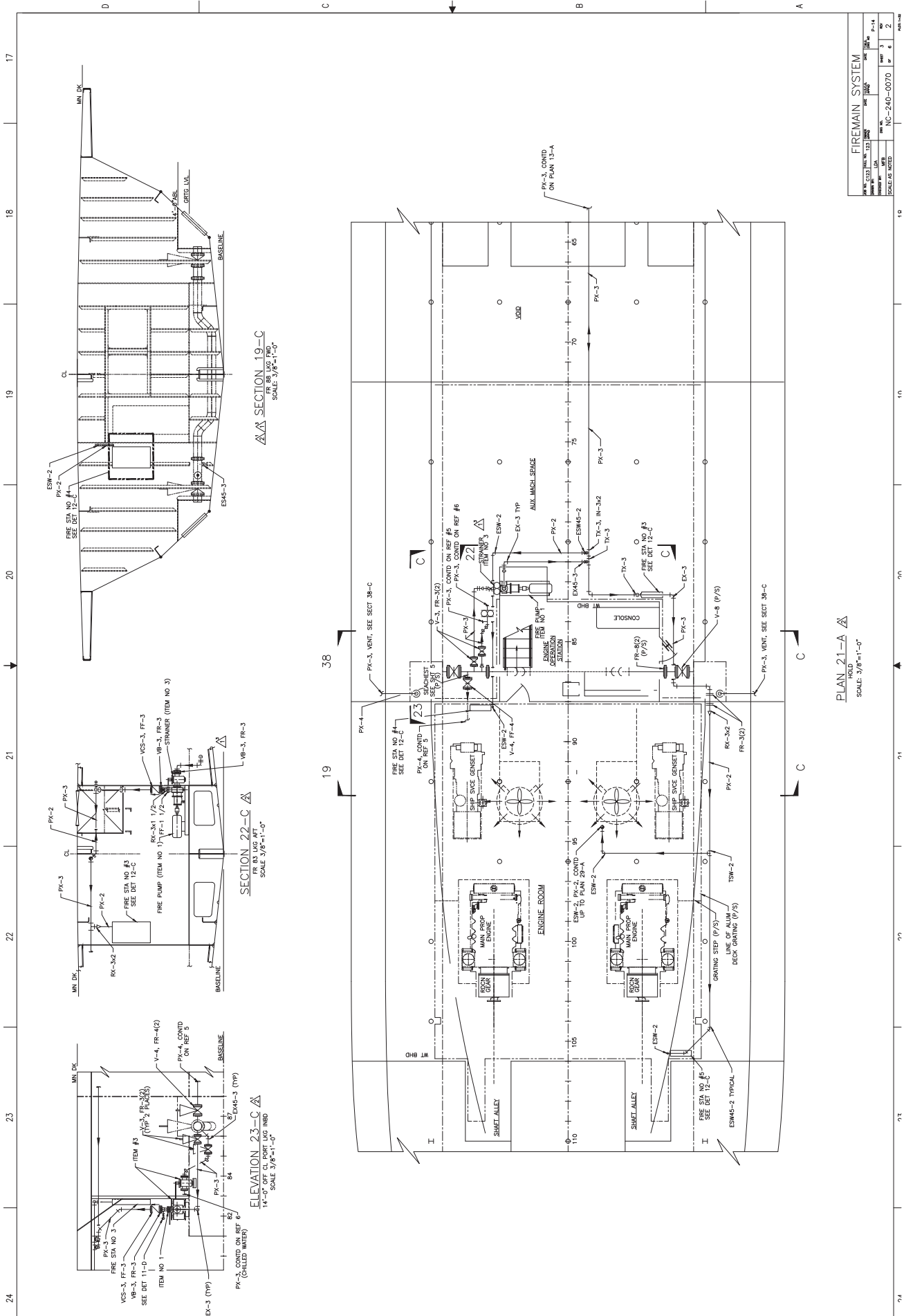
**DETAIL 10-C**  
SCALE: 1 1/2"=1'-0"

**DETAIL 9-C**  
FIRE HOSE BACK  
SCALE: 1 1/2"=1'-0"

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

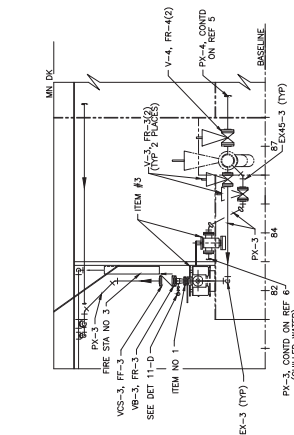
FIREMAIN SYSTEM			
REV	DATE	BY	CHK
1			
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SCALE: AS NOTED  
NC-240-0070

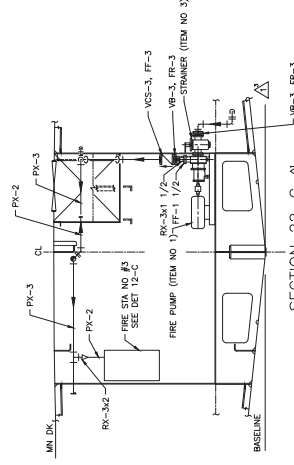


24 23 22 21 20 19 18 17

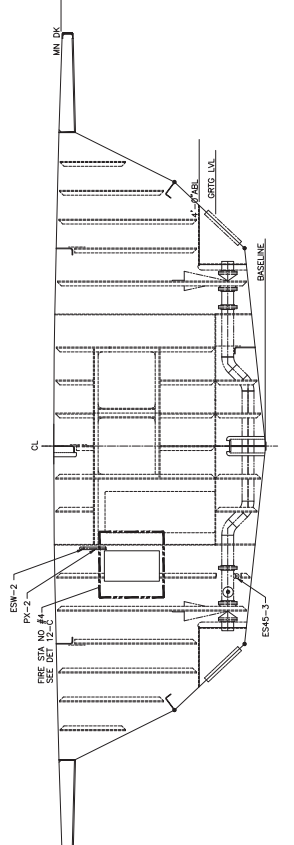
19 20 21 22 23 24



ELEVATION 23-C  
14'-0" OVER TO 10' HHD  
SCALE: 3/8"=1'-0"



SECTION 22-C  
14'-0" OVER TO 10' HHD  
SCALE: 3/8"=1'-0"



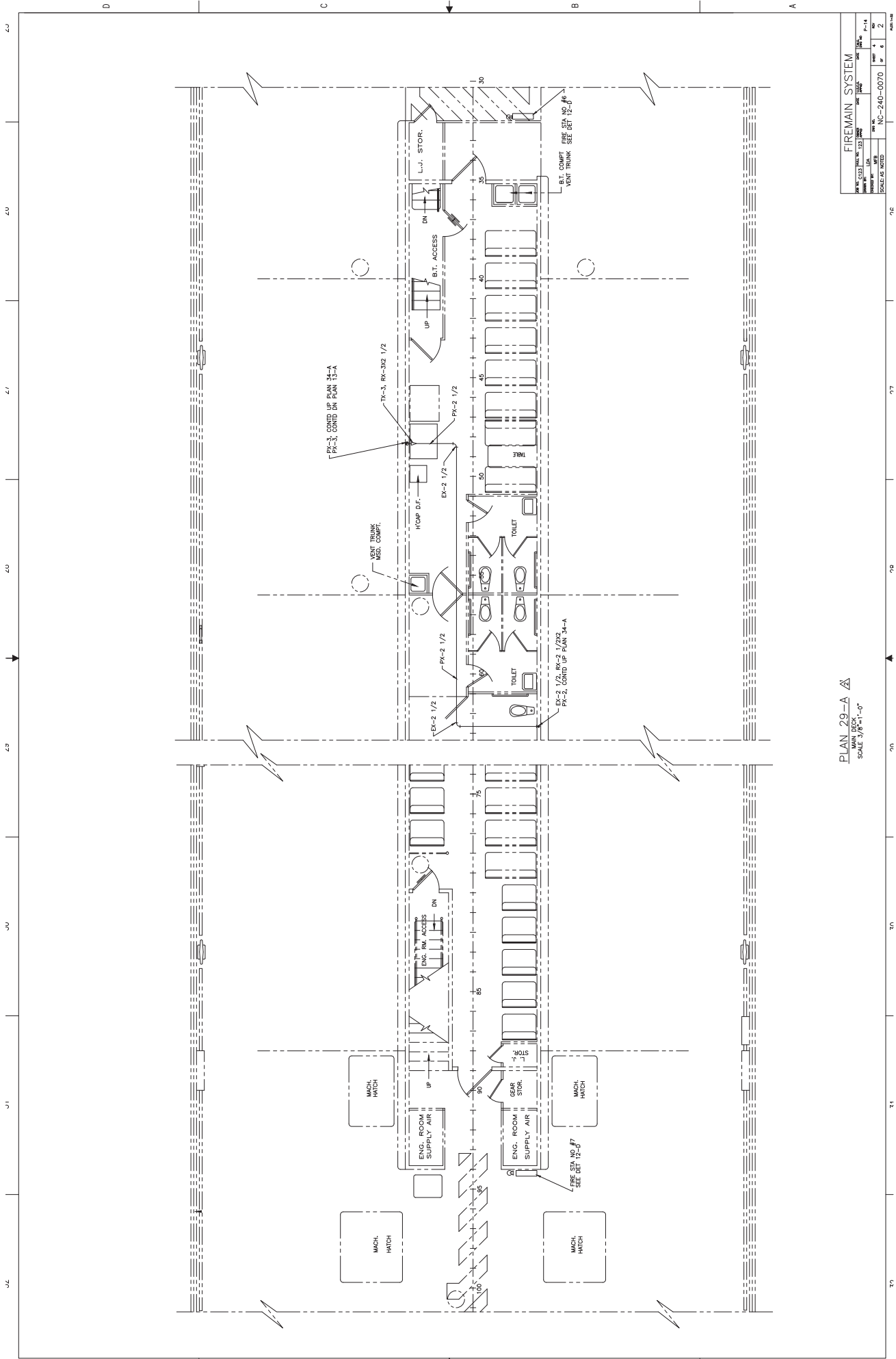
SECTION 19-C  
14'-0" OVER TO 10' HHD  
SCALE: 3/8"=1'-0"

PLAN 21-A  
14'-0" OVER TO 10' HHD  
SCALE: 3/8"=1'-0"

FIREMAIN SYSTEM	
DATE	11/14/18
SCALE	AS SHOWN
PROJECT	NC-240-0070
REV	NO. 3
REV	NO. 4
REV	NO. 5
REV	NO. 6
REV	NO. 7
REV	NO. 8
REV	NO. 9
REV	NO. 10
REV	NO. 11
REV	NO. 12
REV	NO. 13
REV	NO. 14
REV	NO. 15
REV	NO. 16
REV	NO. 17
REV	NO. 18
REV	NO. 19
REV	NO. 20
REV	NO. 21
REV	NO. 22
REV	NO. 23
REV	NO. 24
REV	NO. 25
REV	NO. 26
REV	NO. 27
REV	NO. 28
REV	NO. 29
REV	NO. 30
REV	NO. 31
REV	NO. 32
REV	NO. 33
REV	NO. 34
REV	NO. 35
REV	NO. 36
REV	NO. 37
REV	NO. 38
REV	NO. 39
REV	NO. 40
REV	NO. 41
REV	NO. 42
REV	NO. 43
REV	NO. 44
REV	NO. 45
REV	NO. 46
REV	NO. 47
REV	NO. 48
REV	NO. 49
REV	NO. 50

SCALE: AS NOTED

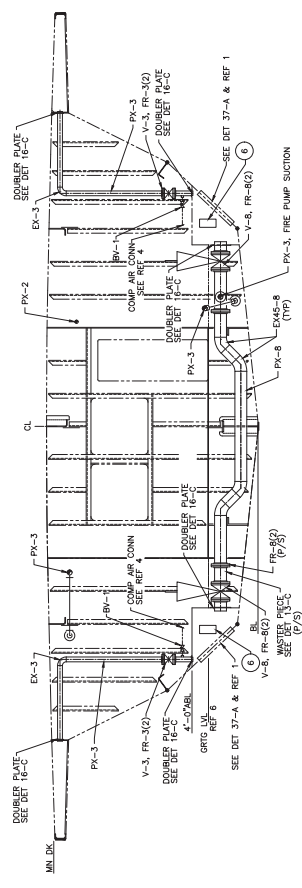




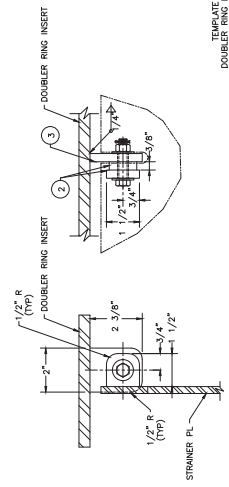
PLAN 29-A  
 FIREMAIN SYSTEM  
 SCALE 3/8" = 1'-0"

FIREMAIN SYSTEM			
DATE	NO.	REV.	BY
12/14/11	1	1	...
12/14/11	2	1	...
12/14/11	3	1	...
12/14/11	4	1	...
12/14/11	5	1	...
12/14/11	6	1	...
12/14/11	7	1	...
12/14/11	8	1	...
12/14/11	9	1	...
12/14/11	10	1	...
12/14/11	11	1	...
12/14/11	12	1	...
12/14/11	13	1	...
12/14/11	14	1	...
12/14/11	15	1	...
12/14/11	16	1	...
12/14/11	17	1	...
12/14/11	18	1	...
12/14/11	19	1	...
12/14/11	20	1	...
12/14/11	21	1	...
12/14/11	22	1	...
12/14/11	23	1	...
12/14/11	24	1	...
12/14/11	25	1	...
12/14/11	26	1	...
12/14/11	27	1	...
12/14/11	28	1	...
12/14/11	29	1	...
12/14/11	30	1	...
12/14/11	31	1	...
12/14/11	32	1	...
12/14/11	33	1	...
12/14/11	34	1	...
12/14/11	35	1	...
12/14/11	36	1	...
12/14/11	37	1	...
12/14/11	38	1	...
12/14/11	39	1	...
12/14/11	40	1	...
12/14/11	41	1	...
12/14/11	42	1	...
12/14/11	43	1	...
12/14/11	44	1	...

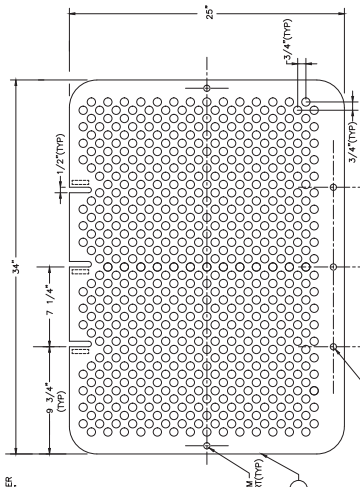
33 34 35 36 37 38 39 40



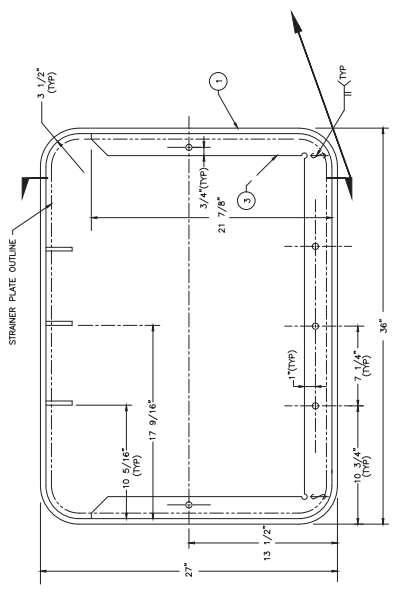
SECTION 38-C-A  
SEA CHEST CROSSOVER  
SCALE: 3/8"=1'-0"



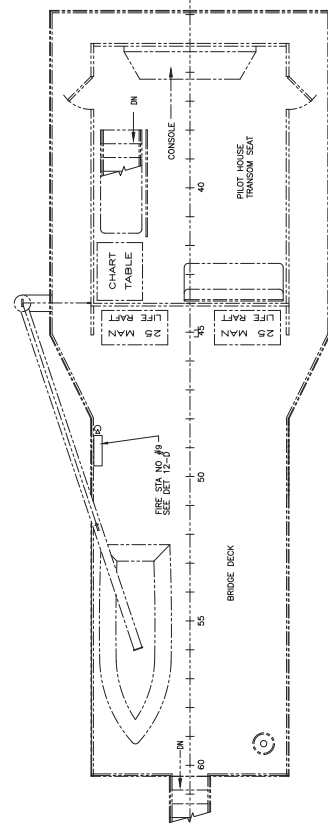
DETAIL 39-B  
DOUBLER RING INSERT (2)  
SCALE: 3/8"=1'-0"



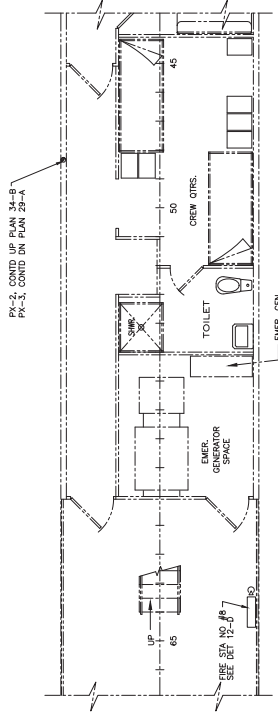
DETAIL 37-B  
STRAINER PLATE OUTLINE  
SCALE: 3/4"=1'-0"



DETAIL 39-A  
DOUBLER RING INSERT (2 REC)  
SCALE: 3/4"=1'-0"



PLAN 34-B  
PILOT HOUSE  
SCALE: 3/8"=1'-0"

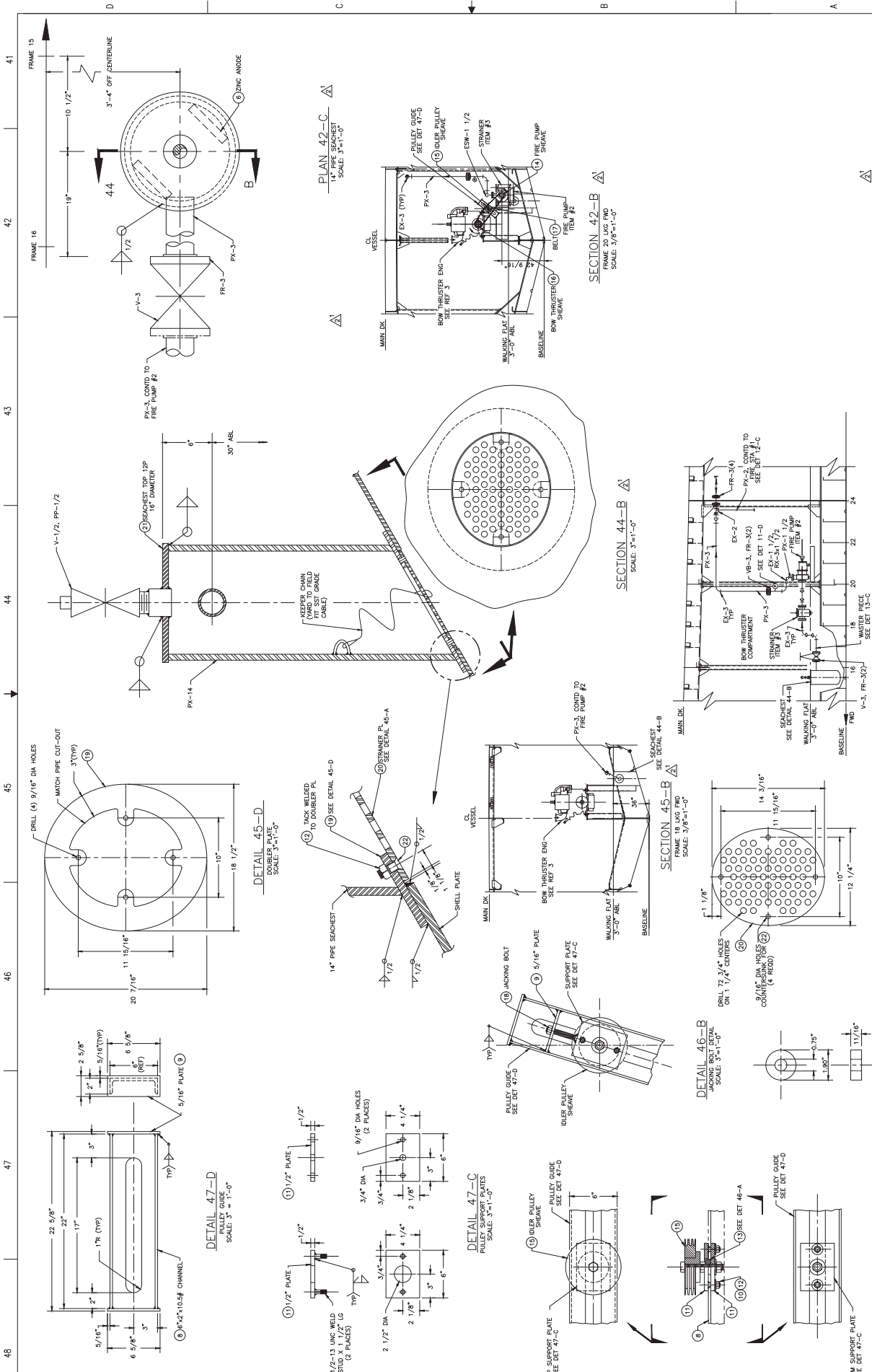


PLAN 34-A  
FIREMAIN SYSTEM  
SCALE: 3/8"=1'-0"

NO.	DATE	BY	CHKD.	APP.	SCALE
1					
2					

NC-240-0070

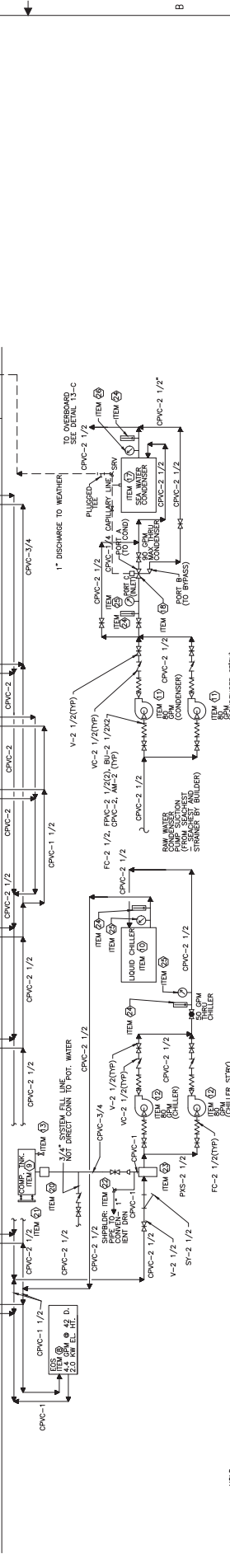
T4 T5 T6 T7 T8 T9 T10



FIREMAN SYSTEM			
REV	DATE	BY	CHK
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8 7 6 5 4 3 2 1

ITEM #	QUANTITY	LOCATION	DESCRIPTION/NOTES
ITEM (1)	1	PILOTHOUSE OVERHEAD	CARRIER 420312 FAN COIL UNIT
ITEM (2)	1	PILOTHOUSE FREE STNG	CARRIER 420303 FAN COIL UNIT
ITEM (3)	1	GALLERY BULKHEAD	CARRIER 420303 FAN COIL UNIT
ITEM (4)	1	GALLERY BULKHEAD	CARRIER 420303 FAN COIL UNIT
ITEM (5)	1	CREW OTIS OVERHEAD	CARRIER 420304 FAN COIL UNIT
ITEM (6)	1	HALLWAY BULKHEAD	CARRIER 420312 FAN COIL UNIT
ITEM (7)	2	FORWARD LOUNGE BULKHEAD	CARRIER 420312 FAN COIL UNIT
ITEM (8)	1	FORWARD LOUNGE BULKHEAD	CARRIER 420312 FAN COIL UNIT
ITEM (9)	1	E.O.S. BULKHEAD	CARRIER 420312 FAN COIL UNIT
ITEM (10)	1	HOLD AUX. MACHINERY RM.	COMPRESSOR TANK B&S 10229-15 0A
ITEM (11)	1	HOLD AUX. MACHINERY RM.	CARRIER RECP. LG CHILLER (247)
ITEM (12)	2	HOLD AUX. MACHINERY RM.	CHILLED WATER PUMPS
ITEM (13)	2	HOLD AUX. MACHINERY RM.	CHILLED WATER PUMPS
ITEM (14)	1	HOLD AUX. MACHINERY RM.	TANK DRAIN
ITEM (15)	1	HOLD AUX. MACHINERY RM.	CHROMALOX LUH-06-83
ITEM (16)	2	HOLD AUX. MACHINERY RM.	CHROMALOX LUH-06-83
ITEM (17)	1	HOLD AUX. MACHINERY RM.	CHROMALOX LUH-06-83
ITEM (18)	1	HOLD AUX. MACHINERY RM.	SEA WATER REFRIG CONDENSER
ITEM (19)	8	AFT LOUNGE MAIN DECK	CONDENSER WATER DIVERTER VA. 12X12 4-WAY 5/4 DIFFUSER
ITEM (20)	1	HOLD AUX. MACHINERY RM.	TANK FITTING BAGS ATF-12
ITEM (21)	1	HOLD AUX. MACHINERY RM.	SOFT GLASS KIT
ITEM (22)	1	HOLD AUX. MACHINERY RM.	RELIEF VALVE
ITEM (23)	1	HOLD AUX. MACHINERY RM.	AIR SEPARATOR BAG AS 2 1/2
ITEM (24)	4	HOLD AUX. MACHINERY RM.	REFRESHMENT WATER TANK 4 1/2 W/PT
ITEM (25)	3	HOLD AUX. MACHINERY RM.	REFRESHMENT WATER TANK 4 1/2 W/PT
ITEM (26)	1	HOLD AUX. MACHINERY RM.	REFRESHMENT WATER TANK 4 1/2 W/PT
ITEM (27)	1	HOLD AUX. MACHINERY RM.	REFRESHMENT WATER TANK 4 1/2 W/PT
ITEM (28)	1	MSD COMPARTMENT	CHROMALOX LUH-06-83
ITEM (29)	1	MSD COMPARTMENT	CHROMALOX LUH-06-83
ITEM (30)	6	ENG. RM. AUX. MCHY. RM.	HARTELL SERIES 440M-12-523
ITEM (31)	2	MR. DR. AFT	HARTELL SERIES 440M-24-523
ITEM (32)	4	ALL TOILET COMP'YS	HARTELL SERIES 20-29-4N3
ITEM (33)	4	ALL TOILET COMP'YS	INSUL. C-3502



NOTE: 1) CONDENSER, FOR BOTH MAIN DECK DISCH. COND. AND BRIDGE DECK 3/4\"/>

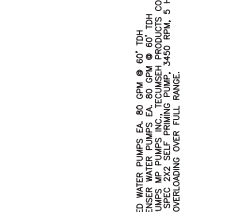
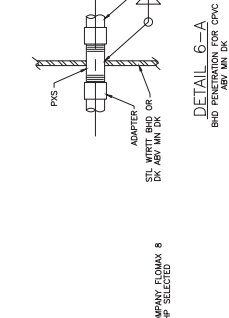
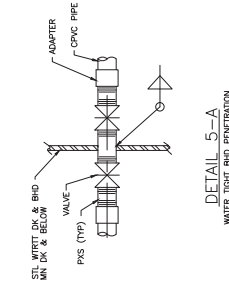
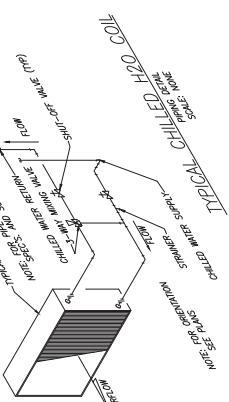
### CHILLED WATER/CONDENSER WATER DIAGRAM

SCALE: NONE

REVISIONS		BY	DATE
1	REVISED DWG PER "AS-BUILT" CONDITIONS		

PROJECT:	SOUND CLASS FERRY
OWNER:	STATE OF NORTH CAROLINA
DESIGNER:	DEPARTMENT OF TRANSPORTATION
SCALE:	NONE



CHILLED WATER PUMPS: 6\"/>

16 15 14 13 12 11 10 9

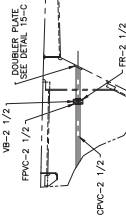
**DOUBLER PLATE TABLE**

PIPE SIZE	DOUBLER PLATE DIA
1/2"	1 1/4"
3/4"	1 3/4"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	3 1/2"
3"	5 1/4"
4"	6 3/4"
5"	8 1/4"
6"	11"
8"	15"
10"	19"

NOTE: DOUBLER PLATE IS TO BE THE SAME THICKNESS AS STRUCTURE BEING PENETRATED.

**DETAIL 15-C**

DOUBLER PLATE TABLE  
SCALE: NONE

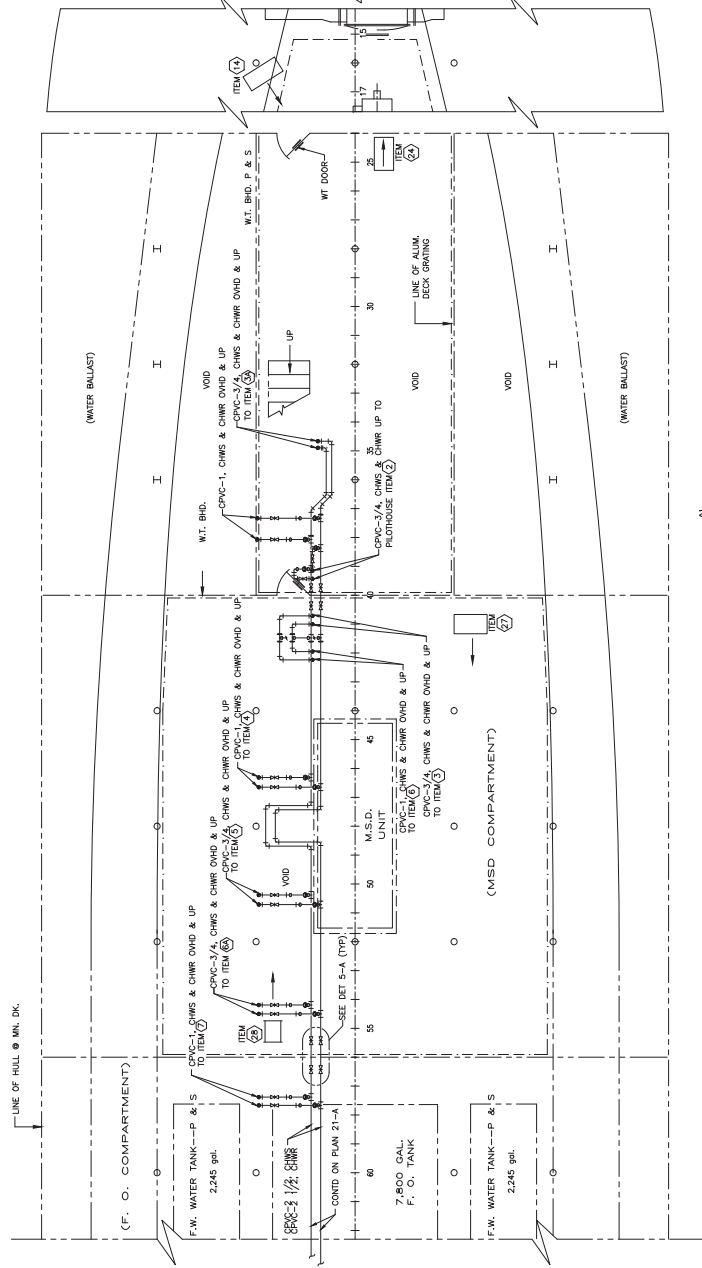


**DETAIL 13-C**

DOUBLER PLATE FOR OVERBOARD RISER  
SCALE: 3/8"=1'-0"

**PARTS LIST**

ITEM	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC NO.	PART NO.	REMARKS
FRS-2 1/2	AR	2 1/2"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
FRS-2	AR	2"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
FRS-1 1/2	AR	1 1/2"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
FRS-1 1/4	AR	1 1/4"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
FRS-3/4	AR	3/4"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
FRS-1	AR	1"	PIPE, SCHED 80, SMLS	316L-SST	ASTM A-312		ANSI B36.19
CPVC-2 1/2	AR	2 1/2"	PIPE, SCHED 80	CPVC	ASTM D-1785		
CPVC-2	AR	2"	PIPE, SCHED 80	CPVC	ASTM D-1785		
CPVC-1 1/2	AR	1 1/2"	PIPE, SCHED 80	CPVC	ASTM D-1785		
CPVC-1 1/4	AR	1 1/4"	PIPE, SCHED 80	CPVC	ASTM D-1785		
CPVC-3/4	AR	3/4"	PIPE, SCHED 80	CPVC	ASTM D-1785		
EPVC-2 1/2	AR	2 1/2"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-2	AR	2"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1 1/2	AR	1 1/2"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1 1/4	AR	1 1/4"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1	AR	1"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-3/4	AR	3/4"	ELBOW, 90°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1/2	AR	1/2"	ELBOW, 45°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1/4	AR	1/4"	ELBOW, 45°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-3/8	AR	3/8"	ELBOW, 45°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
EPVC-1/8	AR	1/8"	ELBOW, 45°, SCHED 80, SOCKET	CPVC	ASTM D-2467		
TPVC-1	AR	1"	TEE, SCHED 80, SOCKET	CPVC	ASTM D-2467		
TPVC-3/4	AR	3/4"	TEE, SCHED 80, SOCKET	CPVC	ASTM D-2467		
AM-2	AR	2"	ADAPTER, SOCKET/MP	CPVC	ASTM D-2467		
AF-2	AR	2"	ADAPTER, SOCKET/PT	CPVC	ASTM D-2467		
AF-1 1/2	AR	1 1/2"	ADAPTER, SOCKET/PT	CPVC	ASTM D-2467		
AF-1 1/4	AR	1 1/4"	ADAPTER, SOCKET/PT	CPVC	ASTM D-2467		
AF-1	AR	1"	ADAPTER, SOCKET/PT	CPVC	ASTM D-2467		
AF-3/4	AR	3/4"	ADAPTER, SOCKET/PT	CPVC	ASTM D-2467		
FR-2 1/2	AR	2 1/2"	FLANGE, FT, SOCKET TYPE, 150#	CPVC	ASTM D-2467		
V-2 1/2	21	2 1/2"	VALVE, GATE, 150#, FLG	BRONZE	ASTM B-62	B-120	STOCKHAM
V-2	4	2"	VALVE, GATE, 150#, THD	BRONZE	ASTM B-62	B-120	STOCKHAM
V-1 1/2	8	1 1/2"	VALVE, GATE, 150#, THD	BRONZE	ASTM B-62	B-120	STOCKHAM
V-1 1/4	16	1 1/4"	VALVE, GATE, 150#, THD	BRONZE	ASTM B-62	B-120	STOCKHAM
V-1	8	1"	VALVE, GATE, 150#, THD	BRONZE	ASTM B-62	B-120	STOCKHAM
V-3/4	14	3/4"	VALVE, GATE, 150#, THD	BRONZE	ASTM B-62	B-120	STOCKHAM
VC-2 1/2	4	2 1/2"	VALVE, SWING CHECK, 150#, FLG	BRONZE	ASTM B-62	B-342	STOCKHAM
VC-3/4	4	3/4"	VALVE, SWING CHECK, 150#, FLG	BRONZE	ASTM B-62	B-342	STOCKHAM
VB-2 1/2	1	2 1/2"	VALVE, BUTT, WATER TYPE, 200#	BRONZE	ASTM B-61	2AM200-43-F	BORRIS (WITH BRONZE TRIM)
ST-2 1/2	1	2 1/2"	STRAINER, Y-TYPE, 150#, FLG	BRONZE	ASTM B-62	BST	MUELLER
FC-2 1/2	8	3 1/2"	FLANGIBLE CONNECTION	MS	ASTM F-1123	1015	GENERAL RUBBER
FR-2 1/2	AR	2 1/2"	FLANGE, FT, FLAT FACE, 150#	SST 316L	ASTM A-182		
FR-2 1/4	AR	2 1/4"	FLANGE, FT, SUP-ON, 150#	CS	ASTM A-105		
BPVC-13/4	AR	1 3/4"	BUSHINGS, RDOCS, THD, 150#	CPVC	ASTM D-2467		



**PLAN 14-A-A**

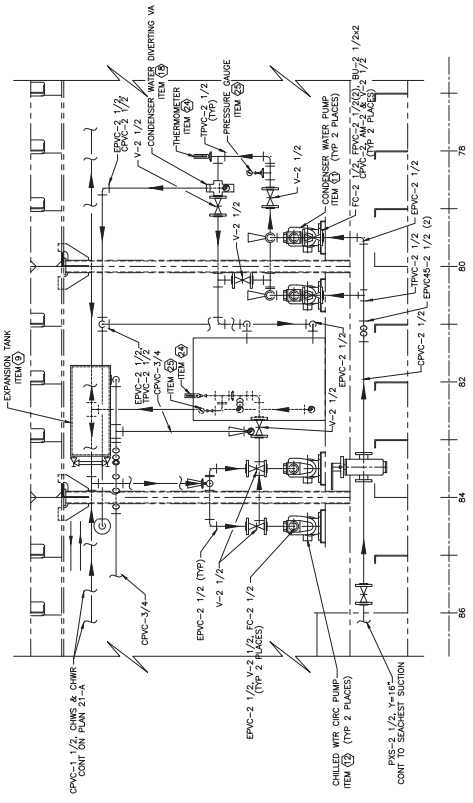
MECHANICAL PLAN  
SCALE: 1/8"=1'-0"

**CHILLED WATER SYSTEM**

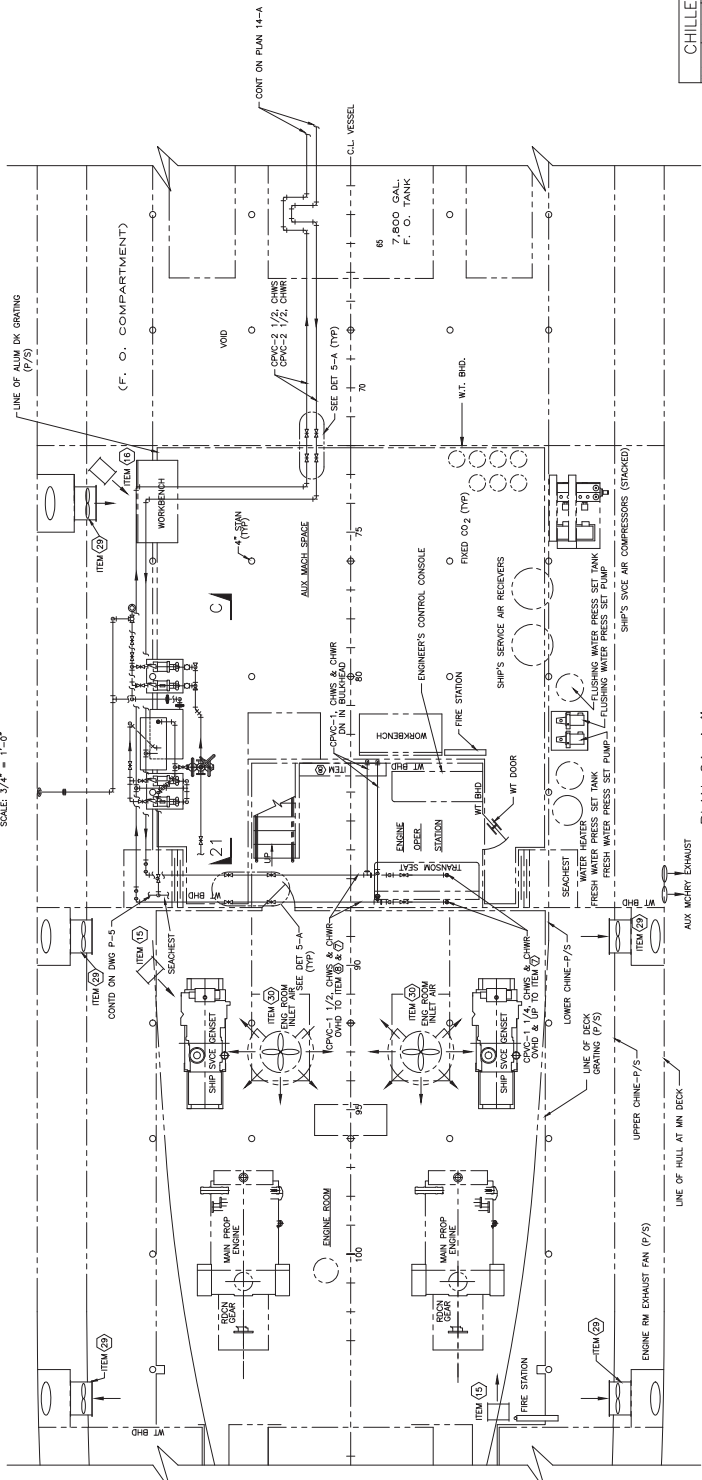
PROJECT NO.	123		
DATE	10/15/00		
SCALE	1/8"=1'-0"		
REV	NO.	DATE	BY
1	1	10/15/00	JL
2	4	10/15/00	JL

NC-240-0074

24 23 22 21 20 19 18 17



ELEVATION 21-C-A  
SCALE: 3/4" = 1'-0"



PLAN 21-A-A  
SCALE: 3/8" = 1'-0"

CHILLED WATER SYSTEM			
DATE	BY	CHKD	APP'D
12/13/03	WJ	WJ	WJ
SCALE: 3/8" = 1'-0"	NO. NC-240-0074	REV	DATE
		1	12/13/03
		2	12/13/03
		3	12/13/03
		4	12/13/03
		5	12/13/03

