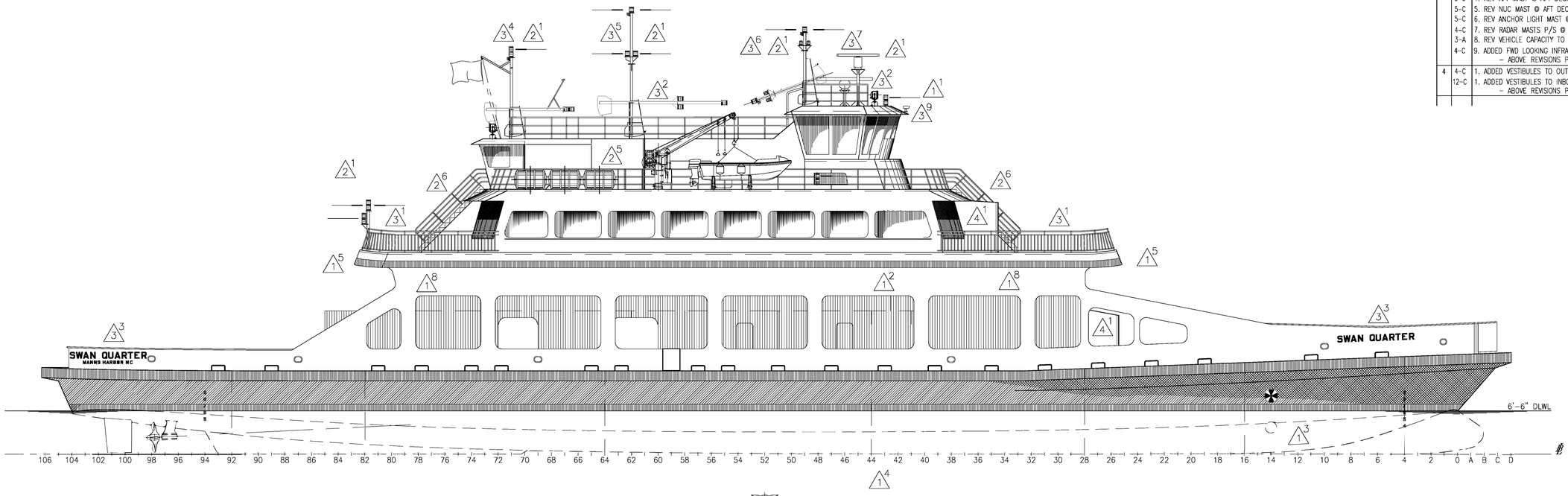
REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	4–12C VAR 2–11B VAR VAR 14–C 3–A VAR	1.REV PILOT HOUSE TOP TO AGREE W STRUCTURAL DWGS 2.REV CURTAIN PL AND BULWARKS PER DEV 3.RELOCATE BOW THRUSTER PER DEV 4.REV LINES PER DEV 5.REV ENDS OF PASSENGER DECK 6.REV AFT STAIRS ON PASSENGER DECK ON INBD PROFILE 7.CORRECTED DESCRIPTION OF BEAM 8.REV STAIRS FROM MN DECK TO PASSENGER DECK DUE TO INSUFFICIENT LANDING AT MID DECK	1/15/10	BJ/KK
2	VAR 12–B 11–C 13–C 14–C, 6–C VAR	1. REV MASTS TO SUIT DEVELOPMENT OF MAST DWGS AND RELOCATE RADAR PER OWNER REQUEST. 2. ADDED BHDS BLW MN DK @ FRS 32, 34 & 40 3. ADDED STAIRTOWER ENCLOSURE. 4. ADDED STAIRWAY TO DECK HOUSE TOP @ FR 48 5. DELETED STAIRWAY TO PILOTHOUSE DECK @ FR 68. 6. ADDED INCLINED LADDERS FROM PASS DK TO PHSE. DK. – REVS 2–6 TO MATCH DWG 101–02 REV 6	2/26/10 6/29/10	BJ/KK MB/KK
3	VAR 5–C VAR 6–C 5–C 5–C 4–C 3–A 4–C	1. REV HANDRAILS @ FWD & AFT END OF PASSENGER DECK. 2. REV HANDRAILS @ AFT HOUSE & PILOT HOUSE TOPS. 3. ADDED HULL NAME FWD & AFT AND HAILING PORT AFT. 4. REV AFT MAST @ AFT DECK TOP. 5. REV NUC MAST @ AFT DECK TOP. 6. REV ANCHOR LIGHT MAST @ PILOT HOUSE TOP. 7. REV RADAR MASTS P/S @ PILOT HOUSE TOP. 8. REV VEHICLE CAPACITY TO 49 CARS. 9. ADDED FWD LOOKING INFRARED CAMERA. – ABOVE REVISIONS PER AS–BUILT –	4/20/11	MH/KK
4	4–C 12–C	1. ADDED VESTIBULES TO OUTBOARD PROFILE. 1. ADDED VESTIBULES TO INBOARD PROFILE. – ABOVE REVISIONS PER AS–BUILT –	7/19/11	MH/KK



OUTBOARD PROFILE

PRINCIPLE DIMENSIONS

17	LENGTH OVERALL	220'–6"
	LENGTH DESIGN LOAD WATERLINE	208'–0"
	BEAM MOLDED	50'–0"
	DEPTH TO MAIN DECK AT SIDE	12'–6"
83	DRAFT TO DLWL	6'–6"
	VEHICLE CAPACITY	49 CARS
	PASSENGER CAPACITY	300
	CREW	6
	HORSEPOWER	2100
	SPEED (MAX)	13 KNOTS
	FUEL CAPACITY	5000 GAL
	POTABLE WATER CAPACITY	5000 GAL
	GEAR OIL CAPACITY	170 GAL
	LUBE OIL CAPACITY	170 GAL
	OILY WATER CAPACITY	170 GAL
	DIRTY OIL CAPACITY	750 GAL

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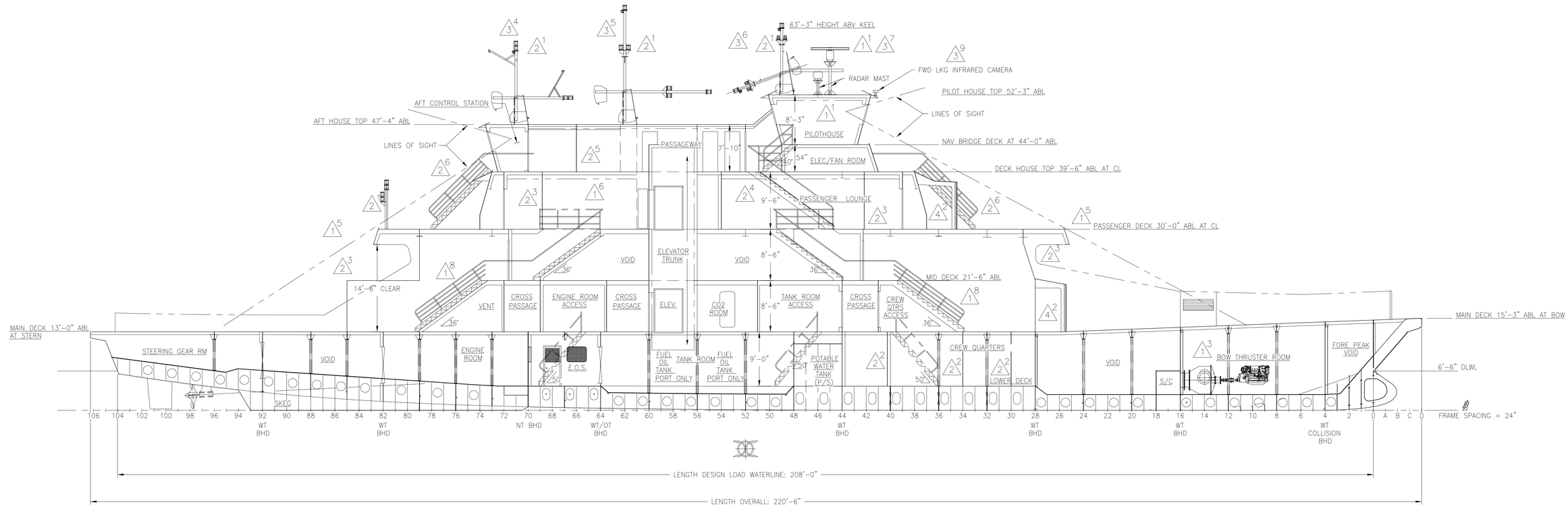
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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

OUTBOARD & INBOARD PROFILE

DRAWN BY:	BJ	DATE: 12/1/09	DWG NO. 101–01 SHT 1 OF 2
CK'D BY:	KHK	HULL No. 413	
SCALE:	1/8"=1'–0"	G&C Job No. 09–060	REV. 4



INBOARD PROFILE

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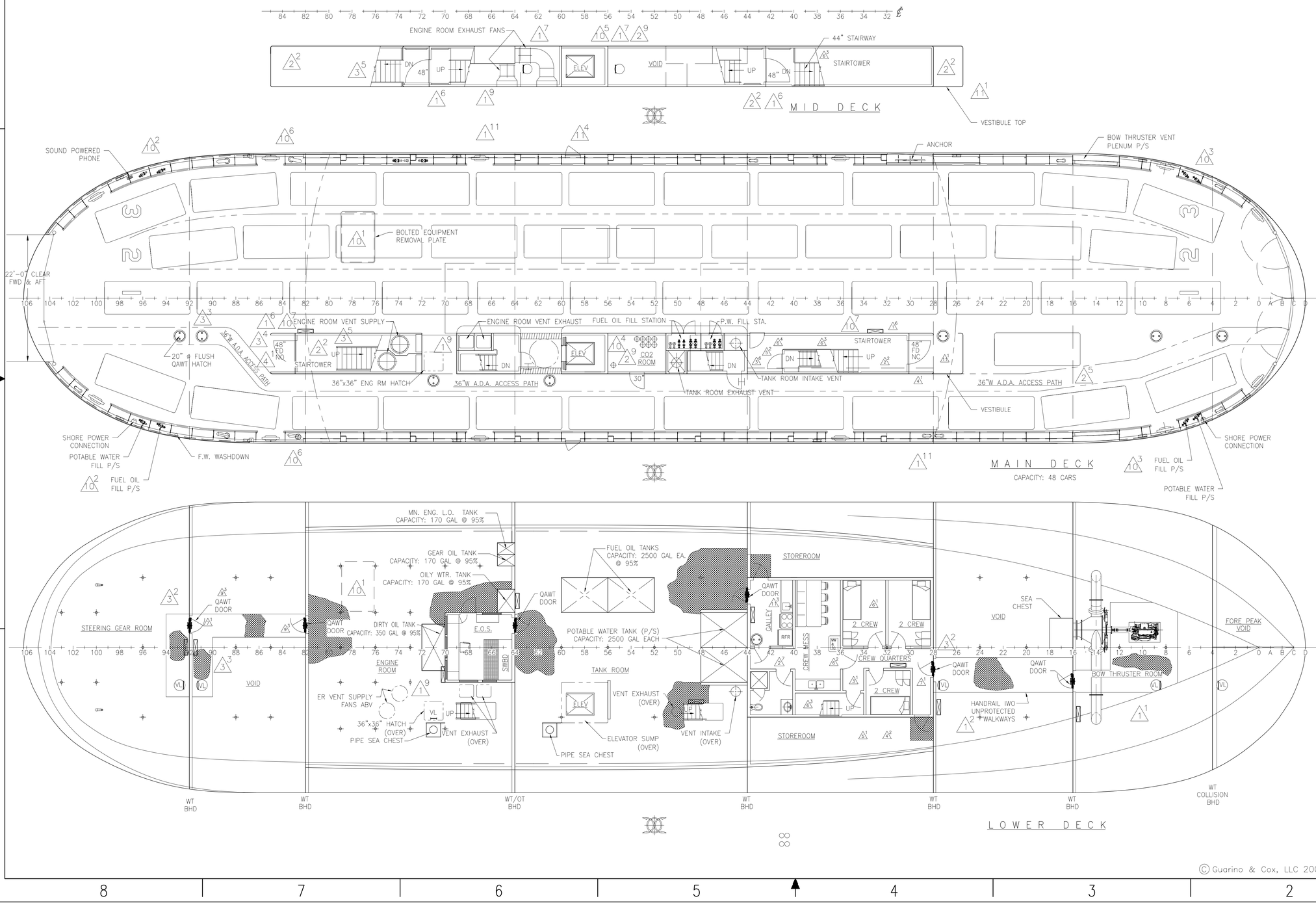
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

OUTBOARD & INBORD PROFILE

DRAWN BY: BJ	DATE: 12/1/09	DWG NO. 101-01 SHT 2 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 4



REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
11	VAR. 12–A 12–B 5–B 6–C	1. ADDED INDICATION OF VESTIBULES ON MAIN DK, MID DK & PASSENGER DK. 2. RELOCATED 2 SEATS ON FWD PASSENGER DECK. 3. ADDED SINK IN GALLEY. 4. INDICATED PORT SIDE BULWARK GATE. – ABOVE REVS PER AS–BUILT –	7/19/11	MH/KK

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	3–A 4–A 13–A 14–C 13–C VAR 13,14–A 14–C VAR VAR SHT 2	1.ADDED FLOOR PL AROUND BOWTHRUSTER ENGINE 2.ADD NOTE FOR HANDRAILS IN WAY OF UNPROTECTED WALKWAYS 3.REVISED SEATING ARRANGEMENT ON PASSENGER DECK. 4.ADDED DOOR ON STBD SIDE OF BRIDGE DECK AT FR 62. 5.REV ARRANGEMENT IN WAY OF SHIPS OFFICE AND HVAC/STOWAGE AREA. ABOVE REV PER OWNER COMMENTS. 6.REV STAIRS FROM MAIN DECK TO PASSENGER DECK DUE TO INSUFFICIENT LANDING ON MID DECK 7.ADDED FLUSH MH ON PASSENGER DECK TO ACCESS VOIDS ON MID DECK LEVEL. 8.REV STAIRS ON DECKHOUSE TOP TO AGREE W/ STRUCTURE DWG. 9.REV LOWER DECK, MAIN DECK AND MID DECK TO SUIT DEVELOPMENT OF ENG ROOM VENT. 10.REV HEADS ON PASSENGER DECK AND HVAC BLOWER ROOMS TO SUIT STRUCTURAL DWG DEVELOPMENT 11.REV BULWARK, CURTAIN PL AND TIRE RAIL TO PER DEVELOPMENT 12.REV PASSENGER DECK HB TO AGREE W STRUCTURAL DWGS.	1/15/10	BJ/KK
2	13–C VAR 13–B 14–B,C 3–C 13–B 5–B 14–C 14–B VAR	1. SHOW FERRY MON CONSOLE IN PILOT HOUSE PER OWNER COMMENT. 2. REVISE FWD & AFT STAIRS TO CHANGE TO STAIRTOWERS. 3. REVISED PASSENGER LOUNGE SEATING CAPACITY. 4. DELETED AFT STAIR FROM PAX LOUNGE TO PHSE DECK. 5. REV ADA ACCESS PATH 6. REARRANGED PAX LOUNGE TO SUIT. – 2 THRU 6 ABV IN RESP TO USCG STAIRTOWER COMMENTS 7. REVISED CREW MESS/GALLEY ARRGT PER OWNER REQUEST. 8. REVISED STOWAGE ON HOUSE TOP TO HVAC AND ADDED HVAC ROOM ON STBD SIDE. DELETED HVAC BLOWERS ON PAX DECK TO SUIT STAIRTOWER & PAX LOUNGE REV. 9. ADDED PIPE/ELEC CHASE PER DEV.	2/26/10 4/30/10	BJ GCL
3	4–A 4A,8B 7A,7C 7–C VAR 5–C SHT2 SHT2	1. ADDED ENCLOSURE AROUND CREW QTRS STAIRS & REVISED MESS ARRGT TO SUIT. 2. REVISED DOOR SWING FOR WT DOORS @ FR 28 & 92. 3. RELOCATED HATCH, LADDER, F.S. & GRATING IN AFT VOID. 4. RELOCATED AFT BHD OF AFT STAIRTOWER ENCL @ MN DK. 5. REVISED X–VERSE LOC'N OF AFT PAX STAIRWAY. 6. REVISED ARRGT OF VESTIBULE @ MN DK, FR 41–44. 7. REVISED STAIRTOWER ENCL & HEADS @ PAX DK, AND REARRANGED LOUNGE TO SUIT. 8. ADDED EXTERIOR STAIRS FROM PAX DECK TO PHSE DECK.	5/21/10	KHK
4	7,4–C 4–A	1. RELOCATED DOORS IN STAIR TOWER ON MN DECK. 2. RELOCATED DOOR INTO STBD STOREROOM ON LOWER DECK –PER USCG COMMENTS–	6/3/10	BJ/KK
5	4–A 5–C	1. REVISED QUARTERS & MESS ARRANGEMENT. 2. CHANGED CREW QUARTERS COMPANIONWAY DOOR FROM WATERTIGHT TO WEATHERTIGHT. –PER USCG COMMENTS–	6/11/10	KK
6	4–B 4–B 4–A,B,D 5–B	1. REVISED LAYOUT OF CREW QUARTERS @ FR 34. 2. REVISED SWING OF DOOR @ FR 36. 3. MOVED MAIN DECK & LOWER DECK STAIRS OUTBOARD BETWEEN FRS 34–40. 4. DELETED INBD DOOR @ FR 41. – ABOVE CHANGES PER USCG COMMENTS –	6/22/10	MB/KK
7	4,8A	1. REVISED SWING OF WT DOORS @ BHDS 28 & 92.	6/29/10	KK
8	13,14–B 14–C 13–C	1. REVISED PASSENGER LOUNGE SEATING ARRGT PER OWNER COMMENTS 2. REVISED DECKHOUSE TOP IN WAY OF HVAC AND EMERGENCY GENERATOR ROOM PER YARD REQUEST AND LATEST EMERG GENSET INFO 3. MOVE RESCUE BOAT AND DAVIT OUTBD PER DEVELOPMENT	8/2/10	BJ/KK
9	14–C 14–C 7–B SHT2	1. ADDED EMERG GENSET DAY TK. 2. REV GATE SWING TO MATCH DWG 612–02. 3. REV TRANS LOC'N OF WT DOORS AT FR 82 & 92 TO MATCH STRUCTURAL DWGS. 4. UPDATED FWD & AFT PASS LOUNGE WINDOWS PER DEV OF DWG. 153–01.	9/27/10	KK
10	7–A,C 8–B 3–B 5–C 5–D 7–C VAR 13–B	1. REVISED BERP IN PORT MAIN DECK. 2. ADDED AFT POTABLE WATER & FUEL OIL FILLS. 3. ADDED FWD POTABLE WATER & FUEL OIL FILLS. 4. REVISED CO2 ROOM AND REMOVED PIPE & ELECTRICAL CHASE. 5. REMOVED PIPE & ELECTRICAL CHASE @ MID DECK. 6. ADDED AFT VOID VENTS @ MID DECK. 7. RELOCATED FIRE STATIONS @ MAIN & PASSENGER DECKS. 8. REVISED VENDING MACHINE & COFFEE BAR LAYOUT. – ABOVE REVISIONS PER AS–BUILT –	4/21/11	MH/KK

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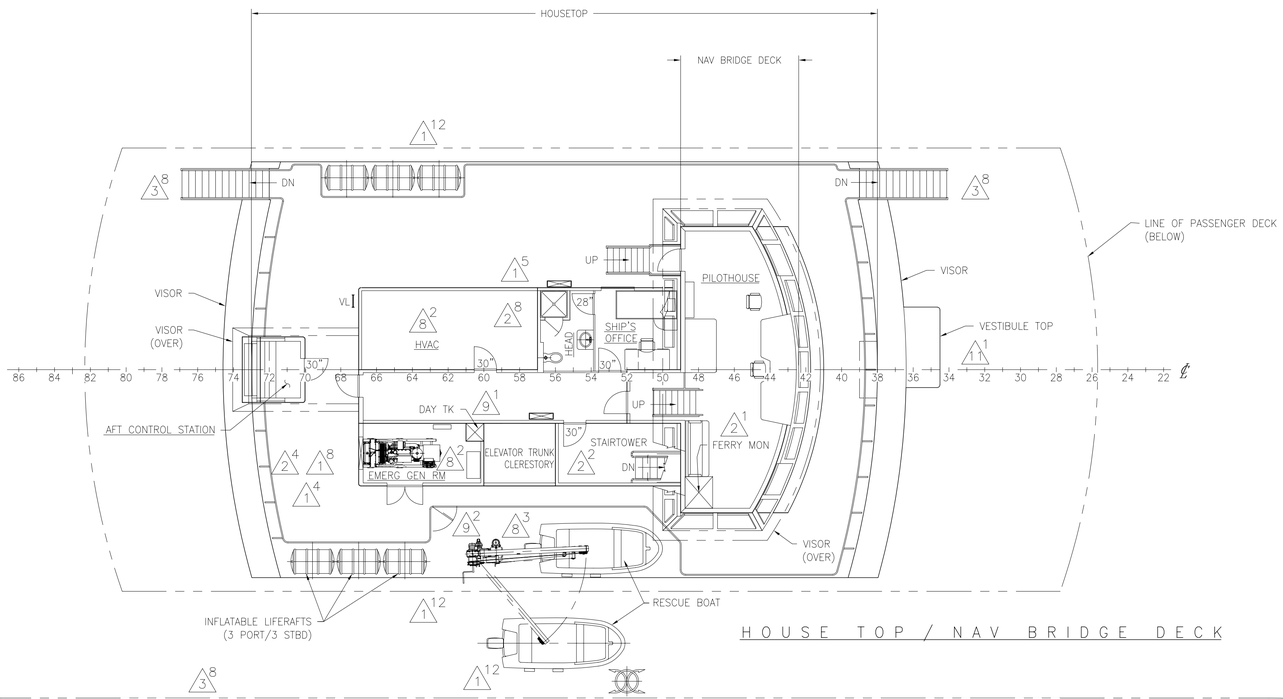
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NEW SOUND CLASS FERRY