D B A

7,800 GAL F.O. TANK

CL. VESSEL

78

79

80

82

84

86

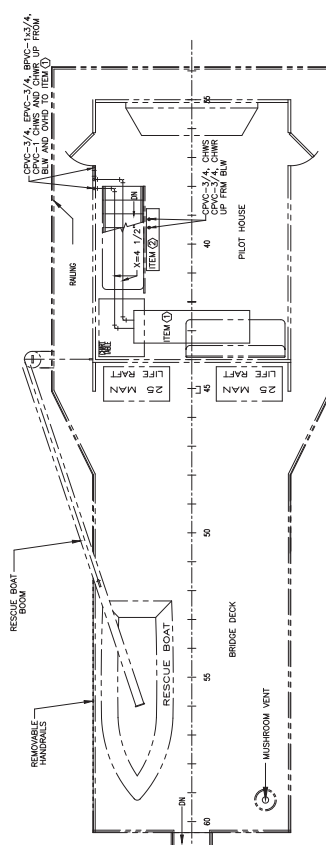
88

90

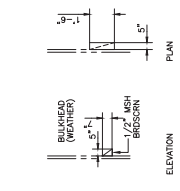
92

94

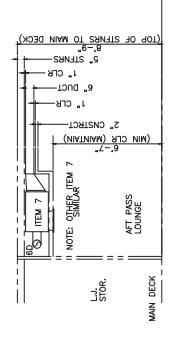
32 31 30 29 28 27 26 25



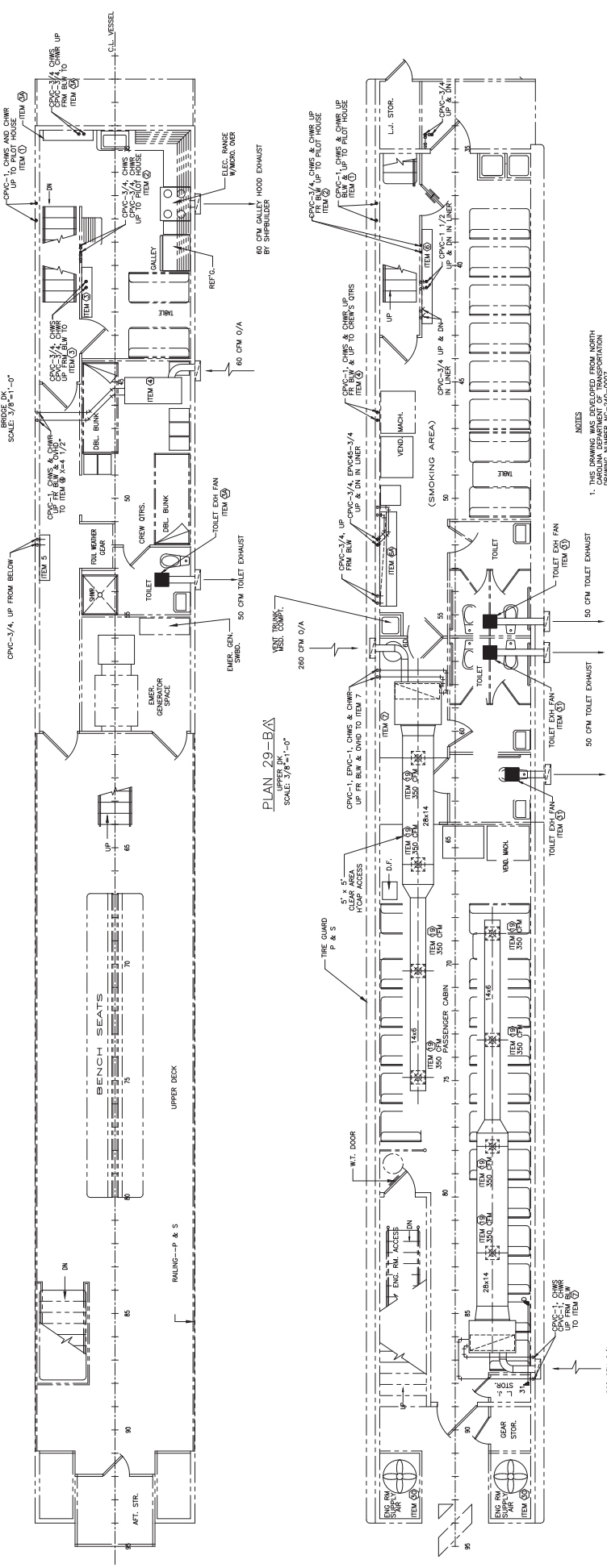
PLAN 27-C-A  
TYPICAL O/A AND/OR EXHAUST AIR HOOD  
SCALE: 3/8"=1'-0"



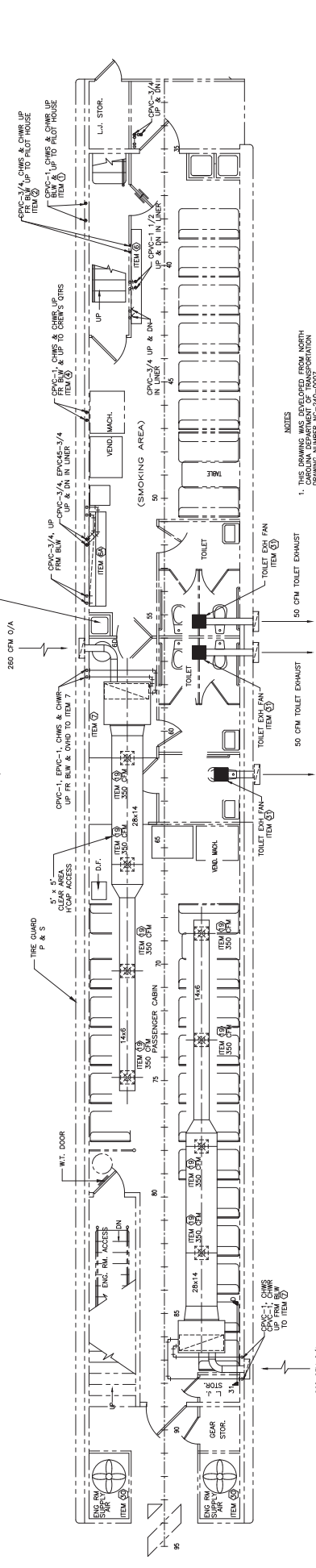
SECTION 31-D (THIS SHEET)  
SCALE: 3/8"=1'-0"



PLAN 29-B-A  
UPPER DECK  
SCALE: 3/8"=1'-0"



PLAN 29-A-A  
MAIN DECK  
SCALE: 3/8"=1'-0"



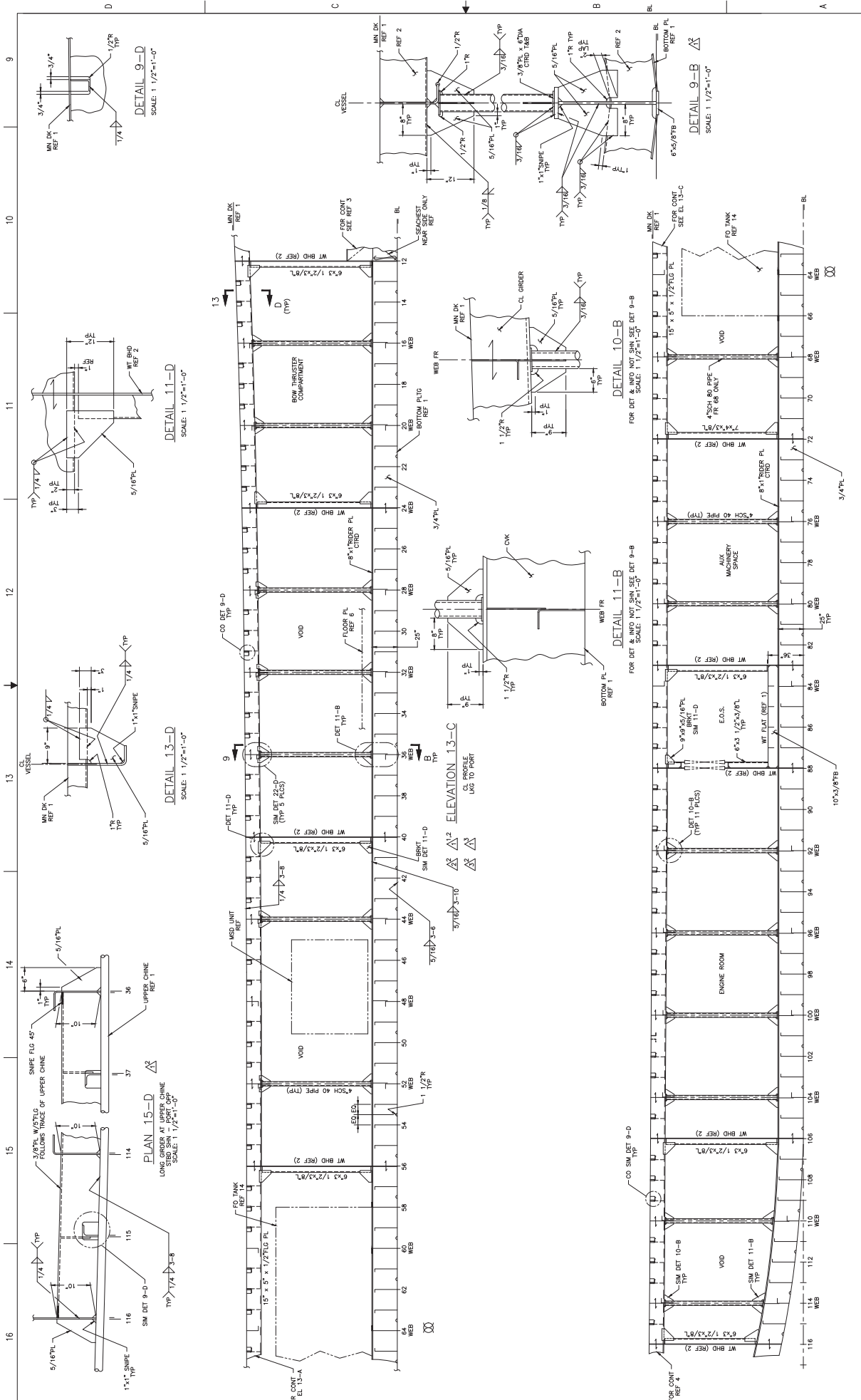
- NOTES
1. THIS DRAWING WAS DEVELOPED FROM NORTH DAKOTA MARINE CORPORATION DRAWING NUMBER NC-240-0007.
  2. PLASTIC PIPE THAT IS ROUTED WITHIN CONCEALED AREAS MUST BE ENCLOSED WITHIN TRUNKS OR DUCTS OF 11 GAGE METAL.
  3. SEE DETAIL 5-A FOR WATERIGHT END PENETRATIONS.

CHILLED WATER SYSTEM			
NO.	DATE	BY	CHKD.
1	11/13/03	WJ	WJ
2	11/13/03	WJ	WJ
3	11/13/03	WJ	WJ
4	11/13/03	WJ	WJ
5	11/13/03	WJ	WJ
6	11/13/03	WJ	WJ
7	11/13/03	WJ	WJ
8	11/13/03	WJ	WJ
9	11/13/03	WJ	WJ
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26	11/13/03	WJ	WJ
27	11/13/03	WJ	WJ
28	11/13/03	WJ	WJ
29	11/13/03	WJ	WJ
30	11/13/03	WJ	WJ
31	11/13/03	WJ	WJ
32	11/13/03	WJ	WJ

32 31 30 29 28 27 26 25







LONG FRAMES BELOW MN DK

NO.	DATE	BY	CHKD.	APP'D.
133				
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200				

SCALE: 3/4"=1'-0"

NO. 240-0080

DATE

BY

CHKD.

APP'D.

NO. 240-0080

DATE

BY

CHKD.

APP'D.

NO. 240-0080

DATE

BY

CHKD.

APP'D.

NO. 240-0080

DATE

BY

CHKD.

APP'D.

NO. 240-0080

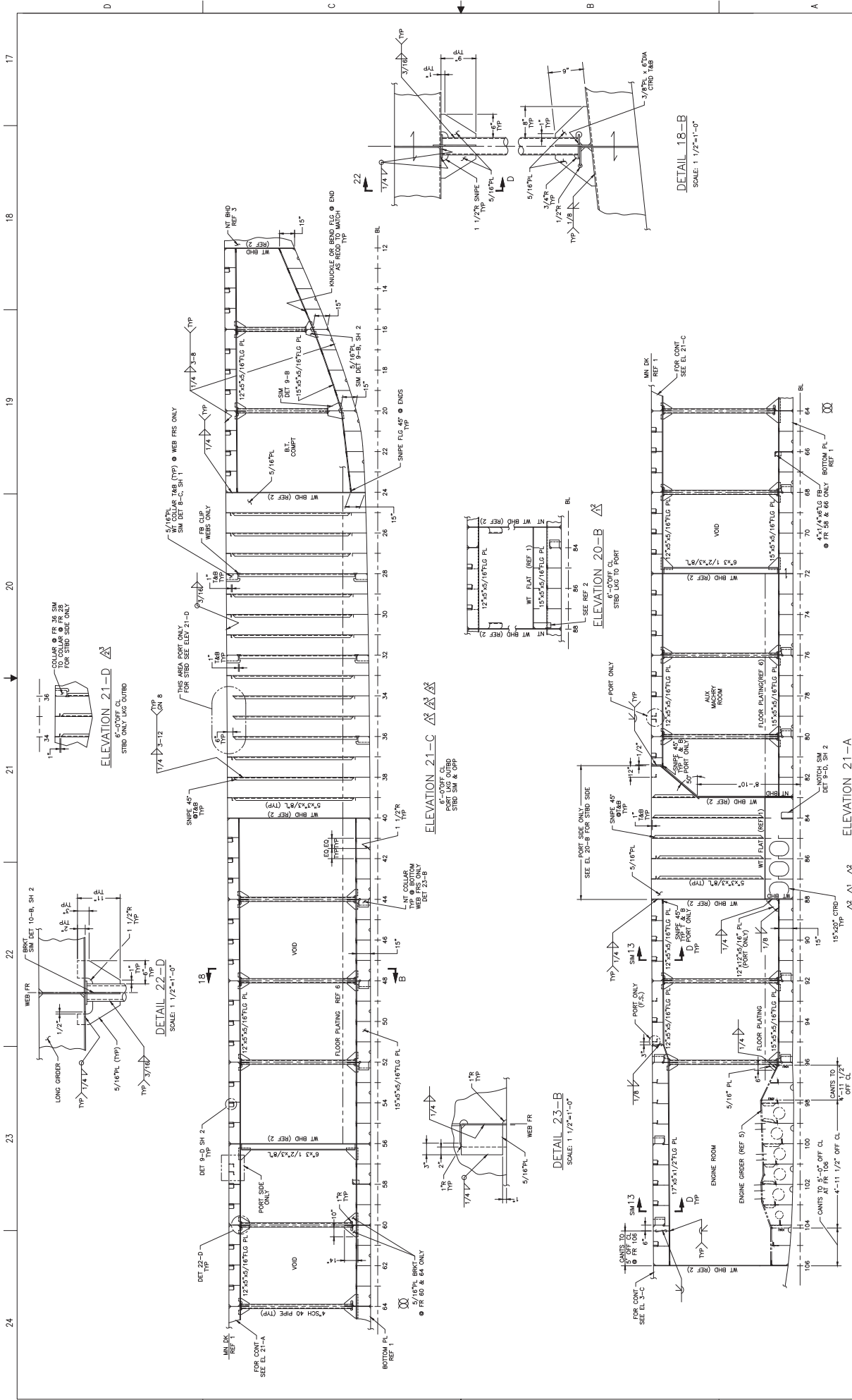
DATE

BY

CHKD.

APP'D.

NO. 240-0080

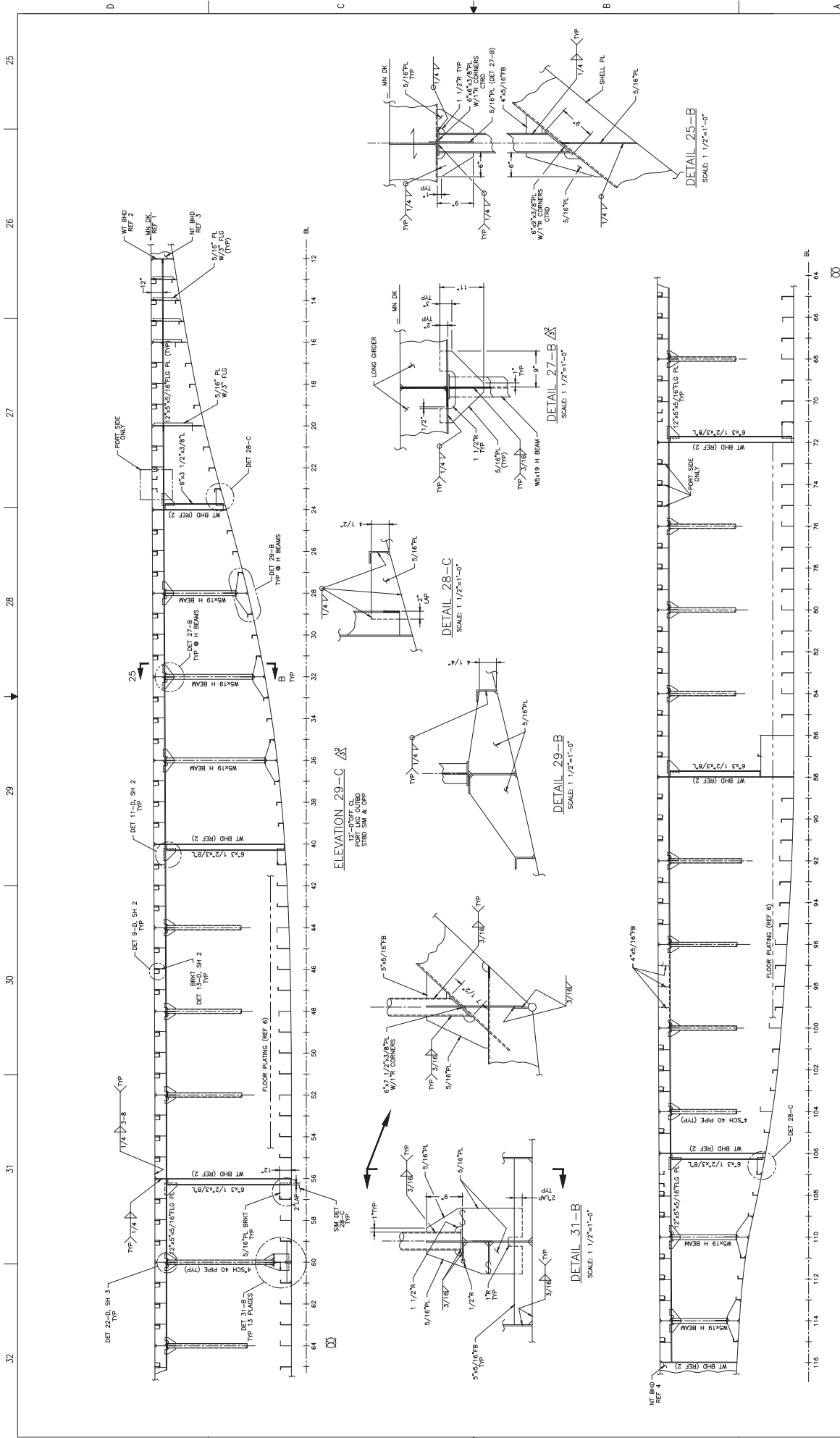


LONG FRAMES BELOW MN DK			
NO.	DATE	BY	CHK
1	10/15/00	J. W. H.	J. W. H.
2	11/15/00	J. W. H.	J. W. H.
3	12/15/00	J. W. H.	J. W. H.
4	01/15/01	J. W. H.	J. W. H.
5	02/15/01	J. W. H.	J. W. H.

SCALE: 3/4"=1'-0"

17 18 19 20 21 22 23 24

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94



LONG FRAMES BELOW MN DK			
REV	DATE	BY	CHK
1			
2			
3			
4			
5			

SCALE: 3/4"=1'-0"  
 NC-240-0080

ELEVATION 29-A  
 PART LOG OUTLET  
 STBD. SIM & OPP

ELEVATION 29-B  
 PART LOG OUTLET  
 STBD. SIM & OPP

ELEVATION 29-C  
 12" ROOF CL.  
 STBD. SIM & OPP

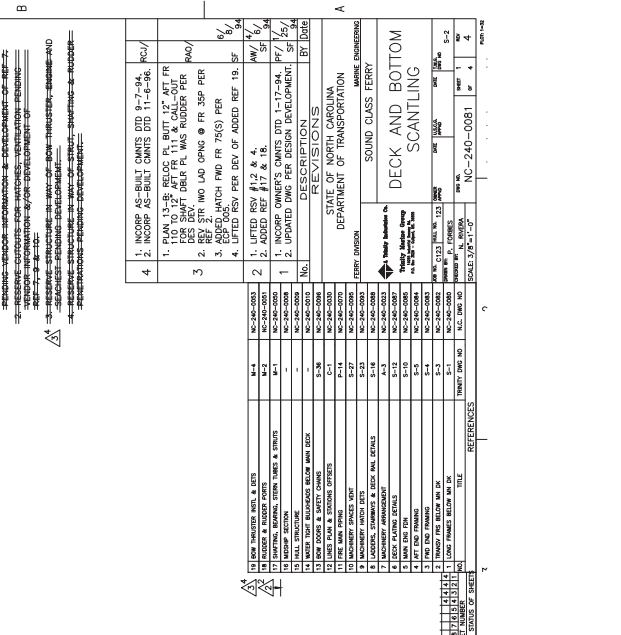
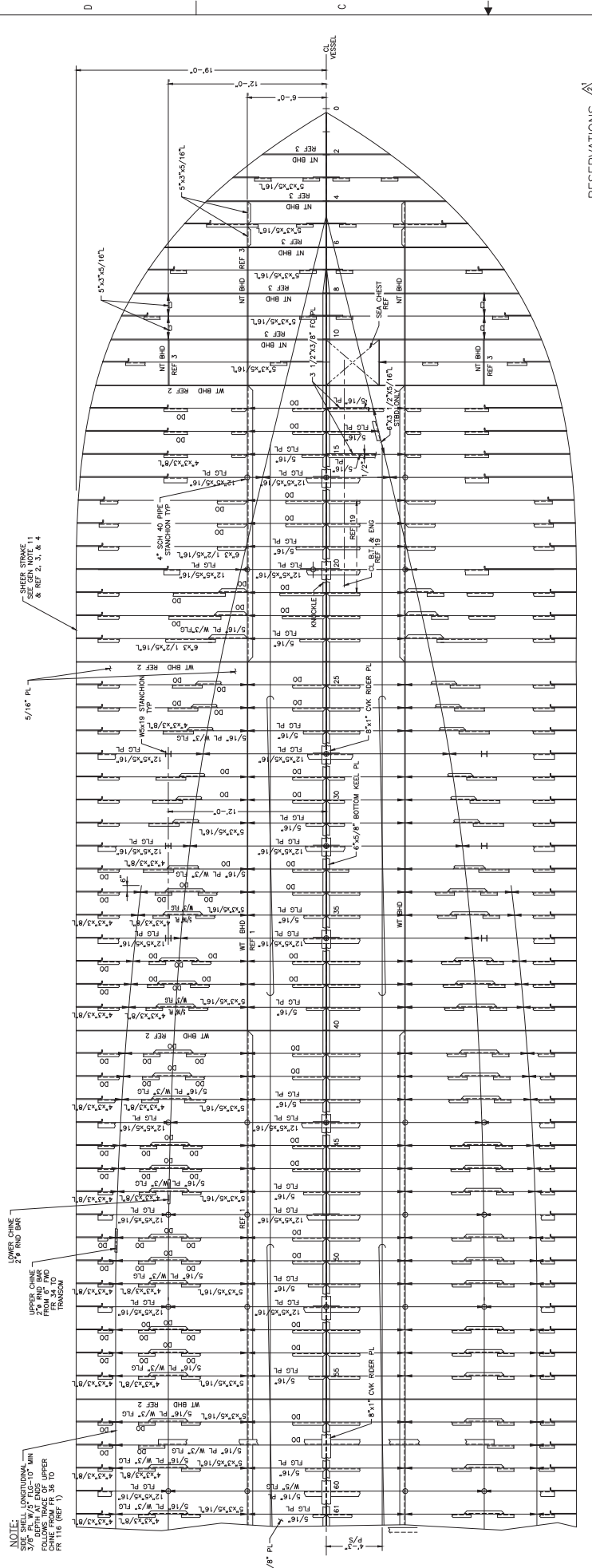
DETAIL 25-B  
 SCALE: 1 1/2"=1'-0"

DETAIL 27-B  
 SCALE: 1 1/2"=1'-0"

DETAIL 28-C  
 SCALE: 1 1/2"=1'-0"

DETAIL 29-B  
 SCALE: 1 1/2"=1'-0"

DETAIL 31-B  
 SCALE: 1 1/2"=1'-0"



**RESERVATIONS**

- 1. INCORP AS-BUILT QMIS DTD 9-7-94.
- 2. INCORP AS-BUILT QMIS DTD 11-6-94.
- 3. INCORP AS-BUILT QMIS DTD 1-17-94.
- 4. INCORP AS-BUILT QMIS DTD 3-23-94.

**GENERAL NOTES:**

- 1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH A.B.S. STANDARDS AND BY U.S.C.G. CERTIFIED WELDERS.
- 2. PLATE SIZES UNLESS NOTED OTHERWISE.
- 3. ALL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED.
- 4. LONGITUDINAL STRANGERS SHALL BE INTERCOSTAL TO TRANSVERSE WEBS.
- 5. TRANSVERSE WEBS, CENTERLINE DECK LONGITUDINAL AND LONGITUDINAL BULKHEADS SHALL BE FITTED WITH COLLARS AT THE PENETRATIONS AS DETAIL ON REF. 1.
- 6. FRAMING IS TO BE DOUBLE CONTINUOUS THROUGHOUT THE VESSEL.
- 7. WELDS FOR 1/2" OF THEIR LENGTH AT EACH END.
- 8. DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD LINES UNLESS OTHERWISE NOTED.
- 9. LONGITUDINAL BULKHEADS TO BE INTERCOSTAL TO TRANSVERSE WEBS.
- 10. ALL SHARP OR RAGGED EDGES TO BE GROUND SMOOTH.
- 11. SHEER STRAKE FROM MAIN DECK DOWN TO KNUCKLE SHALL BE 1/2" x 1/2" PLATE.
- 12. DRAWING - REF 14, 15 & 16.

**PLAN 6 B**

SECTION SCANTLING AND PORT SIDE DETAIL AND STBD SIDE SIMILAR UNLESS NOTED

NO.	DESCRIPTION	DATE
1	INCORP AS-BUILT QMIS DTD 9-7-94	9/7/94
2	INCORP AS-BUILT QMIS DTD 11-6-94	11/6/94
3	INCORP AS-BUILT QMIS DTD 1-17-94	1/17/94
4	INCORP AS-BUILT QMIS DTD 3-23-94	3/23/94

NO.	DESCRIPTION	DATE
1	PLAN 6-B DECK PL BUT 1/2" AFT FR FOR SHAFTRIDER PL WAS RUDDER PER RAO	12/16/94
2	REV STR WO LAD OPGS FR SSP PER RAO	6/16/94
3	ADDED HATCH FWD FR 70S PER RAO	6/16/94
4	LIFTED (REV) PER DEV OF ADDED REF 19	6/16/94

NO.	DESCRIPTION	DATE
1	LIFTED REV #12 & 4	6/16/94
2	ADDED REF #17 & 18	6/16/94

NO.	DESCRIPTION	DATE
1	INCORP OWNER'S QMIS DTD 1-17-94	1/17/94
2	UPDATED DRG PER DESIGN DEVELOPMENT	SF
3	REVISED DRG PER DESIGN DEVELOPMENT	SF
4	REVISED DRG PER DESIGN DEVELOPMENT	SF

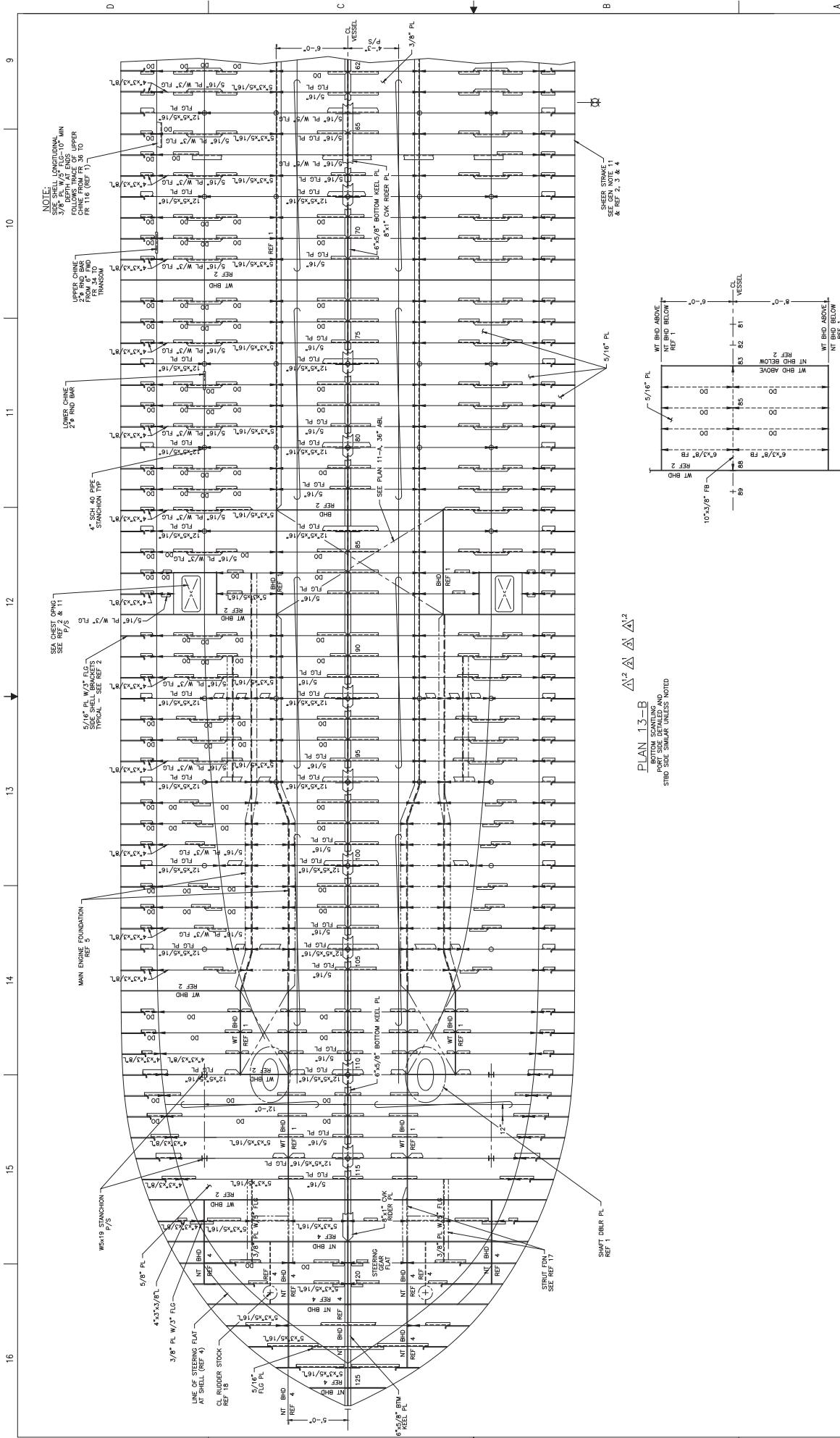
NO.	DESCRIPTION	DATE
1	STATE OF NORTH CAROLINA	
2	DEPARTMENT OF TRANSPORTATION	
3	BRIDGE DIVISION	
4	BRIDGE NO. 123	
5	BRIDGE TYPE	
6	BRIDGE SPAN	
7	BRIDGE LOCATION	
8	BRIDGE OWNER	
9	BRIDGE DESIGNED BY	
10	BRIDGE ENGINEER	
11	BRIDGE DATE	
12	BRIDGE DRAWING NO.	
13	BRIDGE SHEET NO.	
14	BRIDGE SCALE	
15	BRIDGE DRAWING TITLE	
16	BRIDGE DRAWING NUMBER	
17	BRIDGE DRAWING DATE	
18	BRIDGE DRAWING REVISION	
19	BRIDGE DRAWING SCALE	
20	BRIDGE DRAWING DRAWN BY	
21	BRIDGE DRAWING CHECKED BY	
22	BRIDGE DRAWING APPROVED BY	
23	BRIDGE DRAWING DATE	
24	BRIDGE DRAWING SCALE	
25	BRIDGE DRAWING DRAWN BY	
26	BRIDGE DRAWING CHECKED BY	
27	BRIDGE DRAWING APPROVED BY	
28	BRIDGE DRAWING DATE	
29	BRIDGE DRAWING SCALE	
30	BRIDGE DRAWING DRAWN BY	
31	BRIDGE DRAWING CHECKED BY	
32	BRIDGE DRAWING APPROVED BY	
33	BRIDGE DRAWING DATE	
34	BRIDGE DRAWING SCALE	
35	BRIDGE DRAWING DRAWN BY	
36	BRIDGE DRAWING CHECKED BY	
37	BRIDGE DRAWING APPROVED BY	
38	BRIDGE DRAWING DATE	
39	BRIDGE DRAWING SCALE	
40	BRIDGE DRAWING DRAWN BY	
41	BRIDGE DRAWING CHECKED BY	
42	BRIDGE DRAWING APPROVED BY	
43	BRIDGE DRAWING DATE	
44	BRIDGE DRAWING SCALE	
45	BRIDGE DRAWING DRAWN BY	
46	BRIDGE DRAWING CHECKED BY	
47	BRIDGE DRAWING APPROVED BY	
48	BRIDGE DRAWING DATE	
49	BRIDGE DRAWING SCALE	
50	BRIDGE DRAWING DRAWN BY	

NO.	DESCRIPTION	DATE
1	STATE OF NORTH CAROLINA	
2	DEPARTMENT OF TRANSPORTATION	
3	BRIDGE DIVISION	
4	BRIDGE NO. 123	
5	BRIDGE TYPE	
6	BRIDGE SPAN	
7	BRIDGE LOCATION	
8	BRIDGE OWNER	
9	BRIDGE DESIGNED BY	
10	BRIDGE ENGINEER	
11	BRIDGE DATE	
12	BRIDGE DRAWING NO.	
13	BRIDGE SHEET NO.	
14	BRIDGE SCALE	
15	BRIDGE DRAWING TITLE	
16	BRIDGE DRAWING NUMBER	
17	BRIDGE DRAWING DATE	
18	BRIDGE DRAWING REVISION	
19	BRIDGE DRAWING SCALE	
20	BRIDGE DRAWING DRAWN BY	
21	BRIDGE DRAWING CHECKED BY	
22	BRIDGE DRAWING APPROVED BY	
23	BRIDGE DRAWING DATE	
24	BRIDGE DRAWING SCALE	
25	BRIDGE DRAWING DRAWN BY	
26	BRIDGE DRAWING CHECKED BY	
27	BRIDGE DRAWING APPROVED BY	
28	BRIDGE DRAWING DATE	
29	BRIDGE DRAWING SCALE	
30	BRIDGE DRAWING DRAWN BY	
31	BRIDGE DRAWING CHECKED BY	
32	BRIDGE DRAWING APPROVED BY	
33	BRIDGE DRAWING DATE	
34	BRIDGE DRAWING SCALE	
35	BRIDGE DRAWING DRAWN BY	
36	BRIDGE DRAWING CHECKED BY	
37	BRIDGE DRAWING APPROVED BY	
38	BRIDGE DRAWING DATE	
39	BRIDGE DRAWING SCALE	
40	BRIDGE DRAWING DRAWN BY	
41	BRIDGE DRAWING CHECKED BY	
42	BRIDGE DRAWING APPROVED BY	
43	BRIDGE DRAWING DATE	
44	BRIDGE DRAWING SCALE	
45	BRIDGE DRAWING DRAWN BY	
46	BRIDGE DRAWING CHECKED BY	
47	BRIDGE DRAWING APPROVED BY	
48	BRIDGE DRAWING DATE	
49	BRIDGE DRAWING SCALE	
50	BRIDGE DRAWING DRAWN BY	

NO.	DESCRIPTION	DATE
1	STATE OF NORTH CAROLINA	
2	DEPARTMENT OF TRANSPORTATION	
3	BRIDGE DIVISION	
4	BRIDGE NO. 123	
5	BRIDGE TYPE	
6	BRIDGE SPAN	
7	BRIDGE LOCATION	
8	BRIDGE OWNER	
9	BRIDGE DESIGNED BY	
10	BRIDGE ENGINEER	
11	BRIDGE DATE	
12	BRIDGE DRAWING NO.	
13	BRIDGE SHEET NO.	
14	BRIDGE SCALE	
15	BRIDGE DRAWING TITLE	
16	BRIDGE DRAWING NUMBER	
17	BRIDGE DRAWING DATE	
18	BRIDGE DRAWING REVISION	
19	BRIDGE DRAWING SCALE	
20	BRIDGE DRAWING DRAWN BY	
21	BRIDGE DRAWING CHECKED BY	
22	BRIDGE DRAWING APPROVED BY	
23	BRIDGE DRAWING DATE	
24	BRIDGE DRAWING SCALE	
25	BRIDGE DRAWING DRAWN BY	
26	BRIDGE DRAWING CHECKED BY	
27	BRIDGE DRAWING APPROVED BY	
28	BRIDGE DRAWING DATE	
29	BRIDGE DRAWING SCALE	
30	BRIDGE DRAWING DRAWN BY	
31	BRIDGE DRAWING CHECKED BY	
32	BRIDGE DRAWING APPROVED BY	
33	BRIDGE DRAWING DATE	
34	BRIDGE DRAWING SCALE	
35	BRIDGE DRAWING DRAWN BY	
36	BRIDGE DRAWING CHECKED BY	
37	BRIDGE DRAWING APPROVED BY	
38	BRIDGE DRAWING DATE	
39	BRIDGE DRAWING SCALE	
40	BRIDGE DRAWING DRAWN BY	
41	BRIDGE DRAWING CHECKED BY	
42	BRIDGE DRAWING APPROVED BY	
43	BRIDGE DRAWING DATE	
44	BRIDGE DRAWING SCALE	
45	BRIDGE DRAWING DRAWN BY	
46	BRIDGE DRAWING CHECKED BY	
47	BRIDGE DRAWING APPROVED BY	
48	BRIDGE DRAWING DATE	
49	BRIDGE DRAWING SCALE	
50	BRIDGE DRAWING DRAWN BY	



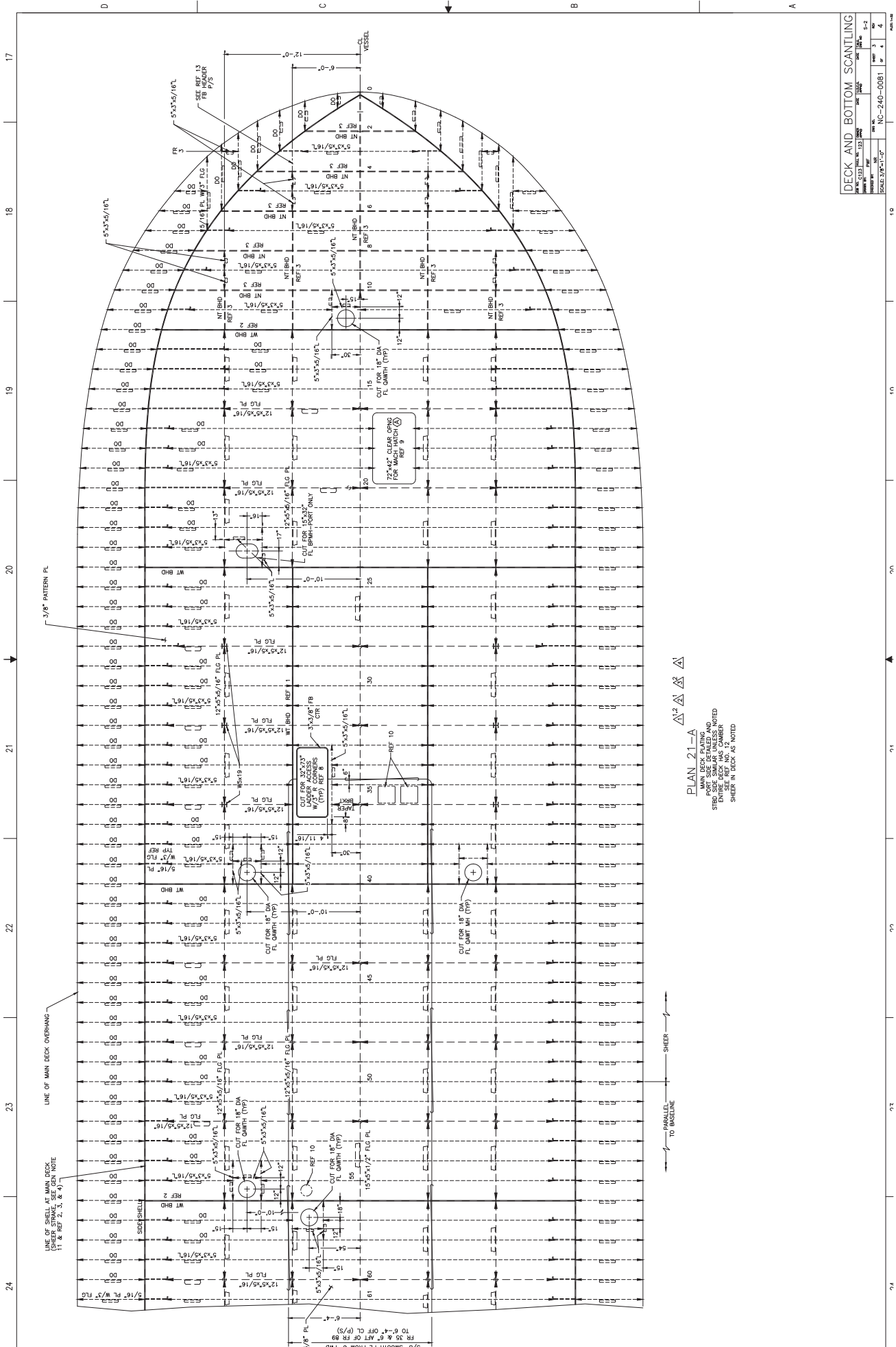
**DECK AND BOTTOM SCANTLING**

NO. 123	DATE	SCALE	NO. 240-0081
REV. 1			
REV. 2			
REV. 3			
REV. 4			

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

PLAN 13-B  
BOTTOM SCANTLING  
STBD SIDE, SIMILAR UNLESS NOTED

9 10 11 12 13 14 15 16



DECK AND BOTTOM SCANTLING			
DATE	NO.	REV.	BY
12/15/10	103	1	WJ
12/15/10	103	2	WJ
12/15/10	103	3	WJ
12/15/10	103	4	WJ
SCALE: 3/8" = 1'-0"		NC-240-0081	

PLAN 21-A

PORT SIDE DETAIL AND  
 STARBOARD SIDE DETAIL  
 SEE REF. NO. 17  
 SHEET IN BOOK AS NOTED

PARALLEL  
 TO BASELINE

SHEER

LINE OF SHELL AT MAIN DECK  
 1" & REF. 2, 3, & 4

LINE OF MAIN DECK OVERHANGS

3/8" PATTERN PL.

24 23 22 21 20 19 18 17

0 10 20 30 40 50 60 70 80 90

3/8" SMOOTH PL FROM 6" MID  
 TO 6" OFF CL (P/S)  
 FR 5 & 6" AT OF FR 89

5/16" PL W/3" FLG

WT BHD

5/16" FLG

12" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

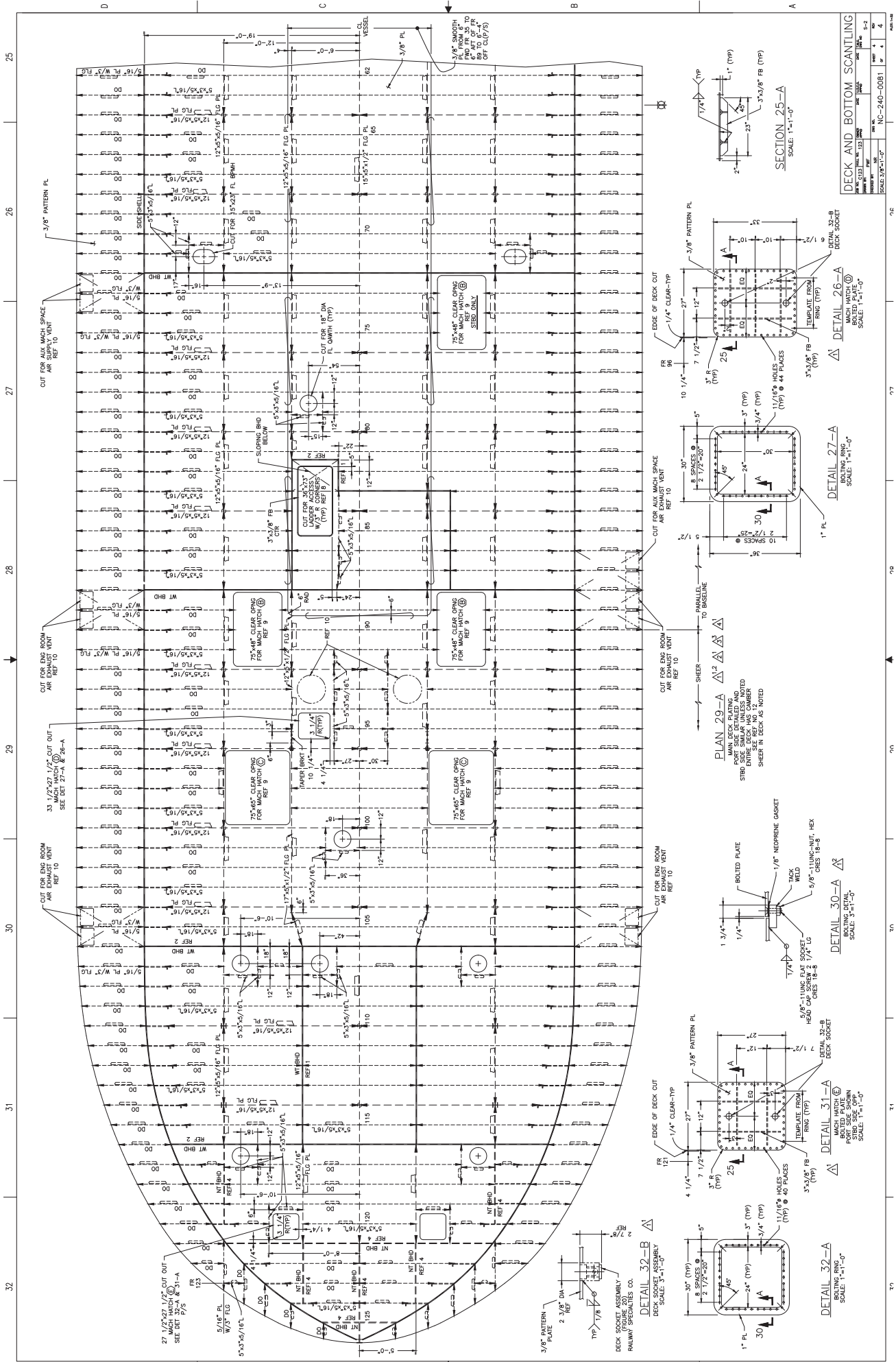
5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG

5/16" x 5/8" x 1/8" FLG



DECK AND BOTTOM SCANTLING			
NO. 133	DATE	REV.	BY
1		1	
2		2	
3		3	
4		4	
SCALE: 3/8" = 1'-0"			
NC-240-0081			

SECTION 25-A  
SCALE: 1" = 1'-0"

DETAIL 26-A  
MATCH POINT  
SCALE: 1" = 1'-0"

DETAIL 27-A  
SCANTLING RING  
SCALE: 1" = 1'-0"

PLAN 29-A  
MAIN DECK PLATING  
ENTIRE DECK HAS CAMBER  
SHEER IN DECK AS NOTED

DETAIL 30-A  
BOLTING DETAIL  
SCALE: 1" = 1'-0"

DETAIL 31-A  
MATCH POINT  
PORT SIDE SHOWN  
SCALE: 1" = 1'-0"

DETAIL 32-A  
BOLTING DETAIL  
SCALE: 1" = 1'-0"

DETAIL 32-B  
DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
RAILWAY SPECIALTIES CO.

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

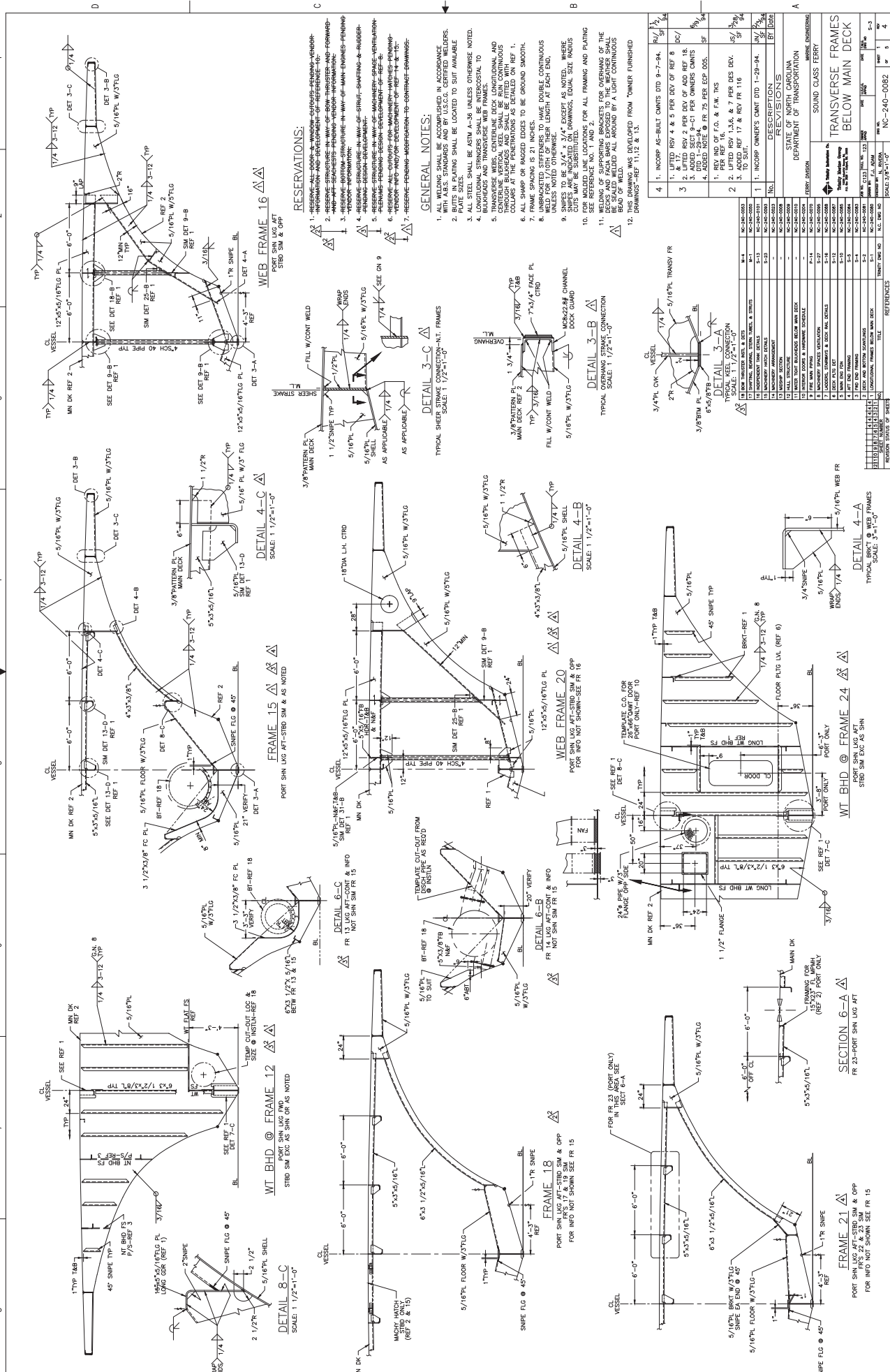
DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"

DECK SOCKET ASSEMBLY  
SCALE: 3/4" = 1'-0"



**RESERVATIONS:**

- 1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE WELDING SPECIFICATIONS REFERENCED HEREIN.
- 2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES.
- 3. ALL STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
- 4. BULKHEADS AND TRANSVERSE WEB FRAMES SHALL BE WELDED TO THE MAIN DECK PLATING THROUGH BULKHEADS AND SHALL BE FITTED WITH AN OVERLAP OF 1/2" TO 1".
- 5. ALL SHARP OR RAGGED EDGES TO BE GROUND SMOOTH.
- 6. FRAME SPACING IS 21 INCHES.
- 7. UNBRACKETED STIFFENERS TO HAVE DOUBLE CONTINUOUS CUTS TO BE 3/4" X 3/4" EXCEPT AS NOTED, WHERE CUTS MAY BE SUBSTITUTED. DIMENSIONS, EQUAL SIZE RADIUS UNLESS NOTED OTHERWISE.
- 8. FOR MOLDED LINE LOCATIONS FOR ALL FRAMING AND PLATING THE WEATHER SHALLOWS FOR OVERHANGS OF THE DECKS AND PACK BARS EXPOSED TO THE WEATHER SHALL BE 1/4" TO 3/8" ALL AROUND BY A LIGHT CONTINUOUS BEAD OF WELD.
- 9. THIS DRAWING WAS DEVELOPED FROM OWNER FURNISHED DRAWINGS-REF 11, 12 & 13.

**GENERAL NOTES:**

- 1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE WELDING SPECIFICATIONS REFERENCED HEREIN.
- 2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES.
- 3. ALL STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
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- 9. THIS DRAWING WAS DEVELOPED FROM OWNER FURNISHED DRAWINGS-REF 11, 12 & 13.

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
2	LIFTED RSV 4 & 5 PER DEV OF REF 8.			
3	LIFTED RSV 2 PER DEV OF ADD REF 18.			
4	ADDED NOTE # 12 PER DEV. CO'S.			
5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
2	LIFTED RSV 4 & 5 PER DEV OF REF 8.			
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
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9	ADDED NOTE # 12 PER DEV. CO'S.			
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11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

NO.	DESCRIPTION	DATE	BY	CHECKED
1	INCORPORATE AS-BUILT CHANGES DTD 9-7-94.			
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5	ADDED NOTE # 12 PER DEV. CO'S.			
6	ADDED NOTE # 12 PER DEV. CO'S.			
7	ADDED NOTE # 12 PER DEV. CO'S.			
8	ADDED NOTE # 12 PER DEV. CO'S.			
9	ADDED NOTE # 12 PER DEV. CO'S.			
10	ADDED NOTE # 12 PER DEV. CO'S.			
11	ADDED NOTE # 12 PER DEV. CO'S.			
12	ADDED NOTE # 12 PER DEV. CO'S.			

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE ENGINEERING  
TRANSVERSE FRAMES  
BELOW MAIN DECK

SCALE: 1/2"=1'-0"  
PROJECT NO. NC-240-0082

DATE: 10/1/94  
DRAWN BY: J. J. JAMES  
CHECKED BY: J. J. JAMES  
SCALE: 1/2"=1'-0"

REFERENCES:  
DRAWING NO. NC-240-0082  
REV. NO. 1  
SCALE: 1/2"=1'-0"

SECTION 6-A  
FR 23-PORT SIN LKG AFT  
FOR INFO NOT SHOWN SEE FR 15

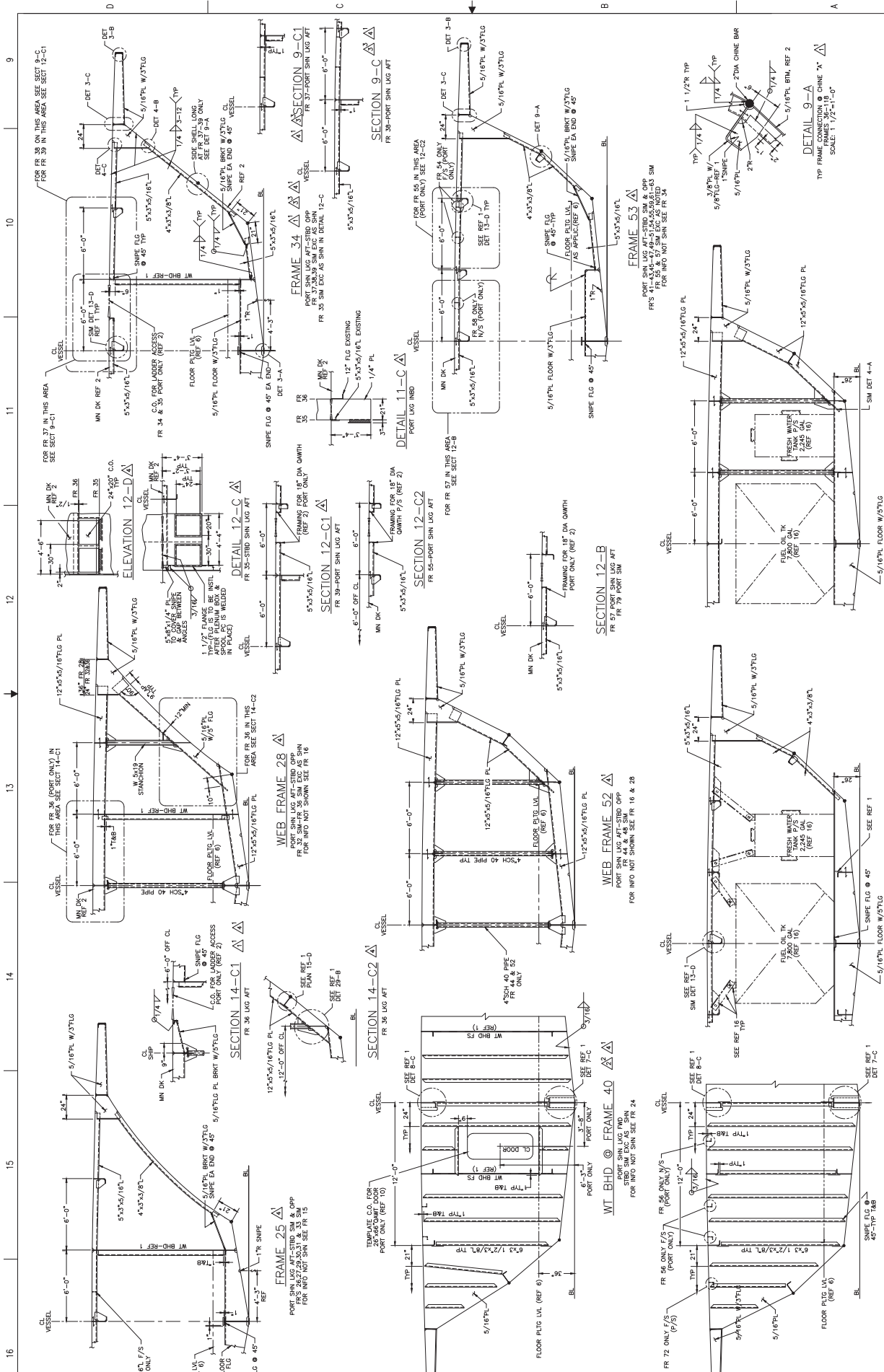
WT BHD @ FRAME 24  
FR 23-PORT SIN LKG AFT  
STBD SIN EXC AS SHN

WT BHD @ FRAME 12  
STBD SIN EXC AS SHN UNLESS NOTED  
SCALE: 1/2"=1'-0"

WT BHD @ FRAME 15  
STBD SIN EXC AS SHN UNLESS NOTED  
SCALE: 1/2"=1'-0"

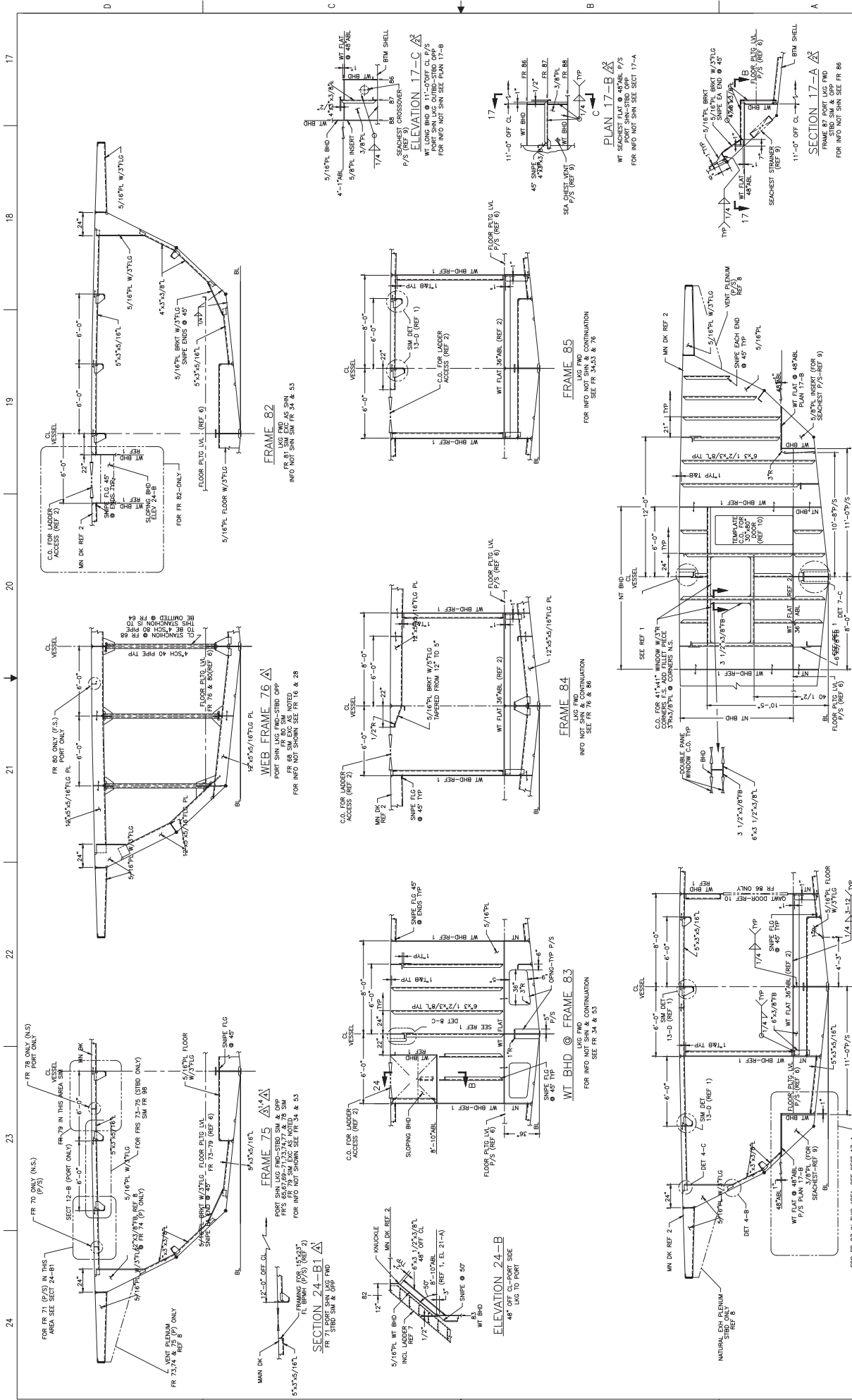
WT BHD @ FRAME 18  
STBD SIN EXC AS SHN UNLESS NOTED  
SCALE: 1/2"=1'-0"





TRANSV FRAMES BLW MN DK			
NO.	DATE	BY	CHK
1	12/15/00	...	...
2	...	...	...
3	...	...	...
4	...	...	...

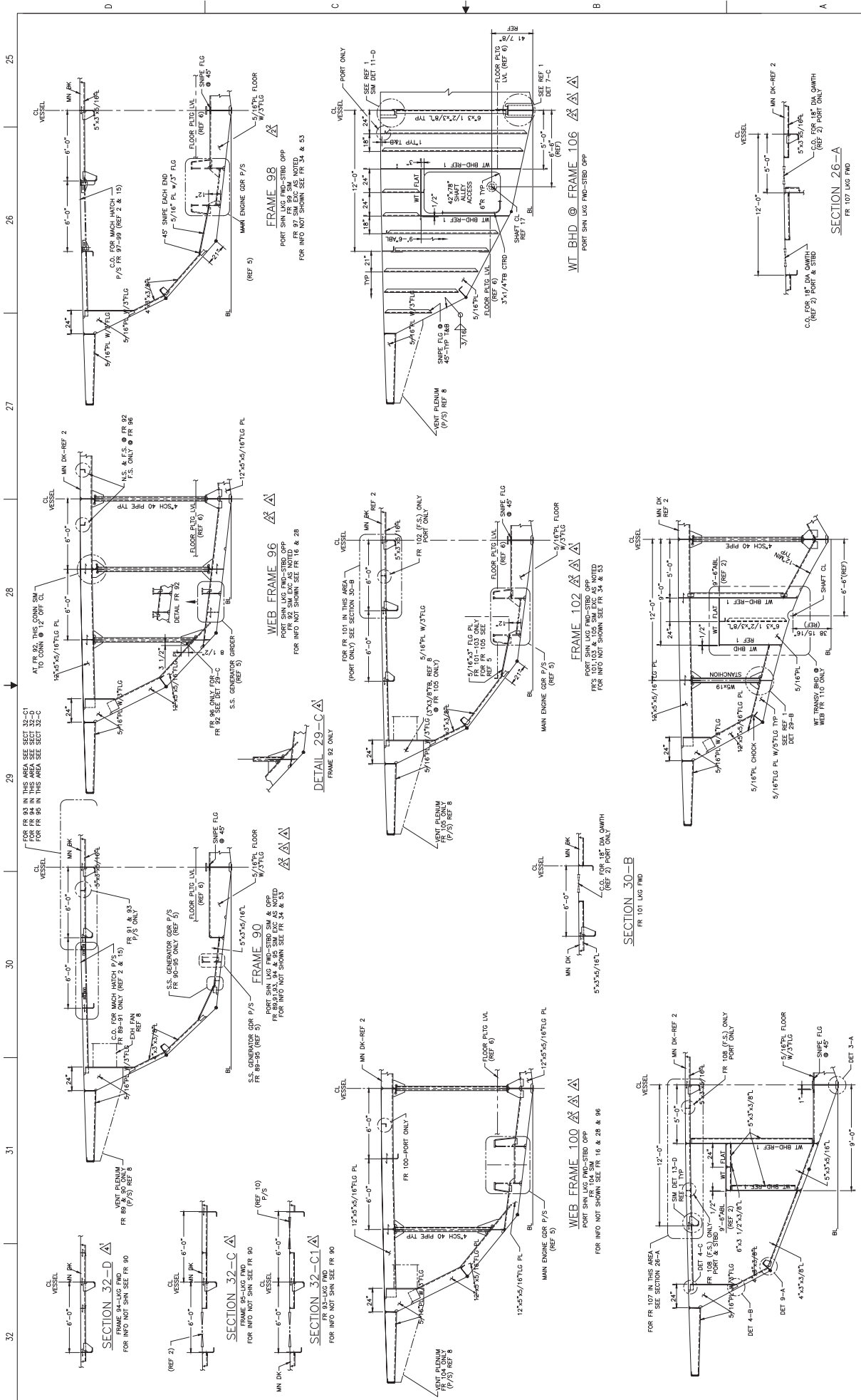
NC-240-0082



TRANSV FRAMES BLW MN DK			
NO.	DATE	BY	CHKD
1	12/10/02	W. J. ...	...
2	...	...	...
3	...	...	...
4	...	...	...

SCALE: 3/4"=1'-0"

NC-240-0082



NO.	REV.	DATE	BY	CHKD.	APP'D.
1	1				
2	1				
3	1				
4	1				

TRANSV FRAMES BLW MN DK  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 114 SIM EXC AS NOTED

WEB FRAME 110  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 114 SIM EXC AS NOTED

WEB FRAME 100  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 107 SIM EXC AS NOTED

FRAME 108  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 109 SIM EXC AS NOTED

FRAME 98  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 98 SIM EXC AS NOTED

FRAME 96  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 96 SIM EXC AS NOTED

FRAME 99  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 99 SIM EXC AS NOTED

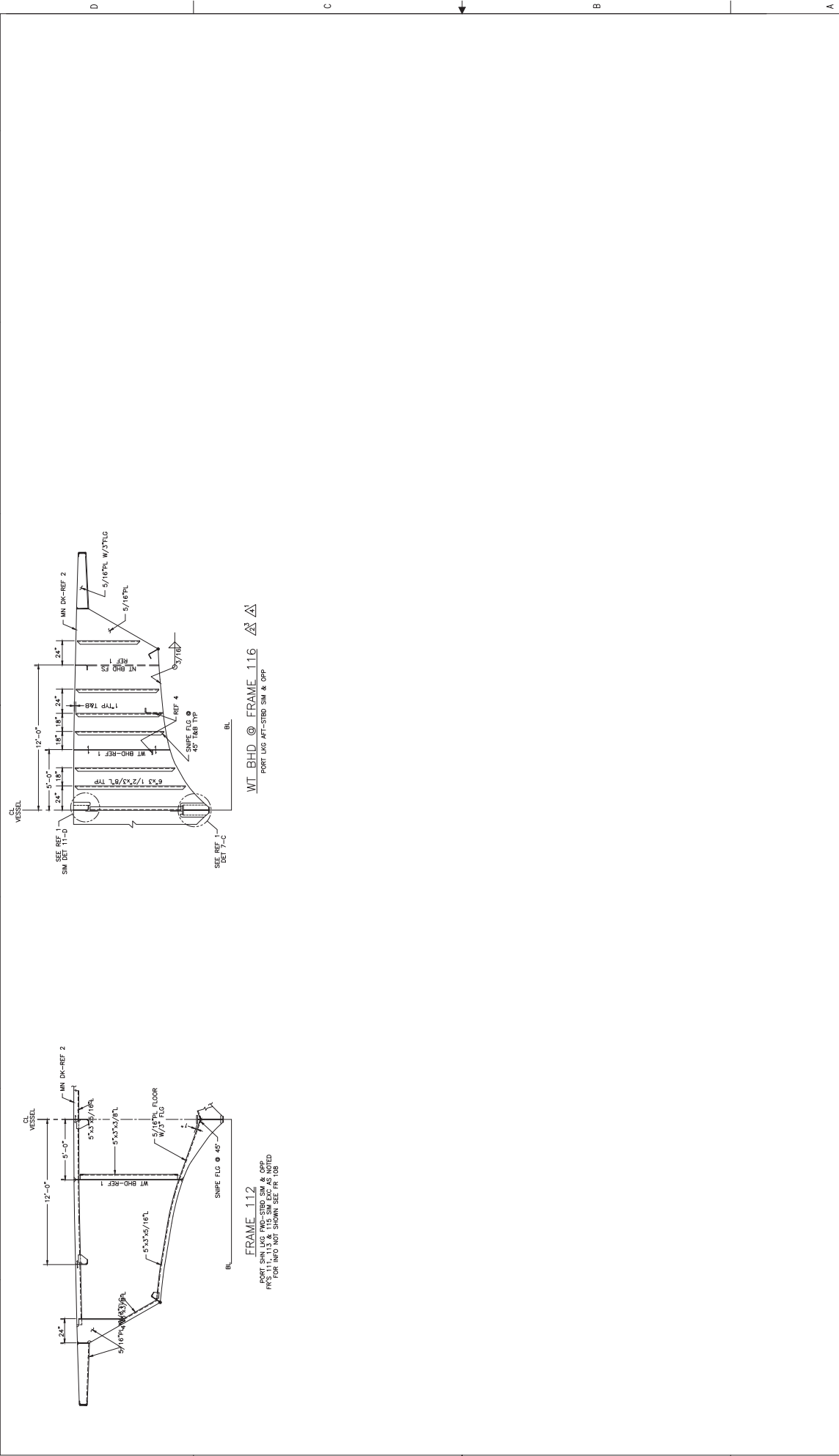
FRAME 90  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 90 SIM EXC AS NOTED

FRAME 102  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 102 SIM EXC AS NOTED

FRAME 106  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 106 SIM EXC AS NOTED

FRAME 110  
 PORT SHN LUG FWD-STRD SIM & OPP  
 FOR FR 110 SIM EXC AS NOTED

40 39 38 37 36 35 34 33



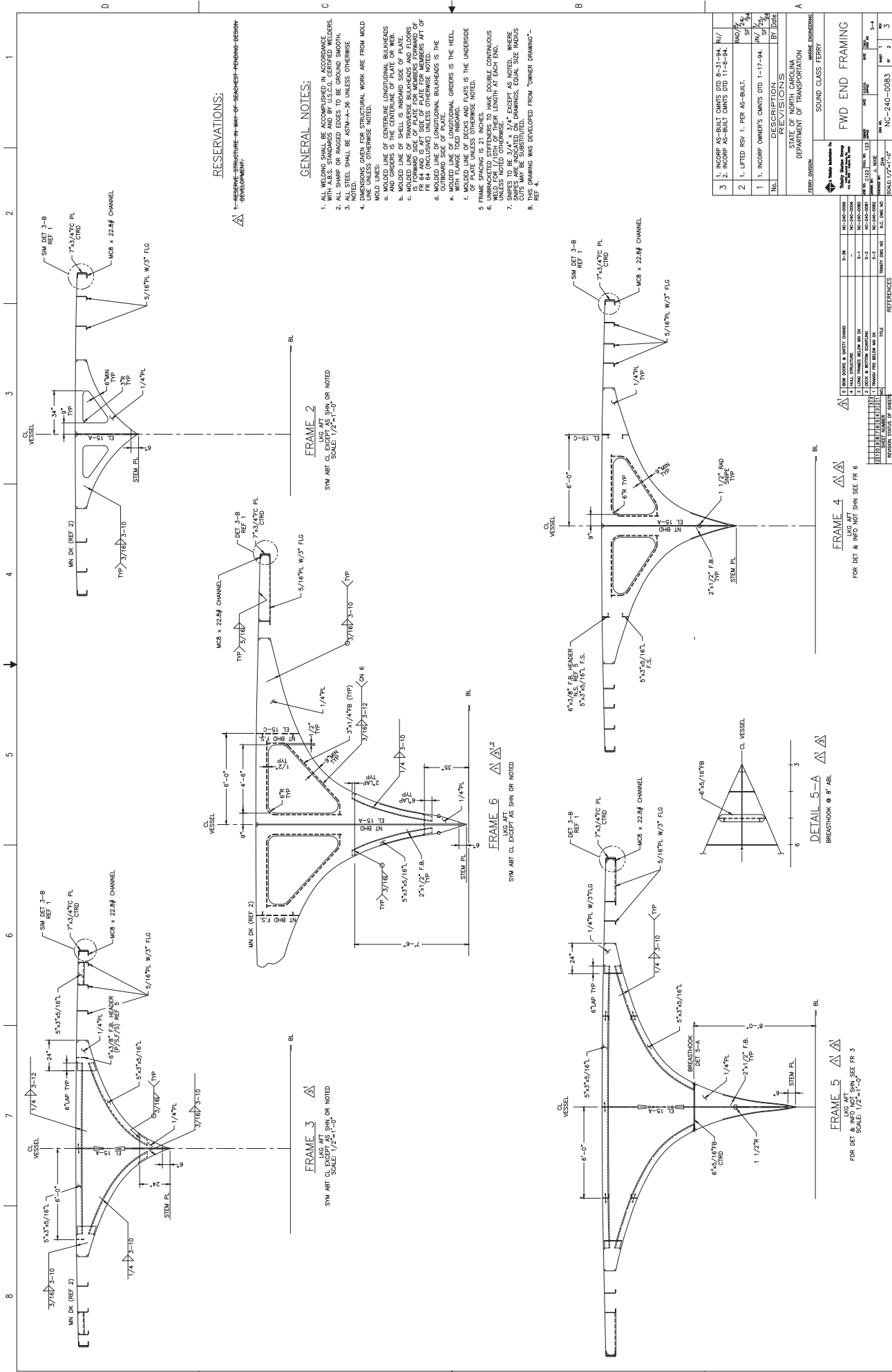
TRANSV FRAMES BLW MN DK	
REV	DATE
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2	05/11/13
3	05/11/13
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97	05/11/13
98	05/11/13
99	05/11/13
100	05/11/13

**WT BHD @ FRAME 116**

PORT LOG AFT-SBID SIM & CPP

**FRAME 112**

PORT SIM LOG AFT-SBID SIM & CPP  
FRS 111, 113 & 115 SIM EXC AS NOTED  
FOR INFO NOT SHOWN SEE FR 108



No.	DESCRIPTION	REV	DATE
1	INCORP AS-BUILT DIMS DTD 8-31-94	1	8/31/94
2	INCORP AS-BUILT DIMS DTD 11-6-94	1	11/6/94
3	INCORP OWNER'S DIMS DTD 1-17-94	1	1/17/94

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 MARINE ENGINEERING

SCALE: 1/2" = 1'-0"

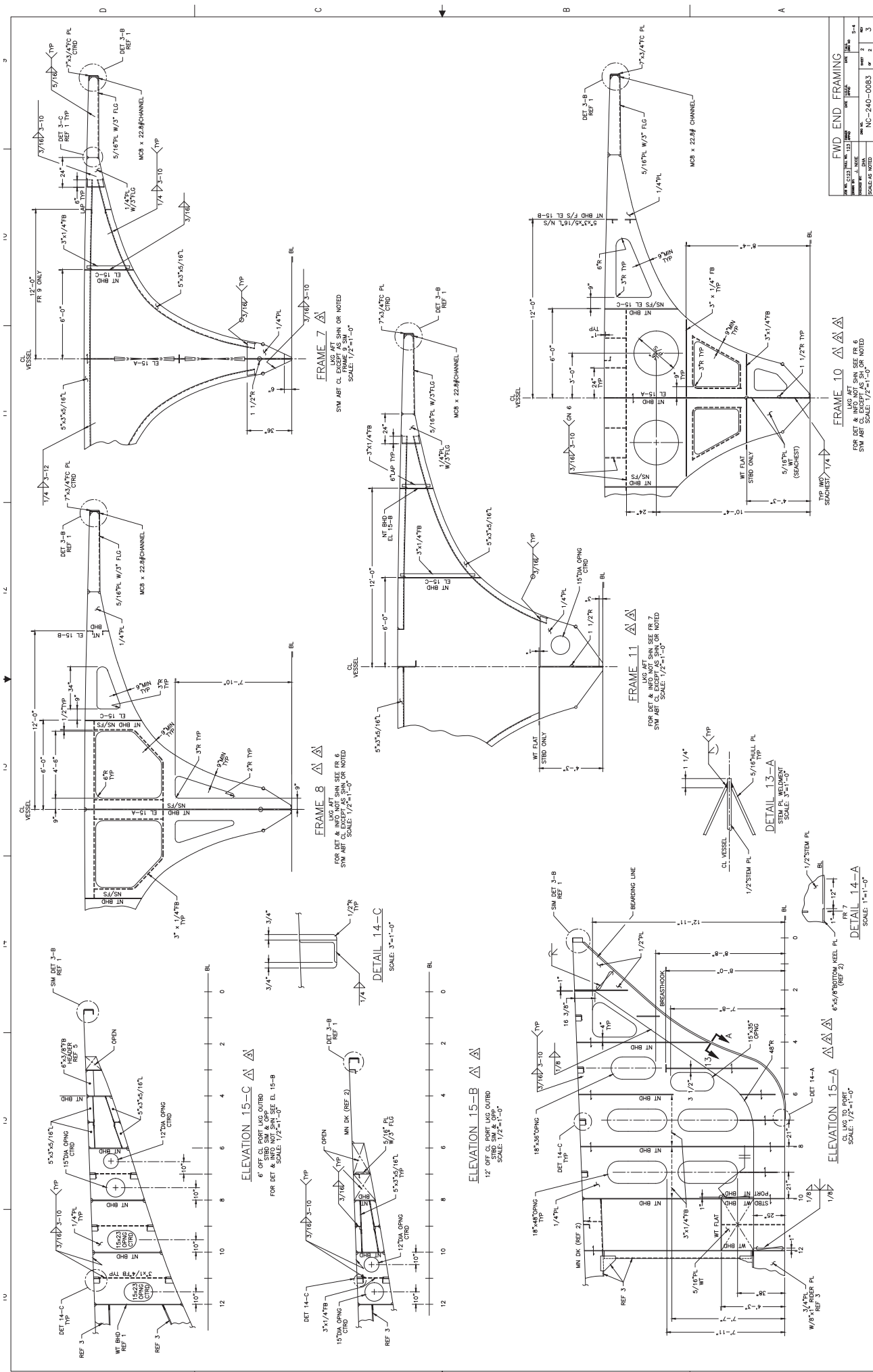
NO.	DESCRIPTION	REV	DATE
1	INCORP AS-BUILT DIMS DTD 8-31-94	1	8/31/94
2	INCORP AS-BUILT DIMS DTD 11-6-94	1	11/6/94
3	INCORP OWNER'S DIMS DTD 1-17-94	1	1/17/94

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 MARINE ENGINEERING

SCALE: 1/2" = 1'-0"

FOR DET 4. INFO NOT SHN SEE FR 6

FOR DET 5. INFO NOT SHN SEE FR 3



NO.	DATE	BY	CHKD.	APP.	SCALE
1	06/12/12	M. L. C.			AS SHOWN
2	06/12/12	J. H. W.			AS NOTED
3	06/12/12	M. L. C.			AS NOTED

**FRAME 7** Δ Δ Δ  
 LKG AFT  
 SW AFT CL. EXCEPT AS SHOWN OR NOTED  
 SCALE: 1/2"=1'-0"

**FRAME 8** Δ Δ Δ  
 LKG AFT  
 SW AFT CL. EXCEPT AS SHOWN OR NOTED  
 SCALE: 1/2"=1'-0"

**FRAME 11** Δ Δ Δ  
 LKG AFT  
 SW AFT CL. EXCEPT AS SHOWN OR NOTED  
 SCALE: 1/2"=1'-0"

**FRAME 10** Δ Δ Δ  
 LKG AFT  
 SW AFT CL. EXCEPT AS SHOWN OR NOTED  
 SCALE: 1/2"=1'-0"

**ELEVATION 15-C** Δ Δ Δ  
 6' OPENING  
 SW & OP. UNB'D  
 FOR DET. & INFO. NOT SHOWN SEE EL. 15-B  
 SCALE: 1/2"=1'-0"

**ELEVATION 15-B** Δ Δ Δ  
 12' OPENING  
 SW & OP. UNB'D  
 FOR DET. & INFO. NOT SHOWN SEE EL. 15-C  
 SCALE: 1/2"=1'-0"

**ELEVATION 15-A** Δ Δ Δ  
 6"x5/8" STEEL PL. (REF. 2)  
 SW & OP. UNB'D  
 FOR DET. & INFO. NOT SHOWN SEE EL. 15-B  
 SCALE: 1/2"=1'-0"

**DETAIL 14-C** Δ Δ Δ  
 SCALE: 3/4"=1'-0"

**DETAIL 14-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"

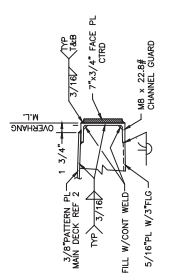
**DETAIL 13-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"

**DETAIL 14-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"

**DETAIL 14-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"

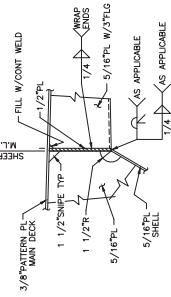
**DETAIL 14-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"

**DETAIL 14-A** Δ Δ Δ  
 SCALE: 1 1/4"=1'-0"



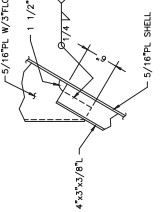
DETAIL 2-D  
TYPICAL OVERHANG STRAKE CONNECTION  
SCALE: 1/2"=1'-0"

RESERVATIONS:  $\Delta$

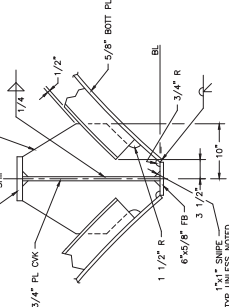


DETAIL 3-D  
TYPICAL DECK REINFORCEMENT FRAMES  
SCALE: 1/2"=1'-0"

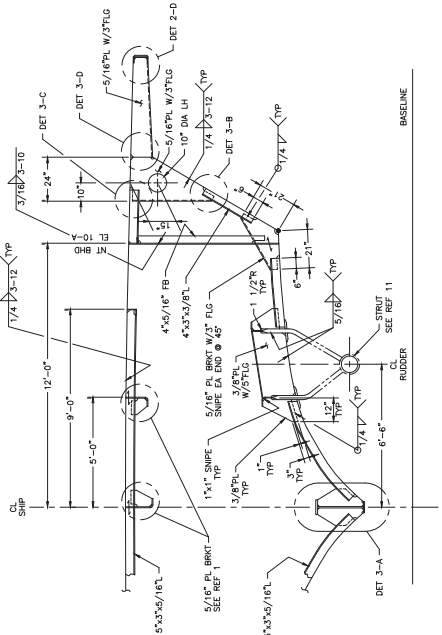
DETAIL 3-C  
SCALE: 1/2"=1'-0"



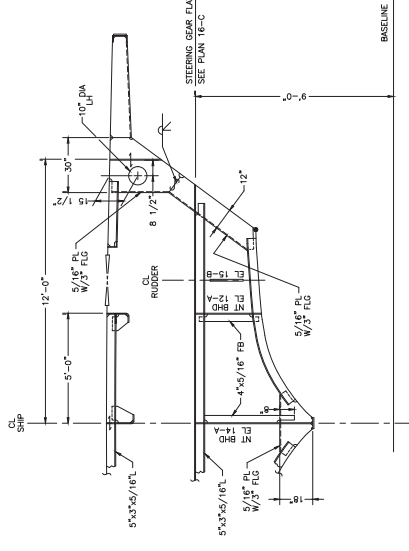
DETAIL 3-B  
SCALE: 1/2"=1'-0"



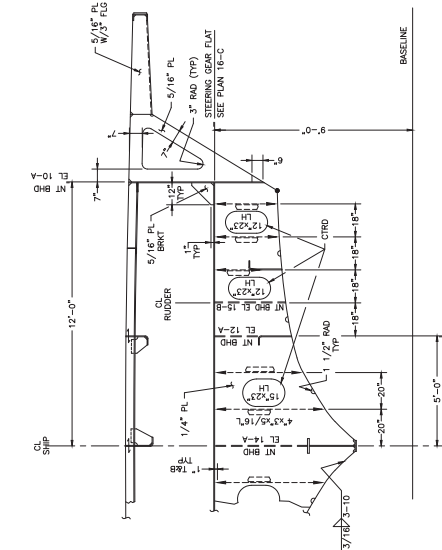
DETAIL 3-A  
SCALE: 1/2"=1'-0"



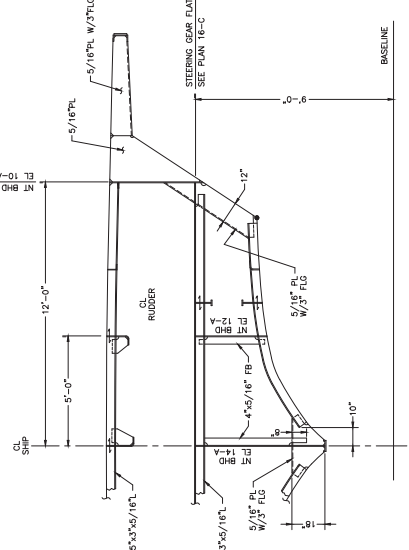
SECTION 5-C  
FRAME 117 SHOWN  
PORT SIDE SHOWN  
STBD SIDE SM UNLESS NOTED



SECTION 5-A  
FRAME 117  
PORT SIDE SHOWN  
STBD SIDE SM UNLESS NOTED  
FOR INFO NOT SHOWN SEE SECTION 5-C



SECTION 8-C  
FRAME 118  
PORT SIDE SHOWN  
STBD SIDE SM UNLESS NOTED  
FOR INFO NOT SHOWN SEE SECTION 5-C



SECTION 8-A  
FRAME 119  
PORT SIDE SHOWN  
STBD SIDE SM UNLESS NOTED  
FOR INFO NOT SHOWN SEE SECTION 5-C

GENERAL NOTES:

1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE WELDING SPECIFICATIONS AND QUALITY CONTROL PROCEDURES.
2. BUTTS IN PLATING SHALL BE LOCKED TO SUIT AVAILABLE.
3. ALL STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
4. BULKHEADS AND TRANSVERSE WEB FRAMES SHALL BE WELDED TO THE MAIN DECK.
5. TRANSVERSE WEBS, CENTRAL DECK LONGITUDINALS AND THROUGH BULKHEADS AND SHALL BE FITTED WITH 5/16" PL W/3TIG WELDS AS DETAIL ON REF. 1.
6. FRAME SPACING IS 21 INCHES.
7. UNBRACKETED STIFFENERS TO HAVE DOUBLE CONTINUOUS UNLESS NOTED OTHERWISE.
8. SHIPES TO BE 3/4" x 3/4" EXCEPT AS NOTED. WHERE CUTS MAY BE SUBSTITUTED.
9. DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD LINE UNLESS OTHERWISE NOTED.
10. MOLDED LINE OF CENTRINE LONGITUDINAL BULKHEADS AND GRIDDERS IS THE CENTRINE OF PLATE OR WEB.
11. MOLDED LINE OF TRANSVERSE BULKHEADS AND FLOORS IS FORWARD OF PLATE FOR MEMBERS FORMED OF FR 44 (INCLUSIVE) UNLESS OTHERWISE NOTED.
12. MOLDED LINE OF TRANSVERSE BULKHEADS IS THE CENTRINE OF PLATE UNLESS OTHERWISE NOTED.
13. MOLDED LINE OF LONGITUDINAL GRIDDERS IS THE HEEL WITH FLANGE TOED INBOARD.
14. ALL SHARP OR RAGGED EDGES TO BE GROUNDED SMOOTH.
15. THIS DRAWING WAS DEVELOPED FROM "OWNER FURNISHED DRAWING" - REF 9 & 10.