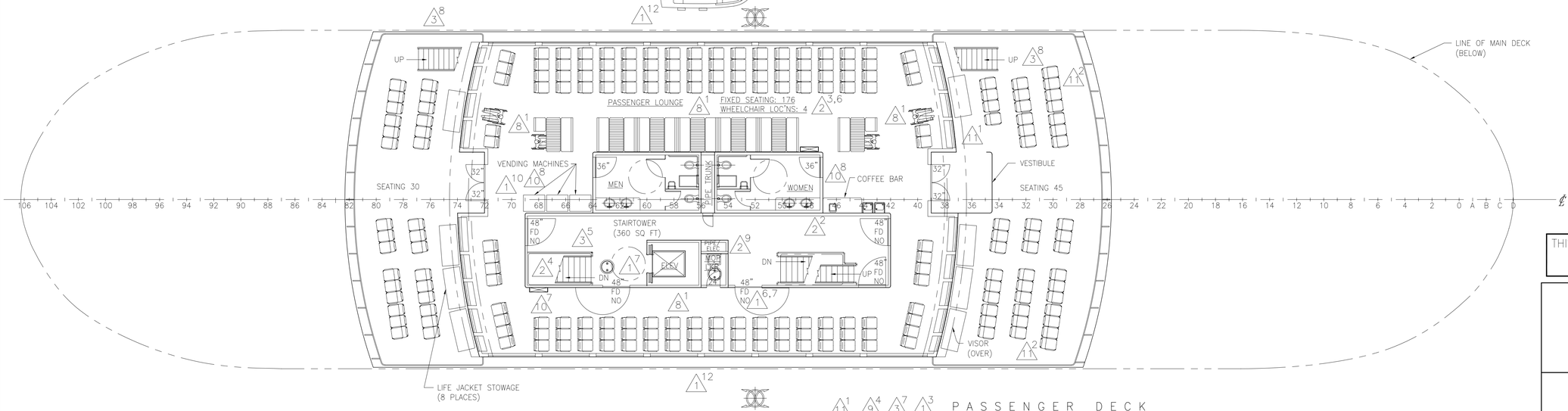
GENERAL ARRANGEMENT

DRAWN BY: BJ	DATE: 12/1/09	DWG NO. 101–02 SHT 1 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'–0"	G&C Job No. 09–060	REV. 11

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HOUSE TOP / NAV BRIDGE DECK



PASSENGER DECK

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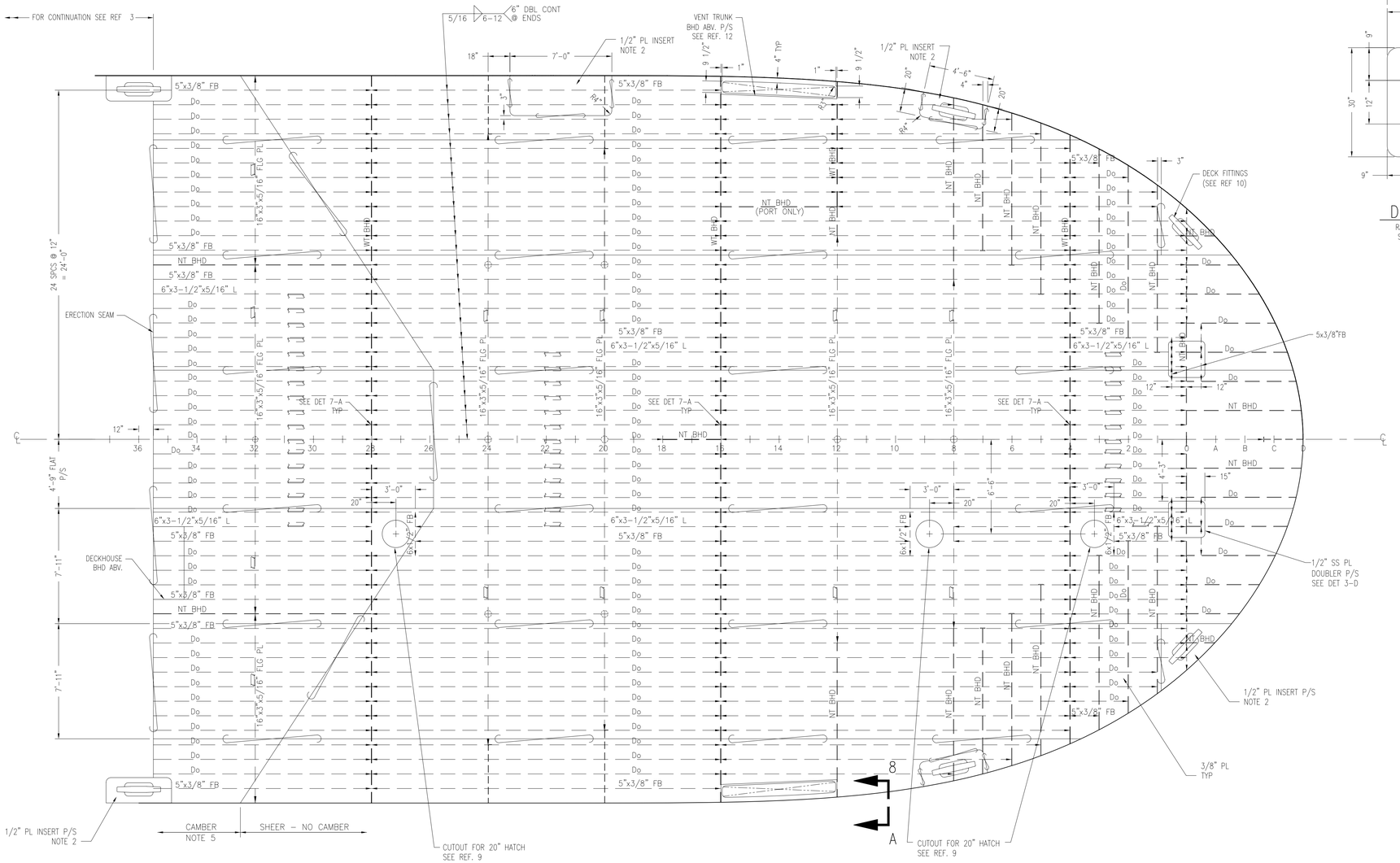
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

GENERAL ARRANGEMENT

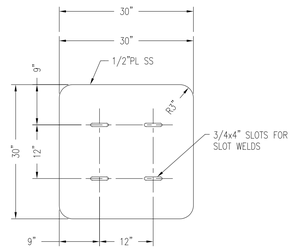
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CK'D BY: KHK		HULL No. 413	
SCALE: 1/8"=1'-0"		G&C Job No. 09-060	REV. 11

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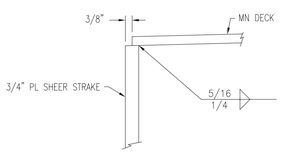
MAIN DECK SCANTLINGS

BOW TO FRAME 36
SCALE: 1/4" = 1'-0"



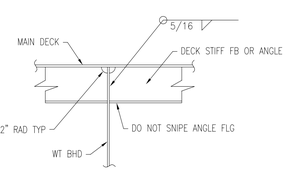
DETAIL 3-D

RAMP GATE DOUBLER
SCALE: 3/4"=1'-0"



SECTION 8-A

TYP CONNECTION AT DECK SIDE
3"=1'-0"



DETAIL 7-A

TYP SECT AT DECK STIFF IN WAY OF WT BHD
1"=1'-0"

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.
5. THE MAIN DECK HAS A MAXIMUM OF 6" STRAIGHT LINE CAMBER AFT OF FRAME 33 AND OUTBOARD OF THE 57" DECK KNUCKLE. WHERE THE BEAM IS LESS THOM MAXIMUN, THE CAMBER MAINTAINS THE SAME ANGLE. FORWARD OF FRAME 26, THE DECK HAS NO CAMBER.
6. WHERE LONG'L BEAMS PASS THROUGH SLOTTED FRAMES, BHDS, OR GIRDERS, THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF EACH SUCH INTERSECTION.

RESERVATIONS

1. RESERVE BOW THRUSTER ENGINE FOUNDATION PENDING BOW THRUSTER ENGINE VENDOR INFORMATION.

NO.	REFERENCES	DWG NO.
12	MACHINERY SPACE VENTILATION	513-01
11	BOW THRUSTER INSTALLATION	568-01
10	DECK FITTINGS	582-01
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	LINES PLAN	839-01
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
4	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-FR. 72	116-02
3	SCANTLING PLANS, FR. 36-FR. 72	110-02
2	FRAMES, BOW-FR. 35	117-01
1	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01

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07069-001-110-1
07069-001-120-1
07069-001-130-1

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REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD

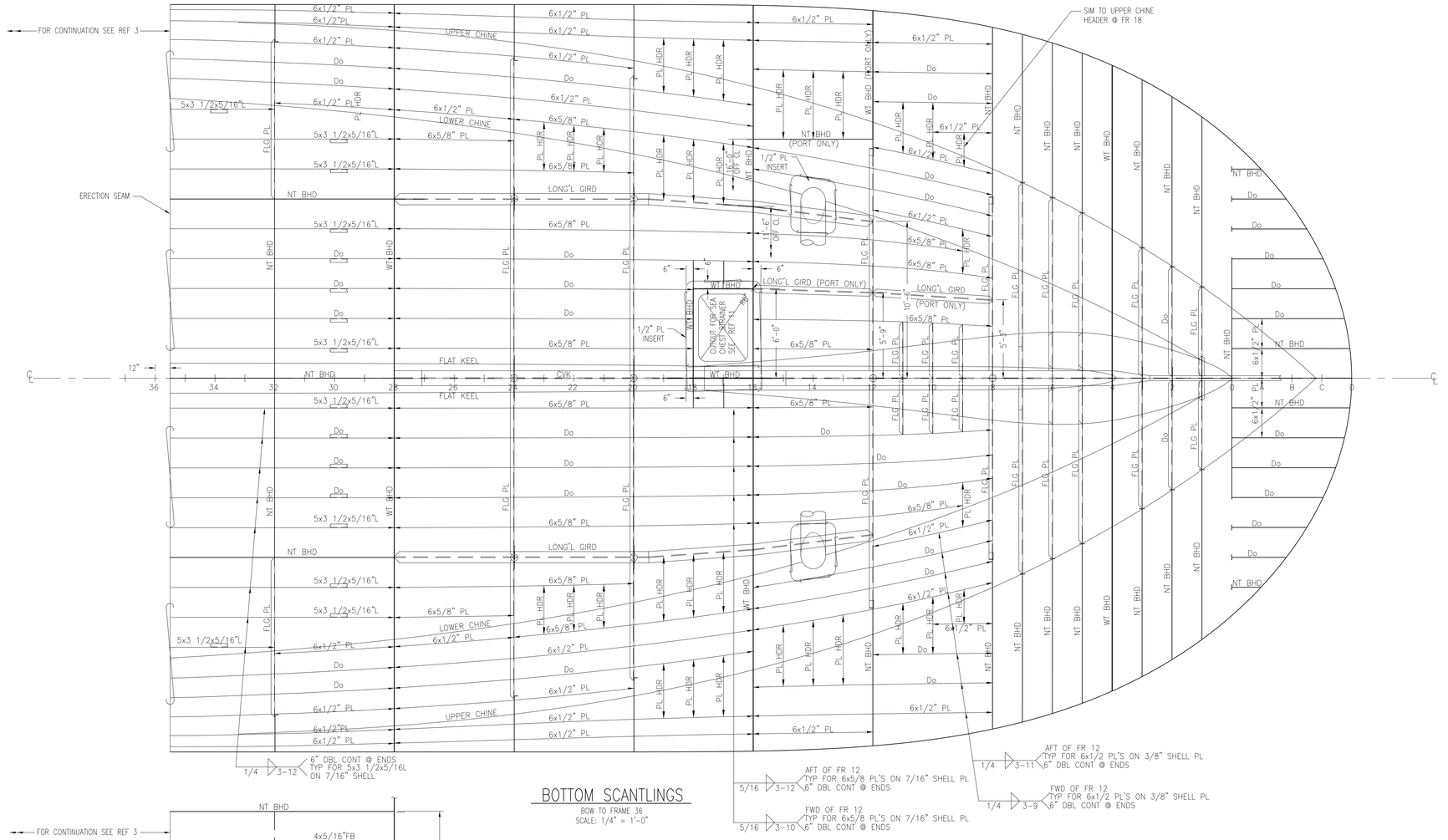
ORANGE Shipbuilding Co., Inc.
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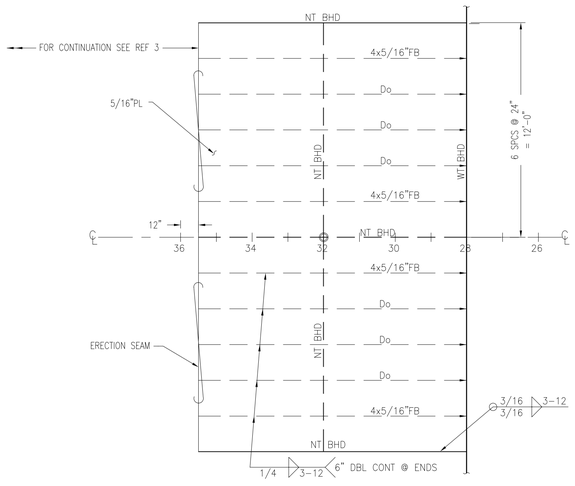
SCANTLING PLANS, BOW - FR. 35

DRAWN BY: C FIELDS	DATE: 12-10-09	DWG NO.	110-01
CK'D BY: KHK	HULL No. 413	SHT 1 OF 2	
SCALE: 1/4"=1'=0"	G&C Job No. 09-060	REV. 0	



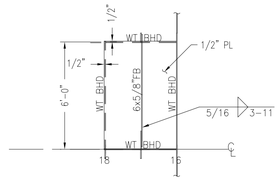
BOTTOM SCANTLINGS

BOW TO FRAME 36
SCALE: 1/4" = 1'-0"



NT FLAT 4'-0' ABV BL

BOW TO FRAME 36
SCALE: 1/4" = 1'-0"



BOW THRUSTER SEA CHEST TOP

6'-0" ABV BL PORT ONLY
SCALE: 1/4" = 1'-0"

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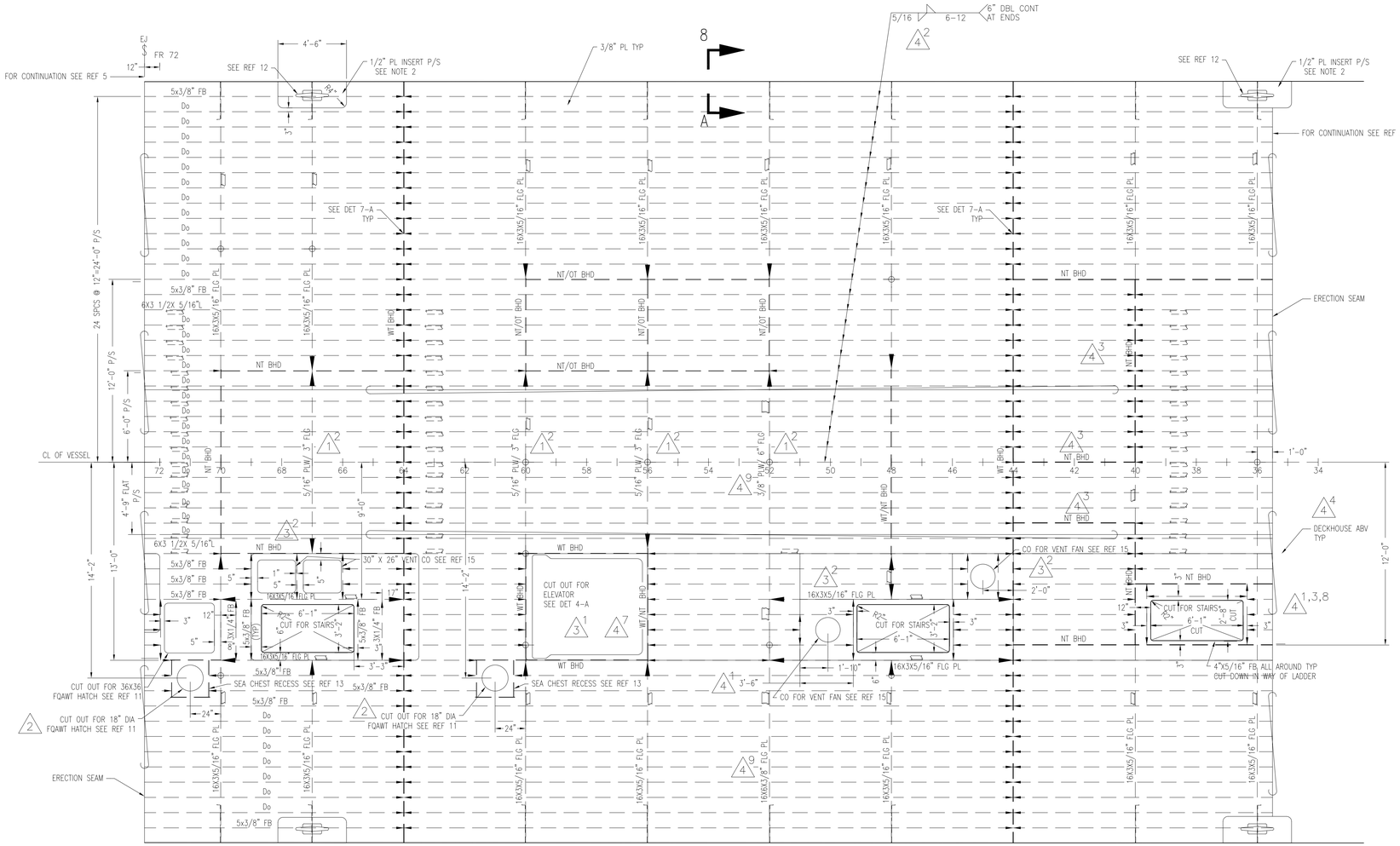
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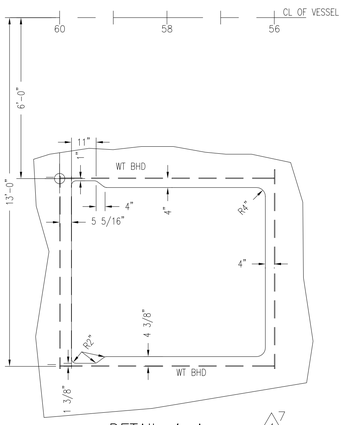
NEW SOUND CLASS FERRY

SCANTLING PLAN, BOW – FR. 35

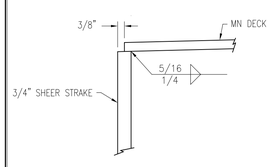
DRAWN BY: C FIELDS	DATE: 12-10-09	DWG NO. 110-01 SHT 2 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 0



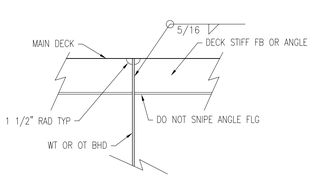
MAIN DECK PLAN VIEW
FRS 36-72



DETAIL 4-A
DECK CUTOUT IN WAY OF ELEVATOR PIT
3/8"=1'-0"



SECTION 8-A
TYP CONNECTION AT DECK SIDE
3"=1'-0"



DETAIL7-A
TYP SECT AT DECK STIFF IN WAY OF WT OR OT BHD
1"=1'-0"

RESERVATIONS

1,2,3

~~1.RESERVE ELEVATOR TRUNK PENDING VENDOR INFO.~~
~~2.RESERVE ENGINE GIRDERS PENDING FINAL VENDOR INFO. AND DEVELOPMENT OF REF 5&16~~
~~3.RESERVE DECK IN WAY OF VENT FANS PENDING DEVELOPMENT OF REF 15~~

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. ALL MATERIAL SHALL BE ABS GRADE-A OR EQUIVALENT EXCEPT AS NOTED.
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REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	SHT 3	1.REV SHAPE OF LONGL STIFF'S BETWEEN LOWER CHINE AND SHEAR STRAKE KNUCKLE PER DEVELOPMENT	2/19/10	BJ/KK
	VAR	2.REV DESCRIPTION OF TRANSVERSE FLG PLS AT CL PER CHANGES ON DWG 117-02		
	21-B	3.REM SNIPE FROM FLG OF TRANSVERSE BOTTOM FLG PL AT FR 48 AT 12"-0" OFF CL STBD SIDE		
	16-A	4.REV TT AND CVK CAP PL AT FRS 70-72 PER DEV OF REF 5&16		
	16-A,B	5.REV LONGL GIRDERS FR 60-73 AND REMOVE RESV, ADDED REF 17. PER DEV OF REF 6&16		
	11-D	6.CORRECTED DEPTH OF CHOCK.		
2	6,8-B	REV DECK HATCHES IWO SEACHESTS TO 18" PER YARD REQUEST.	3/17/10	KK
3	VAR	1. ADD DIMS FOR ELEVATOR CUT-OUT AND REMOVE RESV #1.	3/23/10	KK
	5,7-C	2. REV DECK CO'S AND ASSOCIATED STRUCTURE IWO VENT FANS, AND REMOVE RESV #3.		
	12-B	3. CORRECTED DECK HATCH DIAM IN CREW QTRS.		
4	5-B	1. ADDED LOCATING DIM FOR STAIR C/O.	3/29/10	MB/KK
	5-D	2. REVISED WELD FROM CHAIN WELD TO STAGGERED WELD	6/14/10	
	VARIES	3. REVISED LOCATION FOR STAIRWAY OPENING. ADDED NT BHDS @ FR 40, CL & 4'-0 OFF CL STBD.		
	3-C	4. REVISED LAYOUT FOR DECKHOUSE ABV.		
	VARIES	5. REVISED FLANGE INDICATIONS @ FRS 48, 56 & 70.		
	VARIES	6. ADDED ABV DECK BHDS @ FR 40, CL, 4'-0" & 8'-0" OFF CL STBD		
	4-A, 6-C	7. REVISED MN DECK CUTOUT IN WAY OF ELEVATOR PIT AND ADDED DET 4-A, PER LATEST VENDOR INFO	7/23/10	BJ/KK
	4-C	8. REVISED DECK CUTOUT FOR FWD STAIRS FRS 36-40 TO SUIT LATEST ARRANGEMENT.		
	5-B,C	9. REV SIZE OF X-VERSE DK FR @ FR 52 STBD.		
	14-C	10. REV FRAMING OF ELEVATOR SUMP BOTTOM PER VENDOR INFO.		
	SHT 3	11. REV X-VERSE FRAMES ON BTM SHELL @ FRS 48, 56 & 70.		
	16A,B	12. REV OUTBD ENG GIRD @ FR 73 TO MATCH REF 16.		