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP AS BUILT DIMS DTD 8-31-94.			
2	DELETED REV #1 & 12.			
3	INCORP OWNER'S OMT DTD 1-29-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
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NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
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3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
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NO.	REVISIONS	DATE	BY	CHKD
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3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
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NO.	REVISIONS	DATE	BY	CHKD
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2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
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NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

NO.	REVISIONS	DATE	BY	CHKD
1	INCORP OWNER'S OMT DTD 1-29-94.			
2	DELETED REV #1 & 12.			
3	INCORP AS BUILT DIMS DTD 8-31-94.			

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
FERRY DIVISION

PROJECT: TRINITY FERRY  
DRAWING NO: NC-240-0084  
SCALE: 1/2"=1'-0"

DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]

DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]

DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]

DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]

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CHKD: [Signature]

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BY: [Signature]  
CHKD: [Signature]

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CHKD: [Signature]

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BY: [Signature]  
CHKD: [Signature]

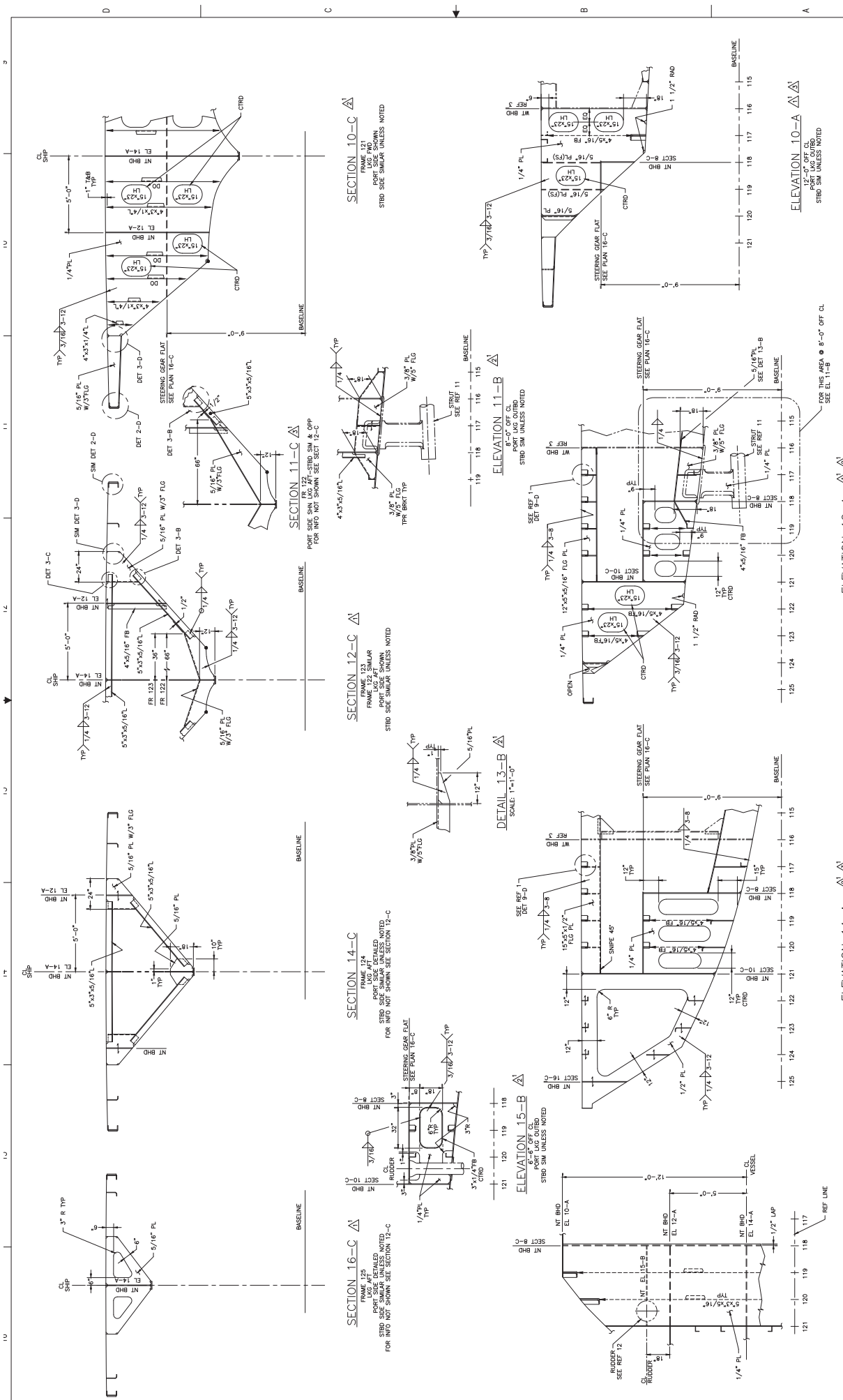
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BY: [Signature]  
CHKD: [Signature]

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CHKD: [Signature]

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BY: [Signature]  
CHKD: [Signature]

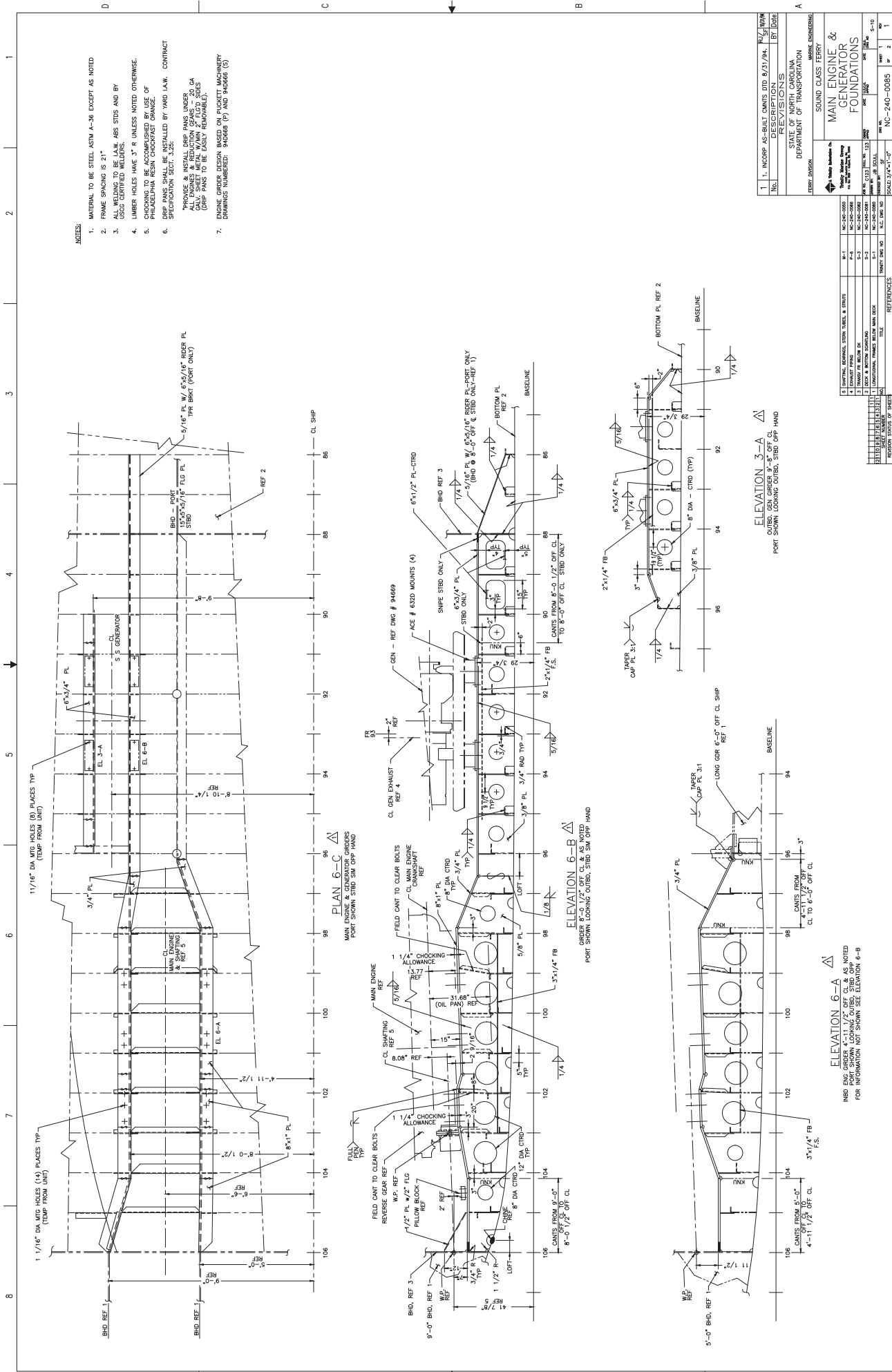
DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]

DATE: 10/1/94  
BY: [Signature]  
CHKD: [Signature]



AFT END FRAMING			
FR. NO.	FR. NAME	DATE	REV.
121	FR. 121	10/1/00	1
122	FR. 122	10/1/00	1
123	FR. 123	10/1/00	1
124	FR. 124	10/1/00	1
125	FR. 125	10/1/00	1
126	FR. 126	10/1/00	1
127	FR. 127	10/1/00	1
128	FR. 128	10/1/00	1
129	FR. 129	10/1/00	1
130	FR. 130	10/1/00	1
131	FR. 131	10/1/00	1
132	FR. 132	10/1/00	1
133	FR. 133	10/1/00	1
134	FR. 134	10/1/00	1
135	FR. 135	10/1/00	1
136	FR. 136	10/1/00	1
137	FR. 137	10/1/00	1
138	FR. 138	10/1/00	1
139	FR. 139	10/1/00	1
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148	FR. 148	10/1/00	1
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194	FR. 194	10/1/00	1
195	FR. 195	10/1/00	1
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197	FR. 197	10/1/00	1
198	FR. 198	10/1/00	1
199	FR. 199	10/1/00	1
200	FR. 200	10/1/00	1





- NOTES:**
1. MATERIAL TO BE STEEL ASTM A-36 EXCEPT AS NOTED
  2. FRAME SPACING IS 21"
  3. ALL WELDING TO BE LAKE 48S STDS AND BY USCG CERTIFIED WELDERS.
  4. LUMBER HOLES HAVE 3" R UNLESS NOTED OTHERWISE.
  5. CHOCKING TO BE ACCOMPLISHED BY USE OF USCG CERTIFIED WELDERS.
  6. CRIP PANS SHALL BE INSTALLED BY WELD LAW. CONTRACT SPECIFICATION SECT. 3.25.
  7. PROVIDE & INSTALL DRIP PANS UNDER ALL ENGINES & REDUCTION GEARS - 20 GA (DRIP PANS TO BE EASILY REMOVABLE).
  8. ENGINE ORDER DESIGN BASED ON PICKETT MACHINERY DRAWINGS NUMBERED: 840668 (P) AND 840668 (S)

NO.	DATE	BY	CHKD	REV
1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

NO.	DATE	BY	CHKD	REV
1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

NO.	DATE	BY	CHKD	REV
1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

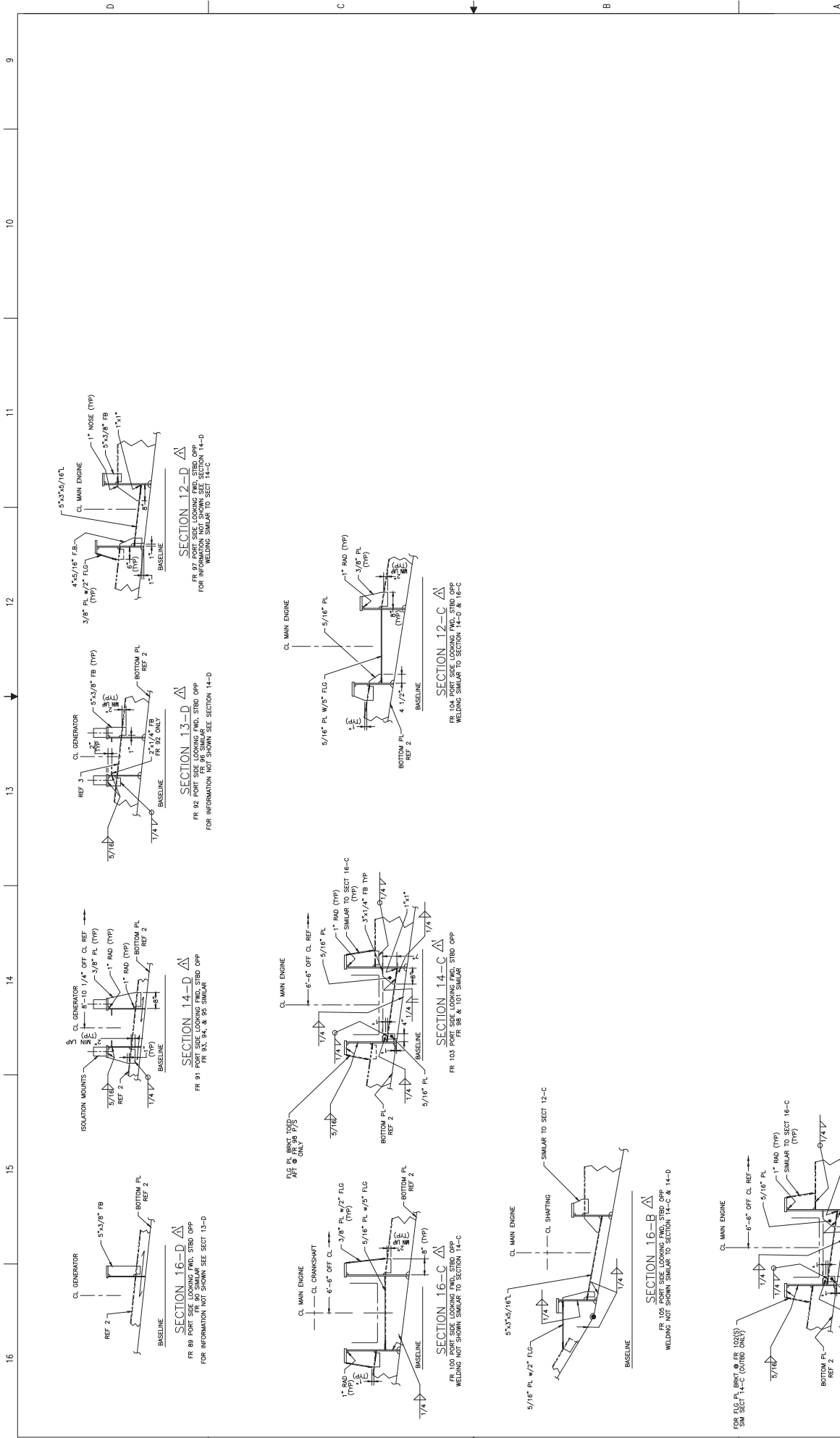
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1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

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NO.	DATE	BY	CHKD	REV
1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

NO.	DATE	BY	CHKD	REV
1	INCORP AS-BUILT DIMS DTD 8/21/94	BT	BT	1

SCALE: 3/4" = 1'-0"



MAIN ENGINE & GEN FDN.			
NO.	DATE	BY	CHKD
1	11/10/10	...	...
2	...	...	...
3	...	...	...

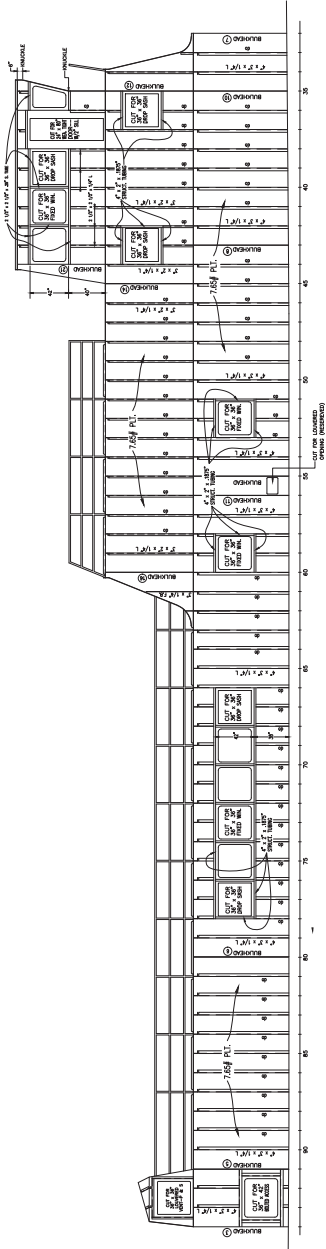
SCALE: 3/4"=1'-0"

NC-240-0085

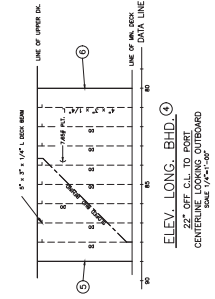
16 15 14 13 12 11 10 9

10 11 12 13 14 15 16

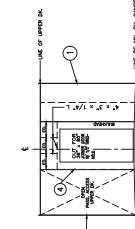
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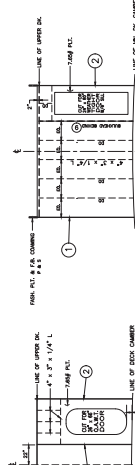
**BULKHEAD ②**  
INBOARD LOOKING OUTBOARD  
SCALE 1/4"=1'-00"



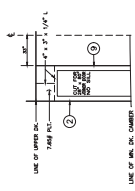
**ELEV. LONG. BHD. ④**  
22\"/>



**ELEVATION BHD.—FR.—89 ⑤**  
FR. 89—LOOKING FWD  
SCALE 1/4"=1'-00"



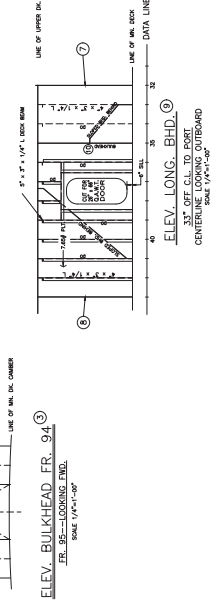
**ELEVATION BHD.—FR.—80 ⑥**  
FR. 79—LOOKING AFT  
SCALE 1/4"=1'-00"



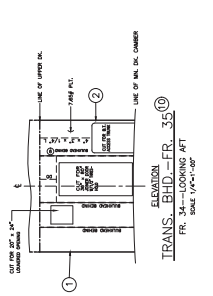
**ELEVATION BHD.—FR.—37 ⑦**  
FR. 31—LOOKING AFT  
SCALE 1/4"=1'-00"



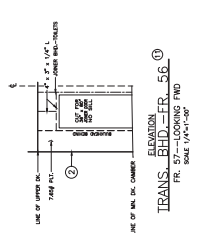
**ELEVATION BHD.—FR.—43 ⑧**  
FR. 30A—LOOKING FWD  
SCALE 1/4"=1'-00"



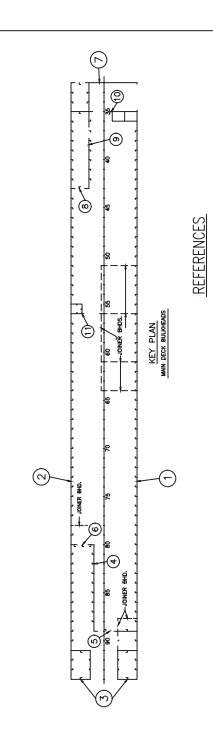
**ELEV. BULKHEAD FR. 94 ⑨**  
FR. 95—LOOKING FWD  
SCALE 1/4"=1'-00"



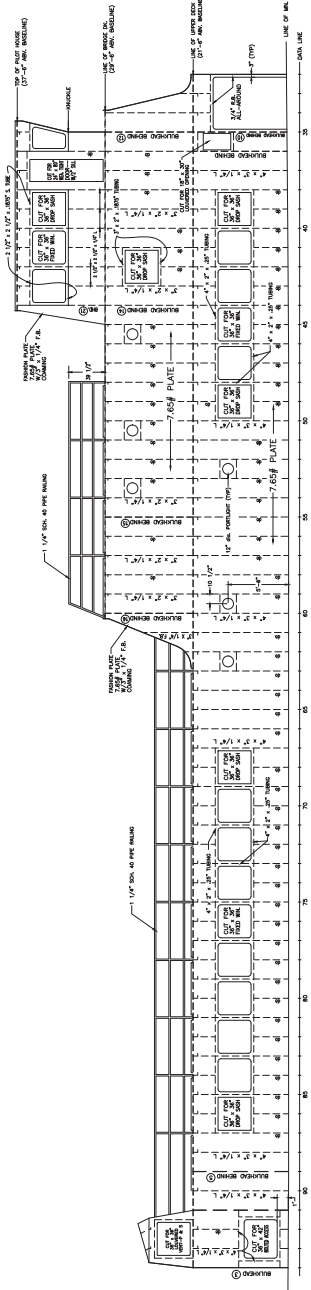
**ELEVATION BHD.—FR.—35 ⑩**  
FR. 34—LOOKING AFT  
SCALE 1/4"=1'-00"



**ELEVATION BHD.—FR.—56 ⑪**  
FR. 57—LOOKING FWD  
SCALE 1/4"=1'-00"



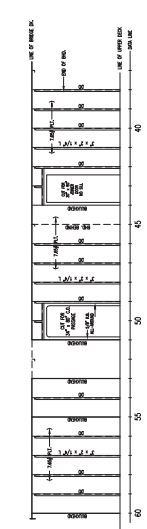
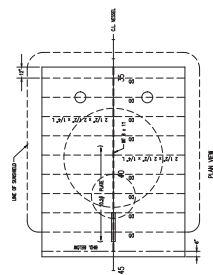
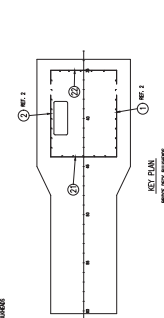
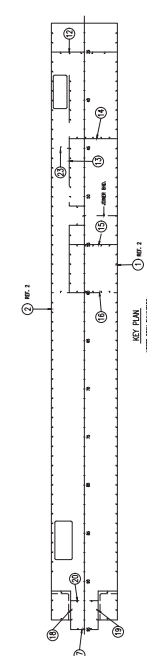
**ELEV. LONG. BHD. ⑫**  
33\"/>



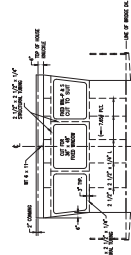
**BULKHEAD ①**  
OUTBOARD LOOKING INBOARD  
SCALE 1/4"=1'-00"

- REFERENCES**
1. CONTRACT SPECIFICATIONS
  2. STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
  3. WISCONSIN SECTION

NOL	DESCRIPTION	BY	DATE
<b>REVISIONS</b>			
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
FERRY CONTRACT NO. 240-00110 SHEET 2			
FERRY ON ORDER NO. 240-00080			
<b>SOUND CLASS FERRY</b>			
<b>STRUCTURE</b>			
<b>ABOVE MAIN DECK</b>			
DATE	BY	APPROVED	
NO. 240-0011	SHT. 1	OF 0	



LONG. BHD.--FR. 33' OFF C.L. TO PORT  
CENTRELINE LOADING DECK  
SCALE 1/4"=1'-0"



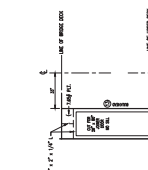
PILOT HOUSE MAIN DECK  
FR. 42--LOADING DECK  
SCALE 1/4"=1'-0"

TRANS. BHD.--FR. 60  
FR. 54--LOADING DECK  
SCALE 1/4"=1'-0"

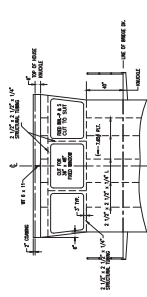


TRANS. BHD.--FR. 44  
FR. 42--LOADING DECK  
SCALE 1/4"=1'-0"

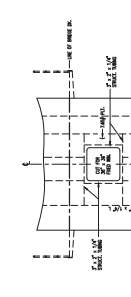
TRANS. BHD.--FR. 55  
FR. 54--LOADING DECK  
SCALE 1/4"=1'-0"



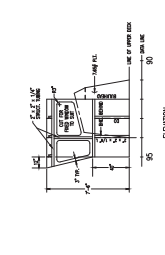
TRANS. BHD.--FR. 45  
FR. 54--LOADING DECK  
SCALE 1/4"=1'-0"



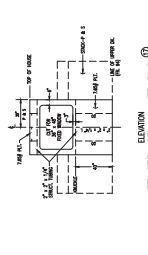
PILOT HOUSE FORWARD  
FR. 32--LOADING DECK  
SCALE 1/4"=1'-0"



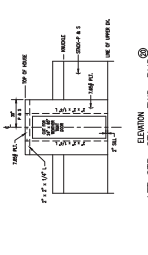
GALLEY FORWARD  
FR. 31--LOADING DECK  
SCALE 1/4"=1'-0"



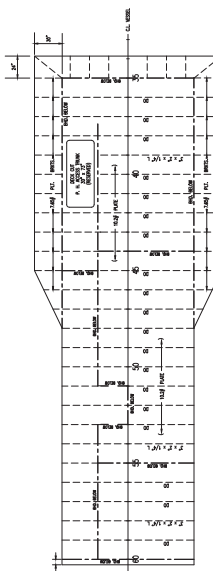
LONG. BHD.--FR. 37' OFF C.L. TO PORT  
PORT SIDE--SEAS, SHARPEY'S DECK WARD  
SCALE 1/4"=1'-0"



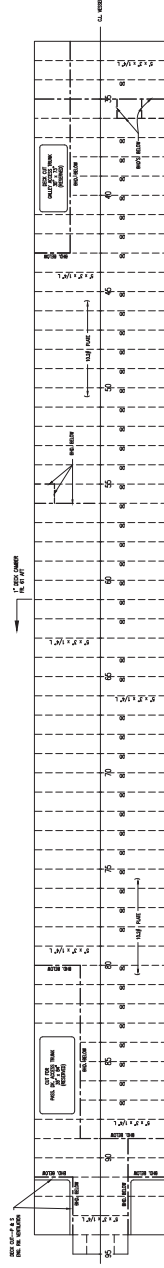
AFT STR. STA.--AFT BHD.  
SCALE 1/4"=1'-0"



AFT STR. STA.--FWD BHD.  
SCALE 1/4"=1'-0"



BRIDGE DECK  
SCALE 1/4"=1'-0"



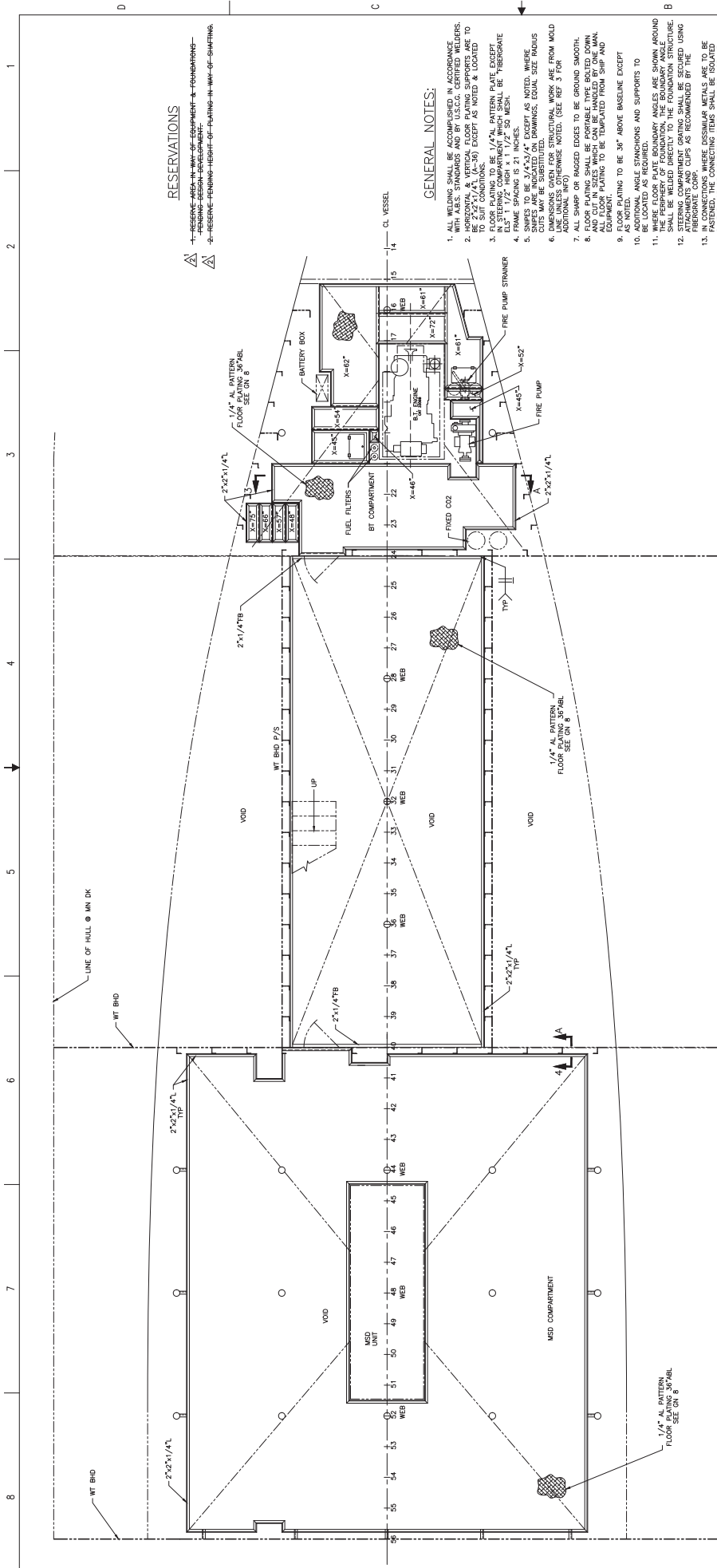
UPPER DECK  
SCALE 1/4"=1'-0"

- REFERENCES
1. CONTRACT SPECIFICATIONS
  2. STRUCT. AND MAR. SECTIONS
  3. AISC SP 2001

DRG. NO. 240-001(0) SHEET 1  
DRG. NO. 240-000(0)

No.	DESCRIPTION	BY	DATE

FEDERAL DIVISION  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 MARINE ENGINEERING  
 APRIL 20, 1950  
 SOUND CLASS FERRY  
 STRUCTURE  
 ABOVE MAIN DECK  
 APPROVED  
 SEA. LIA.  
 CIVIL ENGR.  
 SCALE AS SHOWN  
 NC. 240-0011 SHEET 2 OF 0

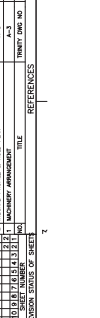
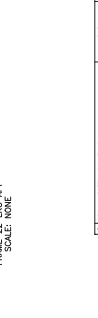
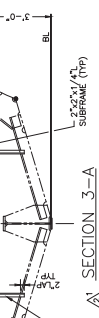
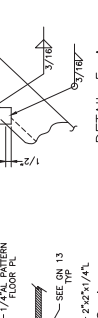
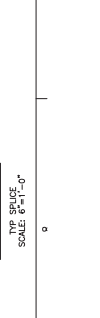
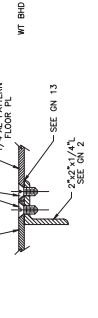
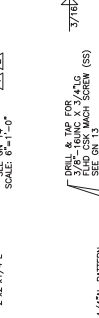
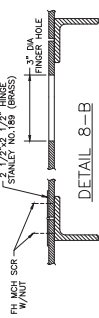


**RESERVATIONS**

- 1- ALL WELDING SHALL BE ACCORDANCE WITH THE WELDING PROCEDURE SPECIFICATION (WPS) AND QUALIFICATION RECORD (QUR) FOR THE WELDER.
- 2- RESERVE HANGING HEIGHT OF PLATING IN WAY OF SHAFING.

**GENERAL NOTES:**

1. ALL WELDING SHALL BE ACCORDANCE WITH THE WELDING PROCEDURE SPECIFICATION (WPS) AND QUALIFICATION RECORD (QUR) FOR THE WELDER.
2. HORIZONTAL & VERTICAL FLOOR PLATING SUPPORTS ARE TO BE 2'x2'x1/4" (A-36) EXCEPT AS NOTED & LOADED TO BE 2'x2'x1/4" (A-36).
3. FLOOR PLATING TO BE 1/4" AL PATTERN PLATE EXCEPT IN STEERING COMPARTMENT 2'x1'x1/4" SHALL BE "BERGGRATE" PLATE.
4. FRAME SPACING IS 21 INCHES.
5. SNIPES TO BE 3/4" x 1/4" EXCEPT AS NOTED. WHERE CUTS MAY BE SUBSTITUTED.
6. DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD LINES UNLESS OTHERWISE NOTED. (SEE REF 3 FOR ADDITIONAL INFO)
7. ALL SHARP OR RIGGED EDGES TO BE GROUND SMOOTH.
8. ALL WELDED JOINTS SHALL BE MADE BY ONE MAN AND CUT IN SIZES WHICH CAN BE HANDLED BY ONE MAN.
9. FLOOR PLATING TO BE 3/8" ABOVE BASELINE EXCEPT AS NOTED.
10. ALL ANGLE STANCHIONS AND SUPPORTS TO BE LOCATED AS REQUIRED.
11. WHERE FLOOR PLATE BOUNDARY ANGLES ARE SHOWN AROUND PERIMETER OF COMPARTMENT OR STRUCTURE, THE ANGLES SHALL BE WELDED DIRECTLY TO THE FOUNDATION STRUCTURE.
12. STEERING COMPARTMENT GRATING SHALL BE SECURED USING FIBERGLASS CUPS AS RECOMMENDED BY THE MANUFACTURER.
13. IN CONNECTIONS WHERE DISSIMILAR METALS ARE TO BE JOINED, THE USE OF SELECTING TAPE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SHALL BE PROVIDED FOR QUICK ACCESS TO VALVES AND EQUIPMENT LOCATED BELOW FLOOR PLATING.
14. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE NOTED.
15. DRAWING IN REF 1 & 2.

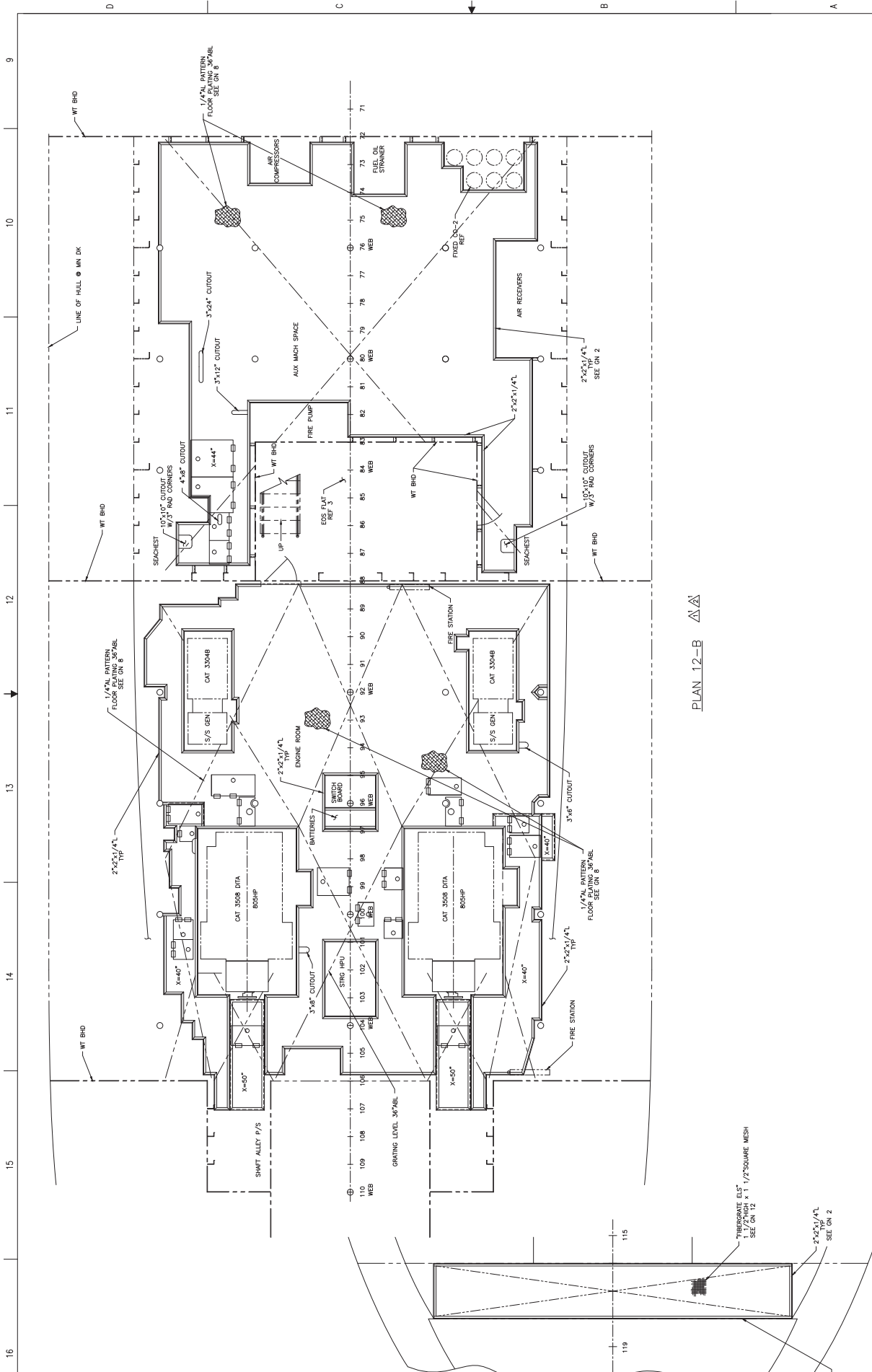


No.	REVISIONS	BY	DATE
1	INCORPORATE COMMENTS FROM LTR DTD 2-9-84	JW/PL	2/9/84
2	INCORPORATE BUILT MARKUPS DTD 12/14/84	JW/PL	12/14/84

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MARINE ENGINEERING	
DECK PLATING DETAILS	
PROJECT NO.	NC-240-0087
DATE	12/14/84
SCALE	1/2" = 1'-0"

1	DESIGN & DETAILING	2-2	NC-240-0087
2	CONSTRUCTION	4-4	NC-240-0087
3	INSPECTION	4-4	NC-240-0087
4	REVISIONS	4-4	NC-240-0087
5	REVISIONS	4-4	NC-240-0087
6	REVISIONS	4-4	NC-240-0087
7	REVISIONS	4-4	NC-240-0087
8	REVISIONS	4-4	NC-240-0087
9	REVISIONS	4-4	NC-240-0087
10	REVISIONS	4-4	NC-240-0087
11	REVISIONS	4-4	NC-240-0087
12	REVISIONS	4-4	NC-240-0087
13	REVISIONS	4-4	NC-240-0087
14	REVISIONS	4-4	NC-240-0087
15	REVISIONS	4-4	NC-240-0087

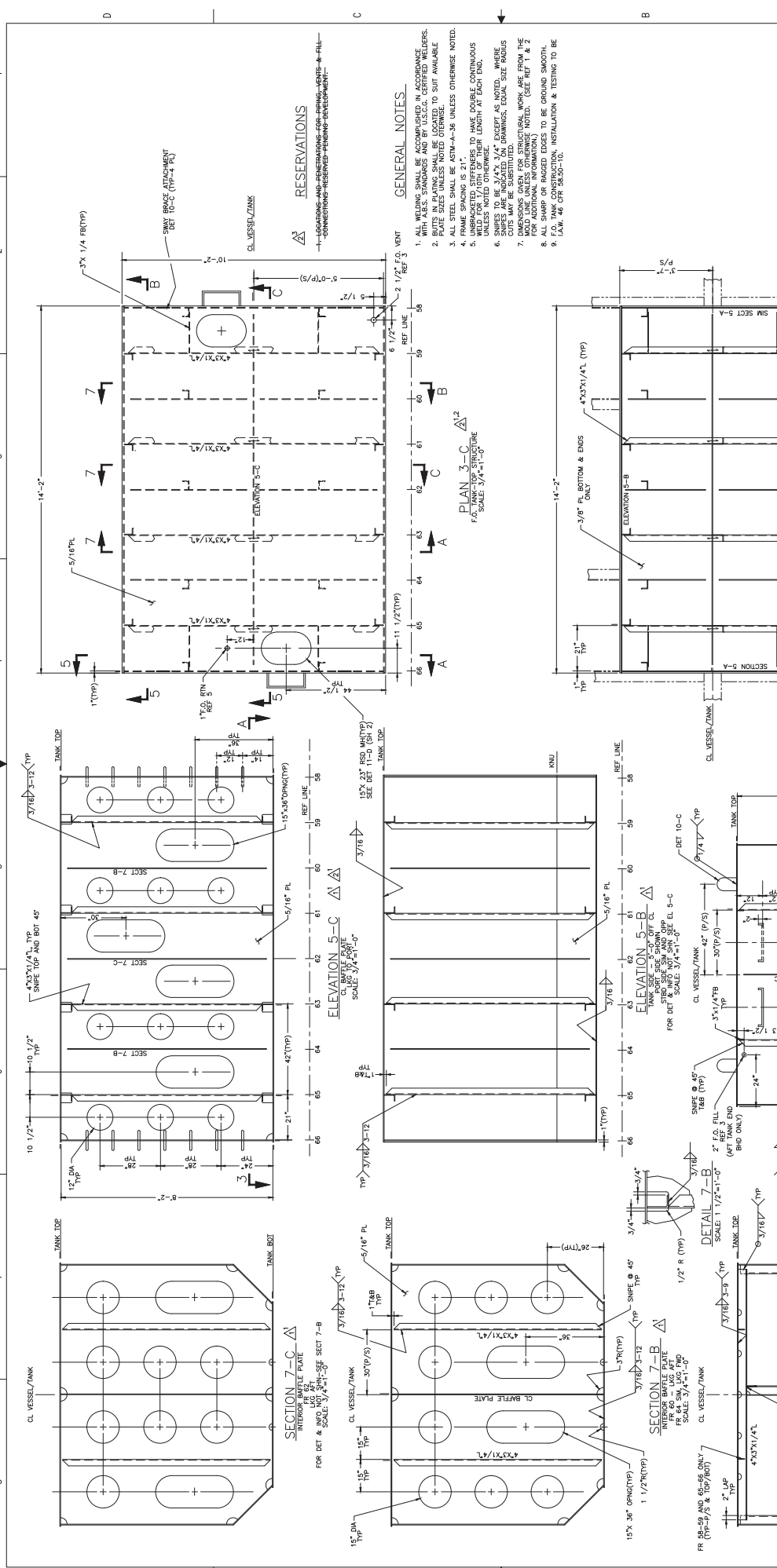
DECK PLATING DETAILS				
APPROX. DATE	NO. 123	DATE	NO.	REV.
DRAWN BY	...	CHECKED BY	...	...
SCALE	1/2" = 1'-0"	PROJECT NO.	NC-240-0087	NO. OF SHEETS
			OF	2



PLAN 12-B  $\Delta$ A

TEMPERATURE 53° F  
 1 1/2" THICK X 1 1/2" SQUARE MESH  
 SEE CN 12

PLAN 16-A  
 STEERING COMP. DRINKING



- ### RESERVATIONS
1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROPRIATE CODES.  
 2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES UNLESS NOTED OTHERWISE.  
 3. ALL STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.  
 4. UNPACKED STIFFENERS TO HAVE DOUBLE CONTINUOUS WELDS TO MAIN SHELL UNLESS NOTED OTHERWISE.  
 5. UNPACKED STIFFENERS TO HAVE DOUBLE CONTINUOUS WELDS TO MAIN SHELL UNLESS NOTED OTHERWISE.  
 6. SNIPES TO BE 3/4"x3/4" EXCEPT AS NOTED, WHERE DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM THE CENTERLINE UNLESS NOTED OTHERWISE. (SEE REF 1 & 2 FOR ADDITIONAL INFORMATION).  
 7. ALL SHARP OR RAGGED EDGES TO BE GRIND SMOOTH.  
 8. ALL MARKINGS TO BE MADE IN ACCORDANCE WITH THE APPROPRIATE CODES.  
 9. I.A.W. API 650-110. INSTALLATION & TESTING TO BE ACCORDANCE WITH THE APPROPRIATE CODES.

### GENERAL NOTES

1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROPRIATE CODES.  
 2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES UNLESS NOTED OTHERWISE.  
 3. ALL STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.  
 4. UNPACKED STIFFENERS TO HAVE DOUBLE CONTINUOUS WELDS TO MAIN SHELL UNLESS NOTED OTHERWISE.  
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 7. ALL SHARP OR RAGGED EDGES TO BE GRIND SMOOTH.  
 8. ALL MARKINGS TO BE MADE IN ACCORDANCE WITH THE APPROPRIATE CODES.  
 9. I.A.W. API 650-110. INSTALLATION & TESTING TO BE ACCORDANCE WITH THE APPROPRIATE CODES.

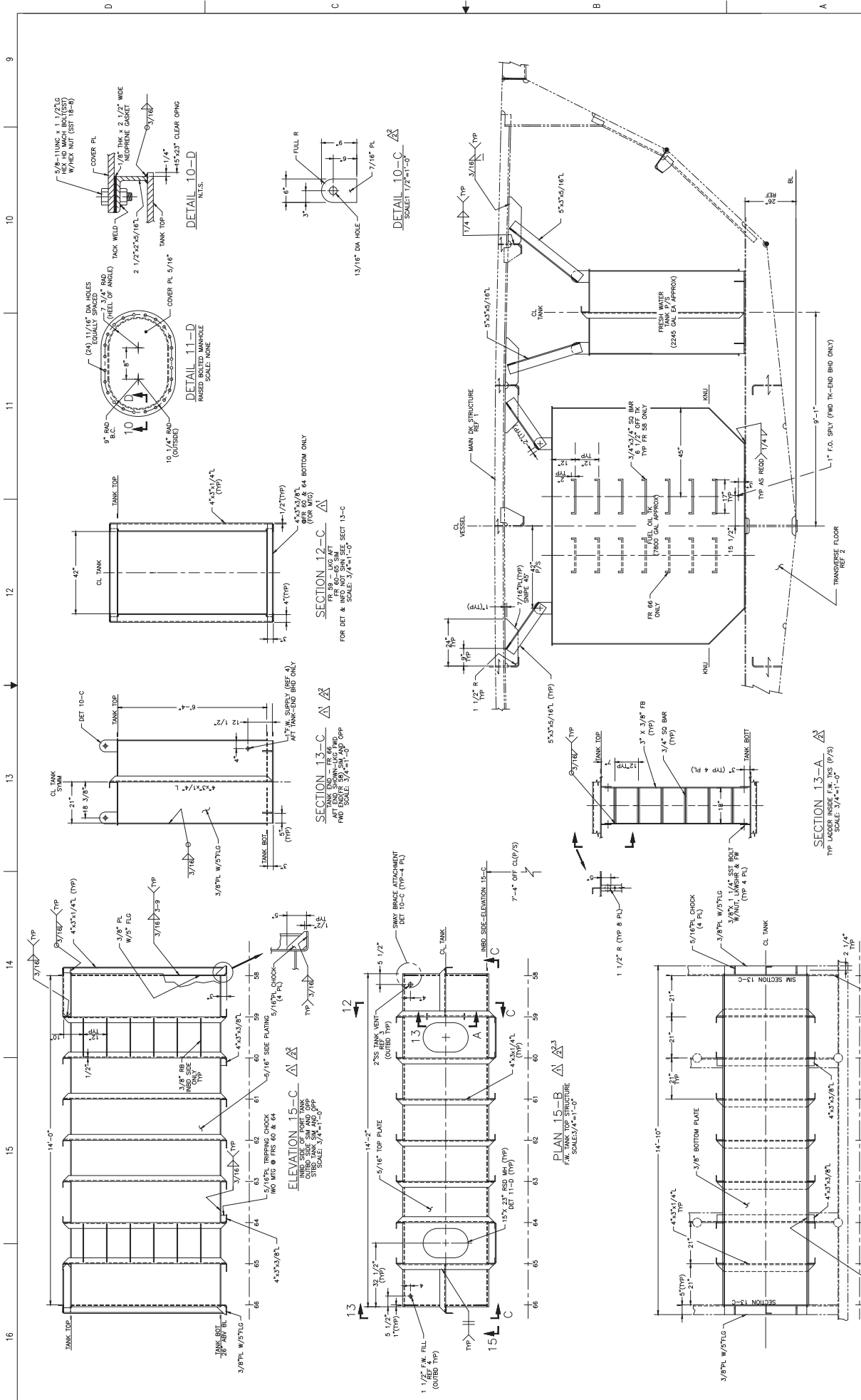
No.	DESCRIPTION	BY DATE
1	INCORPORATE OWNER'S COMMENTS DTD 2-18-84.	JN/ JRM
2	INCORPORATE OWNER'S COMMENTS DTD 3-7-84.	AM/
3	INCORPORATE OWNER'S COMMENTS DTD 11-14-84. (AS SET SECT 13-A). (AS SET SECT 13-A). (AS SET SECT 13-A).	AM/

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		MARK INFORMATION	
FURNISH DIVISION		MARK INFORMATION	
SOUND CLASS TERRY			
INDEPENDENT TANK			
DETAILS			
MARK	NO.	DATE	BY
NC 240-0101	1	11-14-84	AM
NC 240-0101	2	3-7-84	JN
NC 240-0101	3	11-14-84	AM

REFERENCES			
1	ASME	SECTION VIII, DIVISION 1	PERMISSIBLE STRESS DESIGN AND WORKING STRESS DESIGN
2	API	650	API 650 - STEEL VESSELS FOR STORAGE OF LIQUIDS AT OR BELOW ATMOSPHERIC PRESSURE
3	ASME	SECTION IX	BRIDGE AND BOLTING SPECIFICATIONS
4	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
5	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
6	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
7	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
8	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
9	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS
10	ASME	SECTION VIII, DIVISION 2	ALTERNATE DESIGN STRESS

SCALE: 3/4" = 1'-0"

ITEM NO.	DESCRIPTION	SCALE	DATE
1	CL VESSEL/TANK	3/4" = 1'-0"	
2	CL BATTLE PLATE	3/4" = 1'-0"	
3	CL VESSEL/TANK	3/4" = 1'-0"	
4	CL VESSEL/TANK	3/4" = 1'-0"	
5	CL VESSEL/TANK	3/4" = 1'-0"	
6	CL VESSEL/TANK	3/4" = 1'-0"	
7	CL VESSEL/TANK	3/4" = 1'-0"	
8	CL VESSEL/TANK	3/4" = 1'-0"	
9	CL VESSEL/TANK	3/4" = 1'-0"	
10	CL VESSEL/TANK	3/4" = 1'-0"	



**INDEPENDENT TANK DETAILS**

DATE	BY	CHK	APP
10/23/83	W.C.	W.C.	W.C.
10/24/83	W.C.	W.C.	W.C.
10/25/83	W.C.	W.C.	W.C.
10/26/83	W.C.	W.C.	W.C.
10/27/83	W.C.	W.C.	W.C.
10/28/83	W.C.	W.C.	W.C.
10/29/83	W.C.	W.C.	W.C.
10/30/83	W.C.	W.C.	W.C.
10/31/83	W.C.	W.C.	W.C.
11/01/83	W.C.	W.C.	W.C.
11/02/83	W.C.	W.C.	W.C.
11/03/83	W.C.	W.C.	W.C.
11/04/83	W.C.	W.C.	W.C.
11/05/83	W.C.	W.C.	W.C.
11/06/83	W.C.	W.C.	W.C.
11/07/83	W.C.	W.C.	W.C.
11/08/83	W.C.	W.C.	W.C.
11/09/83	W.C.	W.C.	W.C.
11/10/83	W.C.	W.C.	W.C.
11/11/83	W.C.	W.C.	W.C.
11/12/83	W.C.	W.C.	W.C.
11/13/83	W.C.	W.C.	W.C.
11/14/83	W.C.	W.C.	W.C.
11/15/83	W.C.	W.C.	W.C.
11/16/83	W.C.	W.C.	W.C.
11/17/83	W.C.	W.C.	W.C.
11/18/83	W.C.	W.C.	W.C.
11/19/83	W.C.	W.C.	W.C.
11/20/83	W.C.	W.C.	W.C.
11/21/83	W.C.	W.C.	W.C.
11/22/83	W.C.	W.C.	W.C.
11/23/83	W.C.	W.C.	W.C.
11/24/83	W.C.	W.C.	W.C.
11/25/83	W.C.	W.C.	W.C.
11/26/83	W.C.	W.C.	W.C.
11/27/83	W.C.	W.C.	W.C.
11/28/83	W.C.	W.C.	W.C.
11/29/83	W.C.	W.C.	W.C.
11/30/83	W.C.	W.C.	W.C.
12/01/83	W.C.	W.C.	W.C.
12/02/83	W.C.	W.C.	W.C.
12/03/83	W.C.	W.C.	W.C.
12/04/83	W.C.	W.C.	W.C.
12/05/83	W.C.	W.C.	W.C.
12/06/83	W.C.	W.C.	W.C.
12/07/83	W.C.	W.C.	W.C.
12/08/83	W.C.	W.C.	W.C.
12/09/83	W.C.	W.C.	W.C.
12/10/83	W.C.	W.C.	W.C.
12/11/83	W.C.	W.C.	W.C.
12/12/83	W.C.	W.C.	W.C.
12/13/83	W.C.	W.C.	W.C.
12/14/83	W.C.	W.C.	W.C.
12/15/83	W.C.	W.C.	W.C.
12/16/83	W.C.	W.C.	W.C.
12/17/83	W.C.	W.C.	W.C.
12/18/83	W.C.	W.C.	W.C.
12/19/83	W.C.	W.C.	W.C.
12/20/83	W.C.	W.C.	W.C.
12/21/83	W.C.	W.C.	W.C.
12/22/83	W.C.	W.C.	W.C.
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12/24/83	W.C.	W.C.	W.C.
12/25/83	W.C.	W.C.	W.C.
12/26/83	W.C.	W.C.	W.C.
12/27/83	W.C.	W.C.	W.C.
12/28/83	W.C.	W.C.	W.C.
12/29/83	W.C.	W.C.	W.C.
12/30/83	W.C.	W.C.	W.C.
12/31/83	W.C.	W.C.	W.C.

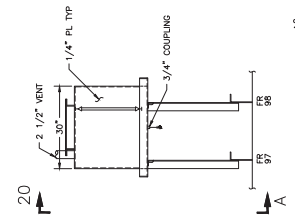
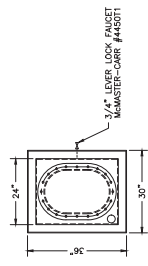
SCALE: AS NOTED

NC-240-0101

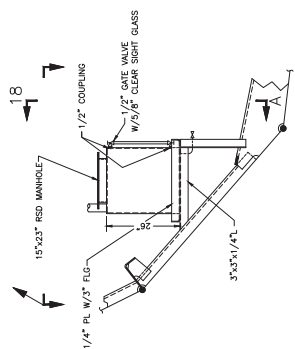


24 23 22 21 20 19 18 17

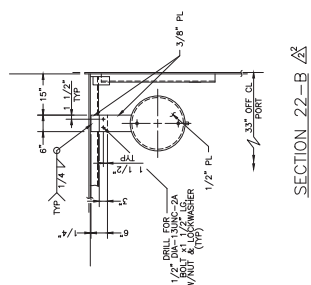
D C B A



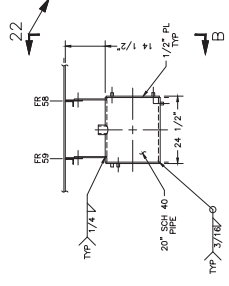
ELEVATION 18-A  
75 GALLON OIL TANK  
STRIP LUG OUTRD



SECTION 20-A  
75 GALLON OIL TANK  
TR 3/4" LUG OUTRD



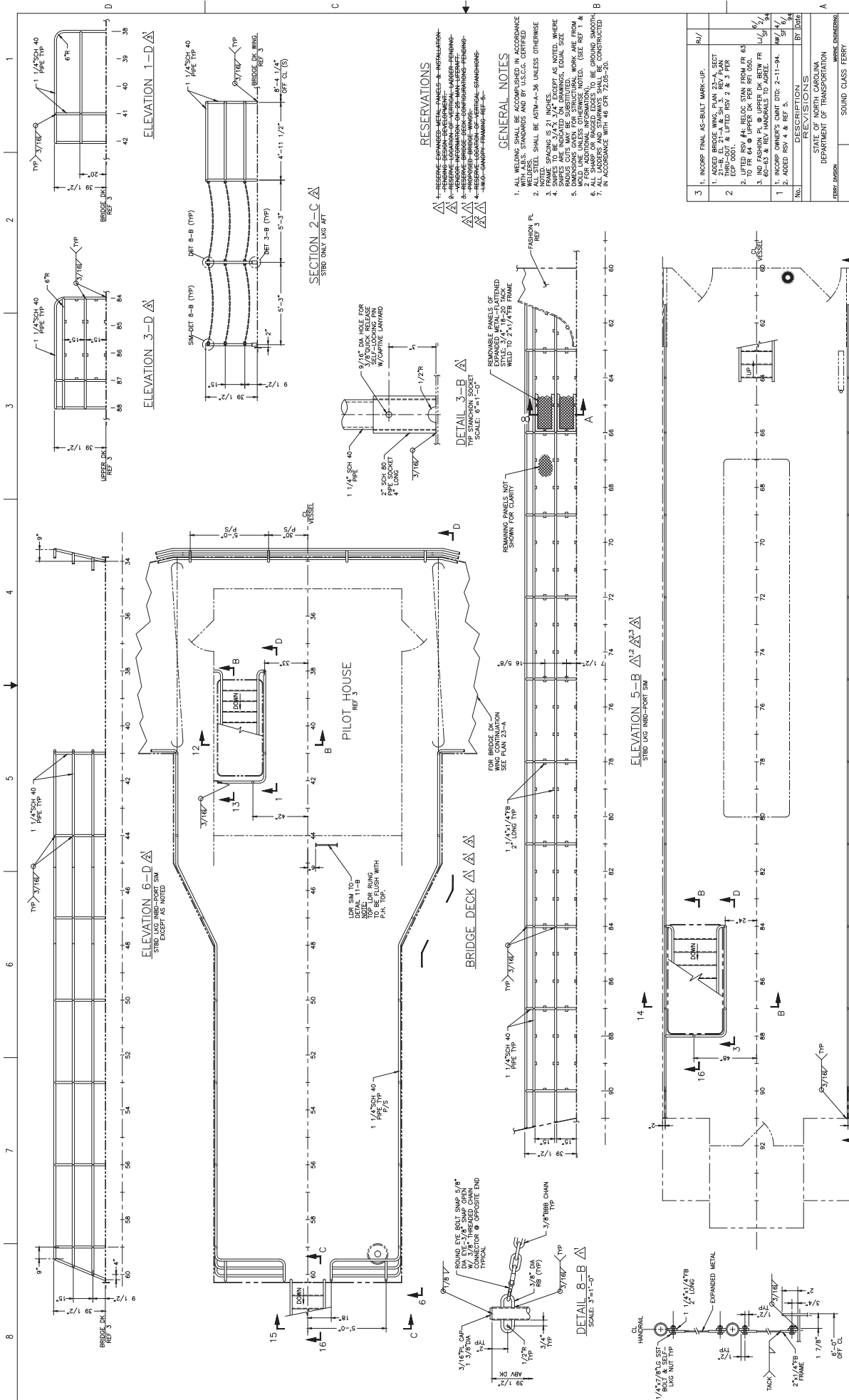
SECTION 22-B  
LUG OUT  
SCALE: 3/4"=1'-0"



ELEVATION 23-B  
EMERGENCY RELEASE DRT TANK  
(APPROX. 20 GAL.)  
SCALE: 3/4"=1'-0"

INDEPENDENT TANK DETAILS			
DATE	BY	CHKD	APP'D
11/15/18	J. A. [Signature]	[Signature]	[Signature]
NO. NC-240-0101	REV. NO.	REV. DATE	REV. DATE
	1	3	2
SCALE: AS NOTED			

19 20 21 22 23 24



- RESERVATIONS**
- 1. RESERVE EXPANDED METAL PANELS & INSTALLATION-  
FOR FUTURE EXPANSION OF THE DECK.
  - 2. RESERVE LOCATION OF VERTICAL WAGON-REINFORCING-  
FOR FUTURE EXPANSION OF THE DECK.
  - 3. INTERPRETATION OF DIMENSIONS & MATERIALS-  
SHOWN ON DRAWINGS IS TO BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 4. INTERPRETATION OF DIMENSIONS & MATERIALS-  
SHOWN ON DRAWINGS IS TO BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 5. INTERPRETATION OF DIMENSIONS & MATERIALS-  
SHOWN ON DRAWINGS IS TO BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 6. INTERPRETATION OF DIMENSIONS & MATERIALS-  
SHOWN ON DRAWINGS IS TO BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 7. INTERPRETATION OF DIMENSIONS & MATERIALS-  
SHOWN ON DRAWINGS IS TO BE AS SHOWN UNLESS OTHERWISE  
NOTED.
- GENERAL NOTES**
- 1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE  
WITH THE STANDARDS AND BY U.S.G.A. CERTIFIED  
WELDERS.
  - 2. NOTED.
  - 3. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 4. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 5. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 6. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 7. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 8. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 9. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 10. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 11. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 12. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 13. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 14. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 15. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 16. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 17. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 18. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 19. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.
  - 20. DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE  
NOTED.

No.	REVISIONS	BY	DATE
1	INCORP FINAL AS-BUILT MARK-UP.		
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.		
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.		
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.		
5	ADDED REV 4 & REV 5.		
6			
7			

STATE OF NORTH CAROLINA	DEPARTMENT OF TRANSPORTATION
SOUND GLASS FERRY	
MARK NO. 1000	
LADDERS, STAIRWAYS & DECK RAIL DET	
PROJECT NO.	NC-240-0088
DATE	3-1-84
SCALE	1/2" = 1'-0"
REV	1 2 3

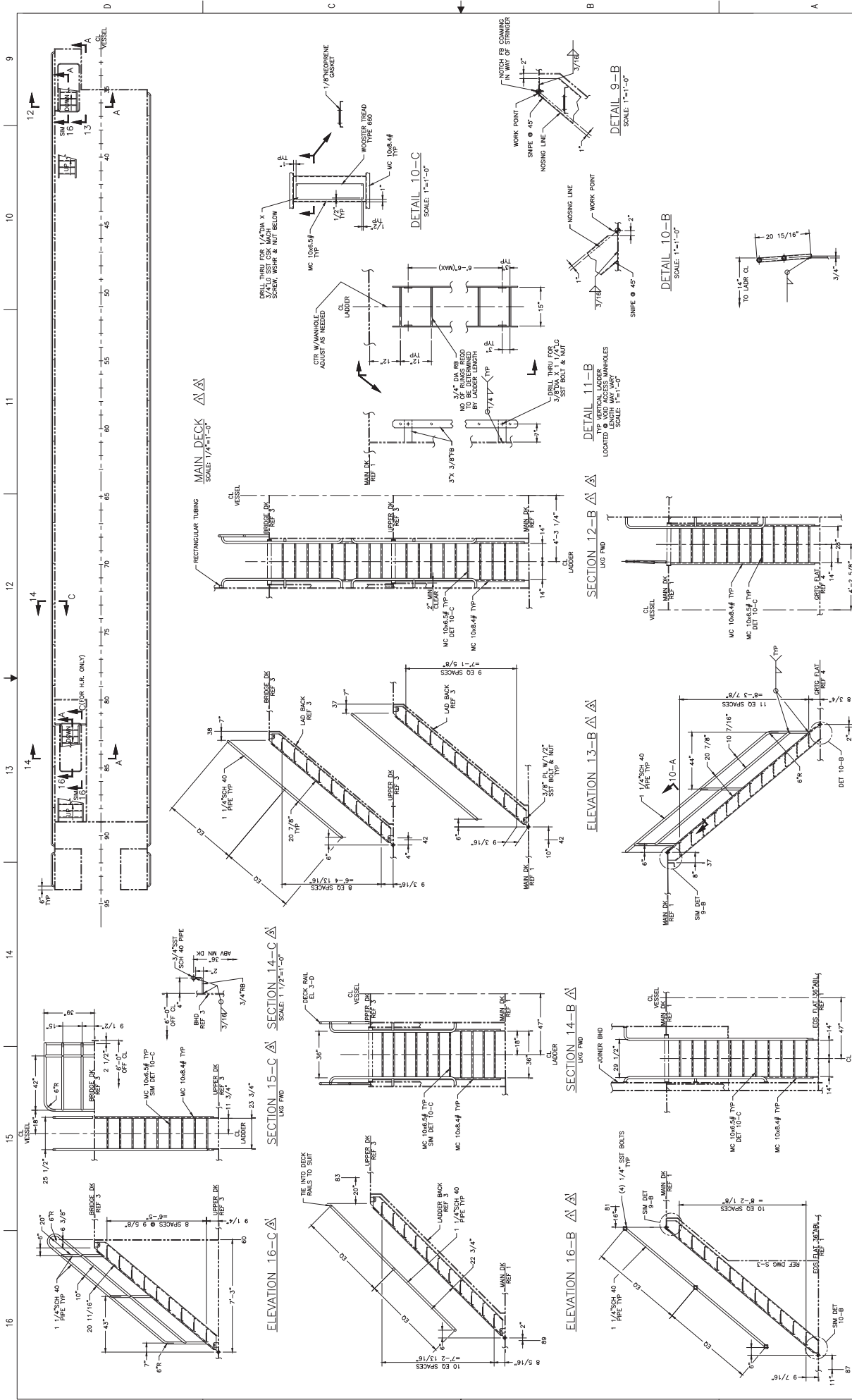
NO.	REVISIONS
1	INCORP FINAL AS-BUILT MARK-UP.
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.
5	ADDED REV 4 & REV 5.
6	
7	

NO.	REVISIONS
1	INCORP FINAL AS-BUILT MARK-UP.
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.
5	ADDED REV 4 & REV 5.
6	
7	

NO.	REVISIONS
1	INCORP FINAL AS-BUILT MARK-UP.
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.
5	ADDED REV 4 & REV 5.
6	
7	

NO.	REVISIONS
1	INCORP FINAL AS-BUILT MARK-UP.
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.
5	ADDED REV 4 & REV 5.
6	
7	

NO.	REVISIONS
1	INCORP FINAL AS-BUILT MARK-UP.
2	ADDED BRIDGE WING PLAN 23-A, SECT 21-B, DL 21-A & SH. 3, REV PLAN ECP ODD.
3	LIFTED REV #4 RELOC STAIN FROM FR 63 TO FR 64 & UPTD COST 2 & 3 PER REV #4.
4	INCORP OWNER'S CONC DTD: 2-11-84. REV #4 & REV 5.
5	ADDED REV 4 & REV 5.
6	
7	



**LADDER, STRUT & DK RAIL DET**

NO.	REV.	DATE	BY	CHK
1	1			
2	1			
3	1			

SCALE: 1/2"=1'-0"

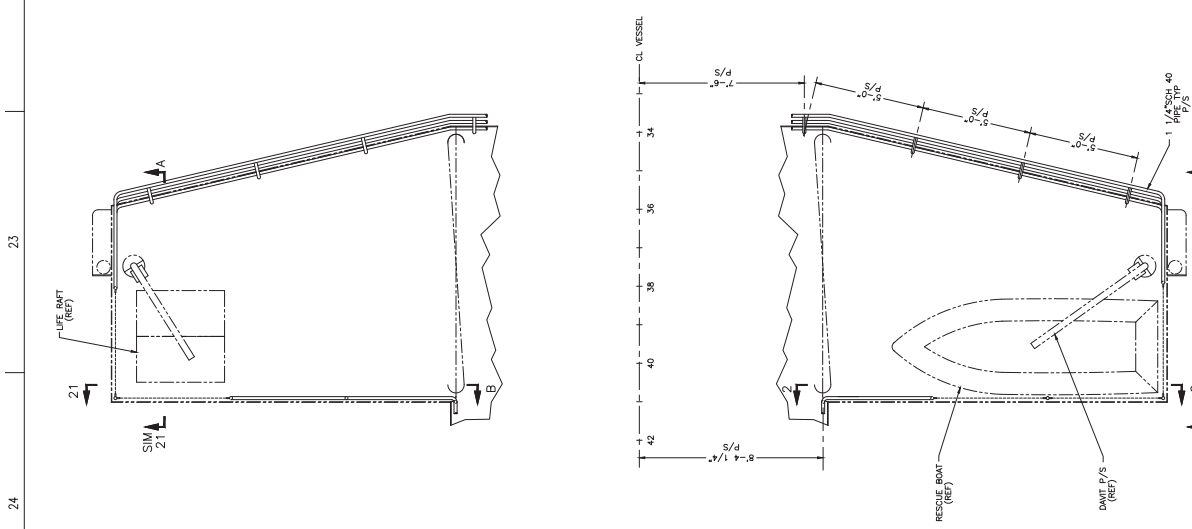
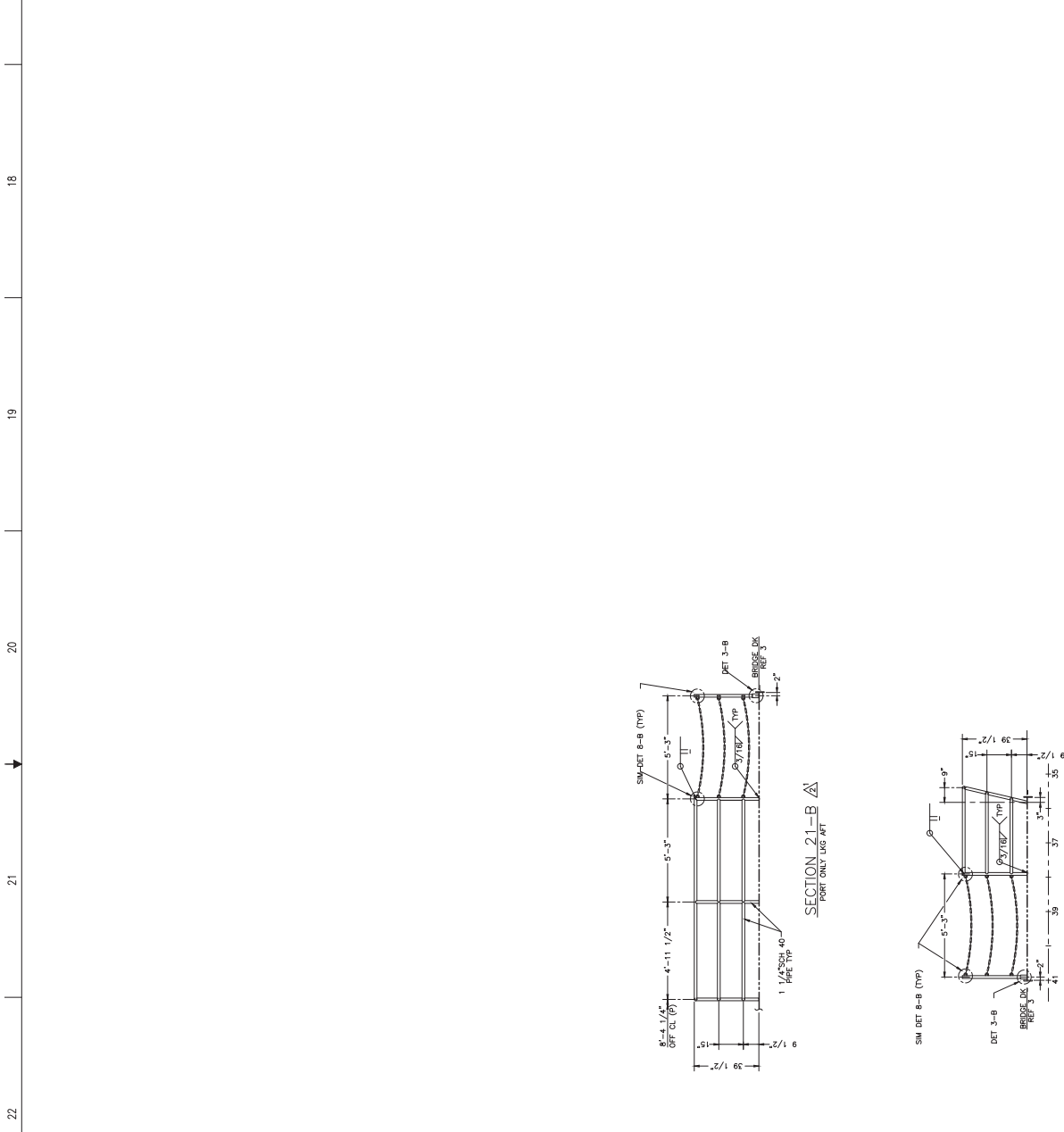
NC-240-0088

FOR INFO NOT SHOWN SEE EL. 16-C

LADR, STRWY & DK RAIL DET		DATE: 10/16/08		DRAWN BY: JG	
SCALE: 1/2"=1'-0"		PROJECT NO: NC-240-0088		SHEET NO: 3 OF 2	
PROJECT: 240-0088		DRAWING: 240-0088-03		DATE: 10/16/08	
PROJECT: 240-0088		DRAWING: 240-0088-03		DATE: 10/16/08	

17 18 19 20 21 22 23 24

D C B A

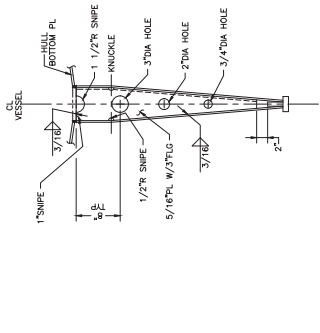


LADR, STRWY & DK RAIL DET		DATE: 10/16/08		DRAWN BY: JG	
SCALE: 1/2"=1'-0"		PROJECT NO: NC-240-0088		SHEET NO: 3 OF 2	
PROJECT: 240-0088		DRAWING: 240-0088-03		DATE: 10/16/08	
PROJECT: 240-0088		DRAWING: 240-0088-03		DATE: 10/16/08	

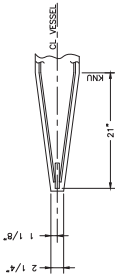
21 22 23 24

A B C

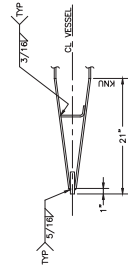




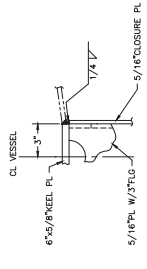
SECTION 7-C  
TYPE: HULL AND KEEL  
SCALE: 1/1/2"=1'-0"



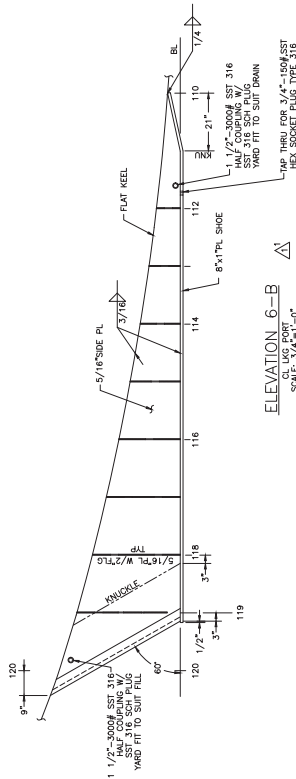
PLAN 6-C  
SCALE: 1/1/2"=1'-0"



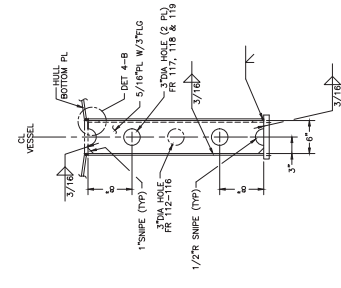
PLAN 4-C  
SCALE: 1/1/2"=1'-0"



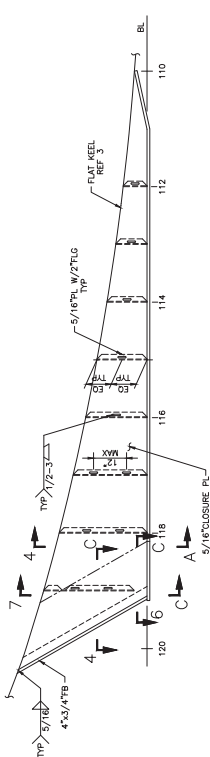
DETAIL 4-B  
SCALE: 3"=1'-0"



ELEVATION 6-B  
TYPE: HULL AND KEEL  
SCALE: 3/4"=1'-0"



SECTION 4-A  
TYPE: HULL AND KEEL  
SCALE: 1/1/2"=1'-0"



ELEVATION 6-A  
TYPE: HULL AND KEEL  
SCALE: 3/4"=1'-0"

GENERAL NOTES

1. APPLY A LIQUID RUST INHIBITOR 'FLOAT COAT' TO ALL EXPOSED SURFACES OF STEEL PRIOR TO APPLICATION.

NO.	REVISIONS	BY	DATE
1	INCORPORATE OWNER'S COMMENT DTD. 1-17-84. (ADD DRAIN PL. PER ABS LTR DTD. 1-21-84)	AN/	8/
2	REVISIONS	BT	10/84