NO.	REFERENCES	DWG NO.
17	FRAMES, FR. 72-STERN	117-03
16	MAIN ENGINE FOUNDATIONS	182-01
15	MACHINERY SPACE VENTILATION	513-01
14	ELEVATOR INSTALLATION	589-01
13	SEA CHEST	163-01
12	DECK FITTINGS	582-01
11	SCHEDULE OF OPENINGS, BELOW DECK	167-01
10	LINES PLAN	839-01
9	MOLD LINE CONVENTION	101-03
8	GENERAL ARRANGEMENTS	101-02
7	OUTBOARD & INBOARD PROFILE	101-01
6	CONSTRUCTION PROFILE & LONG'L BHDS, FR 72-STERN	116-03
5	SCANTLING PLANS, FR 72-STERN	110-03
4	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01
3	SCANTLING PLANS, BOW-FR. 35	110-01
2	FRAMES, FR. 36-72	117-02
1	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-72	116-02

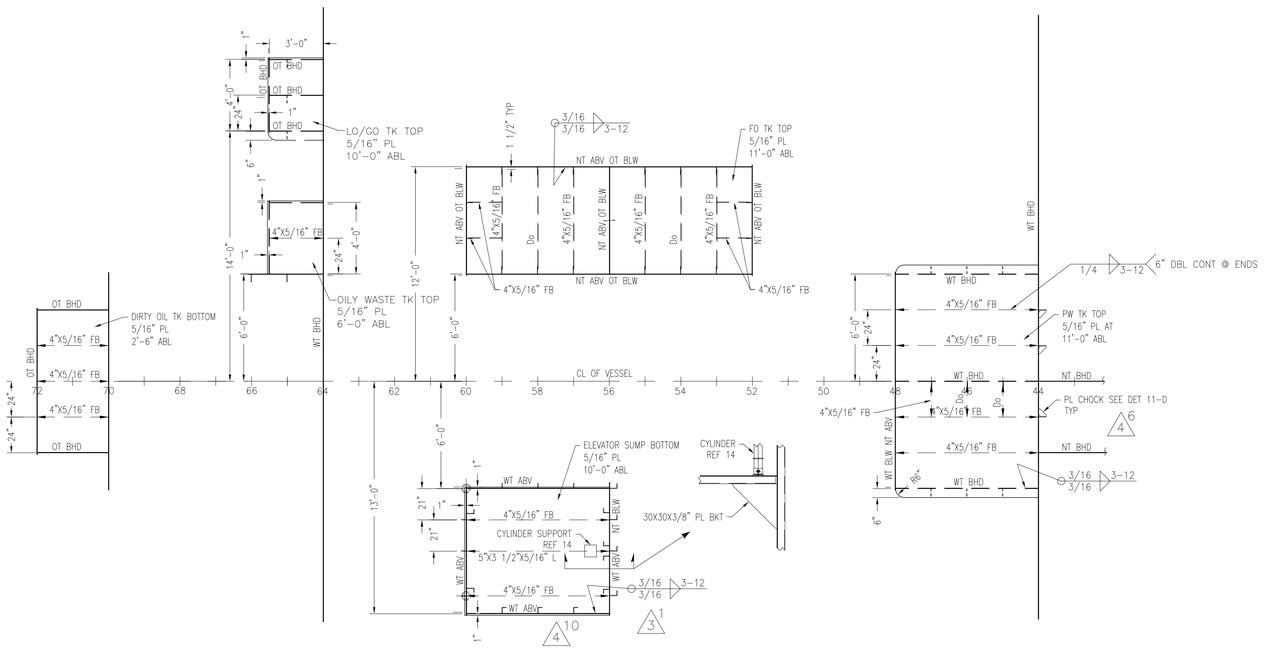
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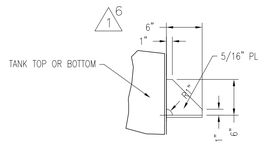
ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY
SCANTLING PLANS
FR 36 – FR 72

DRAWN BY:	B. JAMES	DATE: 12/31/09	DWG NO. 110-02 SHT 1 OF 3
CK'D BY:	KHK	HULL No. 413	
SCALE:	1/4"=1'-0"	G&C Job No. 09-060	REV. 4

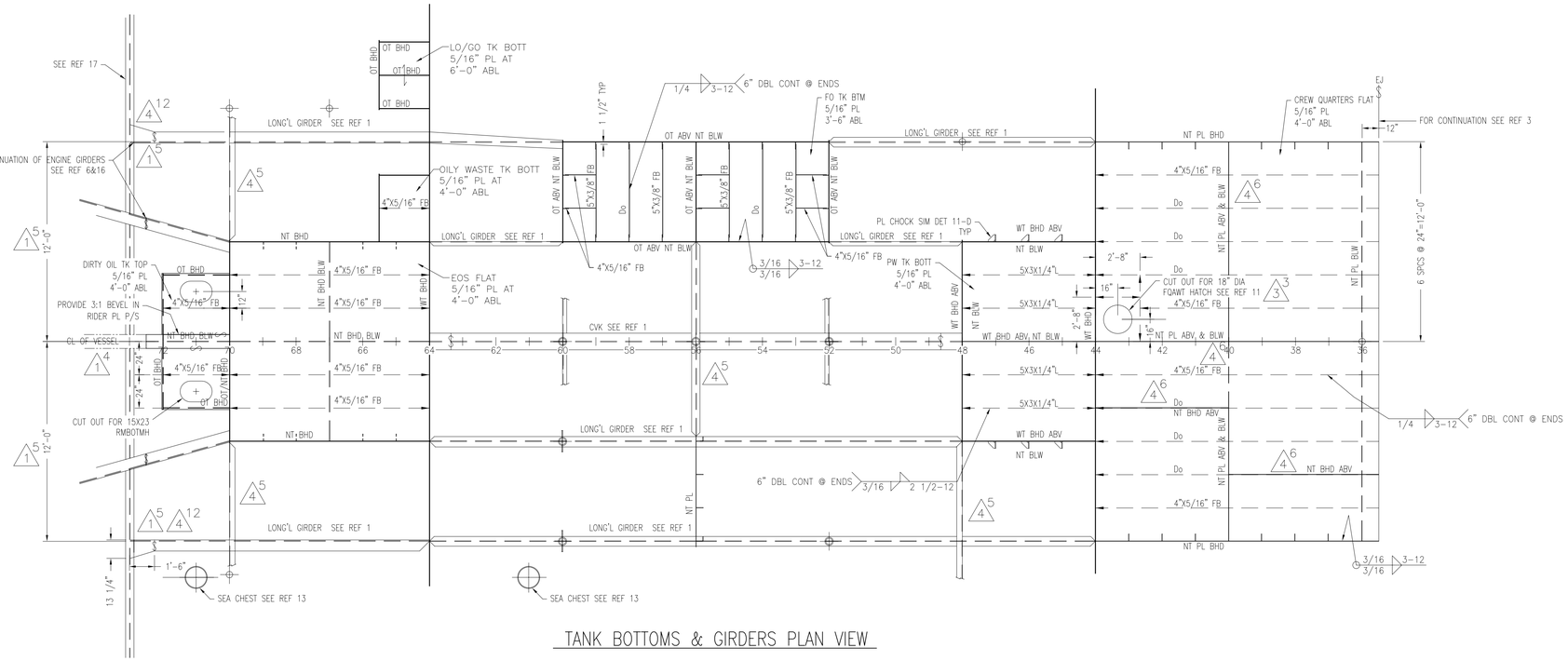
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TANK TOPS PLAN VIEW



DETAIL 11-D
TYP CHOCK IN WAY OF TANKTOP
1"=1'-0"



TANK BOTTOMS & GIRDERS PLAN VIEW

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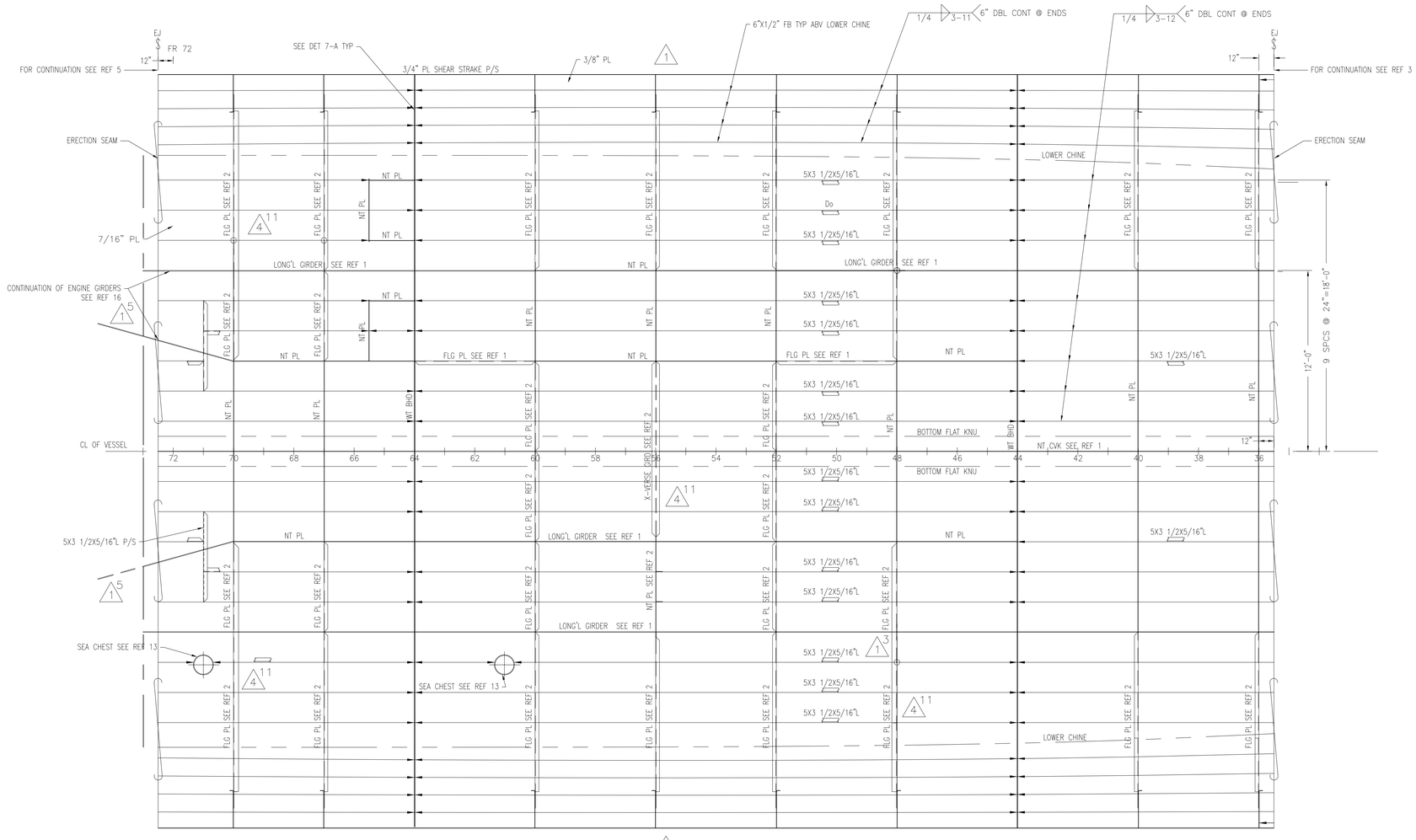
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCANTLING PLANS
FR 36 – FR 72

DRAWN BY: B. JAMES	DATE: 12/31/09	DWG NO. 110-02 SHT 2 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 4



BOTTOM SHELL PLAN VIEW

FRS 36-72

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ORANGE SHIPBUILDING CO. INC.

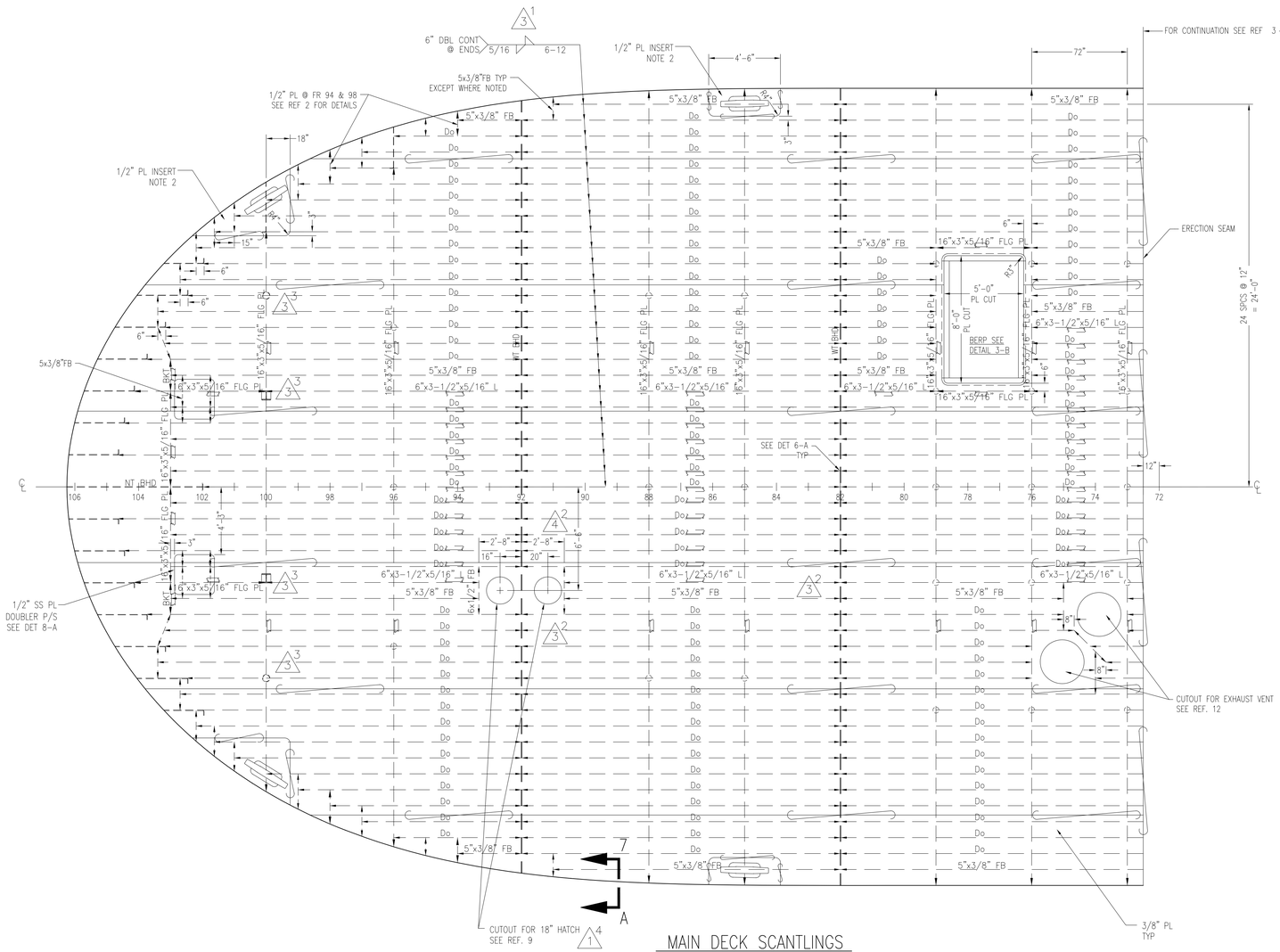
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCANTLING PLANS
FR 36 – FR 72

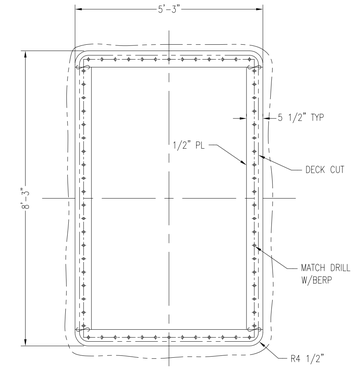
DRAWN BY: B. JAMES	DATE: 12/31/09	DWG NO. 110-02 SHT 3 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 4

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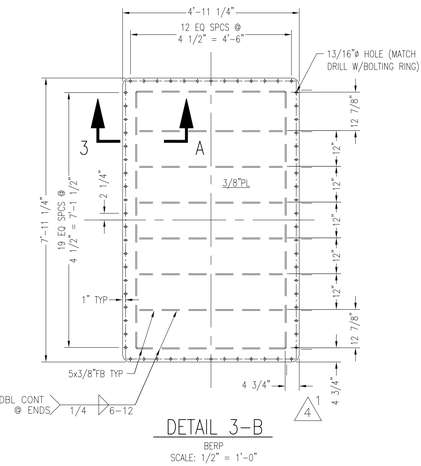
MAIN DECK SCANTLINGS

FRAME 73 TO STERN
SCALE: 1/4" = 1'-0"



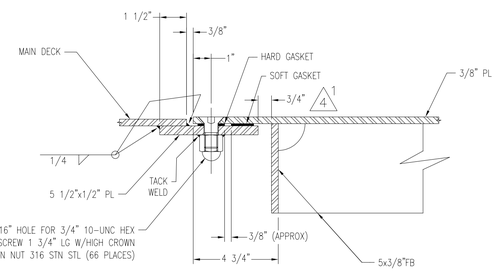
DETAIL 3-D

BERP BOLTING RING
SCALE: 1/2" = 1'-0"



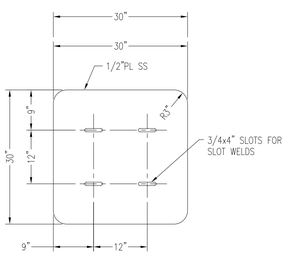
DETAIL 3-B

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



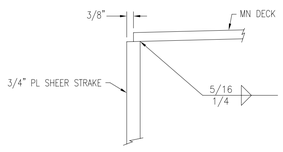
SECTION 3-A

BERP BOLTING
SCALE: 3" = 1'-0"



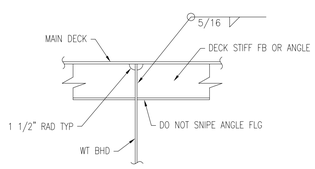
DETAIL 8-A

RAMP GATE DOUBLER
SCALE: 3/4"=1'-0"



SECTION 7-A

TYP CONNECTION AT DECK SIDE
3"=1'-0"



DETAIL 6-A

TYP SECT AT DECK STIFF IN WAY OF WT BHD
1"=1'-0"

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.
5. THE MAIN DECK HAS A MAXIMUM OF 6" STRAIGHT LINE CAMBER AFT OF FRAME 33 AND OUTBOARD OF THE 57" DECK KNUCKLE. WHERE THE BEAM IS LESS THOM MAXIMUN, THE CAMBER MAINTAINS THE SAME ANGLE. FORWARD OF FRAME 26, THE DECK HAS NO CAMBER.
6. WHERE LONG'L BEAMS PASS THROUGH SLOTTED FRAMES, BHDS, OR GIRDERS, THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF EACH SUCH INTERSECTION.

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	16-C 11-D 16-D 16-C VAR 5,7-A	1. ADDED HORIZ. PL HEADER ON TRANSOM @ 7'-6" ABL FROM CL TO GIRD @ 8'-0" OFF CL P/S. 2. REVISED BOTTOM LONG'L 12'-0" OFF CL TO STOP @ FR 100 & REVISED TRANSOM STIFF BOTTOM BKT TO SUIT. 3. REVISED LOCATION OF RIDER PL @ INBD & OUTBD BOTTOM GIRDERS TO BE CENTERED ON THE MOLD LINE OF THE WEBS. 4. REVISED HATCHES FROM 20" TO 18" TO MATCH DWG 167-01.	03/16/10	CF / KK
2	13-C 13-D	1. REMOVED RESERVATION IN WAY OF ENGINE FOUNDATIONS PER VENDOR INFORMATION.	04/08/10	CF / KK
3	6-D 6-C VARIES 12B&D	1. REVISED STIFF WELD FROM CHAIN WELD TO STAGGERED. 2. MOVED MANHOLE FROM AFT FR 82 TO FWD FR 92. 3. ADDED INDICATION OF STANCHION 12'-0" OFF CL @ FR 100. REVISED INDICATION OF STANCHION 6'-0" OFF CL @ FR 100. 4. REV OUTBD END GIRDERS TO MATCH DWG 182-01, REV 1.	07/2/10	MB/KK
4	3-A 3-B 6-C	1. REVISED DRAWING SCALE OF DET 3-A FROM 1 1/2"=1'-0" TO 3"=1'-0". REVISED DIMENSION FOR HATCH REINFORCMENT, AND REVISED BOLTING DETAIL. ABOVE CHANGES PER OWNER COMMENT. 2. RELOCATED MH FWD OF FR 92 FROM 16" TO 20" FWD OF BHD.	07/6/10 07/14/10	MB/KK BJ/KK

NO.	REFERENCES	DWG NO.
13	MAIN ENGINE FOUNDATION	182-01
12	MACHINERY SPACE VENTILATION	513-01
10	DECK FITTINGS	582-01
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	LINES PLAN	839-01
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
4	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-FR. 72	116-02
3	SCANTLING PLANS, FR. 36-FR. 72	110-02
2	FRAMES, FR. 73-STERN	117-03
1	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 73-STERN	116-03

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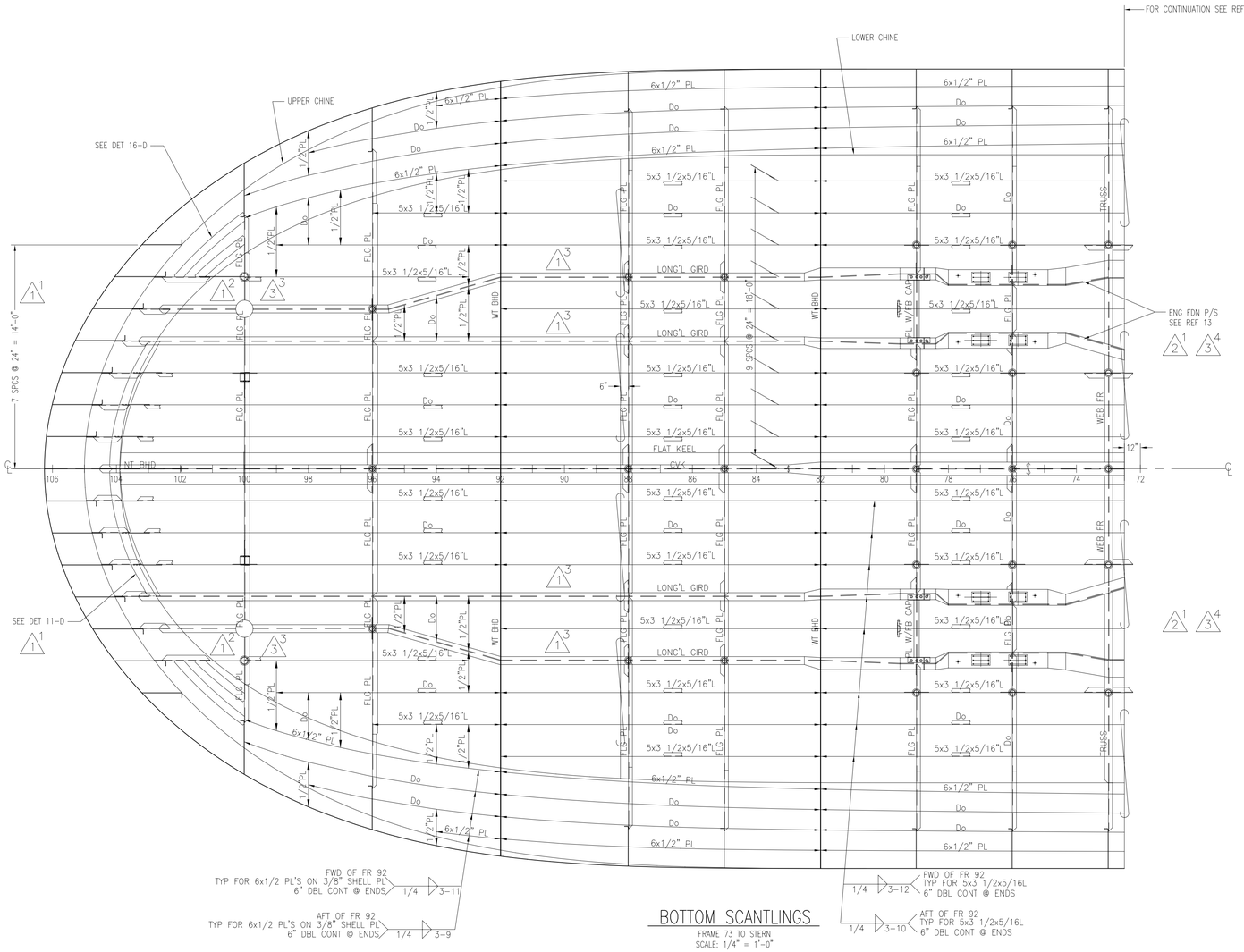
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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