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE ENGINEERING

SOUND CLASS FERRY  
SKEG & BILGE KEEL  
DETAILS

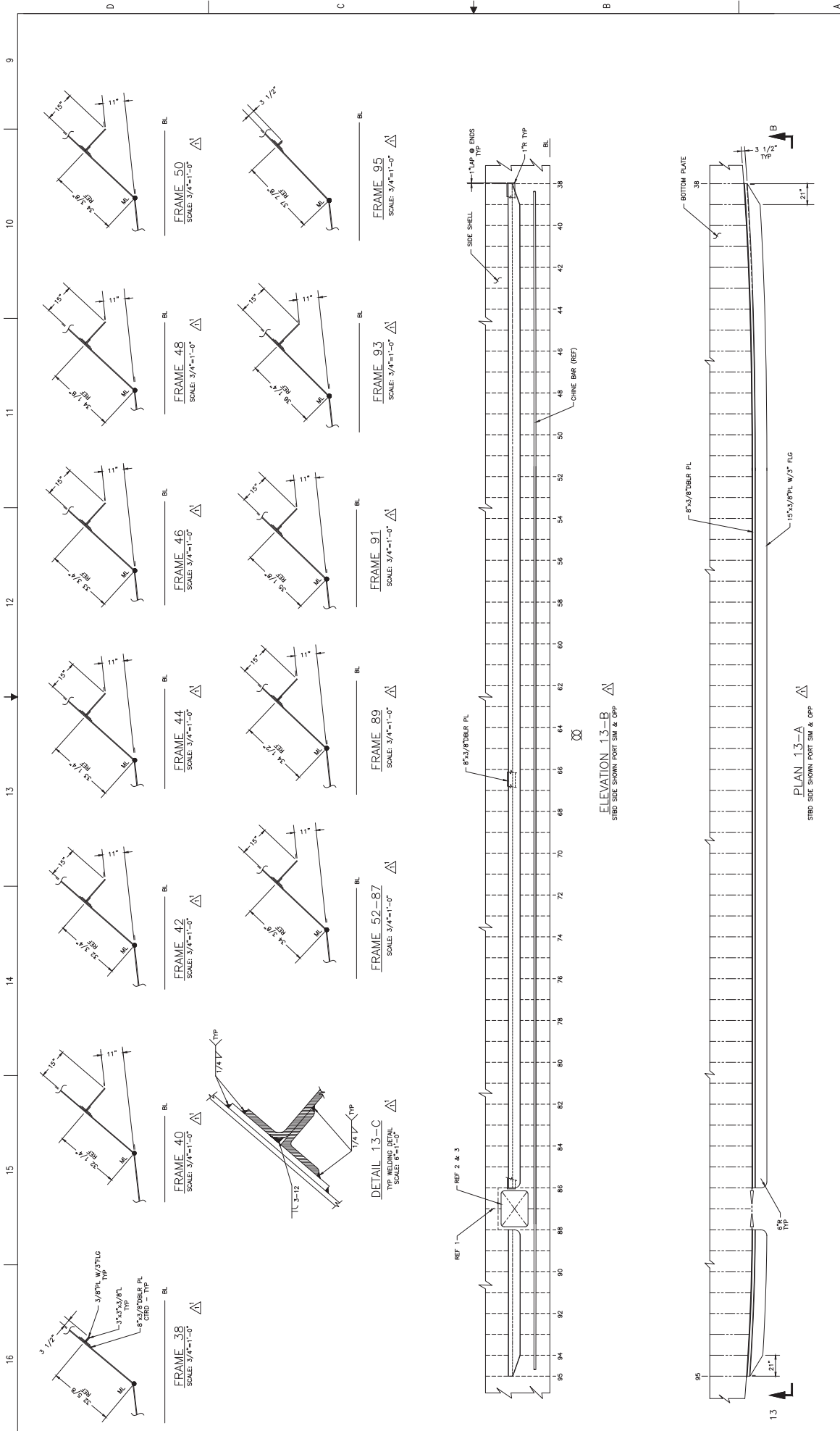
NO. NC-240-0090

NO.	REVISIONS	BY	DATE
1	INCORPORATE OWNER'S COMMENT DTD. 1-17-84. (ADD DRAIN PL. PER ABS LTR DTD. 1-21-84)	AN/	8/
2	REVISIONS	BT	10/84

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE ENGINEERING

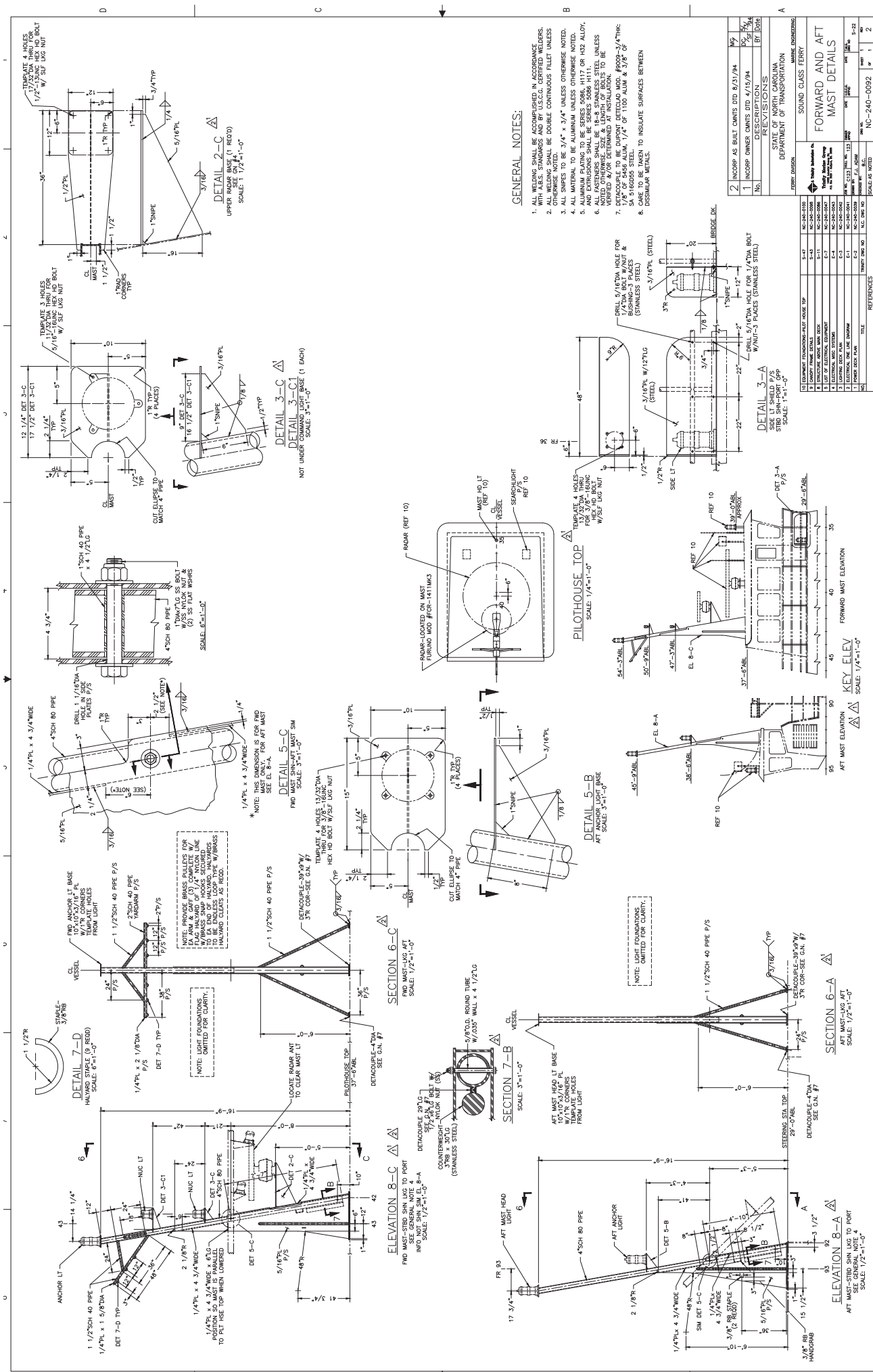
SOUND CLASS FERRY  
SKEG & BILGE KEEL  
DETAILS

NO. NC-240-0090



SKEG & BILGE KEEL DETAILS			
DATE: 02/23/23	SCALE: 3/4"=1'-0"	PROJECT: NC-240-0080	REV: 1
DRAWN BY: J. MOSE	CHECKED BY: J. MOSE	DATE: 02/23/23	REV: 2
SCALE: 3/4"=1'-0"			REV: 1

NO.	DATE	BY	CHKD.	APP.	DESCRIPTION
1					ISSUED FOR PERMIT
2					REVISED



**GENERAL NOTES:**

1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE WELDING CODE AND THE WELDING SYMBOLS THEREIN UNLESS OTHERWISE NOTED.
2. ALL WELDING SHALL BE DOUBLE CONTINUOUS FILLET UNLESS OTHERWISE NOTED.
3. ALL SNIPES TO BE 3/4" x 3/4" UNLESS OTHERWISE NOTED.
4. ALL MATERIALS TO BE A36 UNLESS OTHERWISE NOTED.
5. ALL ALUMINUM TO BE 6061-T6 UNLESS OTHERWISE NOTED.
6. ALL EXTRUSIONS SHALL BE SERIES 3006 H111 OR H112 UNLESS OTHERWISE NOTED.
7. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.
8. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.
9. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.
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18. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.
19. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.
20. ALL SPANLESS STEEL SHALL BE 316L UNLESS OTHERWISE NOTED.

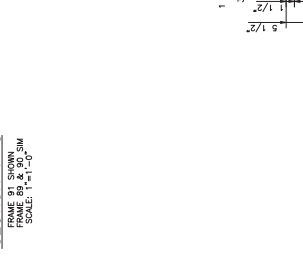
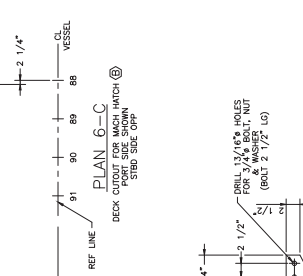
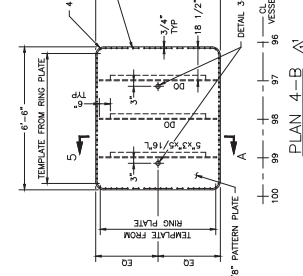
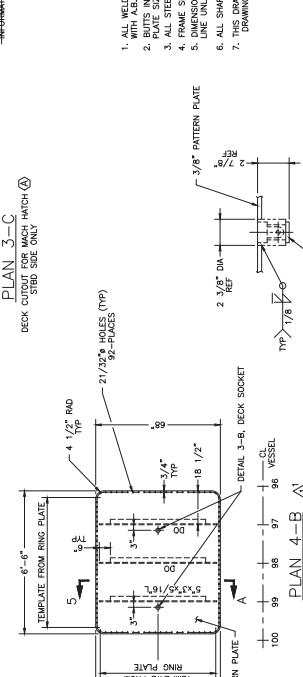
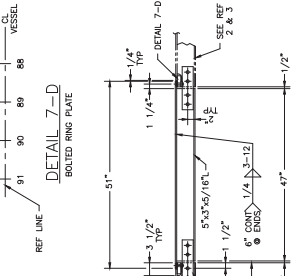
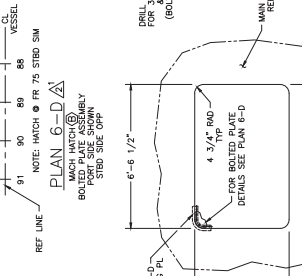
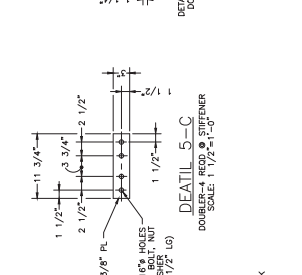
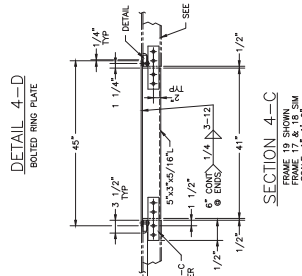
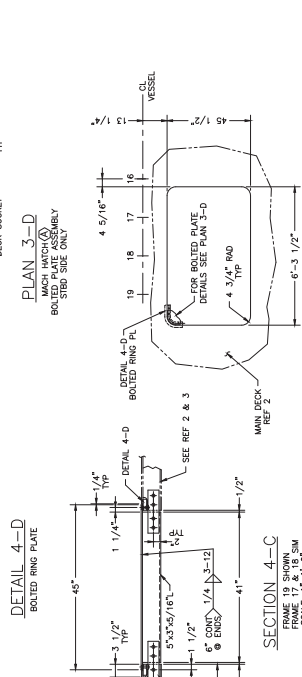
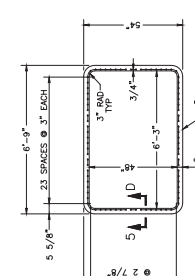
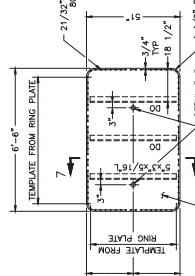
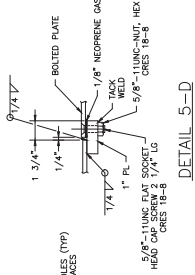
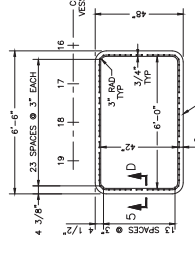
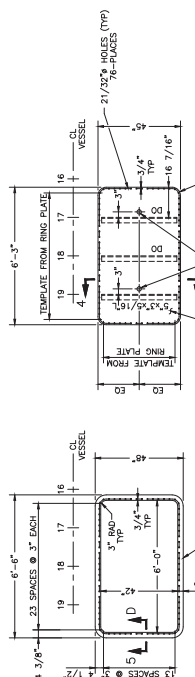
REVISIONS		DATE		BY	
No.	Description				
1	INCORP. AS BUILT CHANGES DTD 8/21/94	8/21/94	WJ		
2	INCORP. OWNER COMMENTS DTD 4/15/94	4/15/94	WJ		

REFERENCES	
1	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
2	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
3	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
4	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
5	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
6	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
7	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
8	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
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17	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
18	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
19	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION
20	NAVY DESIGN DRAWING SPECIFICATION FOR SHIP CONSTRUCTION

STATE OF NORTH CAROLINA				
DEPARTMENT OF TRANSPORTATION				
FERRY DESIGN				
MARINE ENGINEERING				
SOUND CLASS FERRY				
FORWARD AND AFT MAST DETAILS				
No.	DATE	BY	CHKD.	APP'D.
1	8/21/94	WJ		
2	4/15/94	WJ		
3				
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**RESERVATIONS**  
1. RESERVE MACH HATCH ASSEMBLY

**GENERAL NOTES:**  
1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH A.B.S. STANDARDS AND BY U.S.C.C. CERTIFIED WELDERS.  
2. ALL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED.  
3. ALL STEEL SHALL BE 21 INCHES.  
4. FRAME SPACING IS 21 INCHES.  
5. LINE UNLESS OTHERWISE NOTED. (SEE REF 2)  
6. ALL SHARP OR RAGGED EDGES TO BE GROUNDED SMOOTH.  
7. THIS DRAWING WAS DEVELOPED FROM OWNER FURNISHED DRAWING- REF 3.

NO.	DESCRIPTION	BY	DATE
2	INCORP. EXP. OBS.		
1	LIFTED REV. 1		

NO.	DESCRIPTION	BY	DATE
1	REVISIONS		

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE DIVISION  
SOUND CLASS FERRY  
MACHINERY HATCH  
DETAILS

NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

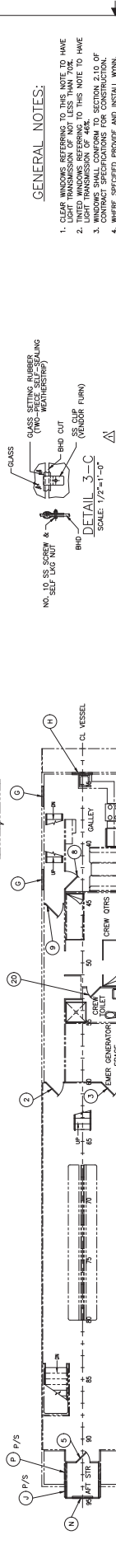
NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

NO.	DESCRIPTION	BY	DATE
5	MAIN STRUCTURE		
4	BECK RING DET		
3	TRANSVERSE FRAMES BELOW MAIN DECK		
2	BECK AND BOTTOM SHANTLES		
1	LONGITUDINAL FRAMES BELOW MAIN DECK		

WINDOW SCHEDULE		MASTER DOOR SCHEDULE	
SYNOPT	MANUFACTURER	DESCRIPTION	REMARKS
A	CORNELL-CARR	36" W x 78" H, 1/2" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1211, SST. HWHR SEE ON 1 & 4
B	CORNELL-CARR	36" W x 78" H, 3/8" THK. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
C	CORNELL-CARR	36" W x 78" H, 3/8" THK. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
D	CORNELL-CARR	36" W x 78" H, 3/8" THK. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
E	A/R	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
F	CORNELL-CARR	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
G	CORNELL-CARR	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
H	A/R	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
I	A/R	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
J	MARILL	12" W x 24" H, 1/2" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
K	MARILL	12" W x 24" H, 1/2" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
L	M/R	12" W x 24" H, 1/2" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
M	CORNELL-CARR	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
N	CORNELL-CARR	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
P	CORNELL-CARR	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4
R	A/R	36" W x 78" H, 3/8" THK. LAM. ELEC. HD. 115 W.C. HEAT TR. GL. CLR. SST. FRAME. BOLTED W/ W/WEAR STRIP. SEE ON 1 & 4	CC-1205, SST. HWHR SEE ON 1 & 4

SYNOPT	MANUFACTURER	DESCRIPTION	REMARKS
1	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2009 W/1/4" SAFETY GLASS-CLR
2	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
3	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
4	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
5	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
6	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
7	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
8	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
9	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
10	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
11	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
12	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
13	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
14	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
15	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SETS & HWHR	CC-2007
16	CEN-TEX MARINE	36" W x 80" H, DAWM STEEL DOOR, 6 DOG TYPE, NO LOCK	CEN-TEX DMC NO. 104
17	CEN-TEX MARINE	36" W x 80" H, DAWM STEEL DOOR, 6 DOG TYPE, NO LOCK	CEN-TEX DMC NO. 104
18	CEN-TEX MARINE	36" W x 80" H, DAWM STEEL DOOR, 6 DOG TYPE, NO LOCK	CEN-TEX DMC NO. 104
19	CEN-TEX MARINE	36" W x 80" H, DAWM STEEL DOOR, 6 DOG TYPE, NO LOCK	CEN-TEX DMC NO. 104
20	CORNELL-CARR	24" W x 80" H, WEATHER-TIGHT AL. SST. HINGES TYPE A LEVER HANDLE, GUARANT LX SET W/NO LOCK & HWHR	CC-2007-B

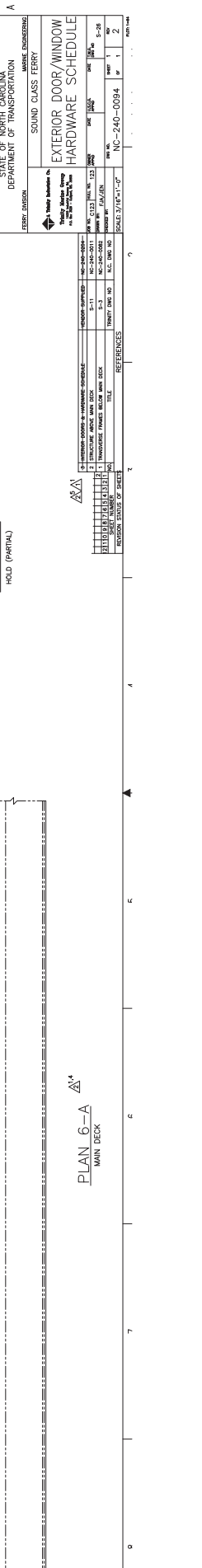


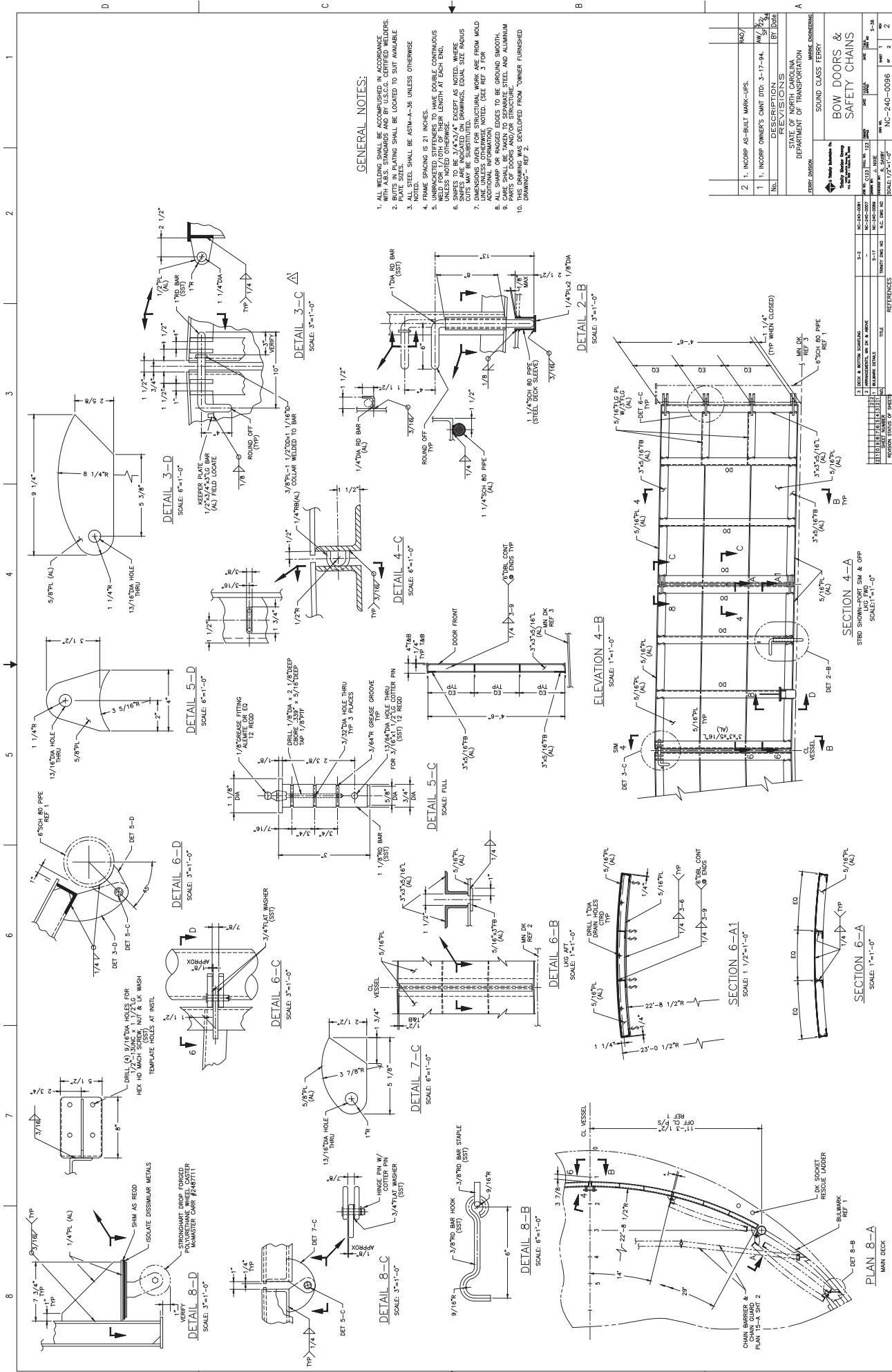
**GENERAL NOTES:**

- CLEAR WINDOWS REFERRED TO IN THIS NOTE TO HAVE LIGHT TRANSMISSION OF NOT LESS THAN 70%.
- UNITED HANSONS REFERENCE TO THIS NOTE TO HAVE CLEAR WINDOWS REFERRED TO IN THIS NOTE TO HAVE LIGHT TRANSMISSION OF NOT LESS THAN 70%.
- WINDOWS SHALL CONFORM TO SECTION 2.10 OF THE SPECIFICATIONS FOR WINDOW INSTALLATION.
- WHERE SPECIFIED, WINDOWS SHALL BE MANUFACTURED BY THE MANUFACTURER OF RECORD.
- STRAIGHT LINE HEAVY DUTY TYPE, 5/16" x 1 1/2" x 1/2" VAC AND STROKE SHALL BE SIZED FOR MAXIMUM LOADS.
- DOOR AND THEIR INSTALLATION SHALL CONFORM TO SECTION 2.9-13 OF CONTRACT SPECIFICATIONS.
- WHERE SPECIFIED, WINDOWS SHALL BE MANUFACTURED BY THE MANUFACTURER OF RECORD.
- RUBBER CHANNEL FOR FIXED WINDOWS ARE SET 3-C.
- ITEM NO. 10 JOINDER DOOR WILL BE 15" W/1/4" x 1/4" JOINDER DOOR WITH 1/4" JOINDER DOOR FRAME SHALL BE FITTED WITH EXTRA HEAVY DUTY NBL HAVING SPRING HINGES CAPABLE TO ACCEPT HEAVY DUTY HANDLE ON EACH SIDE.

No.	REVISIONS	BY	DATE
1	INCORPORATE OWNER'S COMMENTS DTD 4/9/94.		
2	RELOC GALLEY BHD FROM FR 35 TO 34, SEE PER AS-BUILT.		

STATE OF NORTH CAROLINA	
DEPARTMENT OF TRANSPORTATION	
MARINE DIVISION	
SOUND CLASS FERRY	
EXTERIOR DOOR/WINDOW HARDWARE SCHEDULE	
DATE: 3/14/94	SCALE: 3/4"=1'-0"
PROJECT NO: NC-240-0084	SHEET NO: 1
DATE: 3/14/94	SCALE: 3/4"=1'-0"
PROJECT NO: NC-240-0084	SHEET NO: 1





**GENERAL NOTES:**

1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE WELDING CODES AND SPECIFICATIONS. WELDING SHALL BE TO THE BEST QUALITY AVAILABLE.
2. BUTTS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATE SIZES.
3. STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED.
4. FRAME SPACING IS 21 INCHES.
5. UNPACKED STIFFENERS TO HAVE DOUBLE CONTINUOUS WELDING TO THE FRAME. WELDING LENGTH AT EACH END, UNLESS NOTED OTHERWISE.
6. SHEETS TO BE 3/16" THICK EXCEPT AS NOTED. WHERE SHEETS ARE TO BE WELDED TO FRAME, SEE FIG. 10. UNLESS NOTED OTHERWISE.
7. UNLESS OTHERWISE SPECIFIED, ALL WELDS SHALL BE FULL PENETRATION BUTTS.
8. ADDITIONAL INFORMATION TO BE OBTAINED FROM THE DRAWING ENGINEER.
9. CARE SHALL BE TAKEN TO SEPARATE STEEL AND ALUMINUM PARTS OF DOORS AND/OR STRUCTURE.
10. DRAWING DEVELOPED FROM OWNER FURNISHED DRAWING.

NO.	REVISIONS	BY	DATE
2	INCORP AS-BUILT MARK-UPS.	RAO	
1	INCORP OWNER'S GATE BIDS 3-17-84.	AW/SP	3/17/84

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	PROJECT NO. NC-240-0089
BRIDGE	CONTRACT NO. NC-240-0089
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

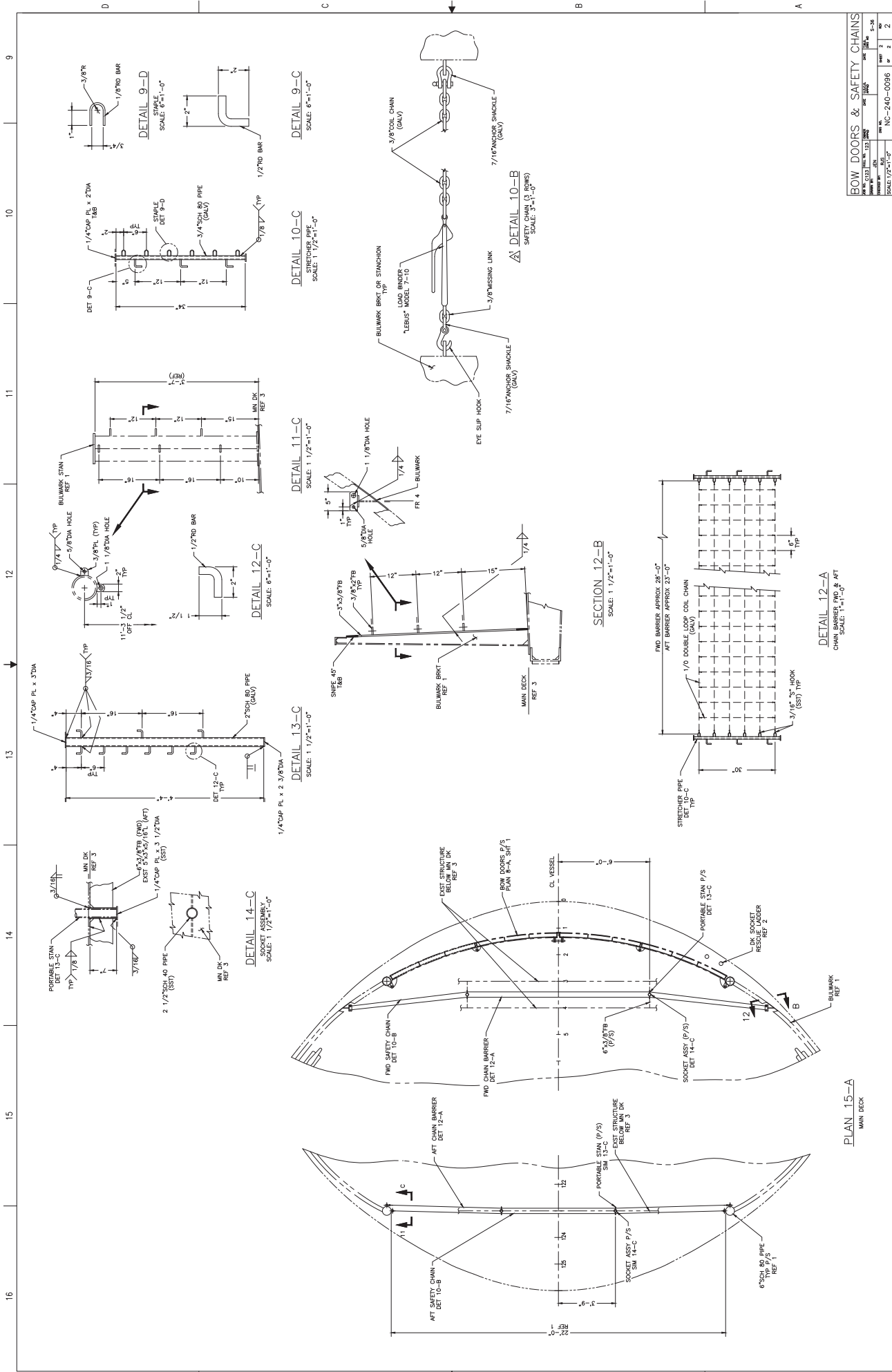
DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"

DATE: 3/17/84	SCALE: 1/2"=1'-0"
PROJECT NO. NC-240-0089	SECTION NO. NC-240-0089
CONTRACT NO. NC-240-0089	SCALE: 1/2"=1'-0"
BRIDGE	SECTION NO. NC-240-0089
BRIDGE	SCALE: 1/2"=1'-0"



BOW DOORS & SAFETY CHAINS			
NO.	REV.	DATE	BY
1	1	08/11/10	...
2	1	08/11/10	...
3	1	08/11/10	...
4	1	08/11/10	...

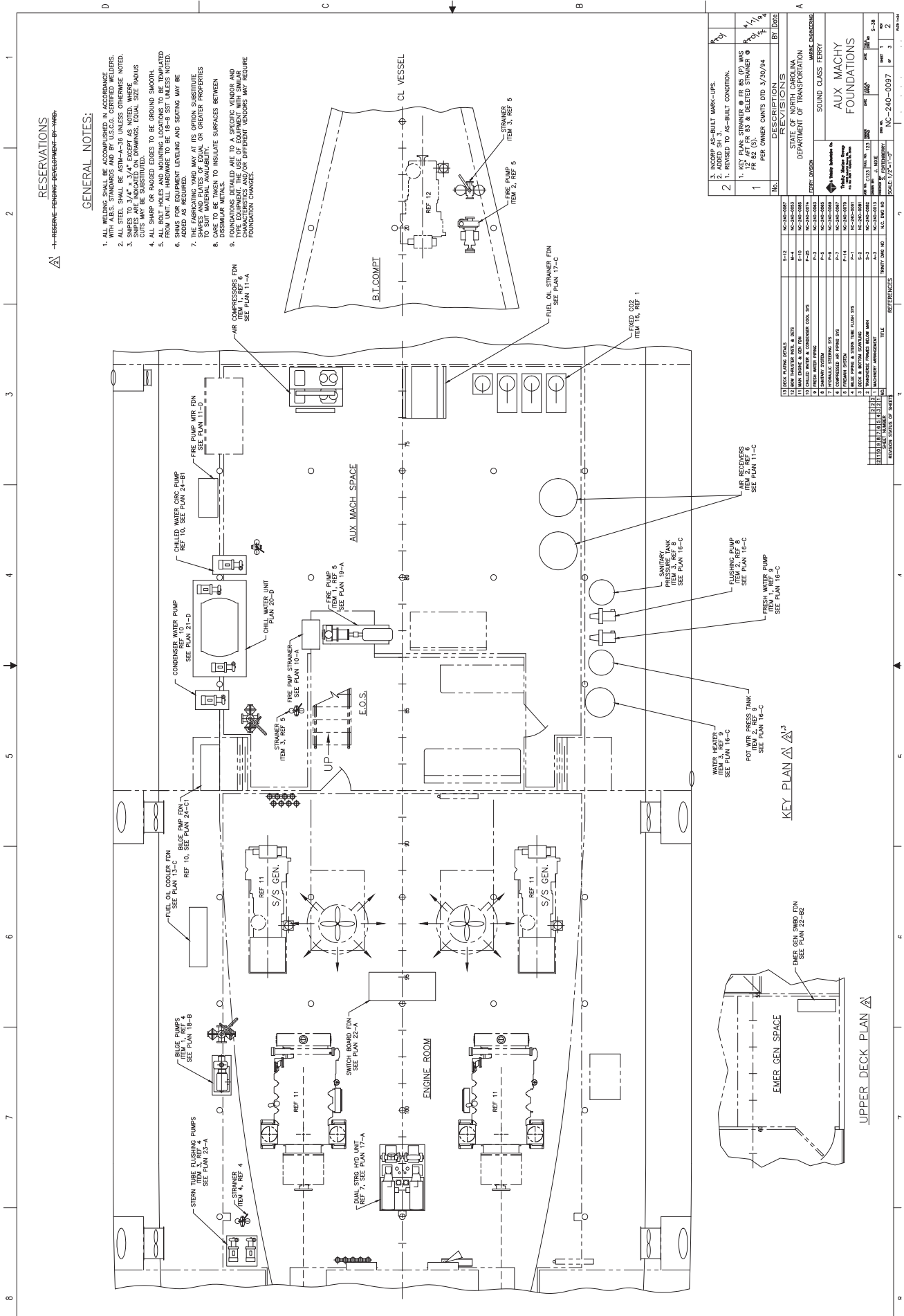
PROJECT: NC-240-0086  
SCALE: 1/2"=1'-0"

**RESERVATIONS**

← RESERVE PUMP DEVELOPMENT OF WORK

**GENERAL NOTES:**

1. ALL WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH A.B.S. STANDARDS AND BY U.S.C.C. CERTIFIED WELDERS.
2. ALL DIMENSIONS SHALL BE IN FEET AND INCHES UNLESS NOTED.
3. SHIMS TO 3/4" x 3/4" EXCEPT AS NOTED. WHERE SHIMS ARE INDICATED ON DRAWINGS, EQUAL SIZE RADIUS SHALL BE USED.
4. ALL SHARP OR RAGGED EDGES TO BE GROUNDED SMOOTH.
5. ALL BOLT HOLES AND MOUNTING LOCATIONS TO BE TEMPLATED FROM UNIT. ALL HARDWARE TO BE 1B-8 SST UNLESS NOTED.
6. ALL HARDWARE TO BE GALVANNEAL UNLESS NOTED.
7. THE FABRICATING YARD MAY AT ITS OPTION SUBSTITUTE TO EXIST MATERIAL AVAILABLE OR GREATER PROPERTIES TO EXIST MATERIAL AVAILABLE.
8. CARE TO BE TAKEN TO INSULATE SURFACES BETWEEN DISSIMILAR METALS.
9. TYPE EQUIPMENT, THE USE OF EQUIPMENT WITH SIMILAR CHARACTERISTICS AND/OR DIFFERENT VENDORS MAY REQUIRE FOUNDATION DIMENSIONS.



No.	REVISIONS	BY	DATE
1	REVISED TO AS-BUILT CONDITION.		
2	REVISED TO AS-BUILT CONDITION.		
3	INCORPORATE AS-BUILT MARK-UPS.		

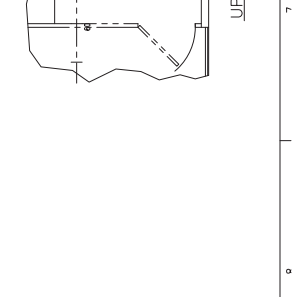
ITEM	DESCRIPTION	DATE	BY
1	REVISED TO AS-BUILT CONDITION.		
2	REVISED TO AS-BUILT CONDITION.		
3	INCORPORATE AS-BUILT MARK-UPS.		

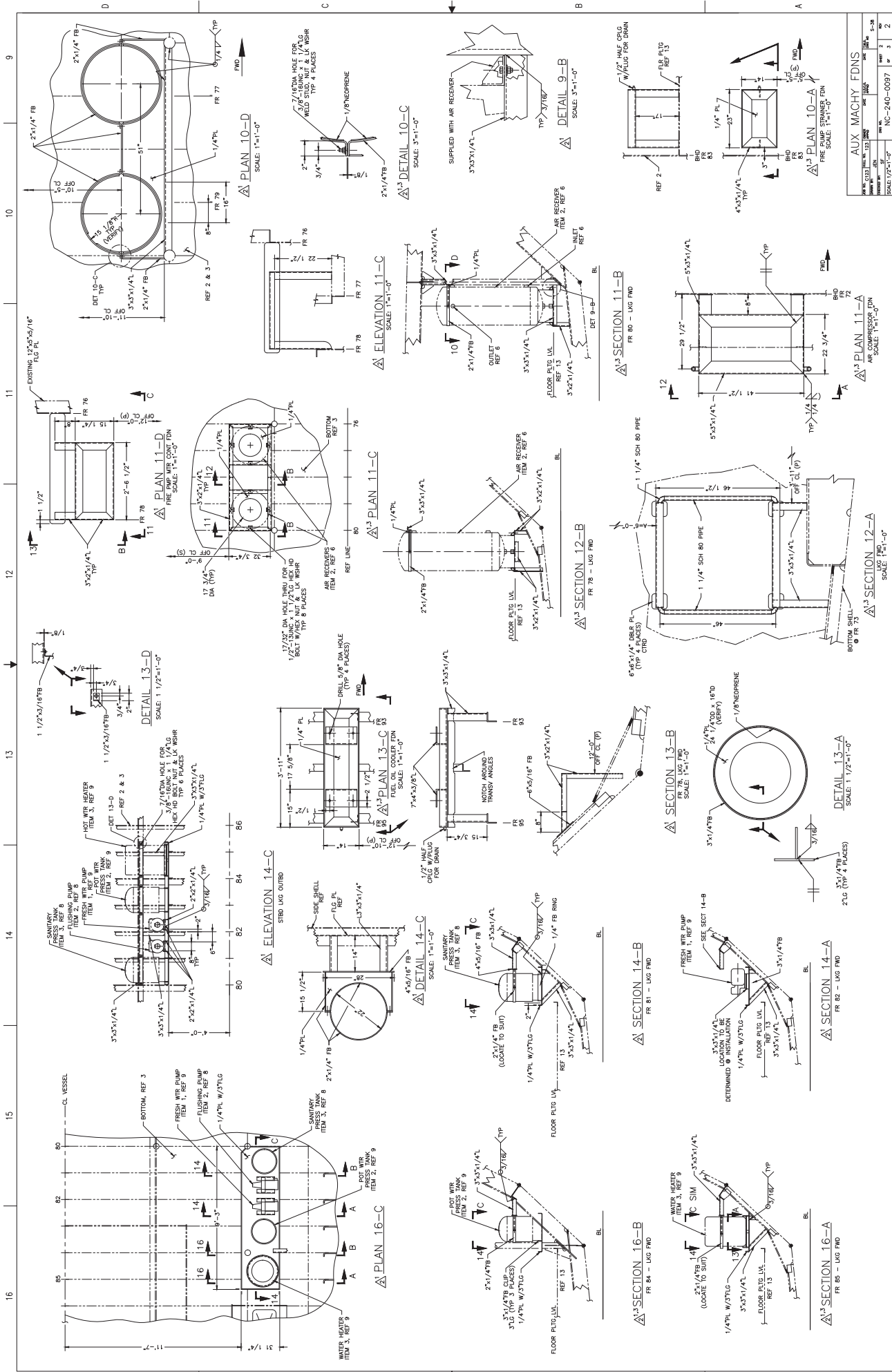
ITEM	DESCRIPTION	DATE	BY
1	REVISED TO AS-BUILT CONDITION.		
2	REVISED TO AS-BUILT CONDITION.		
3	INCORPORATE AS-BUILT MARK-UPS.		

ITEM	DESCRIPTION	DATE	BY
1	REVISED TO AS-BUILT CONDITION.		
2	REVISED TO AS-BUILT CONDITION.		
3	INCORPORATE AS-BUILT MARK-UPS.		

ITEM	DESCRIPTION	DATE	BY
1	REVISED TO AS-BUILT CONDITION.		
2	REVISED TO AS-BUILT CONDITION.		
3	INCORPORATE AS-BUILT MARK-UPS.		