SCANTLING PLANS, FR. 73-STERN

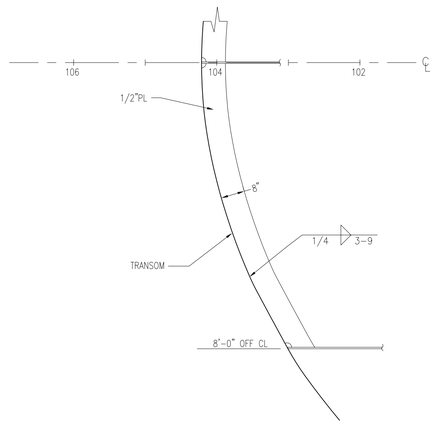
DRAWN BY: C FIELDS	DATE: 02-19-10	DWG NO.	110-03
CK'D BY: KHK	HULL No. 413	SHT 1 OF 2	
SCALE: 1/4" = 1'-0"	G&C Job No. 09-060	REV. 4	

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING
07069-001-110-1
07069-001-120-1
07069-001-130-1

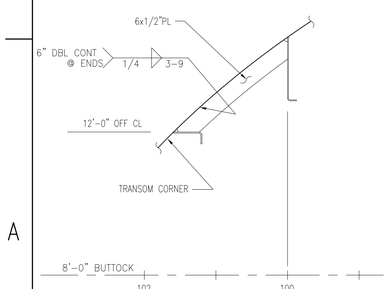
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BOTTOM SCANTLINGS
FRAME 73 TO STERN
SCALE: 1/4" = 1'-0"



DETAIL 11-D 1/1
7'-6" ABV BL
STBD SHOWN PORT SIM
SCALE: 1/2" = 1'-0"



DETAIL 16-D
8'-0" ABV BL SHOWN
9'-6" ABV BL SIM
PORT SHOWN STBD SIM
SCALE: 1/2" = 1'-0"

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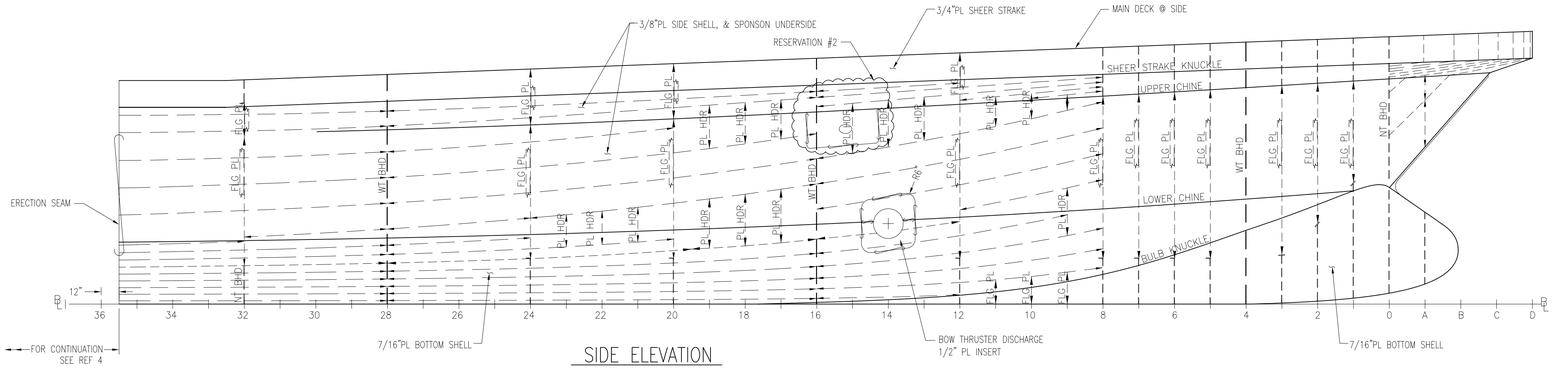
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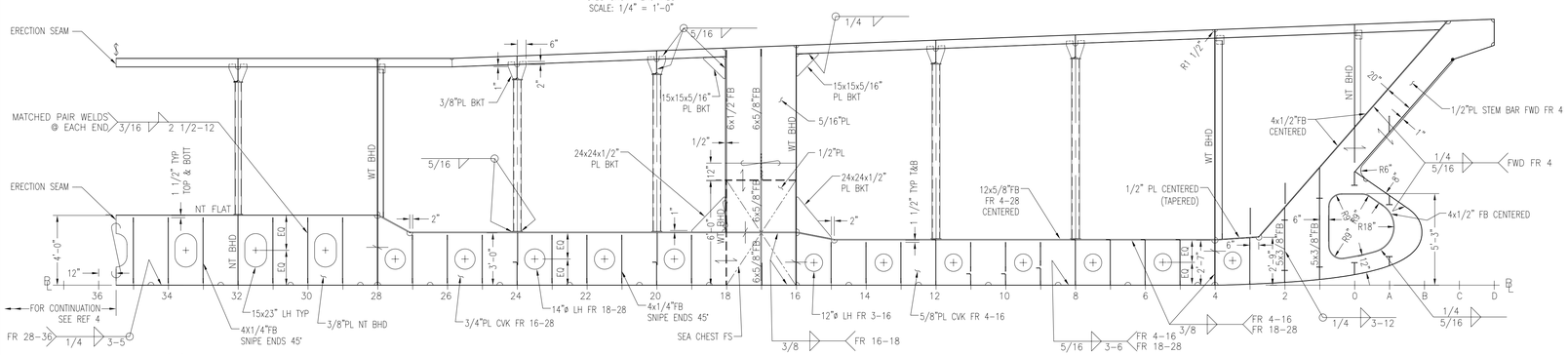
SCANTLING PLANS, FR. 73-STERN

DRAWN BY: C FIELDS	DATE: 02-19-10	DWG NO. 110-03 SHT 2 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4" = 1'-0"	G&C Job No. 09-060	REV. 3



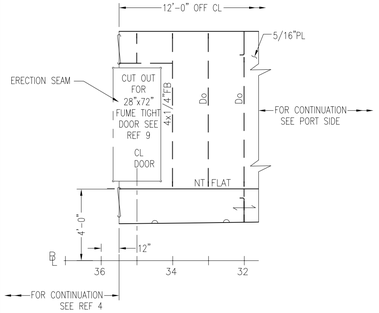
SIDE ELEVATION

BOW TO FRAME 36
STBD SHOWN LKG INBD
SCALE: 1/4" = 1'-0"



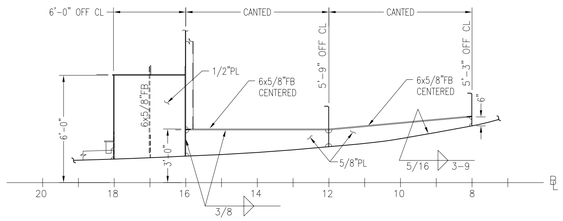
CENTERLINE ELEVATION

BOW TO FRAME 36
SCALE: 1/4" = 1'-0"



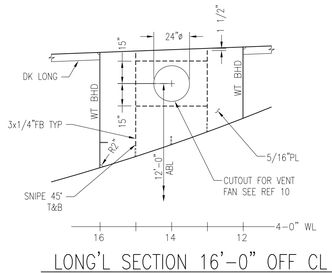
LONG'L SECTION 12'-0" OFF CL

BOW TO FRAME 36
STBD ONLY LKG INBD
SCALE: 1/4" = 1'-0"



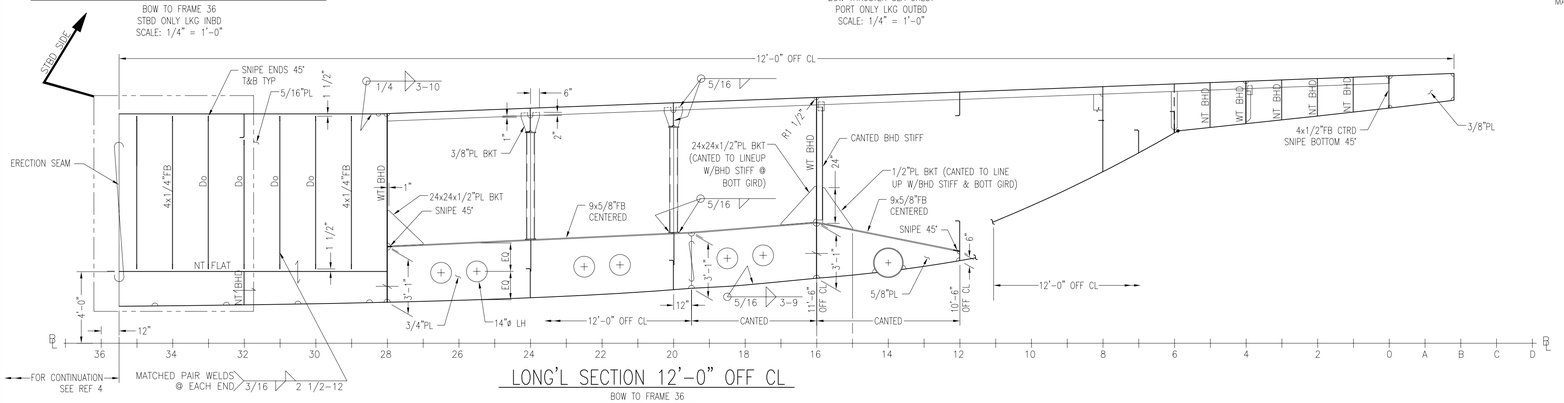
LONG'L SECTION 6'-0" OFF CL

BOW THRUSTER SEA CHEST
PORT ONLY LKG OUTBD
SCALE: 1/4" = 1'-0"



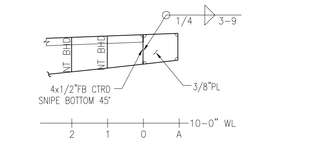
LONG'L SECTION 16'-0" OFF CL

PORT ONLY LKG OUTBD
SCALE: 1/4" = 1'-0"



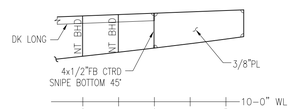
LONG'L SECTION 12'-0" OFF CL

BOW TO FRAME 36
PORT SHOWN LKG OUTBD
STBD SIM EXCEPT AS NOTED
SCALE: 1/4" = 1'-0"



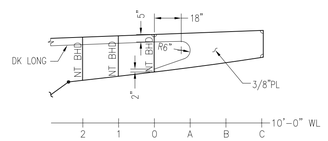
NT BHD 14'-0" OFF CL

PORT SHOWN LKG OUTBD



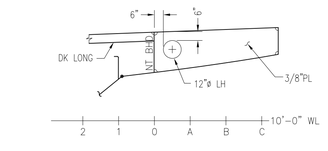
NT BHD 10'-0" OFF CL

PORT SHOWN LKG OUTBD



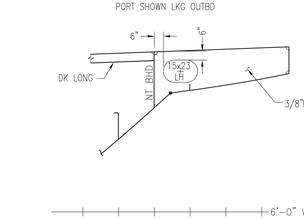
NT BHD 8'-0" OFF CL

PORT SHOWN LKG OUTBD



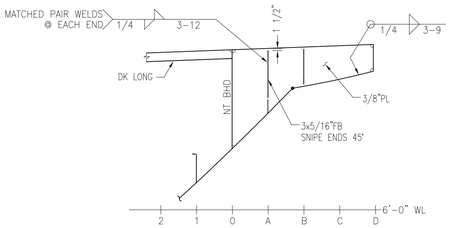
NT BHD 6'-0" OFF CL

PORT SHOWN LKG OUTBD



NT BHD 4'-0" OFF CL

PORT SHOWN LKG OUTBD



NT BHD 2'-0" OFF CL

PORT SHOWN LKG OUTBD

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR SCANTLING PLANS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. TYP SNIPES, VENT & DRAIN HOLES TO BE A 2" RAD. ULLESS OTHERWISE NOTED.
5. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.

RESERVATIONS

1. RESERVE BOW THRUSTER ENGINE FOUNDATION PENDING BOW THRUSTER ENGINE VENDOR INFORMATION.
2. RESERVE EXHAUST THRU-HULL PENETRATION PENDING BOW THRUSTER ENGINE VENDOR INFORMATION.

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD

NO.	REFERENCES	DWG NO.
10	MACHINERY SPACE VENTILATION	513-01
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	LINES PLAN	839-01
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
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2	FRAMES, BOW-FR. 35	117-01
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NORTH CAROLINA DOT FERRY DIVISION

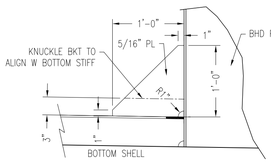
NEW SOUND CLASS FERRY

CONSTRUCTION PROFILE & LONG'L BHDS, BOW – FR. 35

DRAWN BY: C FIELDS	DATE: 12-10-09	DWG NO.	
CK'D BY: KHK	HULL No. 413	116-01	
SCALE: 1/4"=1'=0"	G&C Job No. 09-060	SHT 1 OF 1	
		REV. 0	

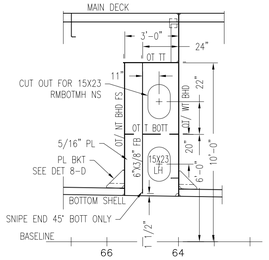
THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING
07069-001-120-2
07069-001-120-5

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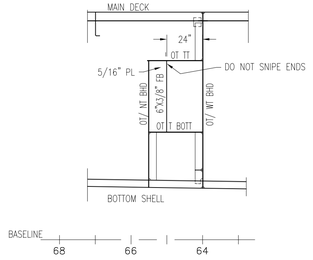
DETAIL 8-D

TYP BOTTOM BKT IN WAY OF LONG'L BHDS
1"=1'-0"



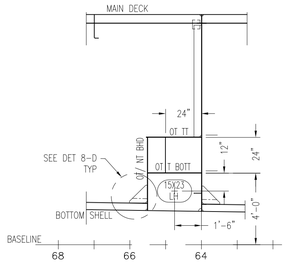
LONG'L SECTION AT 14'-0" OFF CL

PORT SHOWN LKG OUTBD
BHD AT 18'-0" OFF CL TO PORT SIM



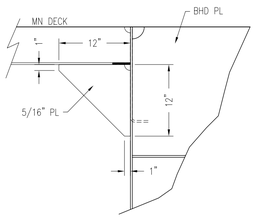
LONG'L SECTION AT 16'-0" OFF CL

PORT SHOWN LKG OUTBD



LONG'L SECTION AT 10'-0" OFF CL

PORT SHOWN LKG OUTBD



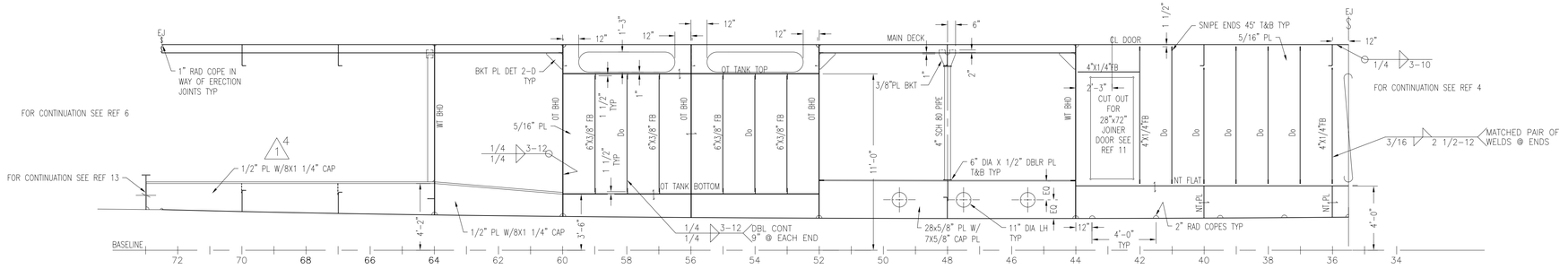
DETAIL 2-D

TYP DECK BKT IN WAY OF LONG'L BHDS
1"=1'-0"

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	VAR	1.REV HEIGHT OF TRANSVERSE FRAME AT FR 48 & 56. TO AGREE W/ REF 2	2/19/10	BJ/KK
	13-B	2.REV HEIGHT OF LONG'L GIRDER 12'-0" OFF CL TO STBD AND REMOVE BKTS AT FRS 44 & 56.		
	16-D	3.REV CVK CAP PL TO 10X3/4" PER DEV OF REF 5&6		
	7-A,C 15-B,D	4.REV LONGL GIRDERS AT 6' & 12' OFF CL AND REMOVE RESV 2 PER DEV OF REF 5&6		
2	SHT 2	1. REMOVED RESERVATION #1.	3/23/10	KK

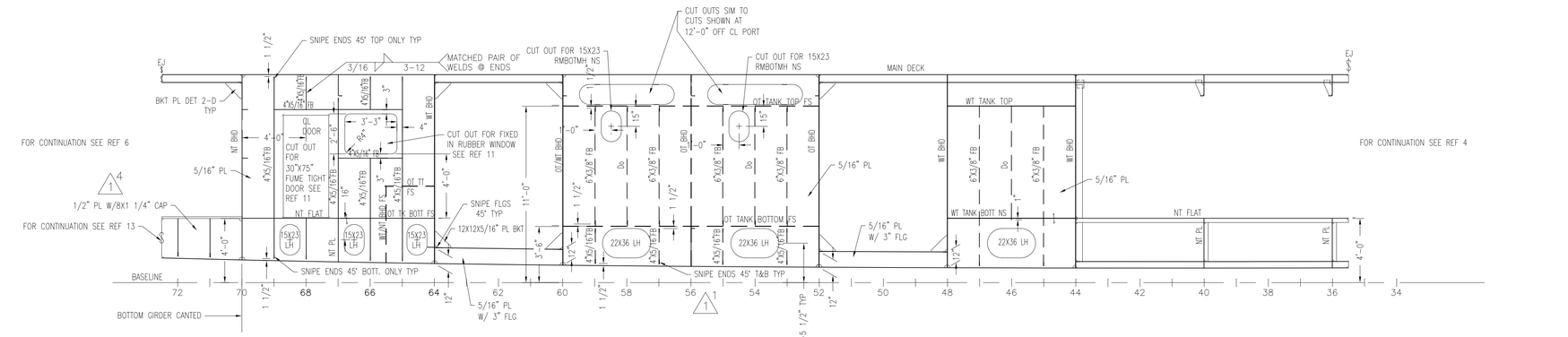
RESERVATIONS

1 ~~1.RESERVE ELEVATOR TRUNK PENDING VENDOR INFO~~



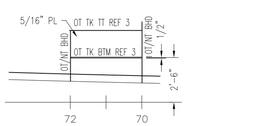
LONG'L SECTION AT 12'-0" OFF CL TO PORT

SHOWN LKG OUTBD



LONG'L SECTION AT 6'-0" OFF CL TO PORT

SHOWN LKG OUTBD



LONG'L SECTION AT 4'-0" OFF CL

PORT SHOWN LKG OUTBD
STBD SIM

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO SCALE NC PARTS OR PREPARE 3D MODELING.
2. INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR SCANTLING PLANS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. ALL MATERIAL SHALL BE ABS GRADE-A OR EQUIVALENT EXCEPT AS NOTED.
5. THE MAIN DECK HAS A MAXIMUM OF 6" STRAIGHT LINE CAMBER AFT OF FRAME 33 AND OUTBOARD OF THE 57" DECK KNUCKLE. WHERE THE BEAM IS LESS THAN MAXIMUM, THE CAMBER MAINTAINS THE SAME ANGLE. FORWARD OF FRAME 26, THE DECK HAS NO CAMBER.

NO.	REFERENCES	DWG NO.
14	SEA CHEST	163-01
13	MAIN ENGINE FOUNDATIONS	182-01
12	DECK FITTINGS	582-01
11	SCHEDULE OF OPENINGS, BELOW DECK	167-01
10	LINES PLAN	839-01
9	MOLD LINE CONVENTION	101-03
8	GENERAL ARRANGEMENTS	101-02
7	OUTBOARD & INBOARD PROFILE	101-01
6	CONSTRUCTION PROFILE & LONG'L BHDS, FR 72-STERN	116-03
5	SCANTLING PLANS, FR 72-STERN	110-03
4	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01
3	SCANTLING PLANS, BOW-FR. 35	110-01
2	FRAMES, FR. 36 - FR 72	117-02
1	SCANTLING PLANS, FR. 36 - FR 72	110-02

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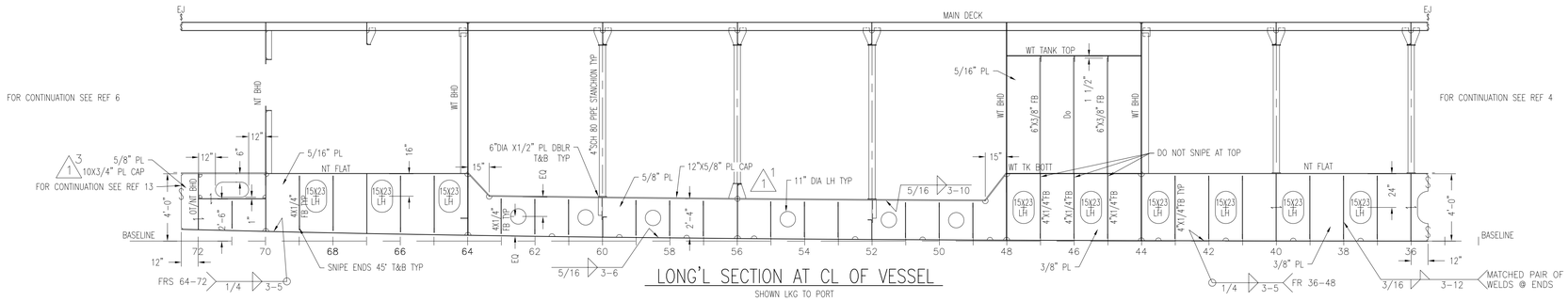
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

CONSTRUCTION PROFILE AND LONG'L BHDS FR 36 - FR 72

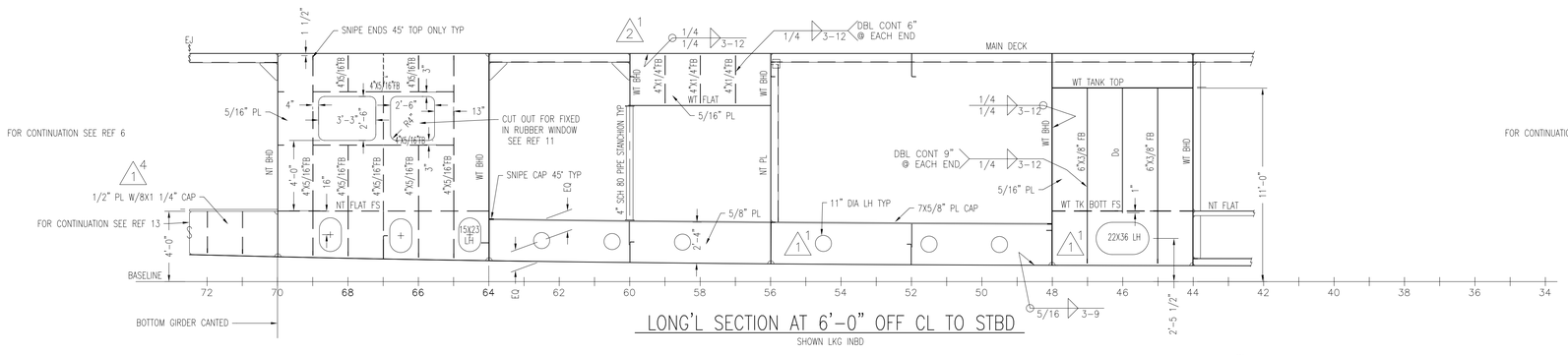
DRAWN BY:	B. JAMES	DATE: 12/31/09	DWG NO. 116-02 SHT 1 OF 2
CK'D BY:	KHK	HULL No. 413	
SCALE:	1/4"=1'-0"	G&C Job No. 09-060	REV. 2

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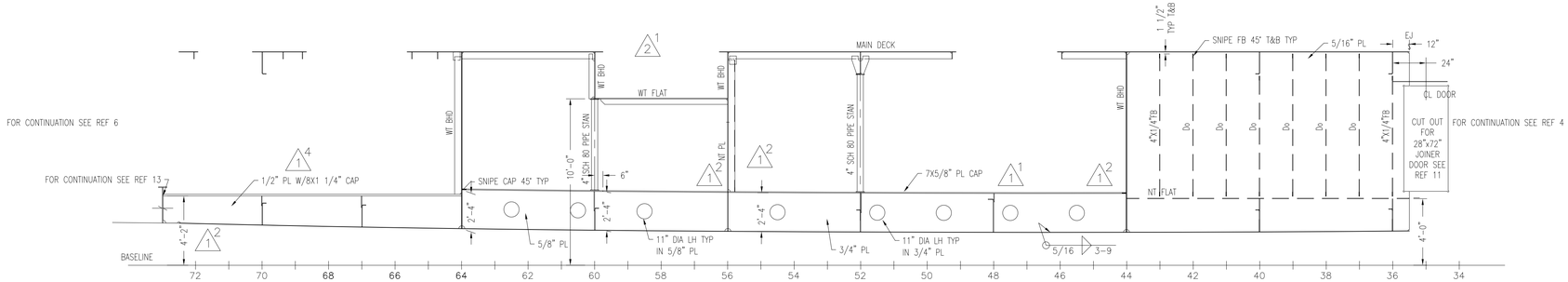
LONG'L SECTION AT CL OF VESSEL

SHOWN LKG TO PORT



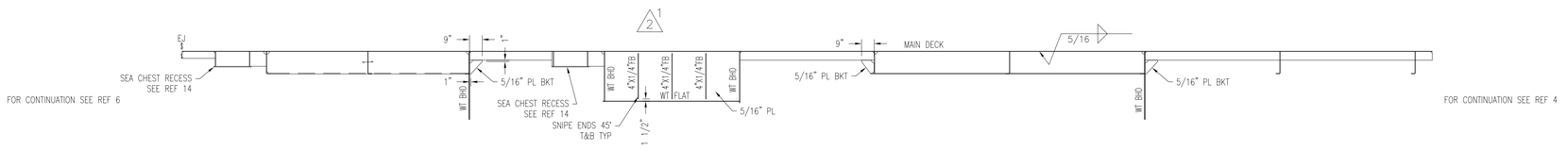
LONG'L SECTION AT 6'-0" OFF CL TO STBD

SHOWN LKG INBD



LONG'L SECTION AT 12'-0" OFF CL TO STBD

SHOWN LKG INBD



LONG'L SECTION AT 13'-0" OFF CL TO STBD

SHOWN LKG INBD

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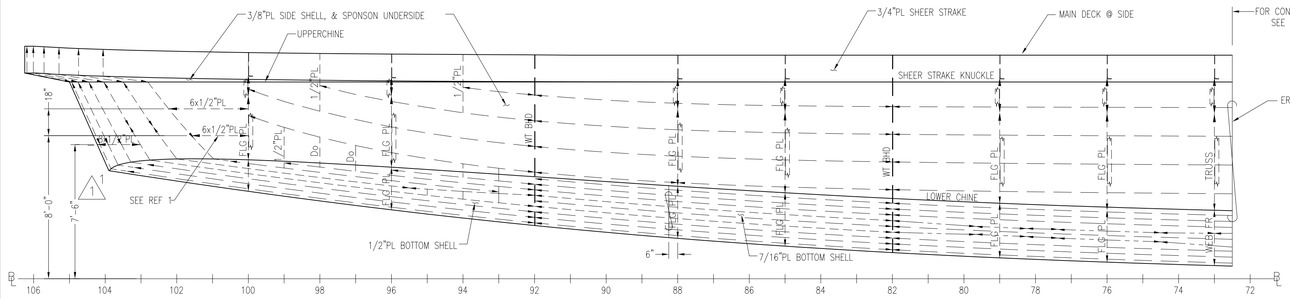
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

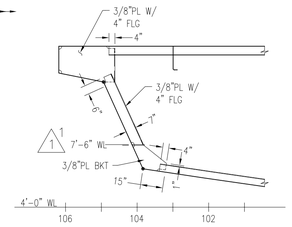
CONSTRUCTION PROFILE AND LONG'L BHDS
FR 36 – FR 72

DRAWN BY: B. JAMES	DATE: 12/31/09	DWG NO. 116-02
CK'D BY: KHK	HULL No. 413	SHT 2 OF 2
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 2



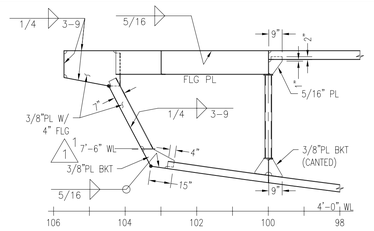
SIDE ELEVATION

FRAME 73 TO STERN
STBD SHOWN LKG INBD
SCALE: 1/4" = 1'-0"



DETAIL 3-D

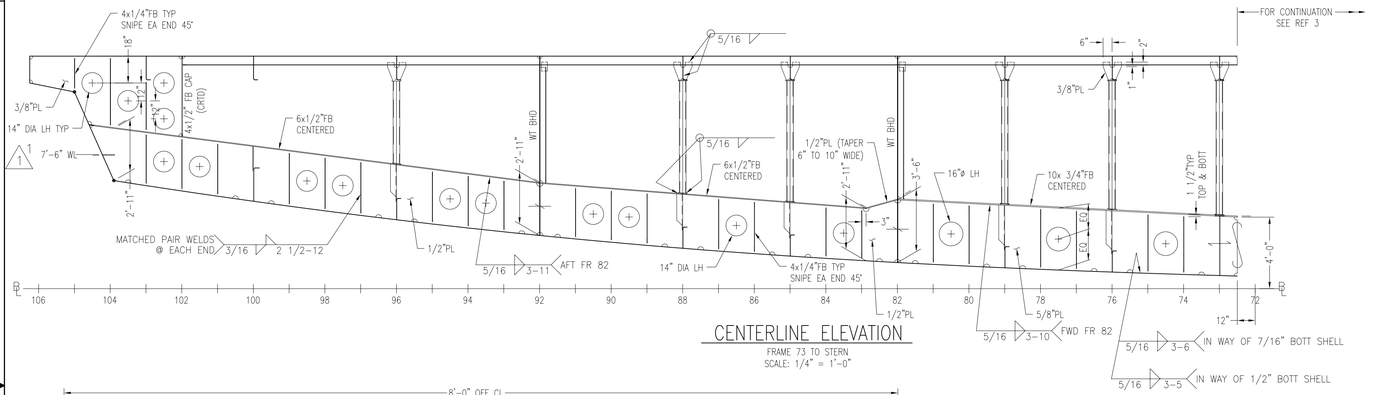
2'-0" OFF CL SHOWN
4'-0" OFF CL SIM
PORT SHOWN LKG OUTBD
SCALE: 1/4" = 1'-0"



DETAIL 2-D

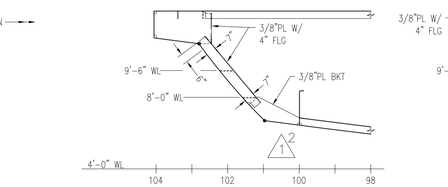
6-0" OFF CL
PORT SHOWN LKG OUTBD
SCALE: 1/4" = 1'-0"

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	VAR	1. ADDED HORIZ. PL HEADER ON TRANSOM @ 7'-6" ABL FROM CL TO GIRD @ 8'-0" OFF CL P/S.	03/16/10	CF / KK
	3-C	2. REVISED BOTTOM LONG'L @ 12'-0" OFF CL TO END @ FR 100 & REVISED TRANSOM STIFF BOTTOM BKT TO SUIT.		
	VAR	3. REVISED LOCATION OF RIDER PL @ INBD & OUTBD BOTTOM GIRDERS TO BE CENTERED ON THE MOLD LINE OF THE WEBS.		
2	5-A 5-B	1. REMOVED RESERVATION IN WAY OF ENGINE FOUNDATIONS PER VENDOR INFORMATION.	04/08/10	CF / KK
3	7-A 7-B	1. REMOVED RESERVATION IN WAY OF STRUT DETAILS. ADDED INDICATION OF STRUT LEGS.	7/2/10	MB/KK



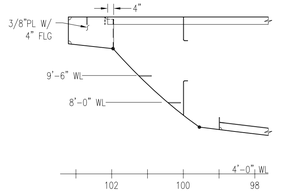
CENTERLINE ELEVATION

FRAME 73 TO STERN
SCALE: 1/4" = 1'-0"



DETAIL 3-C

12'-0" OFF CL
PORT SHOWN LKG OUTBD
SCALE: 1/4" = 1'-0"

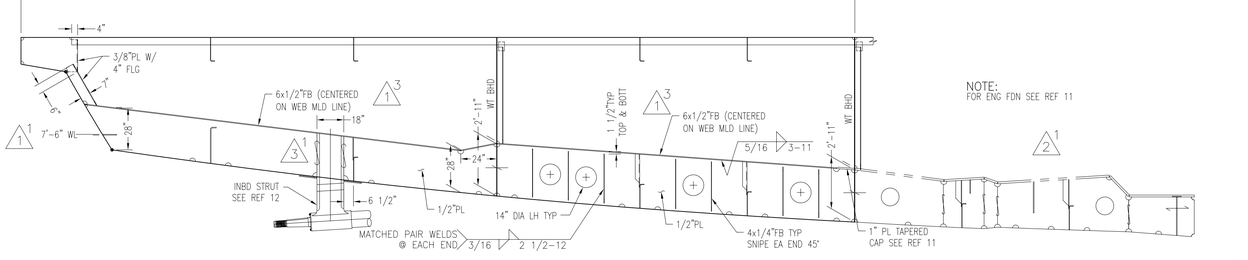


DETAIL 2-C

14'-0" OFF CL
PORT SHOWN LKG OUTBD
SCALE: 1/4" = 1'-0"

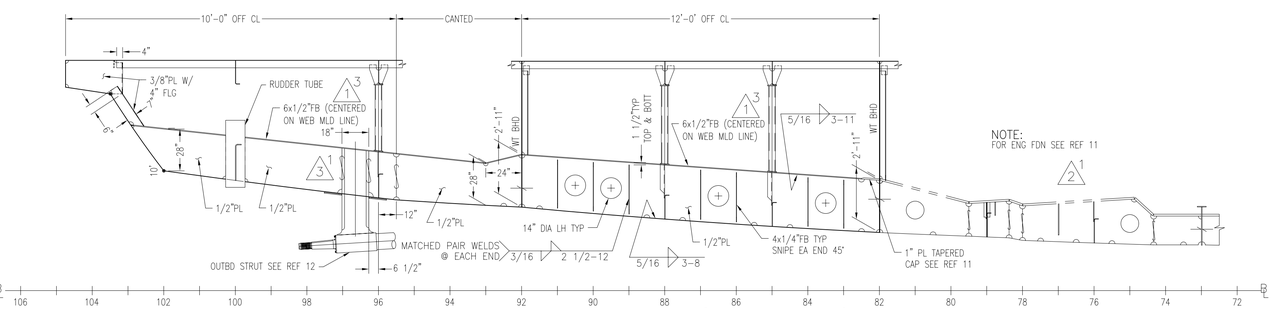
GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR SCANTLING PLANS & REFERENCE NO. 2 FOR TRANSVERSE SECTIONS.
4. TYP SNIPES, VENT & DRAIN HOLES TO BE A 2" RAD. ULESS OTHERWISE NOTED.
5. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.



INB'D GIRDER LONG'L SECTION

FRAME 73 TO STERN
SCALE: 1/4" = 1'-0"



OUTB'D GIRDER LONG'L SECTION

FRAME 73 TO STERN
SCALE: 1/4" = 1'-0"

RESERVATIONS:

3 ~~1. RESERVE STRUT DETAILS PENDING FINAL SHAFTLINE DEVELOPMENT.~~

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING
07069-001-120-2
07069-001-120-5

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NO.	REFERENCES	DWG NO.
12	STRUT DETAILS	114-02
11	MAIN ENGINE FOUNDATION	182-01
10	MACHINERY SPACE VENTILATION	513-01
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	LINES PLAN	839-01
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
4	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-FR. 72	116-02
3	SCANTLING PLANS, FR. 36-FR. 72	110-02
2	FRAMES, FR. 73-STERN	117-03
1	SCANTLING PLANS, FR. 73- STERN	110-03

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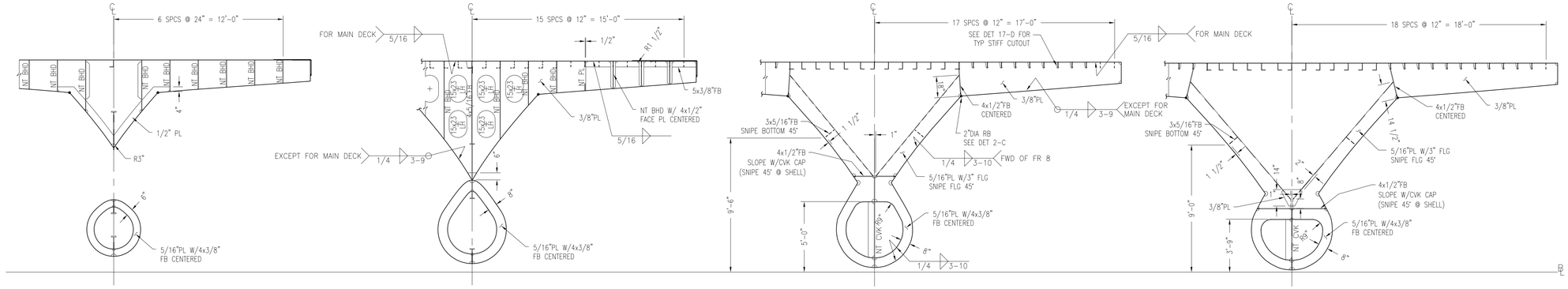
NORTH CAROLINA DOT FERRY DIVISION

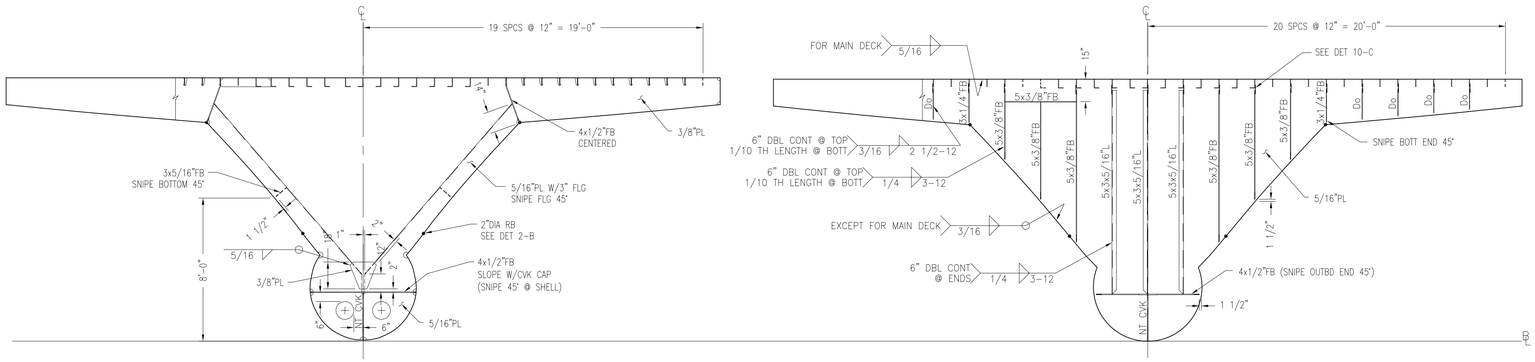
NEW SOUND CLASS FERRY

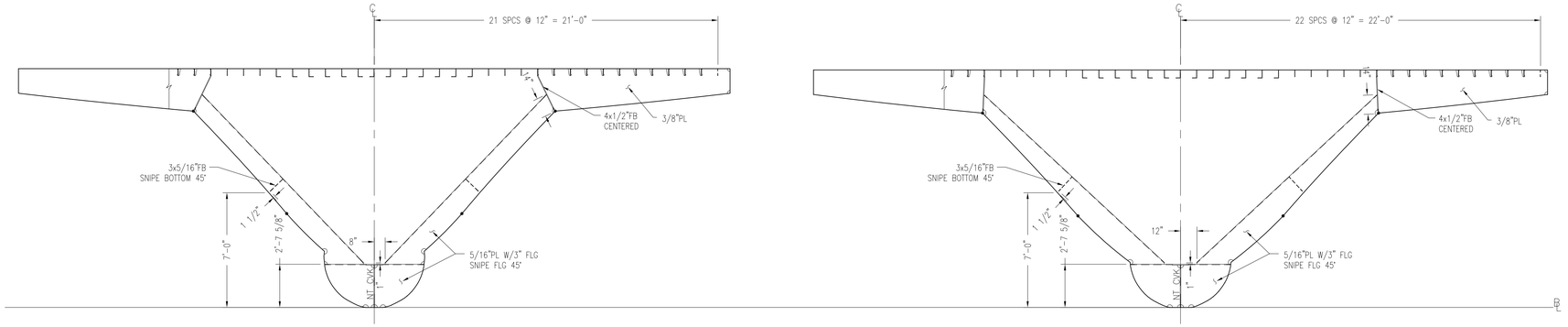
CONSTRUCTION PROFILE & LONG'L BHDS, FR. 73-STERN

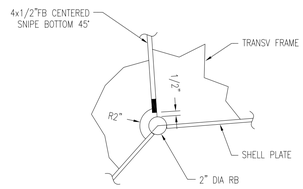
DRAWN BY: C FIELDS	DATE: 02-19-10	DWG NO. 116-03 SHT 1 OF 1
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4" = 1'-0"	G&C Job No. 09-060	REV. 3

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD

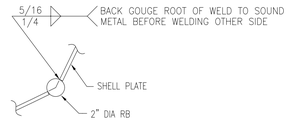








DETAIL 2-C
UPPER CHINE @ FR. 1,2,3,5,6,&7
SCALE: 1 1/2"=1'-0"



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

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR SCANTLING PLANS.
4. TYP SNIPES, VENT & DRAIN HOLES TO BE A 2" RAD. UNLESS OTHERWISE NOTED.
5. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED
6. WHERE LONG'L BEAMS PASS THROUGH SLOTTED FRAMES, BHDS, OR GIRDERS, THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF EACH SUCH INTERSECTION.

RESERVATIONS

1. RESERVE BOW THRUSTER ENGINE FOUNDATION PENDING BOW THRUSTER ENGINE VENDOR INFORMATION.
2. RESERVE EXHAUST THRU-HULL PENETRATION PENDING BOW THRUSTER ENGINE VENDOR INFORMATION.