**KEY PLAN**



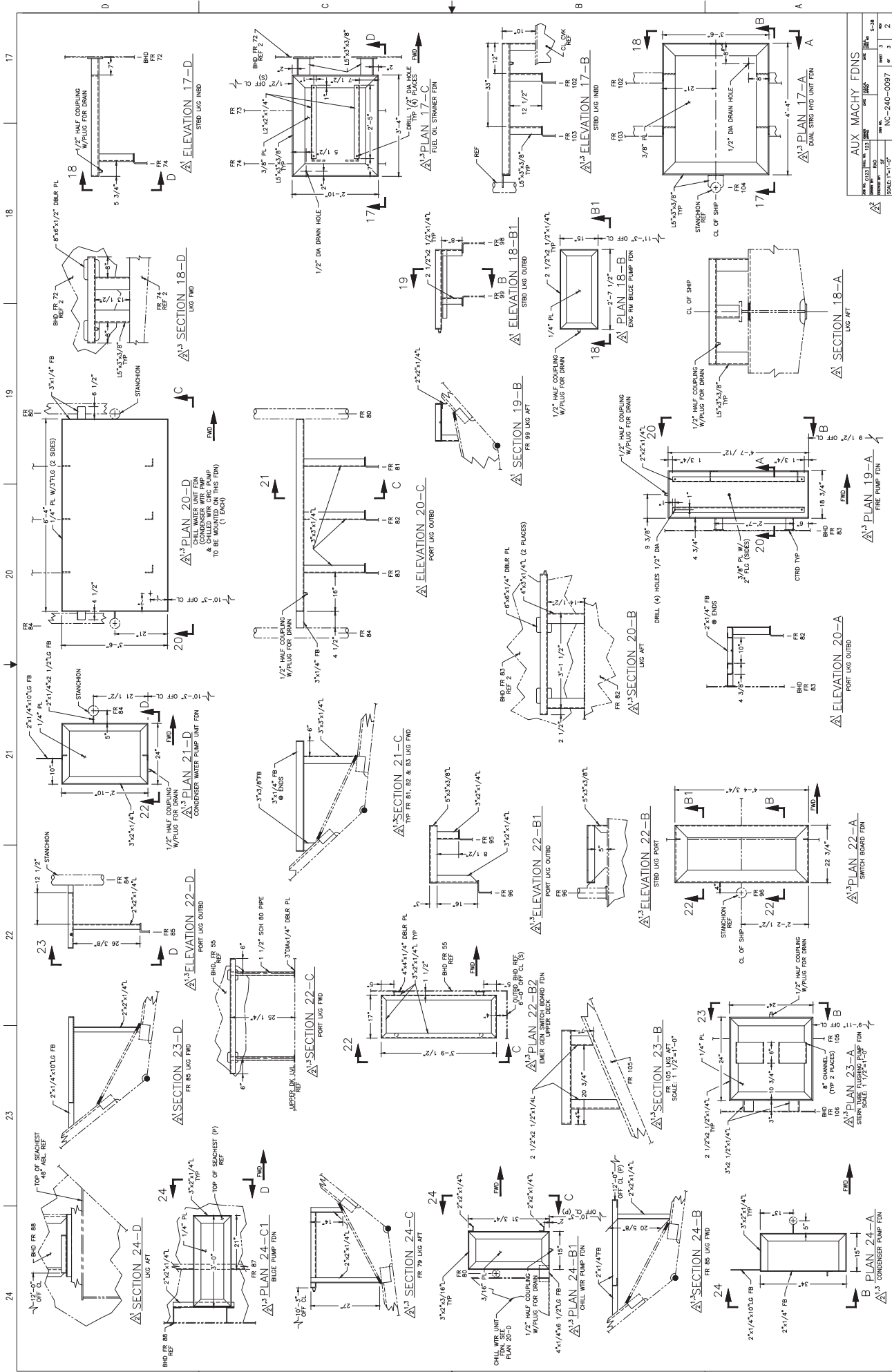


AUX MACHY FDN'S			
NO.	DATE	BY	CHKD
1	12/15/10	JR	ML
2	12/15/10	JR	ML
3	12/15/10	JR	ML
4	12/15/10	JR	ML

NC-240-0087

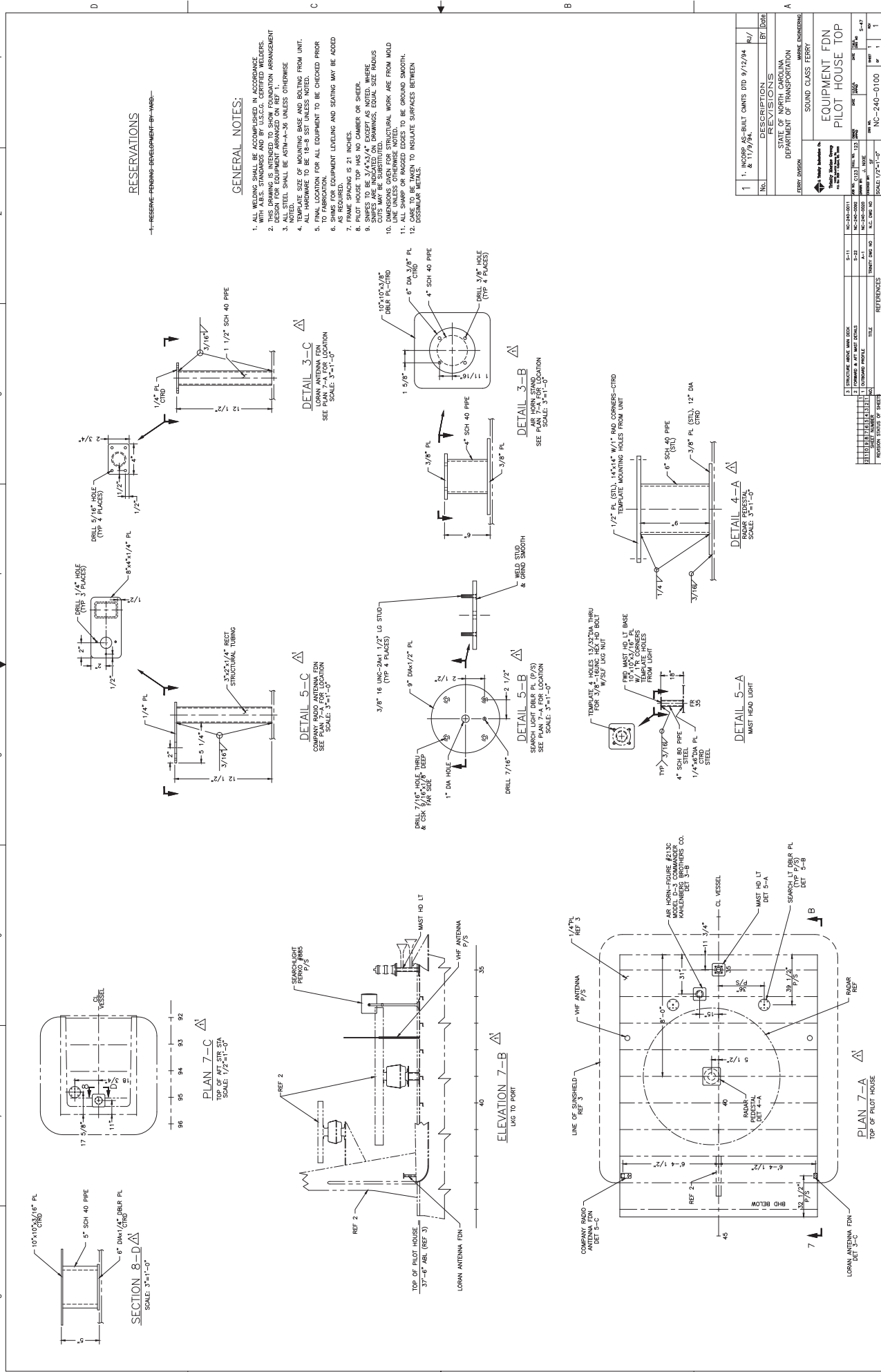
10 11 12 13 14 15 16

9 10 11 12 13 14 15 16



AUX MACHY FDNS			
NO.	DATE	BY	CHK
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

NO.	DATE	BY	CHK
1			
2			
3			
4			
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23			
24			



**RESERVATIONS**

1-RESERVE-FINISHING-EQUIPMENT-BY-WEB-

**GENERAL NOTES:**

- ALL WELDING SHALL BE ACCORDING TO A.S.M.E. WITH A.S.E. STANDARDS AND BY U.S.S.C. CERTIFIED WELDERS.
- THIS DRAWING IS INTENDED TO SHOW FOUNDATION ARRANGEMENT DESIGN FOR EQUIPMENT ARRANGED ON REFLECTOR.
- NOTES SHALL BE FORN #1-30 UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS TO BE TAKEN FROM FINISH SURFACES UNLESS OTHERWISE NOTED.
- FINAL LOCATION FOR ALL EQUIPMENT TO BE CHECKED PRIOR TO FABRICATION.
- SPACING FOR EQUIPMENT LEVELING AND SEATING MAY BE ADDED AS NECESSARY.
- PILOT HOUSE TOP HAS NO CAMBER OR SHEER.
- SMIPS TO BE 3/16" X 1/4" EXCEPT AS NOTED. WHERE DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD CUTS MAY BE SUBSTITUTED.
- ALL SHARP OR RAGGED EDGES TO BE GROUNDED SMOOTH.
- CASE TO BE TAKEN TO INSULATE SURFACES BETWEEN DISSIMILAR METALS.

No.	DESCRIPTION	BY	DATE
1	INCORP AS-BUILT CHGTS DTD 9/12/84 & 1/19/89	R/J	

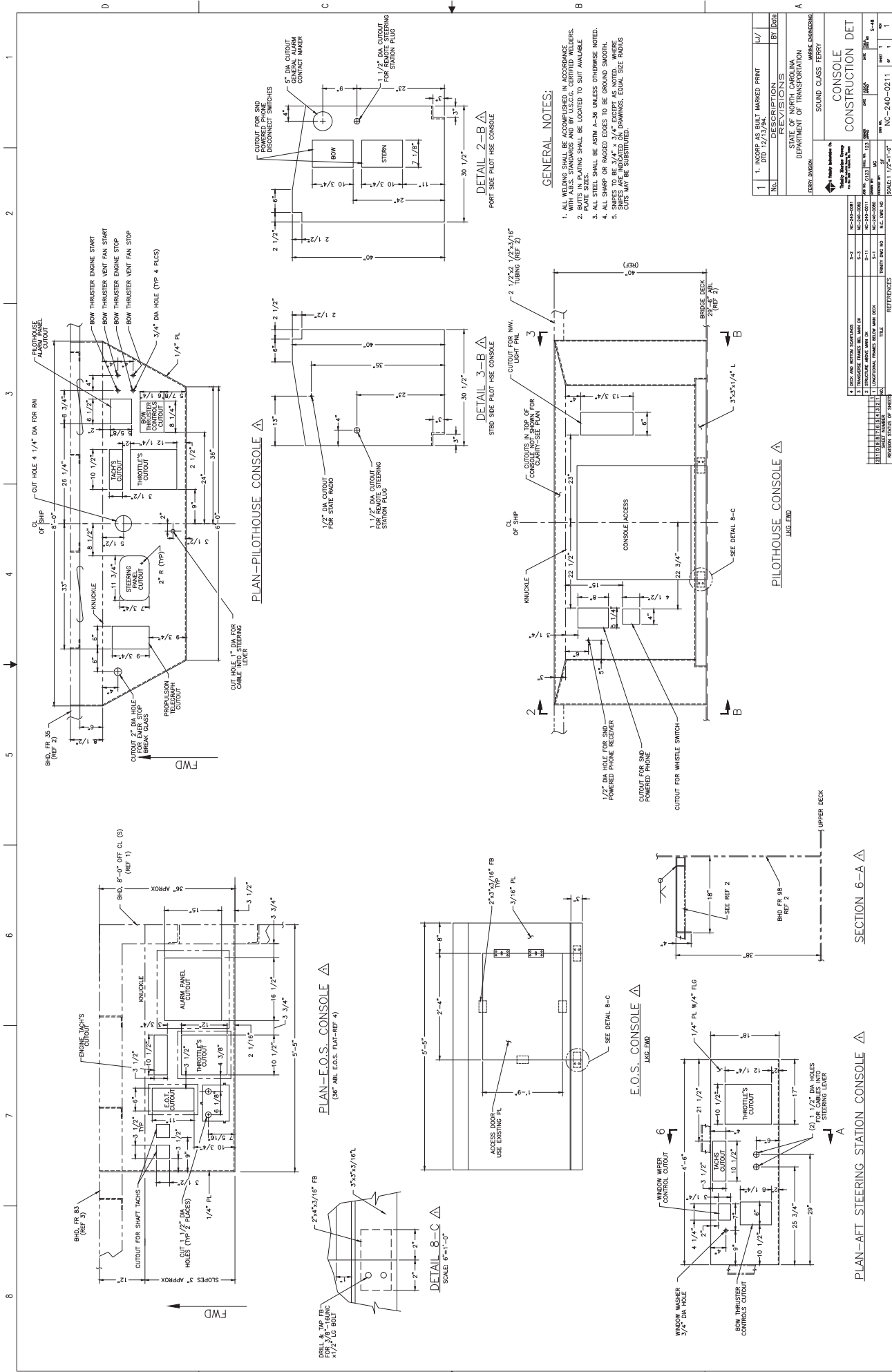
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE DIVISION

PROJECT: SOUND CLASS FERRY  
EQUIPMENT FDN  
PILOT HOUSE TOP

SCALE: 1/2"=1'-0"

NO.	DESCRIPTION	DATE
1	STRUCTURE WORK DATA BOOK	5-11
2	FORMING & SET UP SHEET	5-22
3	CONCRETE MIXTURE	5-22
4	CONCRETE MIXTURE	5-22
5	CONCRETE MIXTURE	5-22
6	CONCRETE MIXTURE	5-22
7	CONCRETE MIXTURE	5-22
8	CONCRETE MIXTURE	5-22
9	CONCRETE MIXTURE	5-22
10	CONCRETE MIXTURE	5-22
11	CONCRETE MIXTURE	5-22
12	CONCRETE MIXTURE	5-22
13	CONCRETE MIXTURE	5-22
14	CONCRETE MIXTURE	5-22
15	CONCRETE MIXTURE	5-22
16	CONCRETE MIXTURE	5-22
17	CONCRETE MIXTURE	5-22
18	CONCRETE MIXTURE	5-22
19	CONCRETE MIXTURE	5-22
20	CONCRETE MIXTURE	5-22





**GENERAL NOTES:**

- ALL METALS SHALL BE ACCORDANCE WITH U.S.C.A. CERTIFIED WELDERS. WITH WELDING STANDARDS AND BY U.S.C.A. CERTIFIED WELDERS.
- BITS IN PLATING SHALL BE LOCATED TO SUIT AVAILABLE PLATING.
- ALL DIMENSIONS SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
- ALL SHARP OR RAGGED EDGES TO BE GROUNDED SMOOTH.
- SNIPES TO BE 3/4" x 3/4" EXCEPT AS NOTED. WHERE SHOWN, EQUAL SIZE RADIUS CUTS MAY BE SUBSTITUTED.

No.	Description	Date	By	Check
1	INCORP AS BUILT MARKED PRINT	11/17/94	BR	DBE
REVISIONS				
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION				
MARK: FERRIERE				
PROJECT: SOUND CLASS FERRY				
CONSTRUCTION DET				
SCALE: 1/2" = 1'-0"				

NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE </tr

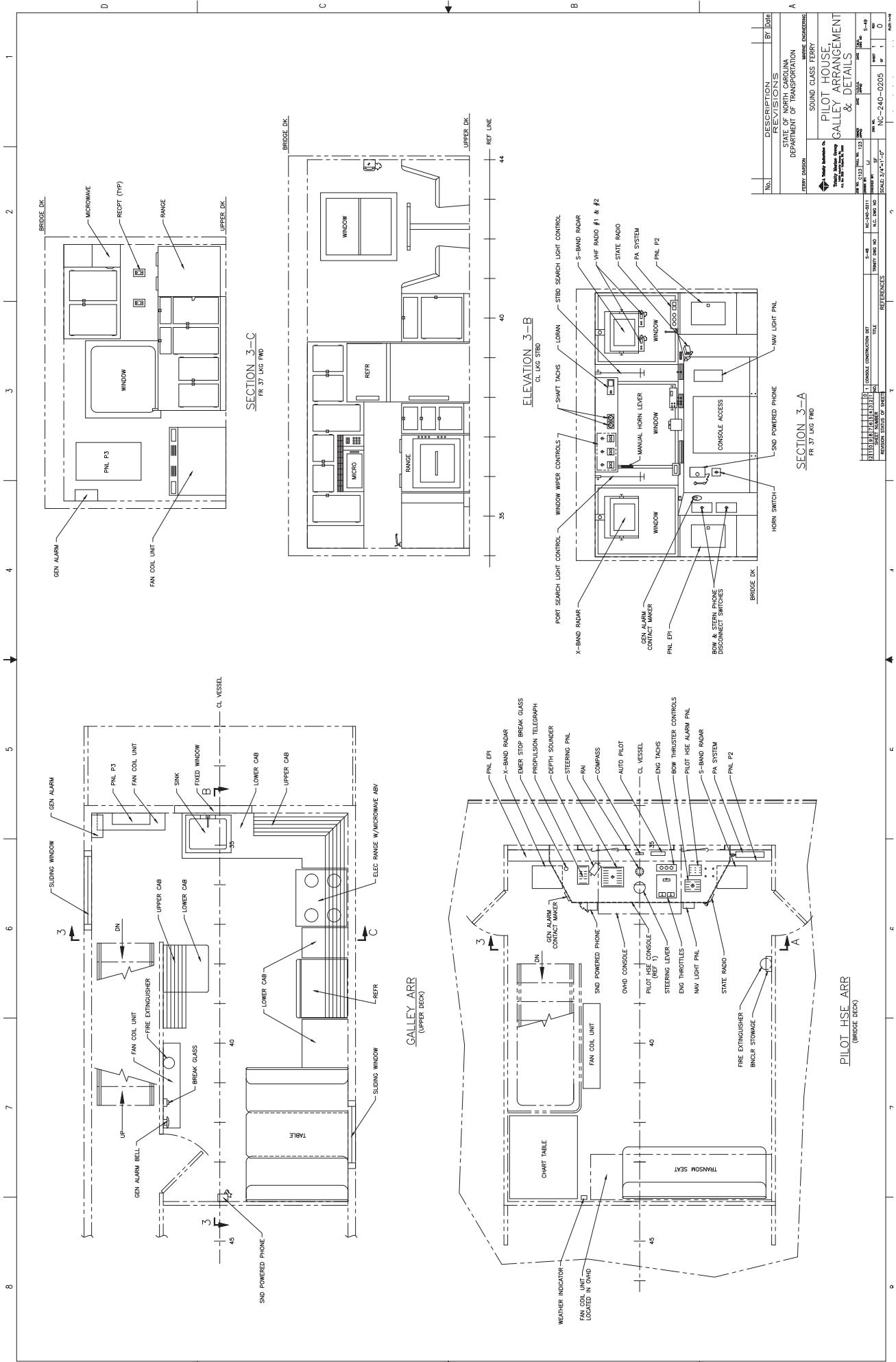
NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE

NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE

NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE

NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE

NO.	DESCRIPTION	DATE	BY	CHECK
1	CONSTRUCTION DET	11/17/94	BR	DBE
2	CONSTRUCTION DET	11/17/94	BR	DBE
3	CONSTRUCTION DET	11/17/94	BR	DBE
4	CONSTRUCTION DET	11/17/94	BR	DBE
5	CONSTRUCTION DET	11/17/94	BR	DBE



1 2 3 4 5 6 7 8

BRIDGE DK. UPPER DK. BRIDGE DK. UPPER DK. BRIDGE DK. UPPER DK. BRIDGE DK. UPPER DK.

GEN ALARM, MICROWAVE, RECEPT (TYP), RANGE, WINDOW, PNL P3, FAN COIL UNIT, GEN ALARM, SLIDING WINDOW, PNL P3, FAN COIL UNIT, SINK, FIRE EXTINGUISHER, UPPER CAB, LOWER CAB, ELEC RANGE W/MICROWAVE ABV, LOWER CAB, UPPER CAB, L-REFR, SLIDING WINDOW, SNO POWERED PHONE, GEN ALARM BELL, FAN COIL UNIT, FIRE EXTINGUISHER, BREAK GLASS, UP, DOWN, CL KESSEL

SECTION 3-C  
FR 37 LUG FRD

SECTION 3-A  
FR 37 LUG FRD

ELEVATION 3-B  
CL LUG STBD

SECTION 3-A  
FR 37 LUG FRD

ELEVATION 3-B  
CL LUG STBD

SECTION 3-A  
FR 37 LUG FRD

ELEVATION 3-B  
CL LUG STBD

GEN ALARM, CONTACT MAKER, PNL EP1, X-BAND RADAR, PORT SEARCH LIGHT CONTROL, WINDOW WIPER CONTROLS, SHAF TACKS, STBD SEARCH LIGHT CONTROL, S-BAND RADAR, HF RADIO #1 & #2, STATE RADIO, PA SYSTEM, PNL P2, NAV LIGHT PNL, SNO POWERED PHONE, HORN SWITCH, WINDOW, MANUAL HORN LEVER, WINDOW, GEN ALARM CONTACT MAKER, PNL EP1, BELL & BELLMAN DISCONNECT SWITCHES, CONSOLE ACCESS

No.	DESCRIPTION	BY	DATE

NO.	DATE	BY	DESCRIPTION

NO.	DATE	BY	DESCRIPTION

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
MARINE ENGINEERING  
SOUND CLASS FERRY  
PILOT HOUSE,  
GALLEY ARRANGEMENT  
& DETAILS  
SCALE: 3/4" = 1'-0"  
PROJECT NO. NC-240-0205  
DRAWING NO. 310

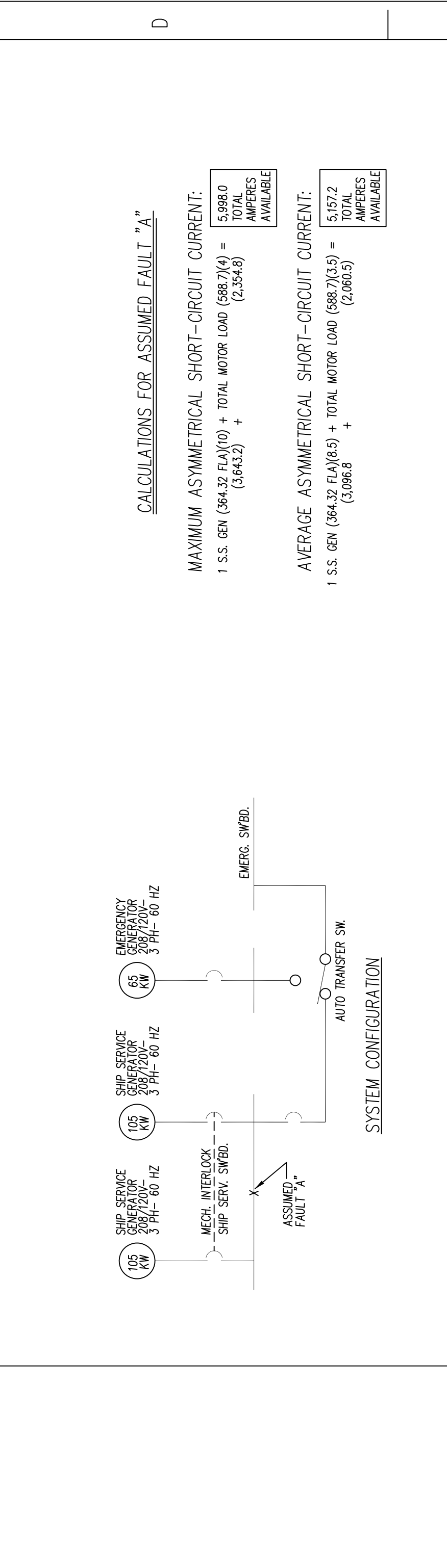
Table with columns: Item Name, Qty, HP, Volts, Phase, Amp, kW, PF, CONNECTED kW, WINTER Load Factor, QNTY, Load Factor, kW, SUMMER Load Factor, QNTY, Load Factor, kW, IN PORT WINTER Load Factor, QNTY, Load Factor, kW, EMERGENCY WINTER Load Factor, QNTY, Load Factor, kW. Includes GRAND TOTAL and CATEGORY 1 - MACHINERY.

Table with columns: Item Name, Qty, HP, Volts, Phase, Amp, kW, PF, CONNECTED kW, WINTER Load Factor, QNTY, Load Factor, kW, SUMMER Load Factor, QNTY, Load Factor, kW, IN PORT WINTER Load Factor, QNTY, Load Factor, kW, EMERGENCY WINTER Load Factor, QNTY, Load Factor, kW. Includes CATEGORY 2 - HVAC.

Table with columns: Item Name, Qty, HP, Volts, Phase, Amp, kW, PF, CONNECTED kW, WINTER Load Factor, QNTY, Load Factor, kW, SUMMER Load Factor, QNTY, Load Factor, kW, IN PORT WINTER Load Factor, QNTY, Load Factor, kW, EMERGENCY WINTER Load Factor, QNTY, Load Factor, kW. Includes CATEGORY 3 - MISC EQ.

Table with columns: Item Name, Qty, HP, Volts, Phase, Amp, kW, PF, CONNECTED kW, WINTER Load Factor, QNTY, Load Factor, kW, SUMMER Load Factor, QNTY, Load Factor, kW, IN PORT WINTER Load Factor, QNTY, Load Factor, kW, EMERGENCY WINTER Load Factor, QNTY, Load Factor, kW. Includes CATEGORY 4 - LIGHTING.

Table with columns: Item Name, Qty, HP, Volts, Phase, Amp, kW, PF, CONNECTED kW, WINTER Load Factor, QNTY, Load Factor, kW, SUMMER Load Factor, QNTY, Load Factor, kW, IN PORT WINTER Load Factor, QNTY, Load Factor, kW, EMERGENCY WINTER Load Factor, QNTY, Load Factor, kW. Includes CATEGORY 5 - ELECTRONICS.



GENERATOR DATA: SHIP SER. GEN. 1, SHIP SER. GEN. 2, EMERG. GEN. Details include kW, kVA, PF, FREQ, PHASE, POWER FACTOR, PARALLEL OPERATION, FULL LOAD AMPERES.

GENERAL NOTES: 1. DATA FOR CALCULATIONS OBTAINED FROM STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. 2. METHOD OF CALCULATIONS OBTAINED FROM 46 CFR CH. 1 (10-54 EDITION) SUBPART 111.32-3. SYSTEMS BELOW 150 KILOWATTS.

TOTAL CONNECTED MOTOR DATA: SHIP SER. SWBD: 88.8 (294.3 FLA), EMERG. SWBD: 50.8 (204.4 FLA), TOTAL: 139.6 (598.7 FLA).

SHORT CIRCUIT ANALYSIS

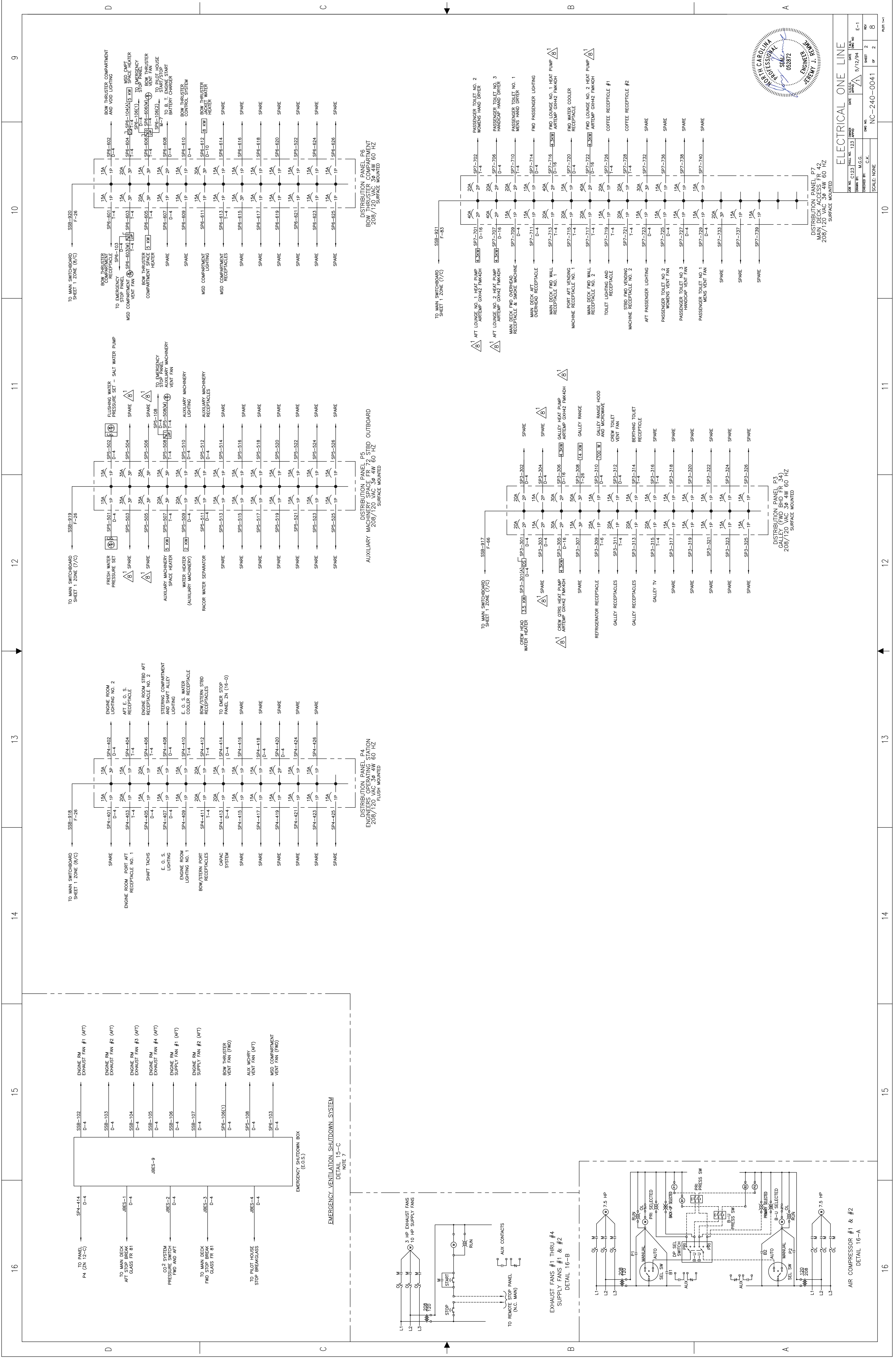
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. FERRY DIVISION. MARINE ENGINEERING. SOUND CLASS FERRY. ELEC. LOAD ANALYSIS. Includes revision table and project details.

Professional Engineer Seal for Jeremy J. Jones, No. 652872, State of North Carolina. Includes signature and date.

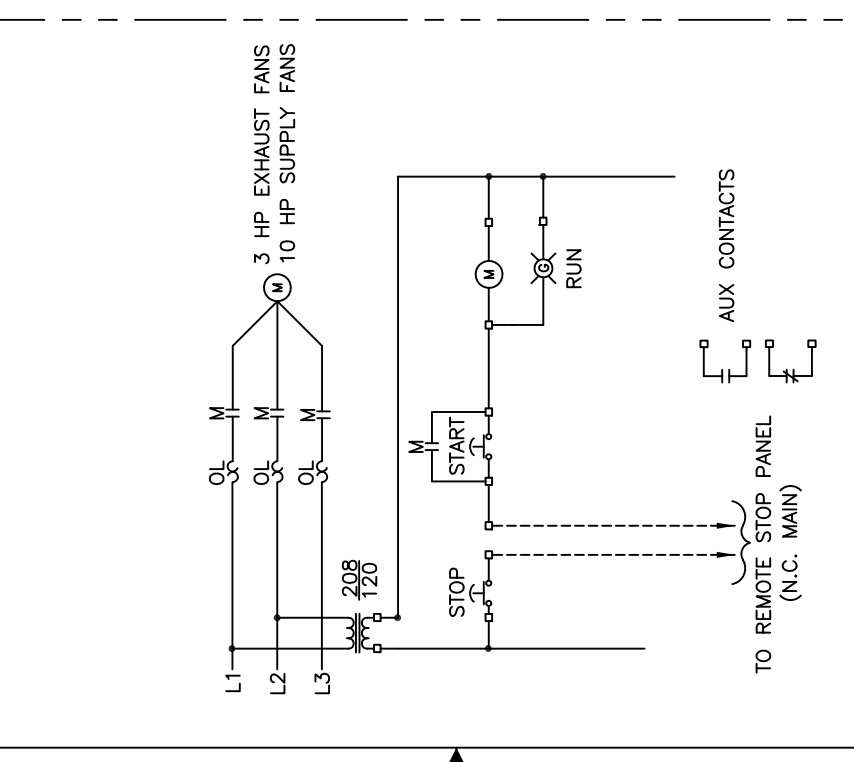
LOAD ANALYSIS SYSTEM: 208/120V DISTRIBUTION. SHIP SERVICE AUXILIARIES, DIESEL GENERATORS, EMERGENCY DIESEL GENERATOR. 2,000 105,000 KW EACH, 1,000 65,000 KW.

This drawing applies to M/V Cedar Island

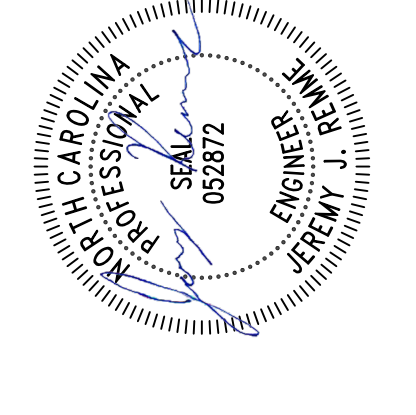
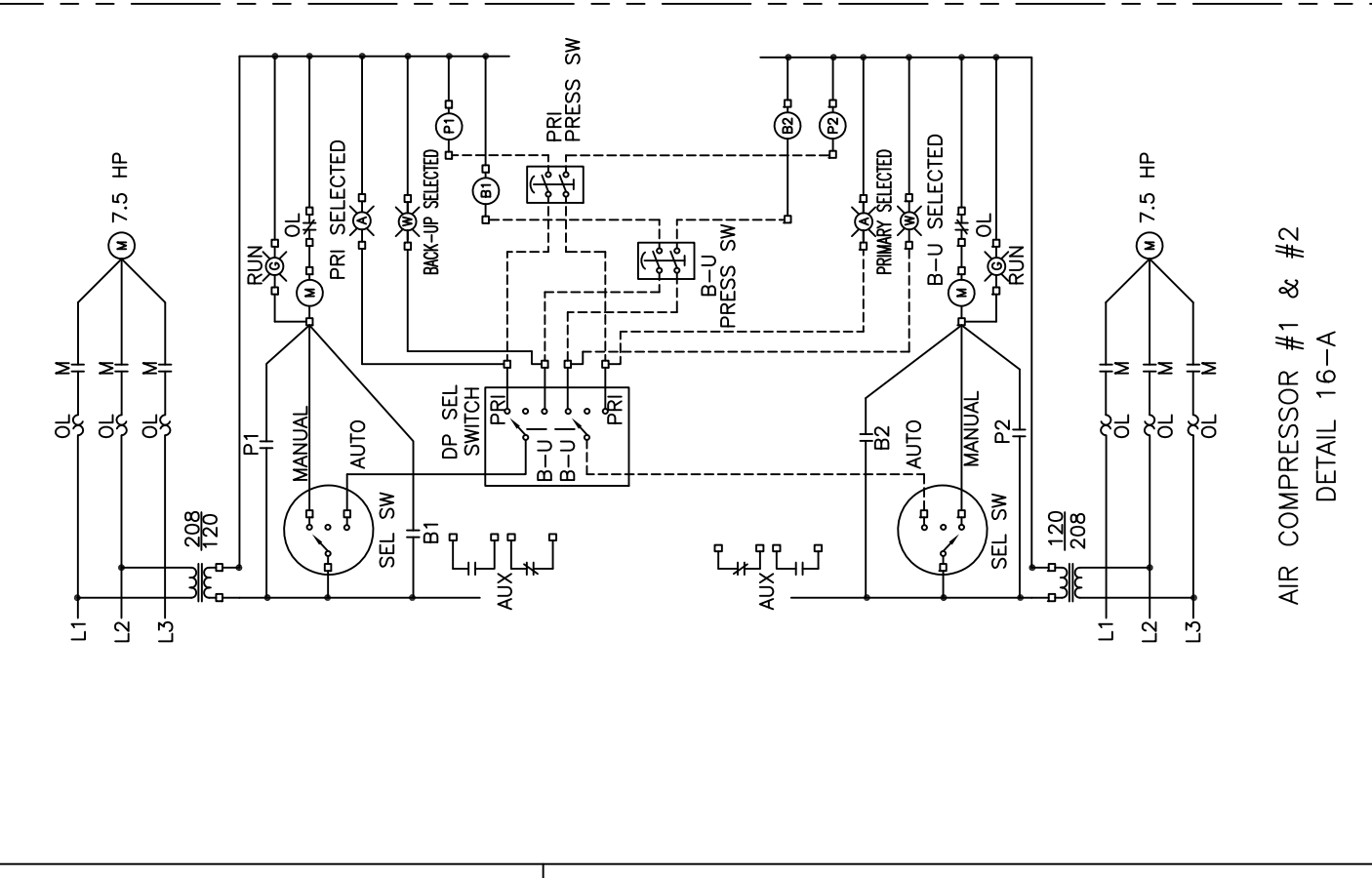




**EMERGENCY SHUTDOWN SYSTEM**  
DETAIL 15-C  
NOTE 7



**EXHAUST FANS #1 THRU #4**  
SUPPLY FANS #1 & #2  
DETAIL 16-B



DATE: 5/12/94		SCALE: NONE	
PROJECT: NC-240-0041	SHEET: 2	OF: 2	REV: 8
ELECTRICAL ONE LINE			
DATE: 5/12/94	SCALE: NONE	PROJECT: NC-240-0041	SHEET: 2
PROJECT: NC-240-0041	SHEET: 2	OF: 2	REV: 8

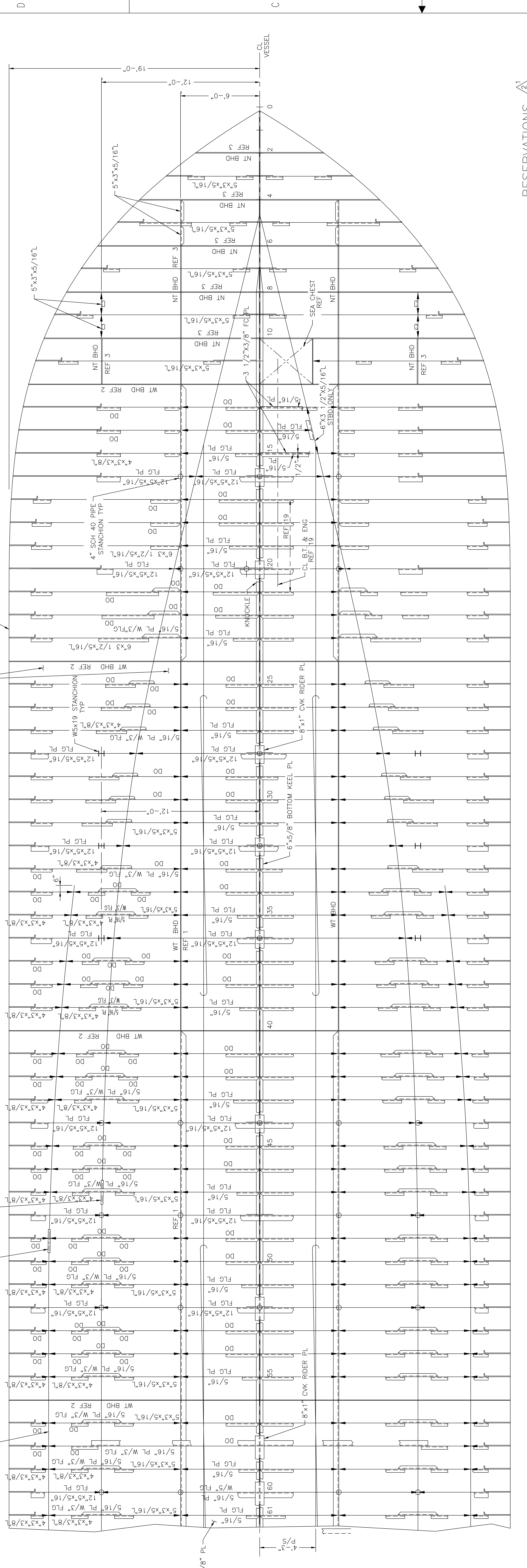
NOTE:  
SIDE SHELL LONGITUDINAL  
3/4" MIN AT ENDS  
FOLLOWS TRACE OF UPPER  
CHINE FROM FR 36 TO  
FR 116 (REF 1)

UPPER CHINE  
3/4" MIN AT ENDS  
FOLLOWS TRACE OF UPPER  
CHINE FROM FR 36 TO  
FR 116 (REF 1)

LOWER CHINE  
2" MIN AT ENDS  
FOLLOWS TRACE OF LOWER  
CHINE FROM FR 36 TO  
FR 116 (REF 1)

5/16" PL  
WT BHD REF 2

SHEER STRAKE  
3" REF. 1  
& 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.C. 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 CUTS MAY BE SUBSTITUTED.
- DIMENSIONS GIVEN FOR STRUCTURAL WORK ARE FROM MOLD LINE UNLESS OTHERWISE NOTED.
- MOLDED LINE OF CENTERLINE LONGITUDINAL BULKHEADS AND GIRDERS IS THE CENTERLINE OF PLATE OR WEB.
- MOLDED LINE OF SHELL IS INBOARD SIDE OF PLATE.
- MOLDED LINE OF TRANSVERSE BULKHEADS AND FLOORS IS FORWARD OF PLATE FOR MEMBERS FORWARD OF FR #64 (INCLUSIVE) UNLESS OTHERWISE NOTED.
- MOLDED LINE OF LONGITUDINAL BULKHEADS IS THE OUTBOARD SIDE OF PLATE.
- MOLDED LINE OF LONGITUDINAL GIRDERS IS THE HEEL WITH LANGE TOED INBOARD.
- 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.