NO.	REFERENCES	DWG NO.
10	BOW THRUSTER INSTALLATION	568-01
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	LINES PLAN	839-01
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
4	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-FR. 72	116-02
3	SCANTLING PLANS, FR. 36-FR. 72	110-02
2	SCANTLING PLANS, BOW-FR.35	110-01
1	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01

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NORTH CAROLINA DOT FERRY DIVISION

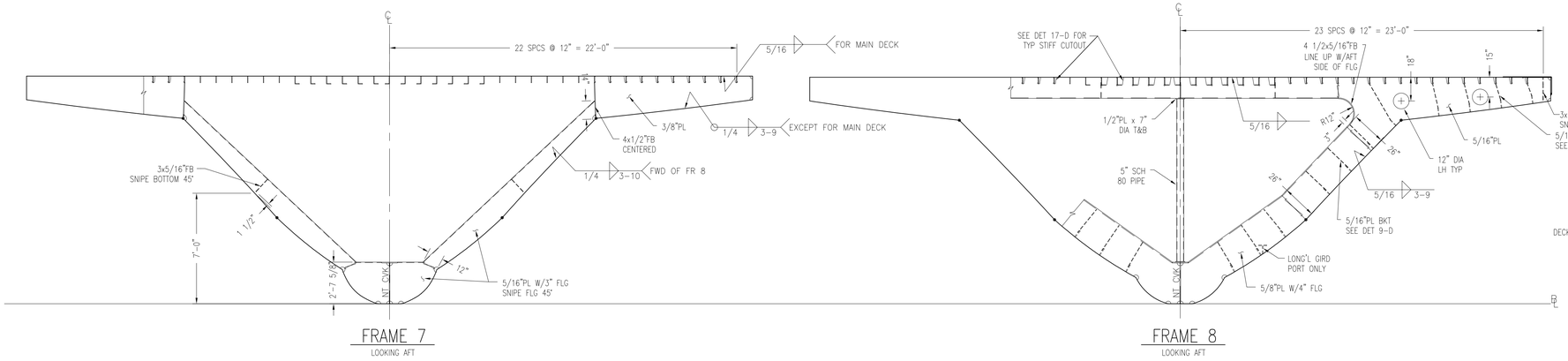
NEW SOUND CLASS FERRY

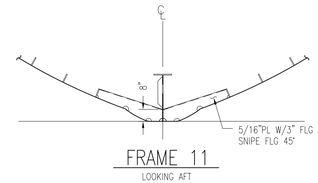
FRAMES, BOW – FR. 35

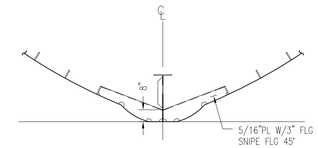
DRAWN BY: C FIELDS	DATE: 12-10-09	DWG NO. 117-01 SHT 1 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'=0"	G&C Job No. 09-060	REV. 0

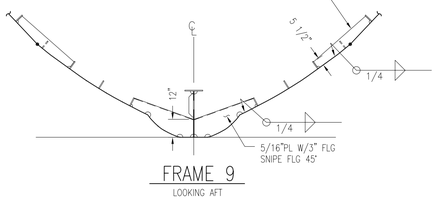
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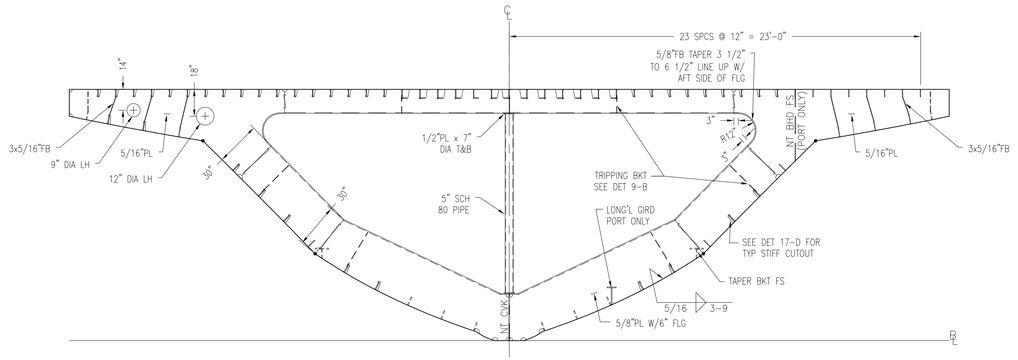
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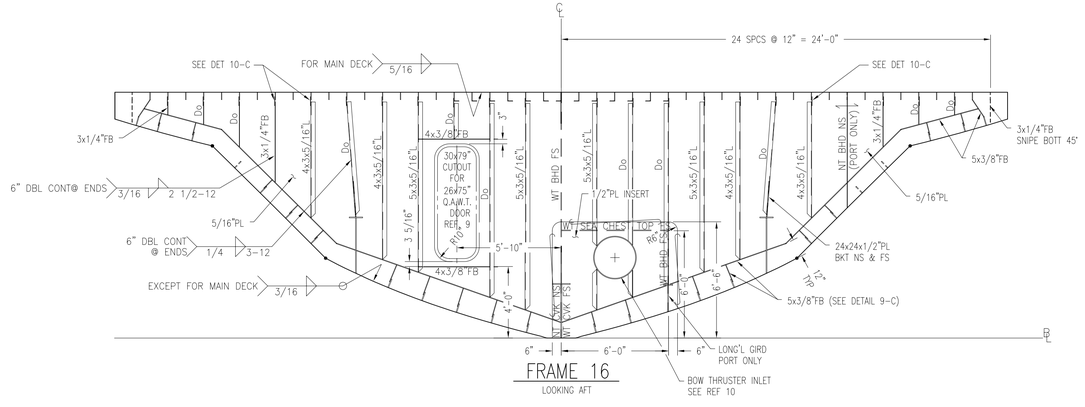


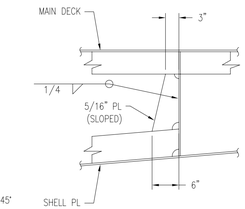


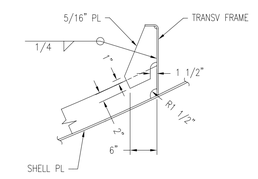


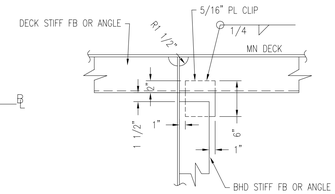


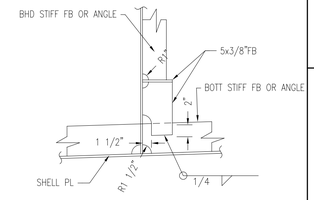


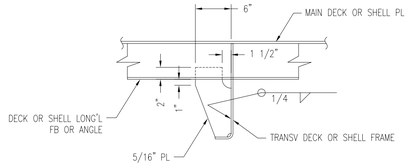












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COVINGTON LA. 70433

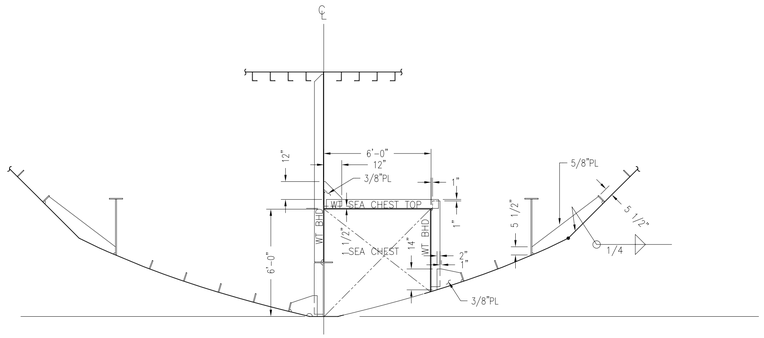
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

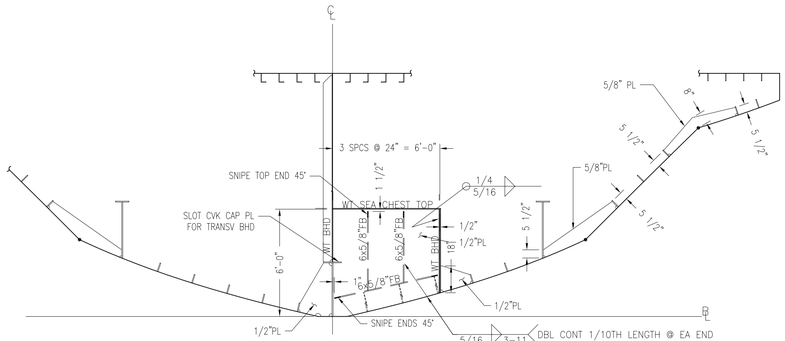
FRAMES, BOW – FR. 35

DRAWN BY: C FIELDS	DATE: 12–10–09	DWG NO. 117–01 SHT 2 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'–0"	G&C Job No. 09–060	REV. 0



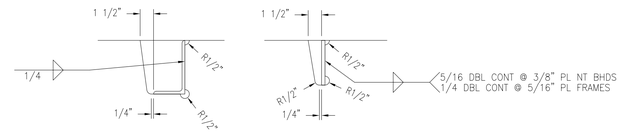
FRAME 17

LOOKING AFT



FRAME 18

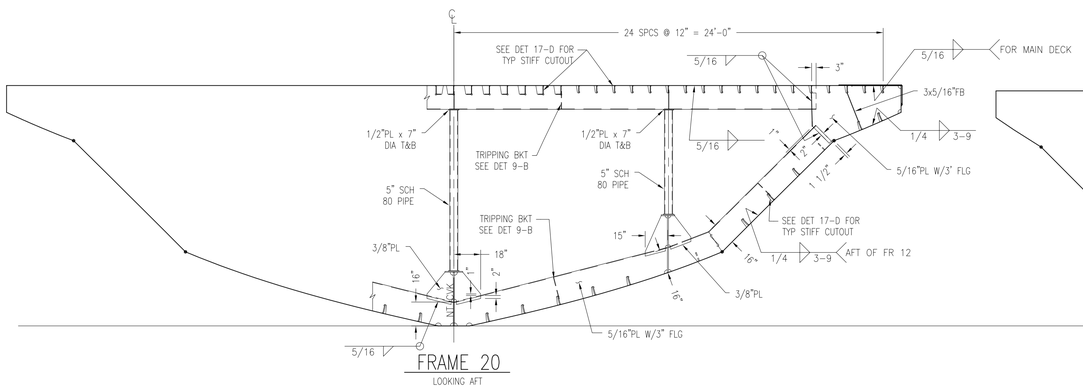
LOOKING AFT



DETAIL 17-D

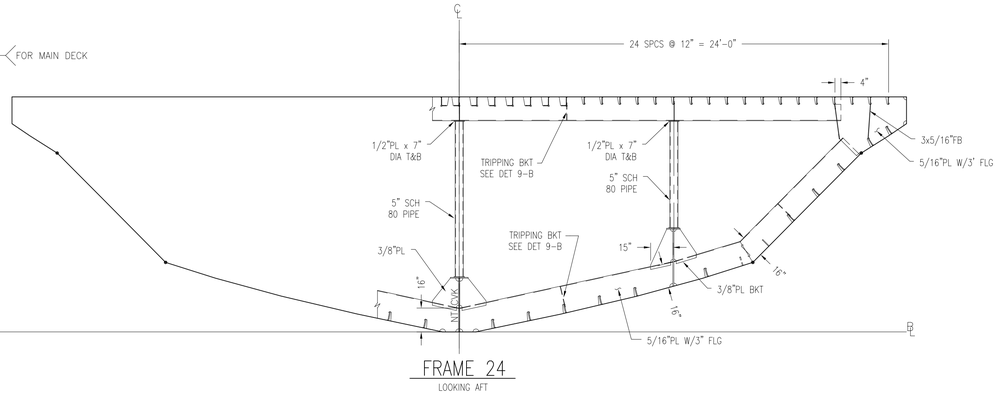
TYP STIFFENER CUTOUT

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



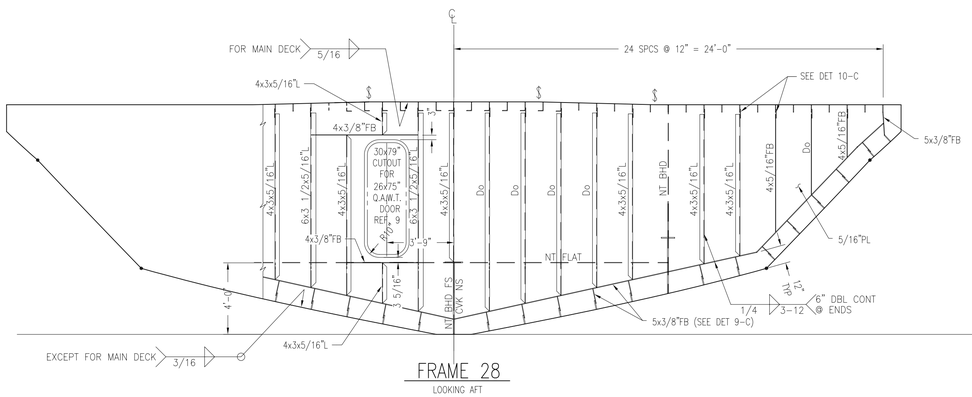
FRAME 20

LOOKING AFT



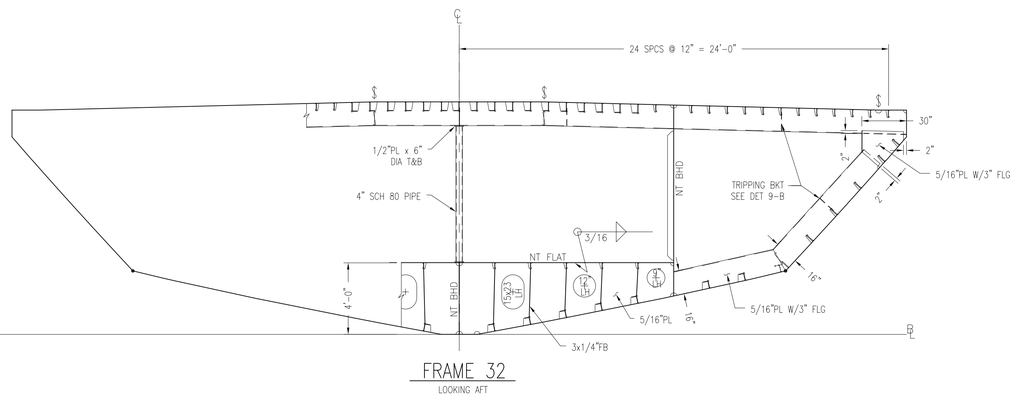
FRAME 24

LOOKING AFT



FRAME 28

LOOKING AFT



FRAME 32

LOOKING AFT

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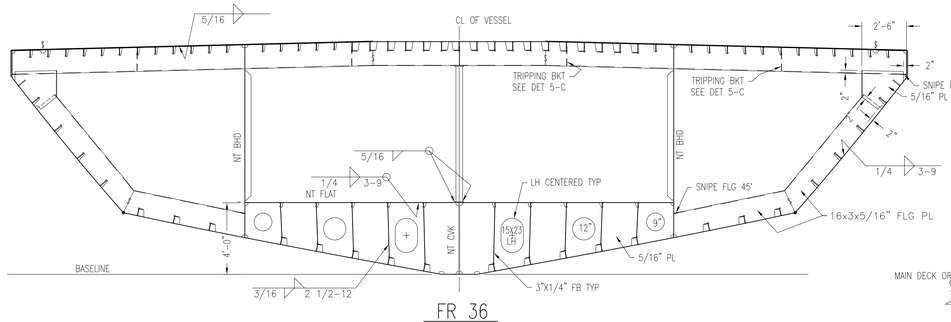
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

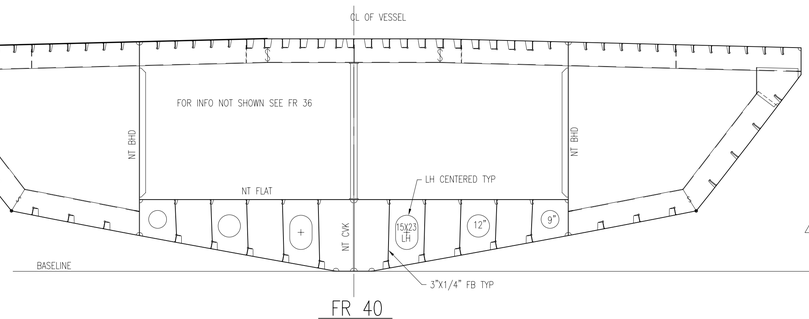
FRAMES, BOW – FR. 35

DRAWN BY: C FIELDS	DATE: 12-10-09	DWG NO. 117-01 SHT 3 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 0

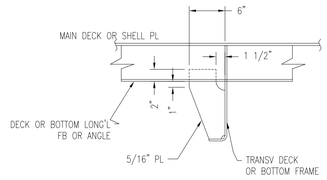
REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	VAR	1.REV MN DK FLG PLS AT CL, AT FRS 52,56,60, &67 TO BE 16" AT BHDS TO ELIMINATE SEAM IN FLG PL. 2.DELETED FB AT FR 44 IN WAY OF FLG PL AT DECK 3.ELIMINATED KNUCKLE IN BHD STIFF AT FR 44 BELOW TT 4.REV STIFF AT FR 60 TO BE NS 5.SHOW BKT AT FR 56 12'-0" OFF CL STBD 6.REV SIZE OF STBD BOTTOM FLG PL AT FR 48 TO 24X4X3/8" AND REV HEIGHT OF LONGL GIRDER AT 12'-0" OFF CL STBD SIDE AT FRS 48,52,56,64,67,&70.	2/19/10	BJ/KK
2	VAR	1. REMOVED RESV #1 & #3.	3/23/10	KK



FR 36



FR 40



DETAIL 5-C

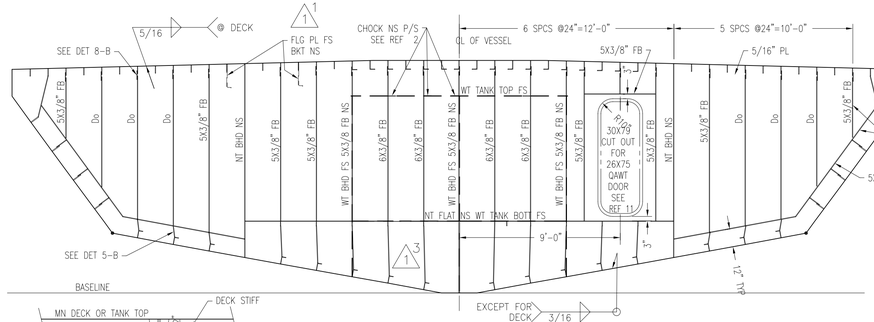
TYP DECK OR BOTTOM FRAME TRIPPING BRACKET
SCALE: 1"=1'-0"

RESERVATIONS

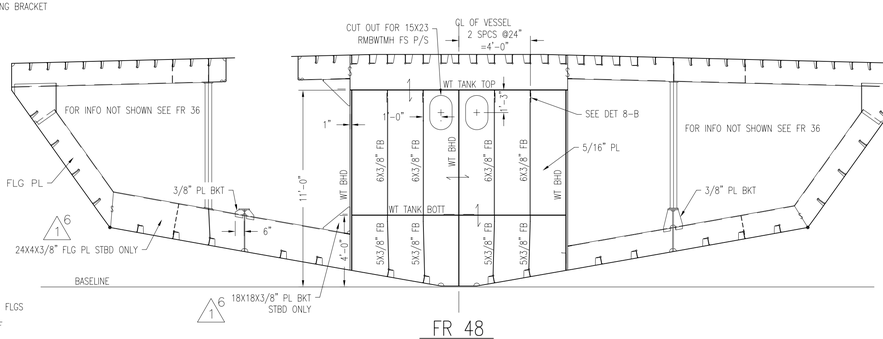
1 2
1.RESERVE ELEVATOR TRUNK PENDING VENDOR INFO.
2.RESERVE ENGINE GIRDERS PENDING FINAL VENDOR INFO. AND DEVELOPMENT OF REF 5&6
3.RESERVE DECK IN WAY OF VENT FANS PENDING DEVELOPMENT OF REF #12.

GENERAL NOTES

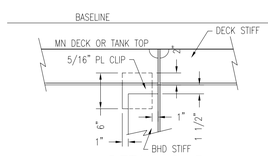
1. THIS DRAWING SHOULD NOT BE USED TO SCALE NC PARTS OR PREPARE 3D MODELING.
2. INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR SCANTLING PLANS
4. ALL FRAMES VIEWED LOOKING AFT.
5. TYP SNIPES, VENT & DRAIN HOLES TO BE A 2" RAD. UNLESS OTHERWISE NOTED.
6. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED
7. WHERE LONG'L BEAMS PASS THROUGH SLOTTED FRAMES, BHDS, OR GIRDERS, THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF EACH SUCH INTERSECTION.



FR 44

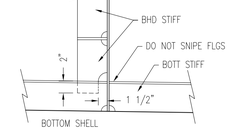


FR 48



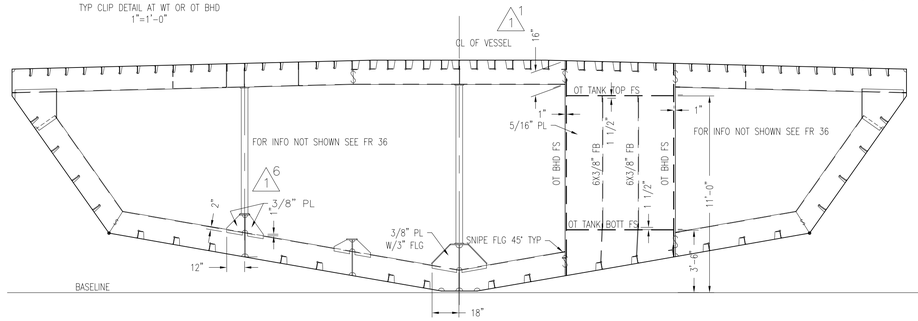
DETAIL 8-B

TYP CLIP DETAIL AT WT OR OT BHD
1"=1'-0"

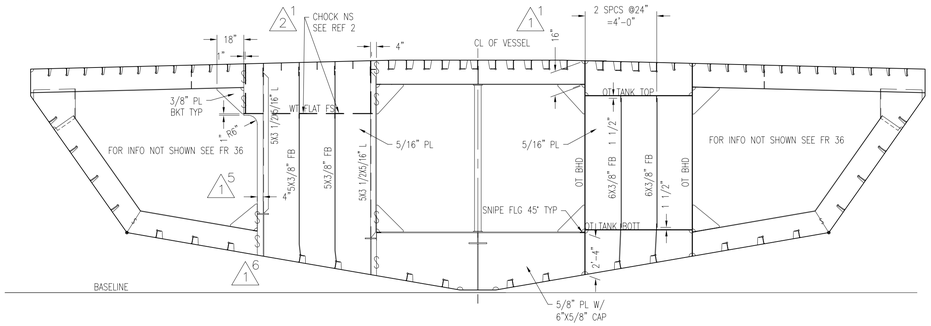


DETAIL 5-B

TYP CLIP DETAIL AT BOTTOM SHELL IN WAY OF WT OR OT BHD
1"=1'-0"



FR 52



FR 56

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NO.	REFERENCES	DWG NO.
12	MACHINERY SPACE VENTILATION	513-01
11	SCHEDULE OF OPENINGS, BELOW DECK	167-01
10	LINES PLAN	839-01
9	MOLD LINE CONVENTION	101-03
8	GENERAL ARRANGEMENTS	101-02
7	OUTBOARD & INBOARD PROFILE	101-01
6	CONSTRUCTION PROFILE & LONG'L BHDS, FR 72-STERN	116-03
5	SCANTLING PLANS, FR 72-STERN	110-03
4	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01
3	SCANTLING PLANS, BOW-FR. 35	110-01
2	SCANTLING PLANS FR 36 - FR 72	116-02
1	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36-72	116-02

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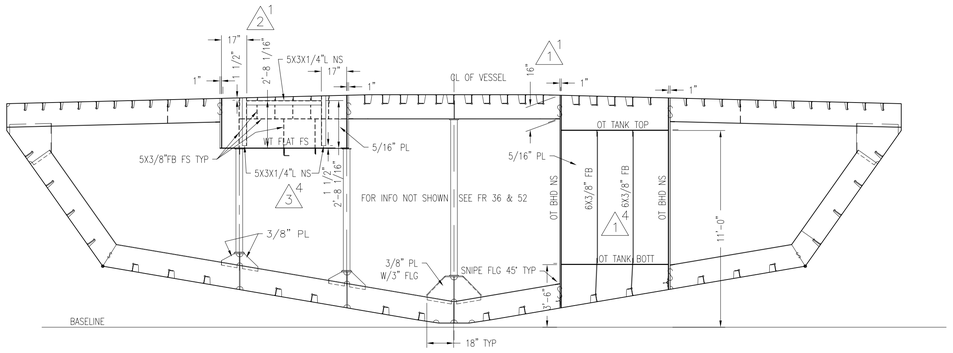
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

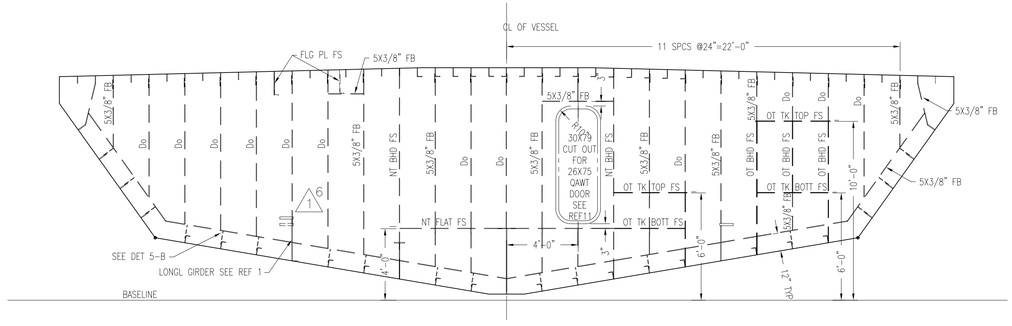
NEW SOUND CLASS FERRY

FRAMES
FR 36 – FR 72

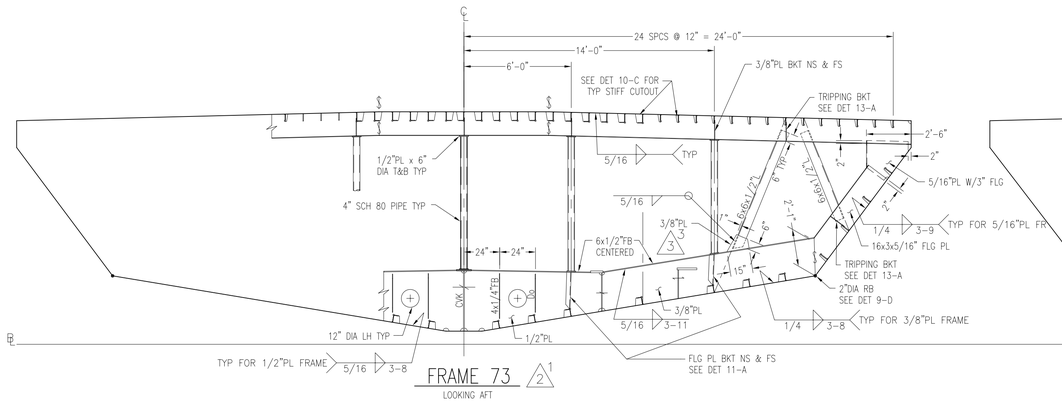
DRAWN BY: B. JAMES	DATE: 12/31/09	DWG NO.	117-02
CK'D BY: KHK	HULL No. 413	SHT 1 OF 2	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 2	

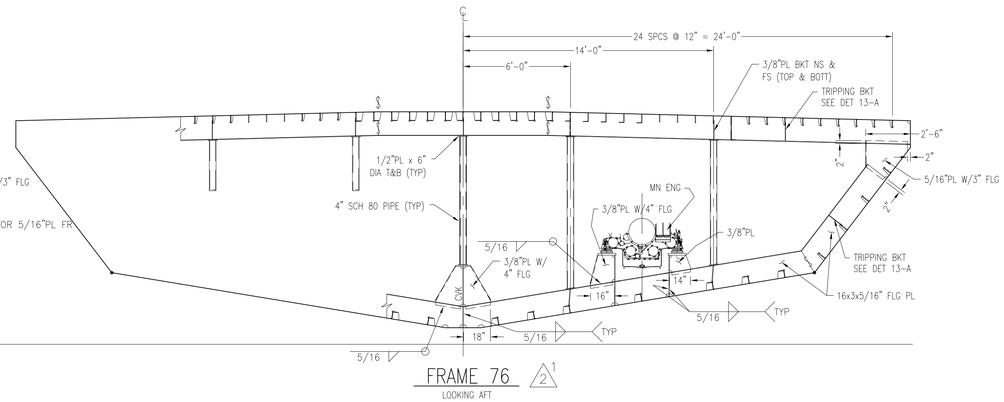


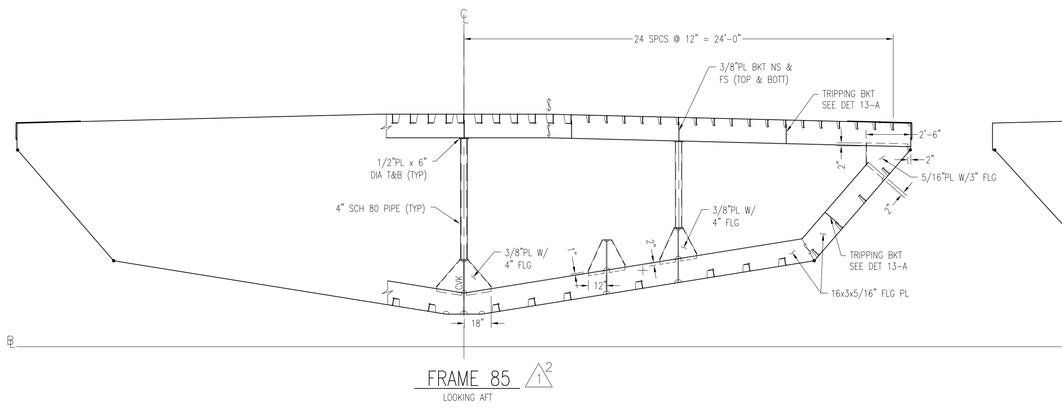
FR 60

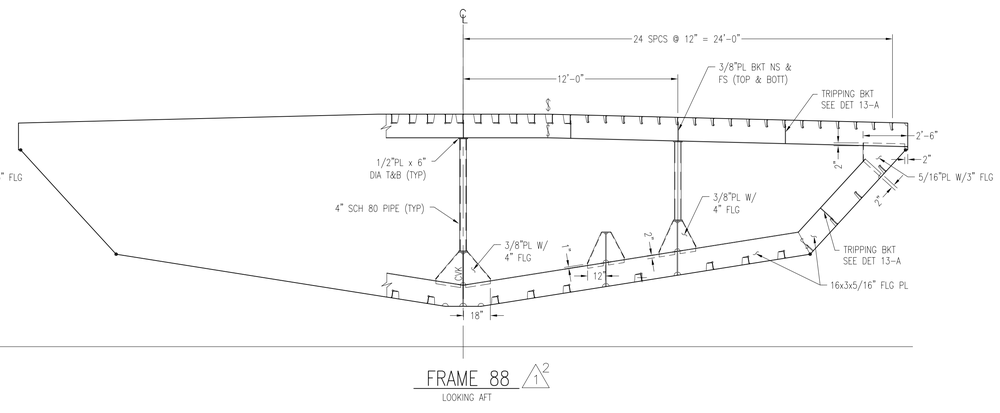

QL OF VESSEL
11 SPCS @24"=22'-0"
FLG PL FS
5X3/8" FB
5X3/8" FB
5X3/8" FB

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	12–B VAR	1. REVISED BOTTOM LONG'L 12'–0" OFF CL TO STOP @ FR 100 & DELETED CUTOUT IN FRAME TO SUIT. 2. AFT OF FR 82 REVISED LOCATION OF RIDER PL @ INBD & OUTBD BOTTOM GIRDERS TO BE CENTERED ON THE MOLD LINE OF THE WEBS.	03/16/10	CF KK
2	VAR	1. REVISED FRAMES 73, 76, 79 & 82 IN WAY OF ENGINE FDN PER ENGINE FOUNDATION DEVELOPMENT.	04/08/10	CF KK
3	12–C 2–B 6B&D	1. ADDED RUDDER STOP SUPPORT STRUCTURE @ FR 100. 2. ADDED REF 13. 3. REV WIDTH OF OUTBD ENG GIRD RIDER PL @ FR 73 & 79.	7/2/10	MB/KK









GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. MAIN DECK INSERT PLATES SHALL BE INSTALLED WITH THE TOP FLUSH WITH THE DECK PLATING.
3. SEE REFERENCE NO. 1 FOR LONG'L SECTIONS & REFERENCE NO. 2 FOR SCANTLING PLANS.
4. TYP SNIPES, VENT & DRAIN HOLES TO BE A 2" RAD. UNLESS OTHERWISE NOTED.
5. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED
6. WHERE LONG'L BEAMS PASS THROUGH SLOTTED FRAMES, BHDS, OR GIRDERS, THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF EACH SUCH INTERSECTION.

3 2

NO.	REFERENCES	DWG NO.
13	STEERING ARRANGEMENT	561–01
12	RUDDER ARRANGEMENT	562–01
11	SHAFT ARRANGEMENT	243–01
10	MAIN ENGINE FOUNDATIONS	182–01
9	SCHEDULE OF OPENINGS, BELOW DECK	167–01
8	LINES PLAN	839–01
7	MOLD LINE CONVENTION	101–03
6	GENERAL ARRANGEMENTS	101–02
5	OUTBOARD & INBOARD PROFILE	101–01
4	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 36–FR. 72	116–02
3	SCANTLING PLANS, FR. 36–FR. 72	110–02
2	SCANTLING PLANS, FR. 73–STERN	110–03
1	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 73–STERN	116–03

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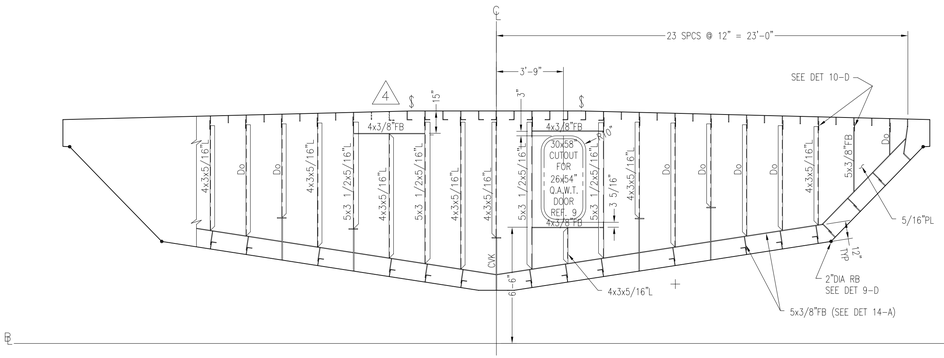
NEW SOUND CLASS FERRY

FRAMES, FR. 73–STERN

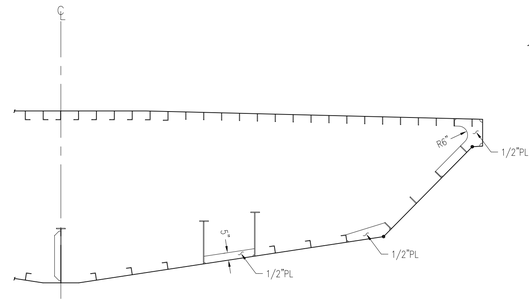
DRAWN BY: C FIELDS	DATE: 02–19–10	DWG NO. 117–03 SHT 1 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4" = 1'–0"	G&C Job No. 09–060	REV. 3

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069–001–120–1

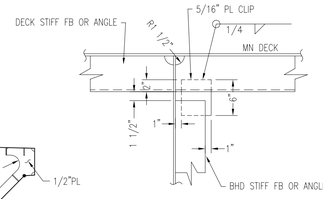
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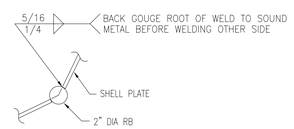
FRAME 92 △1,2
LOOKING AFT



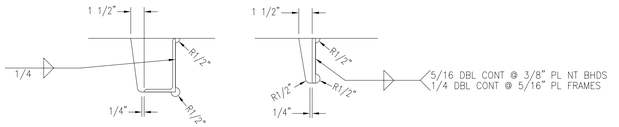
FRAME 94 △1,2
LOOKING AFT



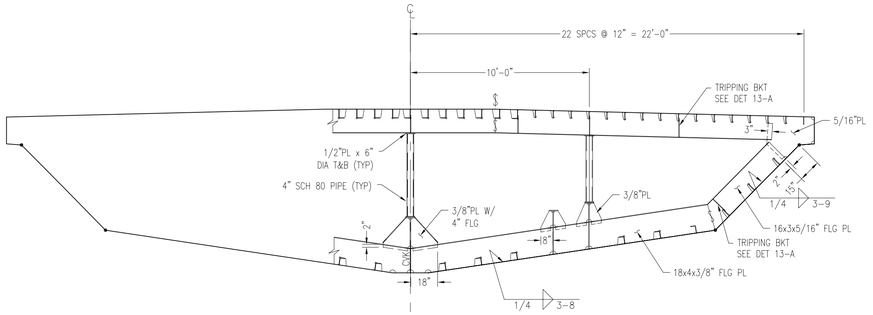
DETAIL 10-D
TYP CLIP DETAIL AT DECK IN WAY OF WT BHD
SCALE: 1"=1'-0"



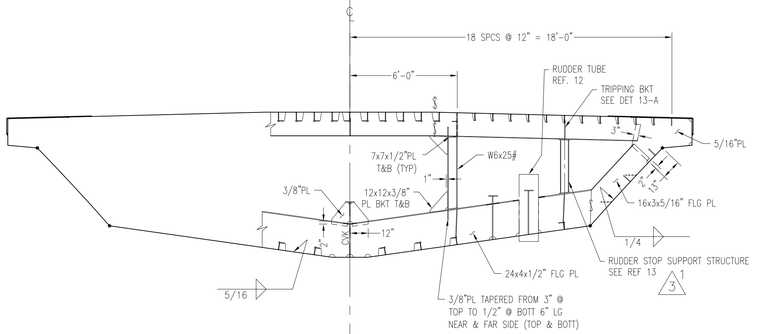
DETAIL 9-D
CHINE BAR
SCALE: 1 1/2"=1'-0"



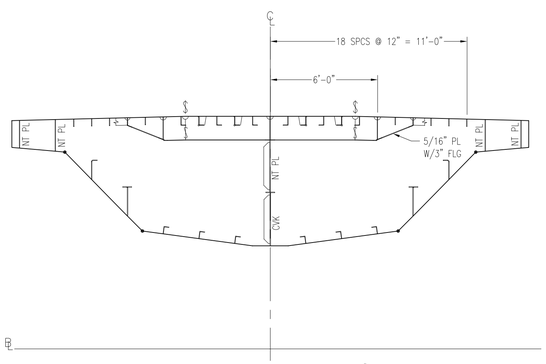
DETAIL 10-C
TYP STIFFENER CUTOUT
SCALE: 1 1/2"=1'-0"



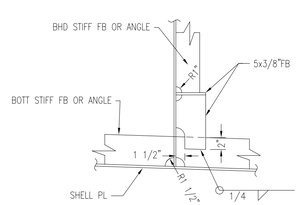
FRAME 96 △1,2
LOOKING AFT



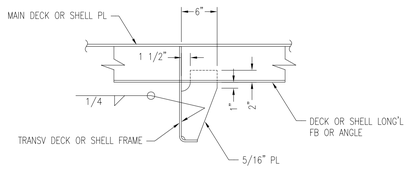
FRAME 100 △1,1,2
LOOKING AFT



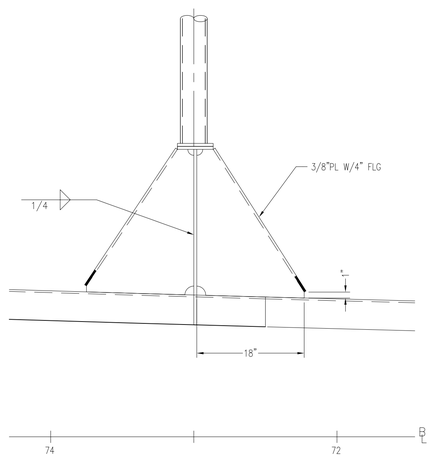
FRAME 103 △1,2
LOOKING AFT



DETAIL 14-A
TYP CLIP DETAIL AT BOTTOM SHELL IN WAY OF WT BHD
SCALE: 1"=1'-0"



DETAIL 13-A
TYP DECK OR BOTTOM FRAME TRIPPING BRACKET
SCALE: 1"=1'-0"



DETAIL 11-A
SCALE: 1"=1'-0"

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A CONRAD INDUSTRIES CO.
710 MARKET STREET-ORANGE, TEXAS 77630
PHONE 409-883-6666 FAX 409-882-0609

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19399 HELENBIRG RD. SUITE 203
COVINGTON LA. 70433

ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

FRAMES, FR. 73-STERN

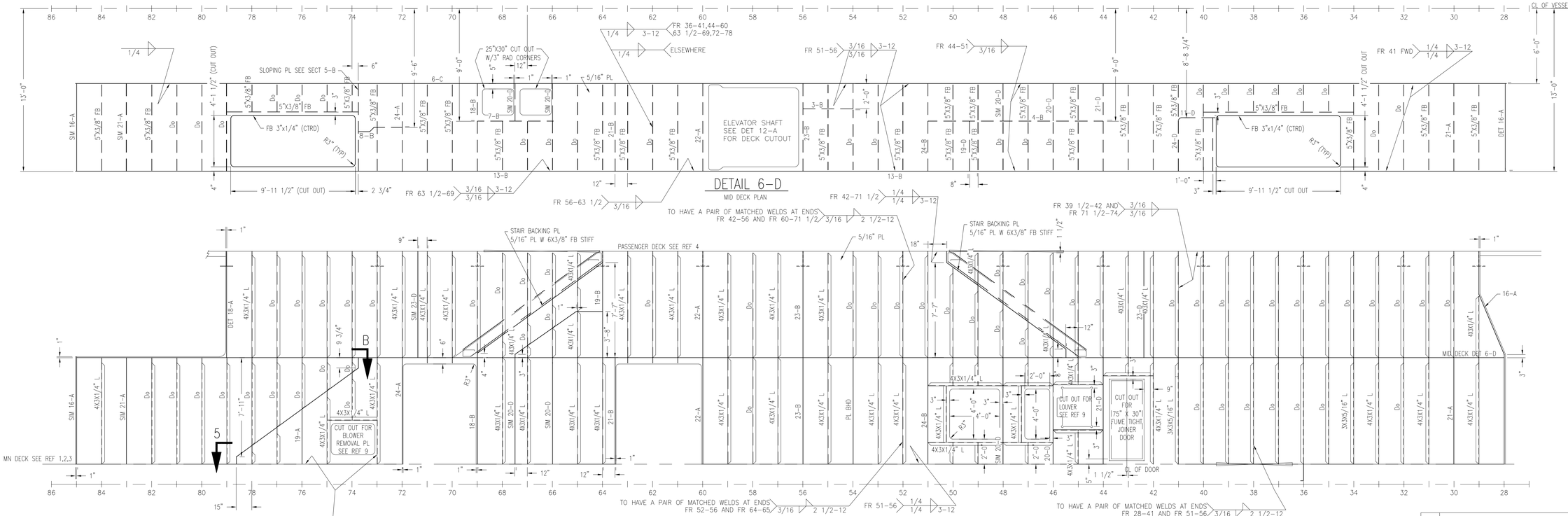
DRAWN BY: C FIELDS	DATE: 02-19-10	DWG NO. 117-03 SHT 2 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4" = 1'=0"	G&C Job No. 09-060	REV. 4

GENERAL NOTES

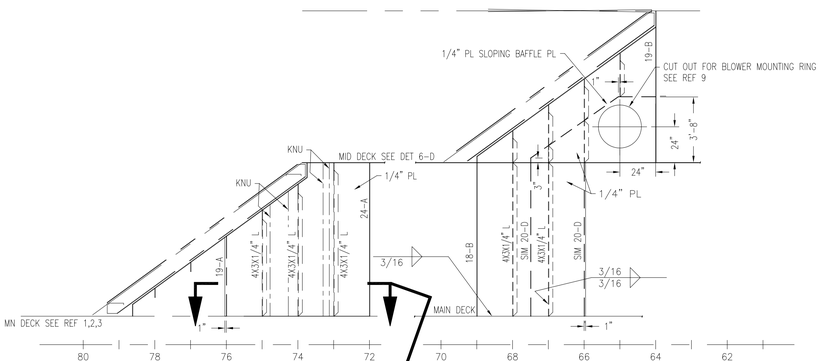
1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. ALL WELDING EXPOSED TO THE WEATHER TO BE DOUBLE CONTINUOUS.
3. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	ALL	OVERALL REVISION TO AGREE WITH GENERAL ARRANGEMENT DWG 101-02 REV 7, PER ADDITION OF ENCLOSED STAIRTOWER.	7/29/10	MB/BJ

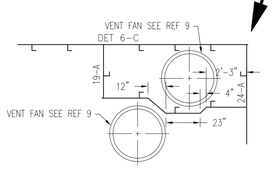


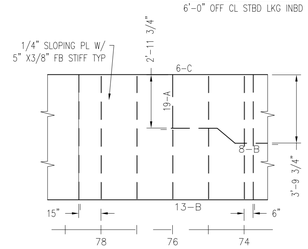
DETAIL 6-C
6'-0" OFF CL STBD LKG INBD



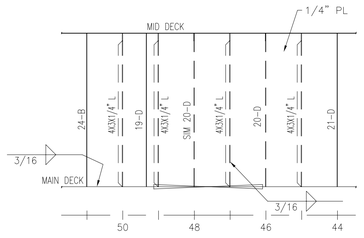
DETAIL 8-B
KNUCKLED BHD STBD LKG INBD

DETAIL 7-B
9'-0" OFF CL STBD LKG INBD

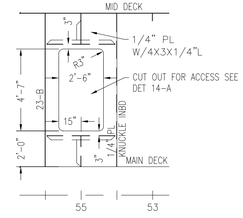




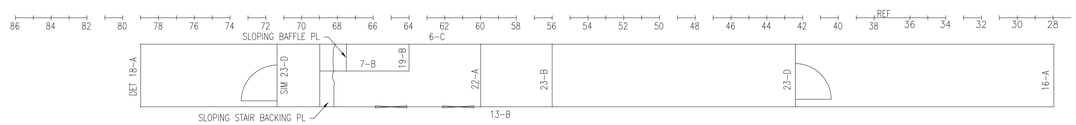
SECTION 5-B
SLOPING STAIR BACK PL



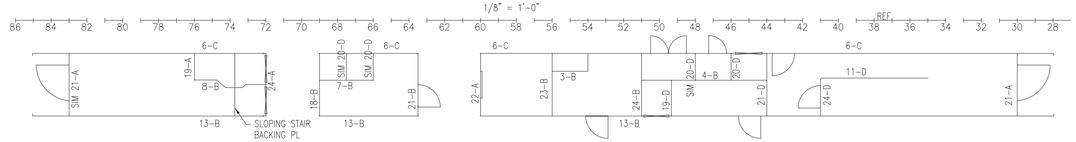
DETAIL 4-B
9'-0" OFF CL STBD LKG INBD



DETAIL 3-B
8'-0" OFF CL STBD LKG INBD



KEY PLAN ABV MID DECK
1/8" = 1'-0"



KEY PLAN BLW MID DECK
1/8" = 1'-0"

NO.	REFERENCES	DWG NO.
14		
13		
12		
11		
10	ELEVATOR INSTALLATION	589-01
9	MACHINERY SPACE VENTILATION	513-01
8	HANDRAILS AND LADDERS, ABOVE DECK	612-02
7	MOLD LINE CONVENTION	101-03
6	GENERAL ARRANGEMENTS	101-02
5	OUTBOARD & INBOARD PROFILE	101-01
4	PASSENGER DECK SCANTLINGS	152-02
3	SCANTLING PLANS, FR 73-STERN	110-03
2	SCANTLING PLANS, FR. 36 - FR 72	110-02
1	SCANTLING PLANS, BOW-FR. 35	110-01

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ORANGE SHIPBUILDING CO. INC.