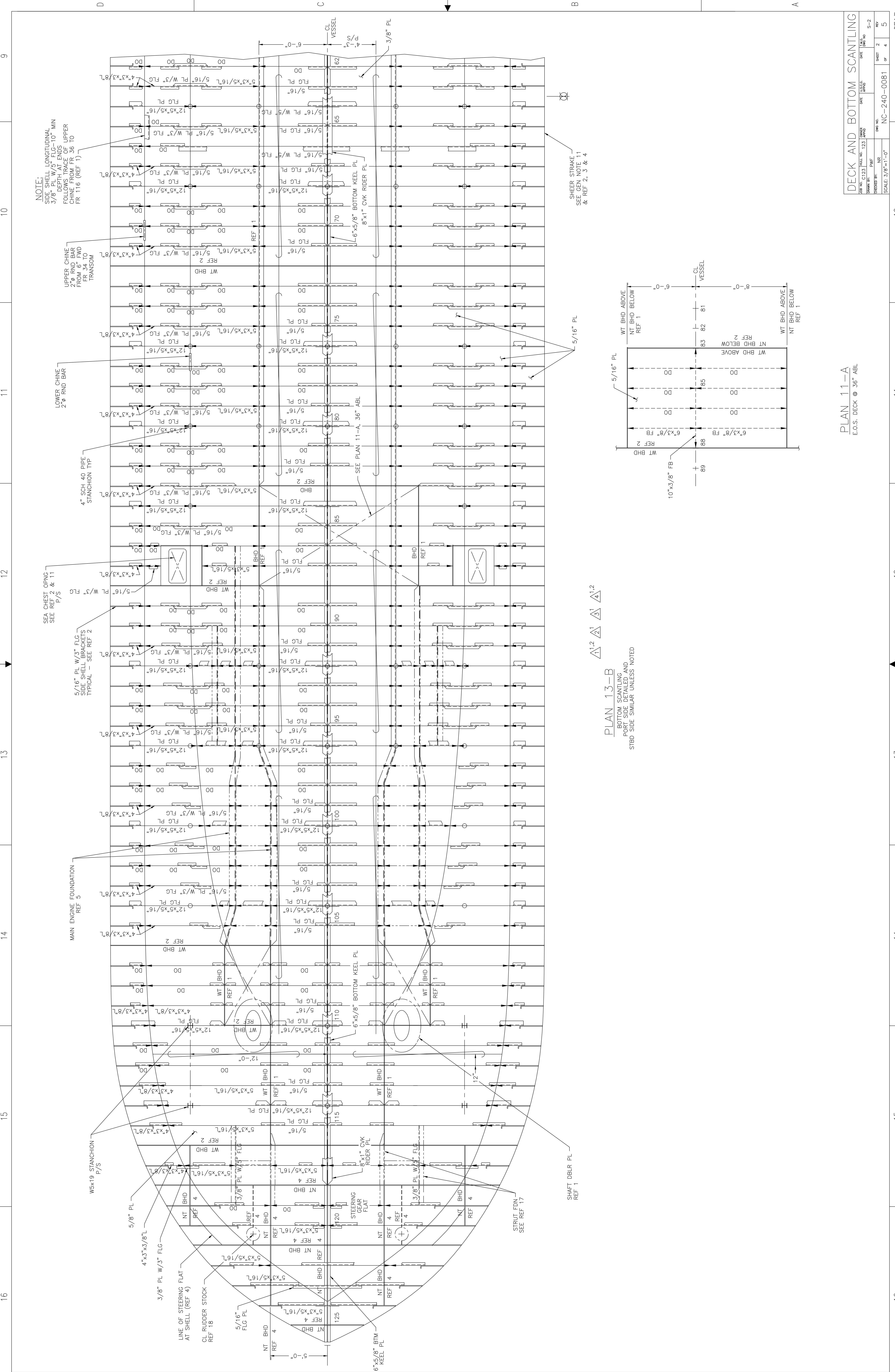
RESERVATIONS

- RESERVE STRUCTURE IN WAY OF ENGINES & GENERATORS—ENDING—VENDOR INFORMATION—& DEVELOPMENT OF REF. 7
- RESERVE CUTOUTS FOR HATCHES, VENTILATION—ENDING—VENDOR INFORMATION—& OR—DEVELOPMENT OF REF. 7
- RESERVE STRUCTURE IN WAY OF BOW THRUSTER—ENGINE AND SEACHES—ENDING—DEVELOPMENT
- RESERVE STRUCTURE IN WAY OF STRUT—SHAFTING—& RUDDER—ENDING—DEVELOPMENT

5	RELOCATED QW/TH FROM BLKD 56 TO FR 53, P. 3, C-23	BT, 3/29/21
4	1. INCORP AS-BUILT CMNTS DTD 9-7-94. 2. INCORP AS-BUILT CMNTS DTD 11-6-96. 3. INCORP AS-BUILT CMNTS DTD 11-6-96. 4. 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. 5. REV 5: SIR 1W0 LAD OPNG @ FR 35P PER EGP 005. 6. REV 6: ADDED HATCH FWD FR 75(S) PER EGP 005. 7. REV 7: LIFTED RSV PER DEV OF ADDED REF 19. SF 94 8. REV 8: LIFTED RSV #1, 2 & 4. 9. REV 9: ADDED REF #17 & 18. SF 94	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 5: SIR 1W0 LAD OPNG @ FR 35P PER EGP 005. 3. ADDED HATCH FWD FR 75(S) PER EGP 005. 4. LIFTED RSV PER DEV OF ADDED REF 19. SF 94	RAO/
2	1. LIFTED RSV #1, 2 & 4. 2. ADDED REF #17 & 18. SF 94	AW/6/
1	1. INCORP OWNER'S CMNTS DTD 1-17-94. PF/1/5/94 2. UPDATED DWG PER DESIGN DEVELOPMENT. SF 94	PF/1/5/94
No.	DESCRIPTION	BY/Date

No.	TRIMITY DWG NO	TITLE	SCALE
M-4	NC-240-0053	BOW THRUSTER INSTL & REFS	
M-2	NC-240-0051	RUDDER & RUDDER POSTS	
M-1	NC-240-0050	SHAFTING, BEARING, STEER TUBES & STRUTS	
-	NC-240-0048	MIDSHIP SECTION	
-	NC-240-0049	HULL STRUCTURE	
-	NC-240-0047	WATER TIGHT BULKHEADS BELOW MAIN DECK	
5-36	NC-240-0010	LOW DOORS & SAFETY CHAINS	
P-14	NC-240-0070	LINE PLAN & STATIONING OFFSETS	
P-11	NC-240-0070	MAIN FRAMING	
S-23	NC-240-0093	MACHINERY SPACES VENT	
S-23	NC-240-0093	MACHINERY HATCH DETS	
A-3	NC-240-0023	LADDERS, STAIRWAYS & DECK RAIL DETAILS	
A-3	NC-240-0023	MACHINERY ARRANGEMENT	
S-10	NC-240-0087	DECK PLATING DETAILS	
S-10	NC-240-0085	MAIN END FIN	
S-5	NC-240-0084	AFT END FRAMING	
S-4	NC-240-0083	TRNSV FRM BELOW MAIN DK	
S-3	NC-240-0082	LONG FRAMES BELOW MAIN DK	
S-1	NC-240-0080	LONG FRAMES BELOW MAIN DK	

No.	TRIMITY DWG NO	TITLE	SCALE
M-4	NC-240-0053	BOW THRUSTER INSTL & REFS	
M-2	NC-240-0051	RUDDER & RUDDER POSTS	
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-	NC-240-0048	MIDSHIP SECTION	
-	NC-240-0049	HULL STRUCTURE	
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S-5	NC-240-0084	AFT END FRAMING	
S-4	NC-240-0083	TRNSV FRM BELOW MAIN DK	
S-3	NC-240-0082	LONG FRAMES BELOW MAIN DK	
S-1	NC-240-0080	LONG FRAMES BELOW MAIN DK	



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

UPPER CHINE  
UPPER CHINE FROM  
FR 34 TO  
TRANSOM

LOWER CHINE  
2" RND BAR

4" SCH 40 PIPE  
STANCHION TYP

SEA CHEST OPNG  
SEE REF 2 & 11  
P/S

5/16" PL W/3" FLG  
SIDE SHELL BRACKETS  
TYPICAL - SEE REF 2

MAIN ENGINE FOUNDATION  
REF 5

W5x19 STANCHION  
P/S

5/8" PL  
4x3x3/8" FLG

3/8" PL W/3" FLG  
LINE OF STEERING FLAT  
AT SHELL (REF 4)

CL RUDDER STOCK  
REF 18

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

5/16" PL

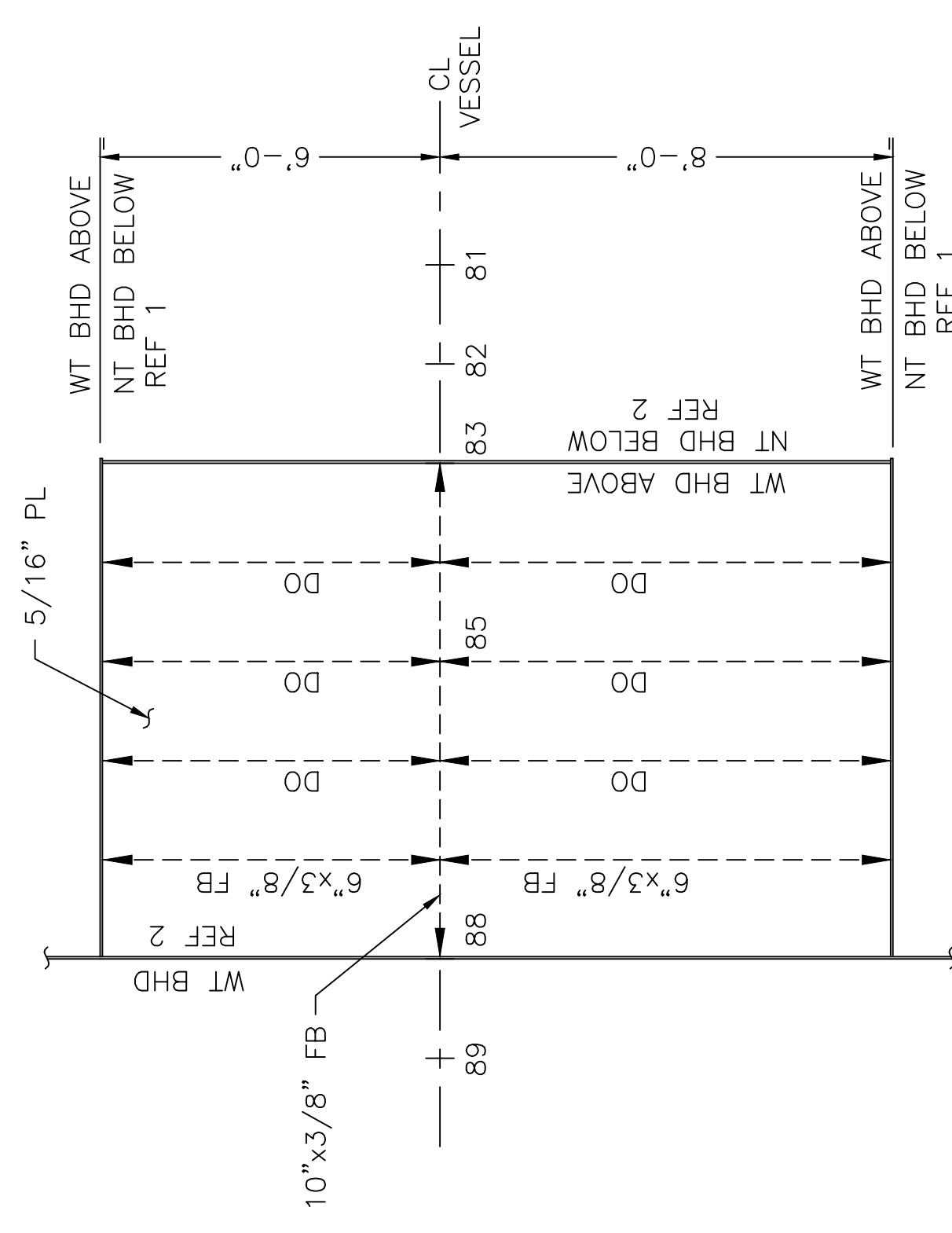
1/2" 1/3" 1/4"

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

SHAFT DBLR PL  
REF 1

STRUT FDN  
SEE REF 17

6"x5/8" BTM  
KEEL PL



DECK AND BOTTOM SCANTLING

JOB NO. C123	SCALE: 3/8"=1'-0"	DATE	REV
DESIGNER: PWF	NC-240-0081	DATE	S-2
CHECKED BY: PWF	4 OF 5		

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

LINE OF SHELL AT MAIN DECK  
(SHEER STRAKE, SEE GEN NOTE  
11 & REF 2, 3, & 4)

LINE OF MAIN DECK OVERHANG

3/8" PATTERN PL

FR 35 & 6" AFT OF FR 89  
TO 6'-4" OFF CL (P/S)  
3/8" SMOOTH PL FROM 6" FWD  
FR 35 & 6" AFT OF FR 89  
TO 6'-4" OFF CL (P/S)  
3/8" PL



PARALLEL TO BASELINE

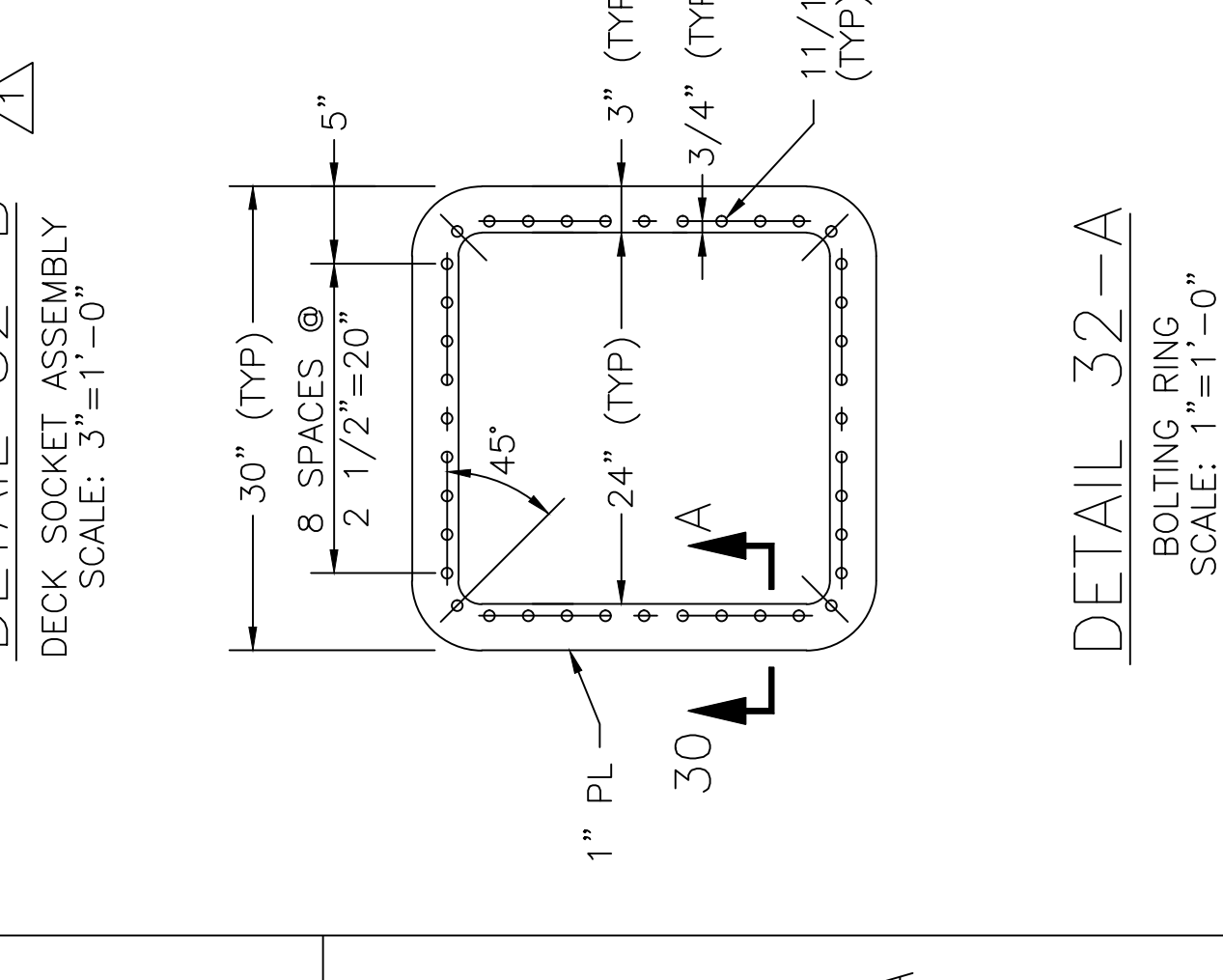
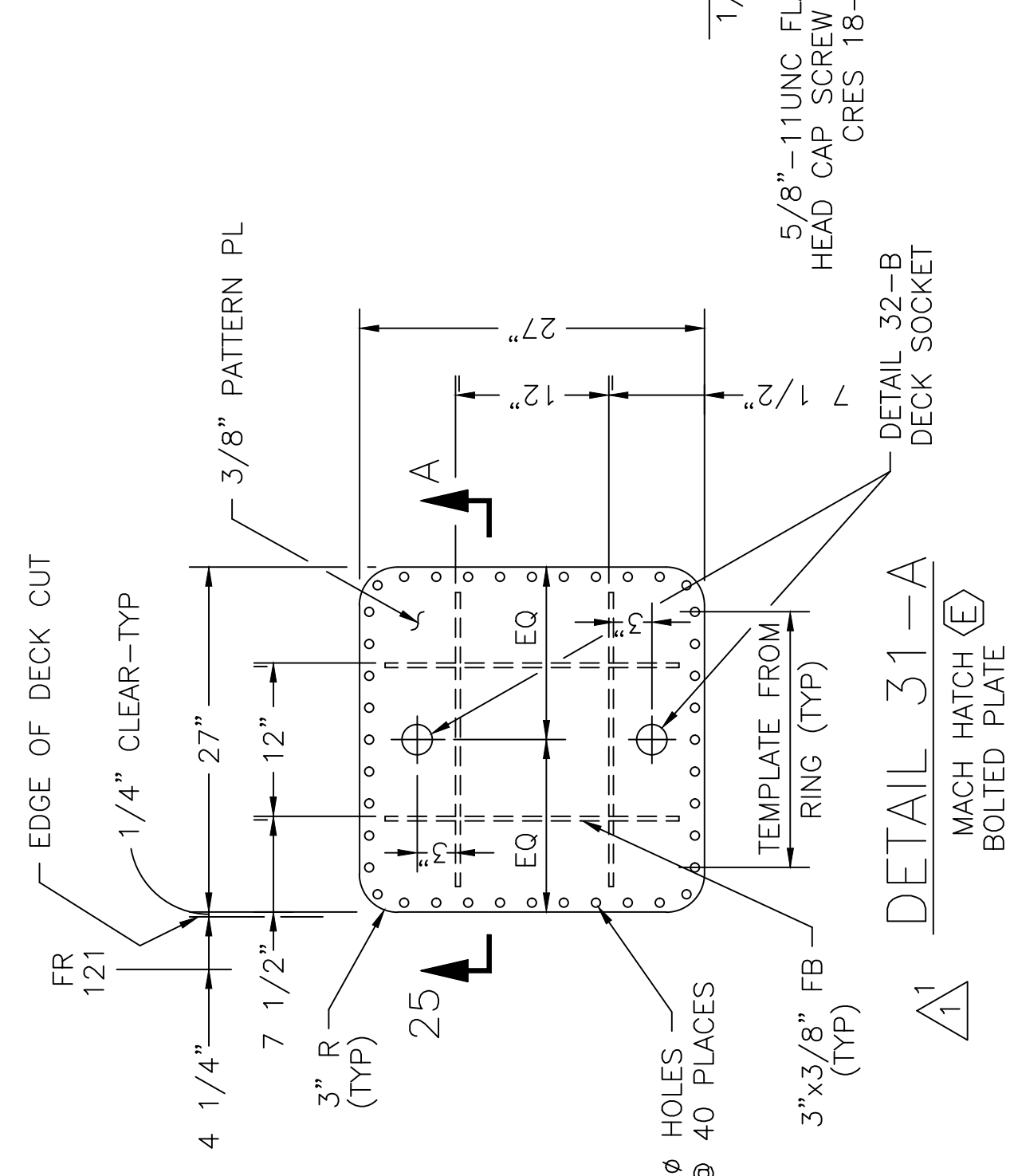
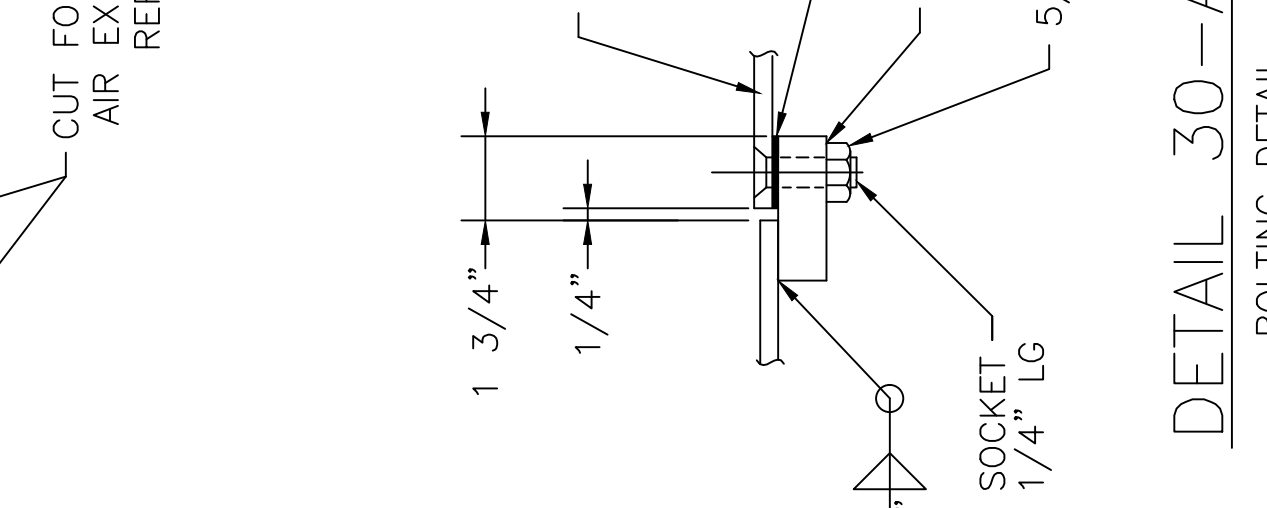
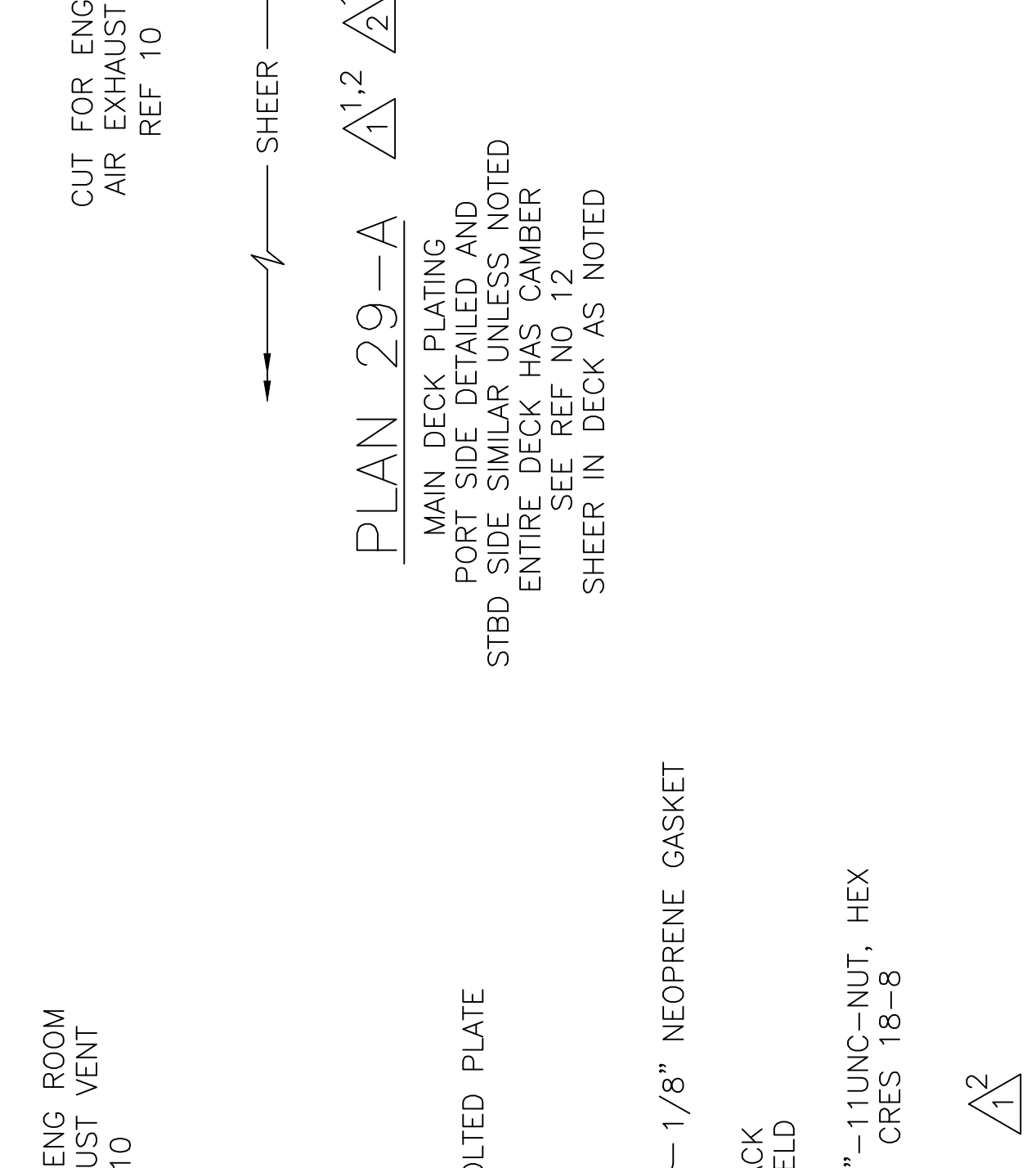
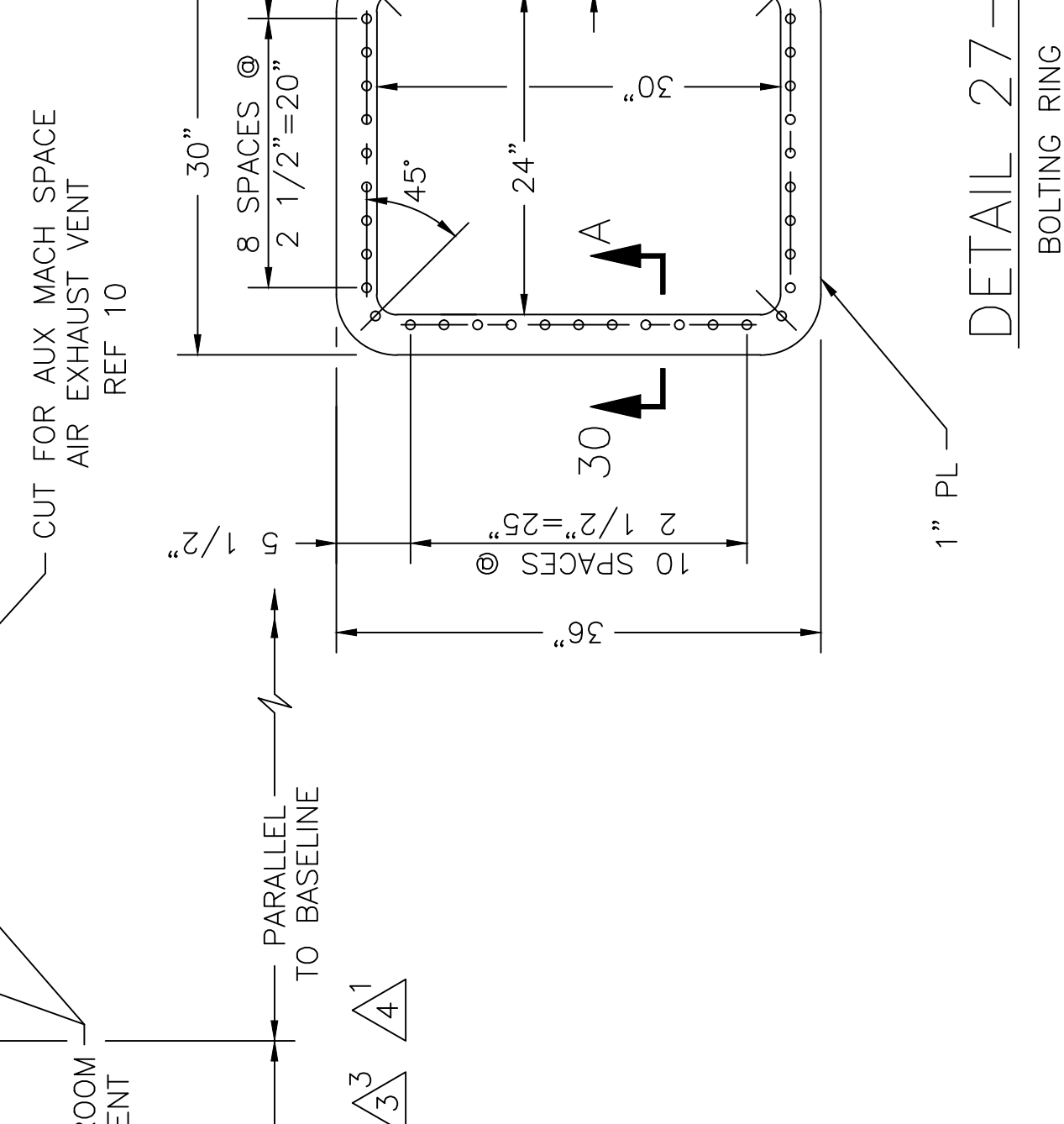
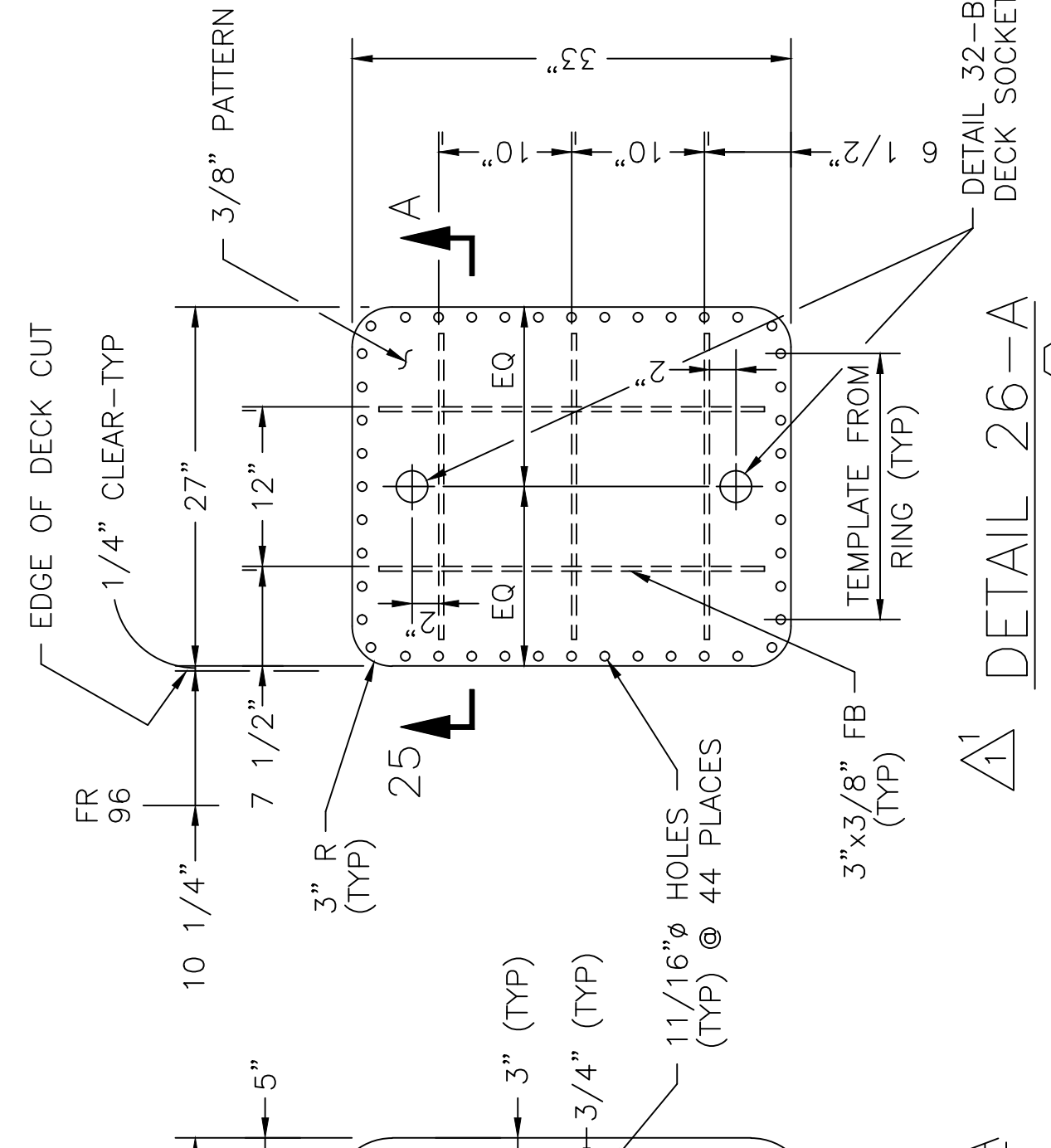
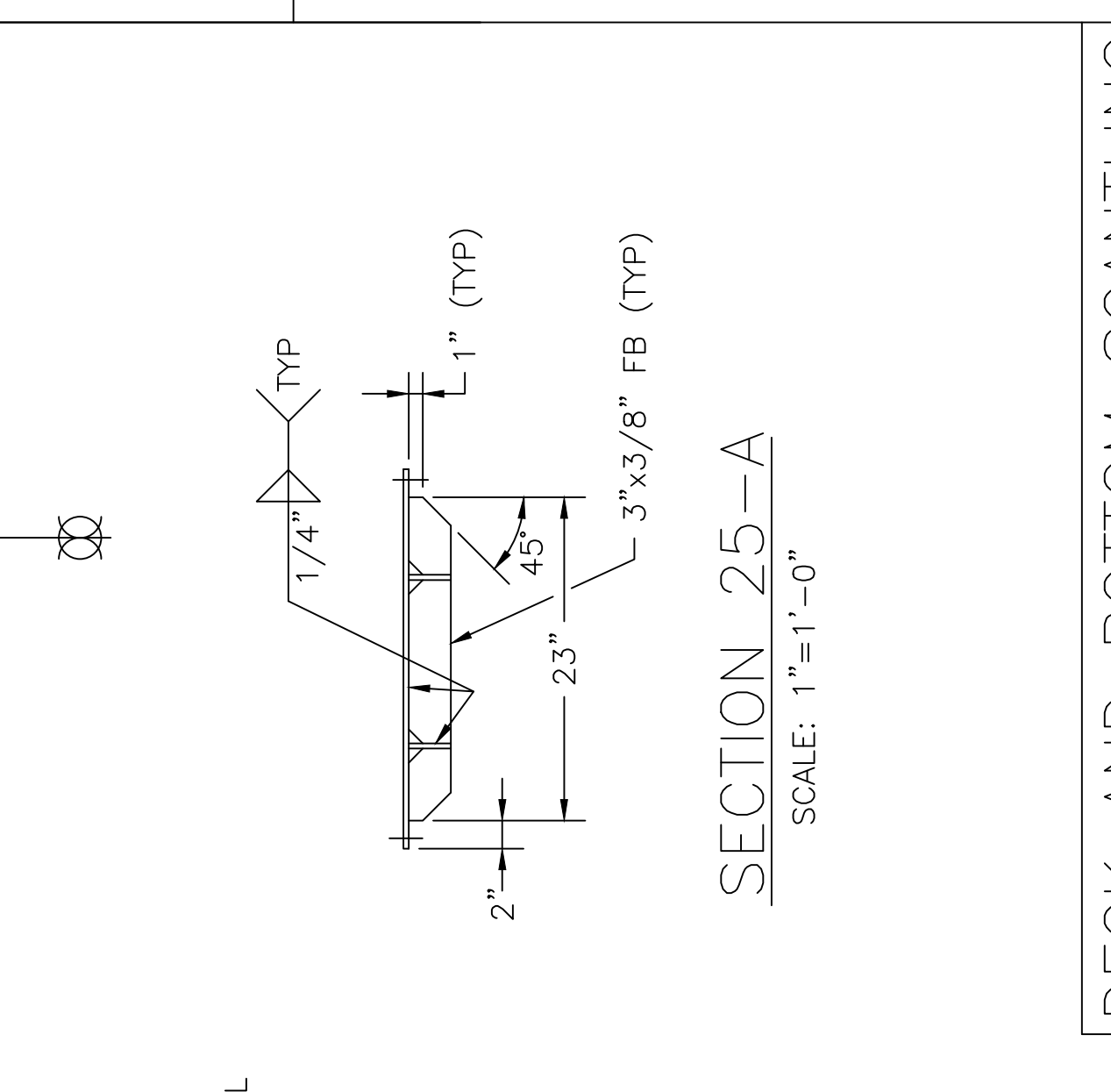
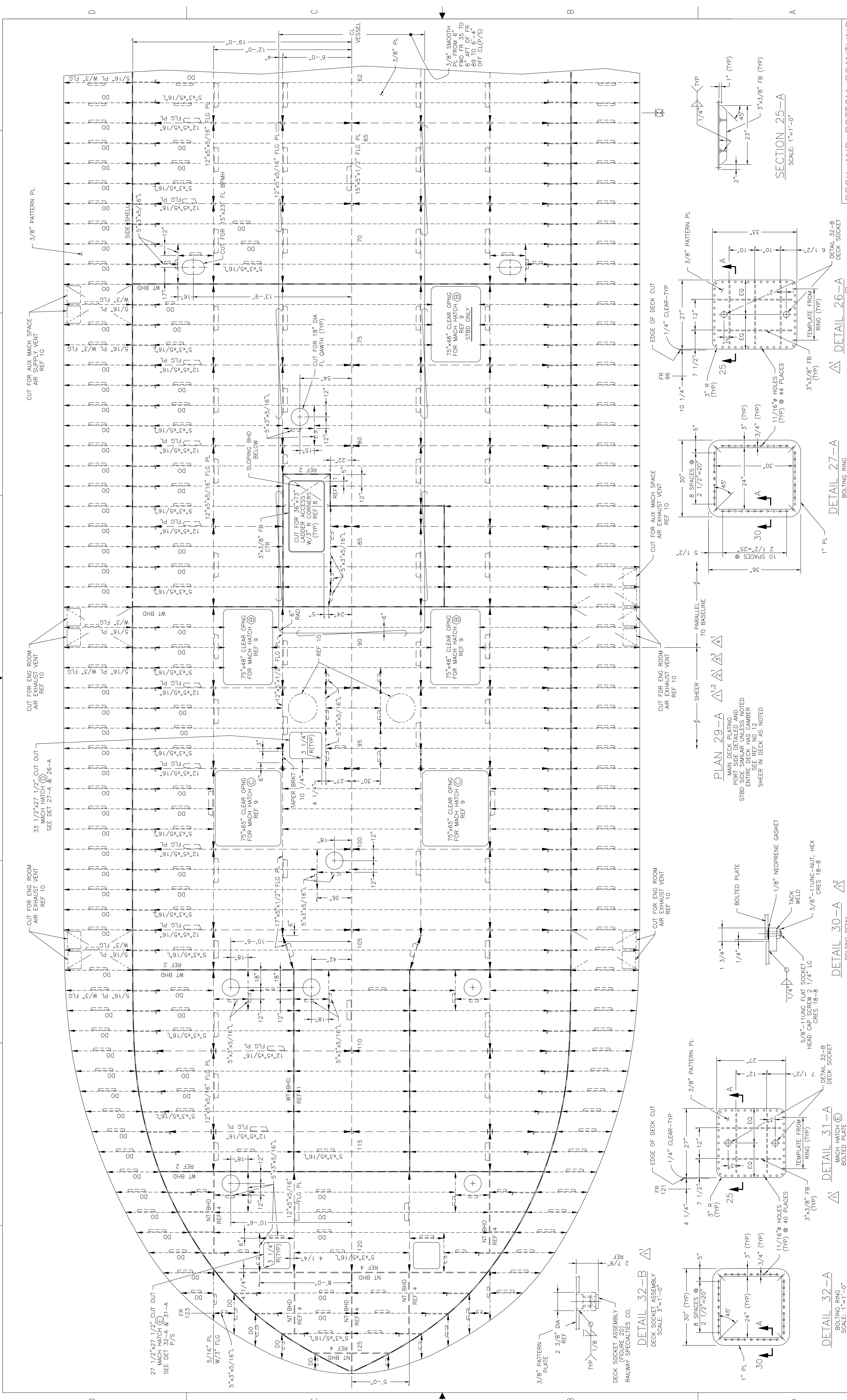
SHEER

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	
DESIGN NO. C123	SCALE: 3/8"=1'-0"
DRAWN BY: PWF	DATE: 12/13/2010
CHECKED BY: NIS	DATE: 12/13/2010
ENGINEER: NC-240-0081	DATE: 12/13/2010
NO. OF SHEETS: 5	NO. OF SHEETS: 5
SHEET NO. 3	SHEET NO. 3
REV. 4	REV. 4
REV. 5	REV. 5





DECK AND BOTTOM SCANTLING				
JOB NO. C123	DRAWING NO. 123	DATE	DATE	DATE
DESIGNED BY: PWF	CHECKED BY: JMC	SCALE: 3/8"=1'-0"	ENC. NO. NC-240-0081	SHEET 4 OF 5

DETAIL 26-A				
CUT FOR MACH HATCH	REF 9	SCALE: 1"=1'-0"		

DETAIL 27-A				
BOLTING RING	REF 10	SCALE: 1"=1'-0"		

DETAIL 29-A				
33 1/2"x27 1/2" CUT OUT	REF 10	SCALE: 1"=1'-0"		

DETAIL 30-A				
MACH HATCH	REF 9	SCALE: 3"=1'-0"		

DETAIL 31-A				
MACH HATCH	REF 9	SCALE: 1"=1'-0"		

DETAIL 32-A				
DECK SOCKET ASSEMBLY	REF 2	SCALE: 3"=1'-0"		