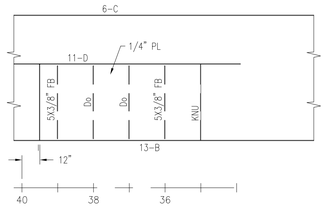
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

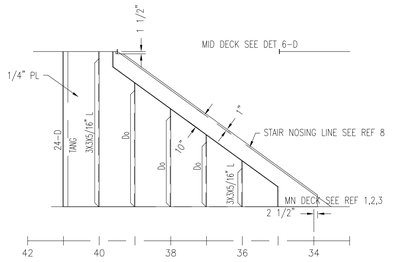
MID-DECK STRUCTURE

DRAWN BY: B. JAMES	DATE: 1/28/2010	DWG NO.	152-01
CK'D BY: KHK	HULL No. 413	SHT 1 OF 3	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1	

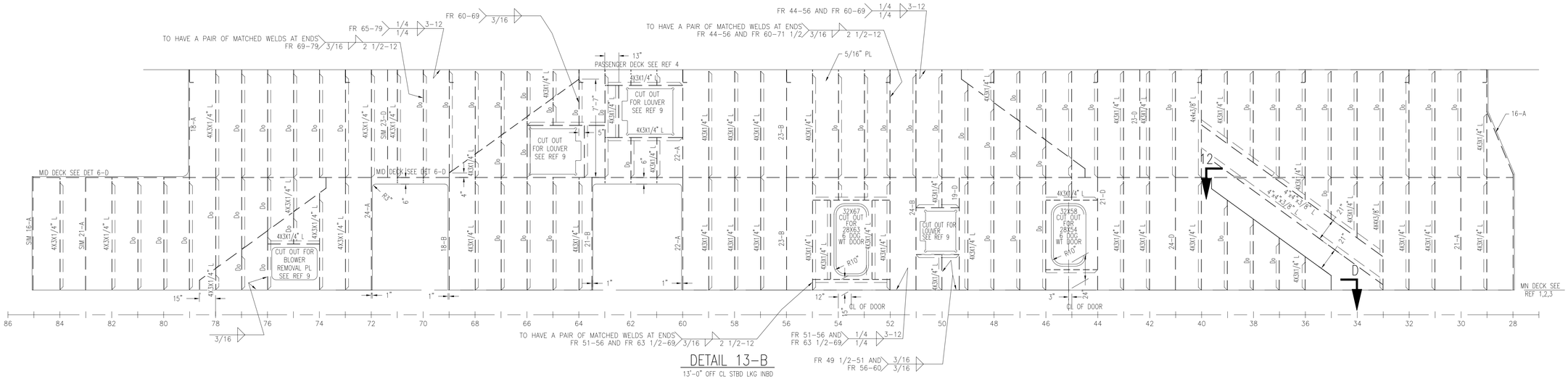
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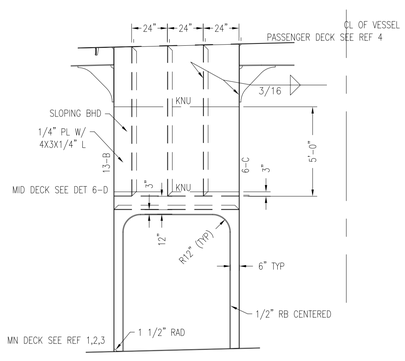
SECTION 12-D
SLOPING STAIR BACK PL



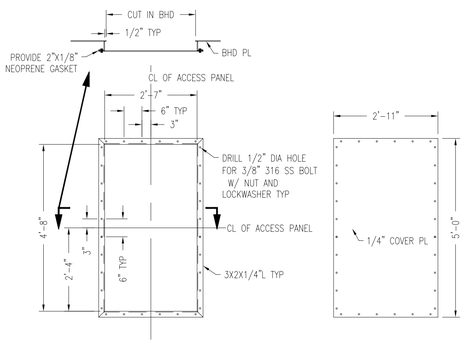
DETAIL 11-D
8'-8 3/4" OFF CL STBD LKG INBD



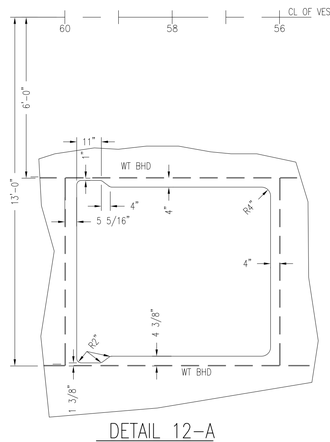
DETAIL 13-B
13'-0" OFF CL STBD LKG INBD



DETAIL 16-A
FWD STAIRTOWER BHD LKG AFT



DETAIL 14-A
PIPE TRACE ACCESS PANEL
1/2"=1'-0"



DETAIL 12-A
DECK CUTOUT IN WAY OF ELEVATOR PIT
3/8"=1'-0"

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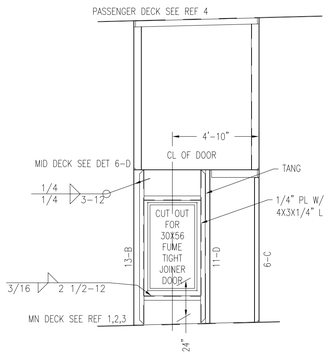
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NEW SOUND CLASS FERRY

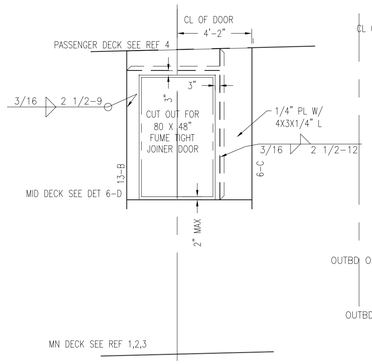
MID-DECK STRUCTURE

DRAWN BY: B. JAMES	DATE: 1/28/2010	DWG NO. 152-01 SHT 2 OF 3	
CK'D BY: KHK	HULL No. 413		
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1	



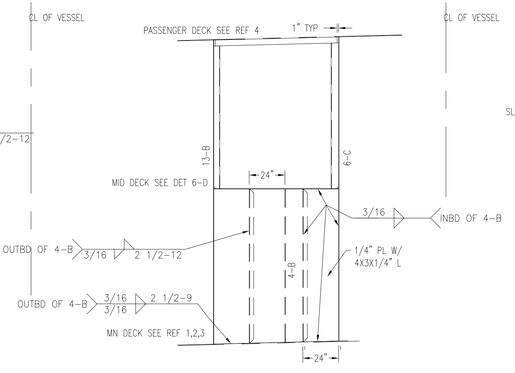
DETAIL 24-D

FR 41 LKG AFT



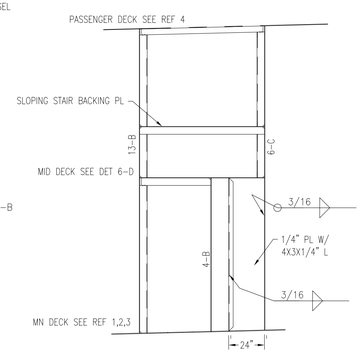
DETAIL 23-D

BHD 9" AFT FR 42 LKG AFT
BHD 9" AFT OF FR 71 SIM



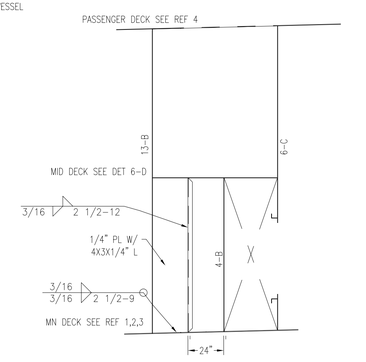
DETAIL 21-D

FR 44 LKG AFT



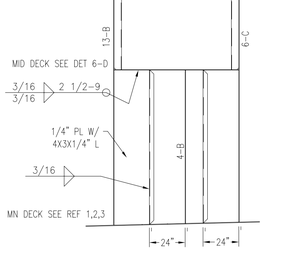
DETAIL 20-D

FR 46 SHOWN LKG AFT FR 48,66& 12" AFT OF FR 67 SIM



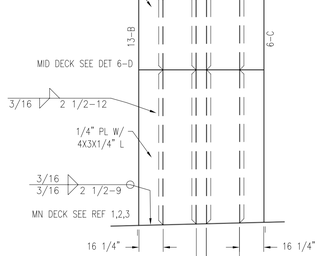
DETAIL 19-D

NT PL 8" AFT OF FR 49 SHOWN LKG AFT



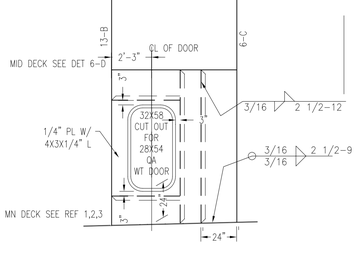
DETAIL 24-B

NT PL FR 51 SHOWN LKG AFT



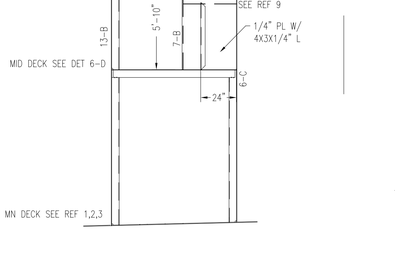
DETAIL 23-B

NT PL FR 56 SHOWN LKG AFT



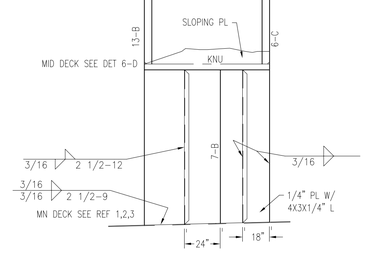
DETAIL 21-B

WT PL AT 12" AFT OF FR 63 SHOWN LKG AFT



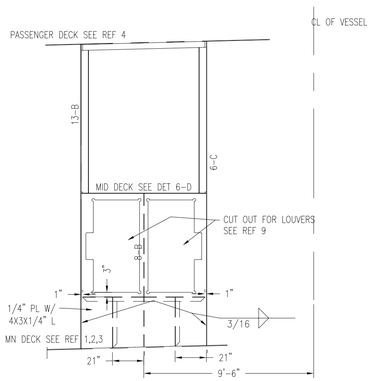
DETAIL 19-B

NT PL AT FR 64 SHOWN LKG AFT



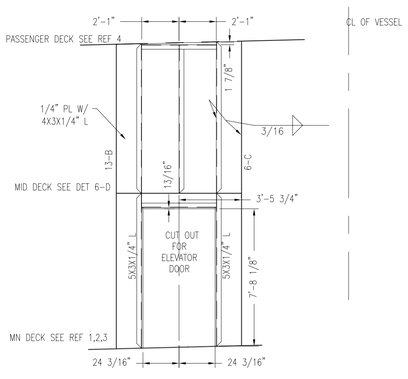
DETAIL 18-B

FR 69 LKG AFT



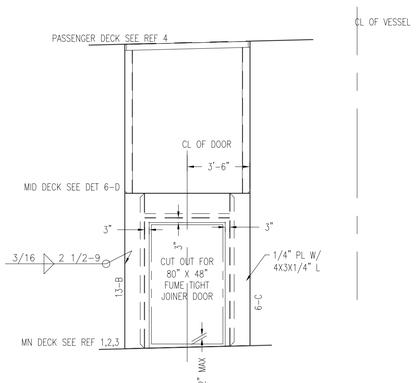
DETAIL 24-A

FR 72 LKG AFT



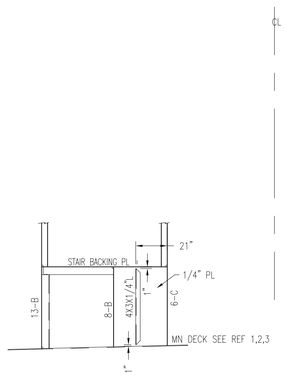
DETAIL 22-A

NT PL FR 60 SHOWN LKG AFT



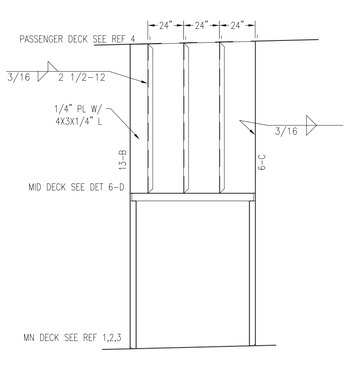
DETAIL 21-A

FR 30 SHOWN LKG AFT
FR 83 SIM & OPP



DETAIL 19-A

FR 76 LKG AFT



DETAIL 18-A

NT PL FR 79 SHOWN LKG AFT

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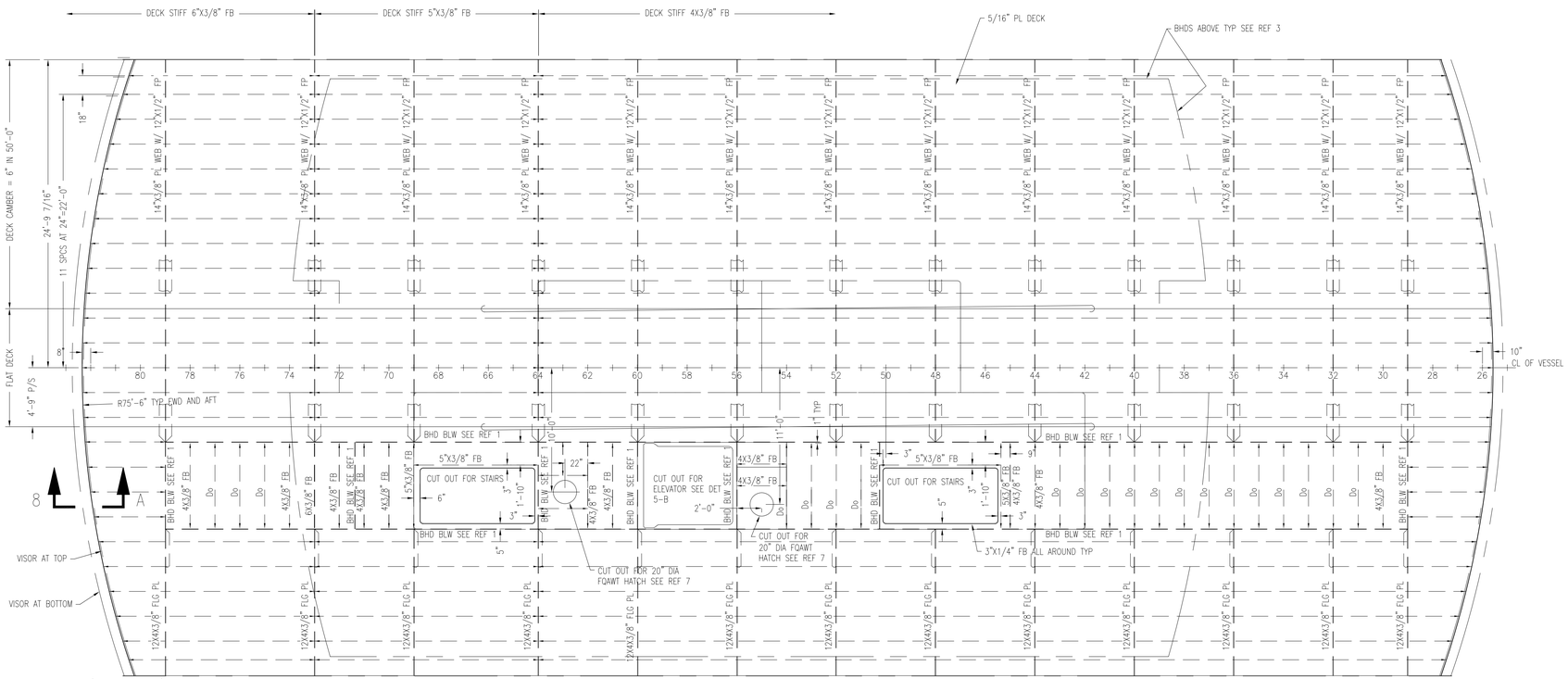
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NORTH CAROLINA DOT FERRY DIVISION

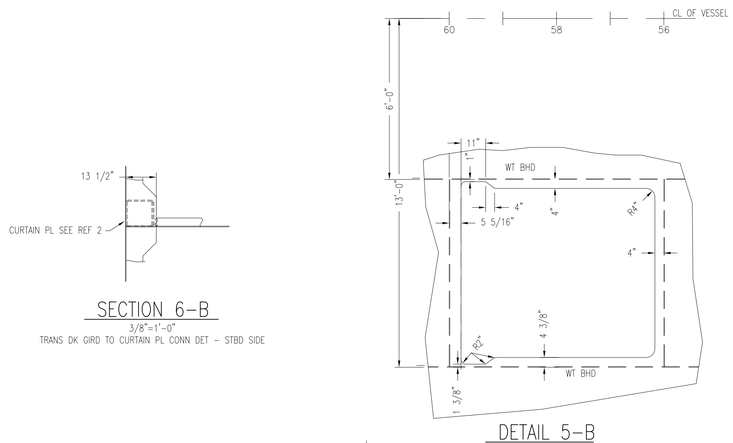
NEW SOUND CLASS FERRY

MID-DECK STRUCTURE

DRAWN BY:	B. JAMES	DATE: 1/28/2010	DWG NO. 152-01 SHT 3 OF 3
CK'D BY:	KHK	HULL No. 413	
SCALE:	1/4"=1'-0"	G&C Job No. 09-060	REV. 1

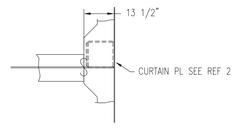


DETAIL 5-C
PLAN VIEW
3/16"=1'-0"

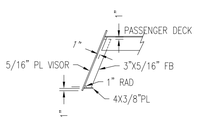


DETAIL 5-B
DECK CUTOUT IN WAY OF ELEVATOR
3/8"=1'-0"

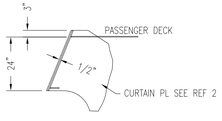
SECTION 6-B
3/8"=1'-0"
TRANS DK GIRD TO CURTAIN PL CONN DET - STBD SIDE



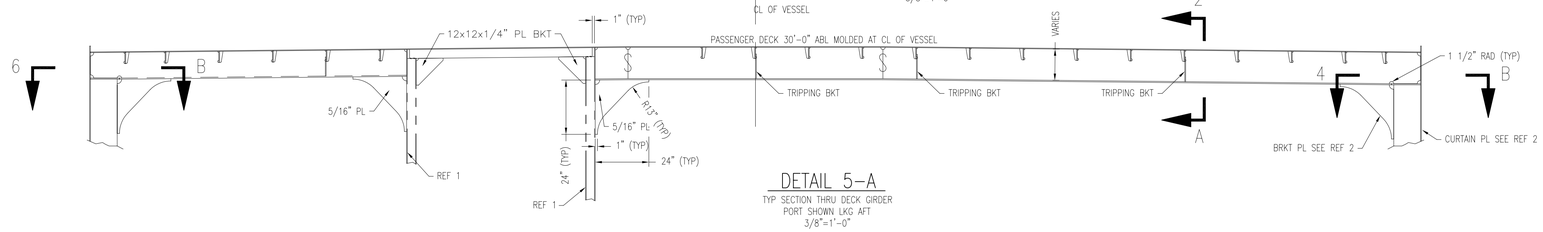
SECTION 4-B
3/8"=1'-0"
TRANS DK GIRD TO CURTAIN PL CONN DET - PORT SIDE



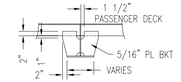
SECTION 8-A
SECTION THRU VISOR
STBD SHOWN LKG INBD
3/8"=1'-0"



SECTION 7-A
SECTION AT CURTAIN PL
STBD SHOWN LKG INBD
3/8"=1'-0"



DETAIL 5-A
TYP SECTION THRU DECK GIRDER
PORT SHOWN LKG AFT
3/8"=1'-0"



SECTION 2-A
TYP TRIPPING BKT
3/8"=1'-0"

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO SCALE NC PARTS OR PREPARE 3D MODELING.
2. ALL WELDING TO BE 3/16" DBL CONT UNLESS NOTED OTHERWISE.

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD

NO.	REFERENCES	DWG NO.
16		
15		
14		
13		
12		
11		
10		
9		
8		
7	SCHEDULE OF OPENINGS, ABV DECK	168-01
6	MOLD LINE CONVENTION	101-03
5	OUTBOARD & INBOARD PROFILE	101-01
4	GENERAL ARRANGEMENTS	101-02
3	02 DECK AND BHDS BELOW	153-01
2	BULWARK AND CURTAIN PLATES	152-03
1	MID DECK STRUCTURE	152-01

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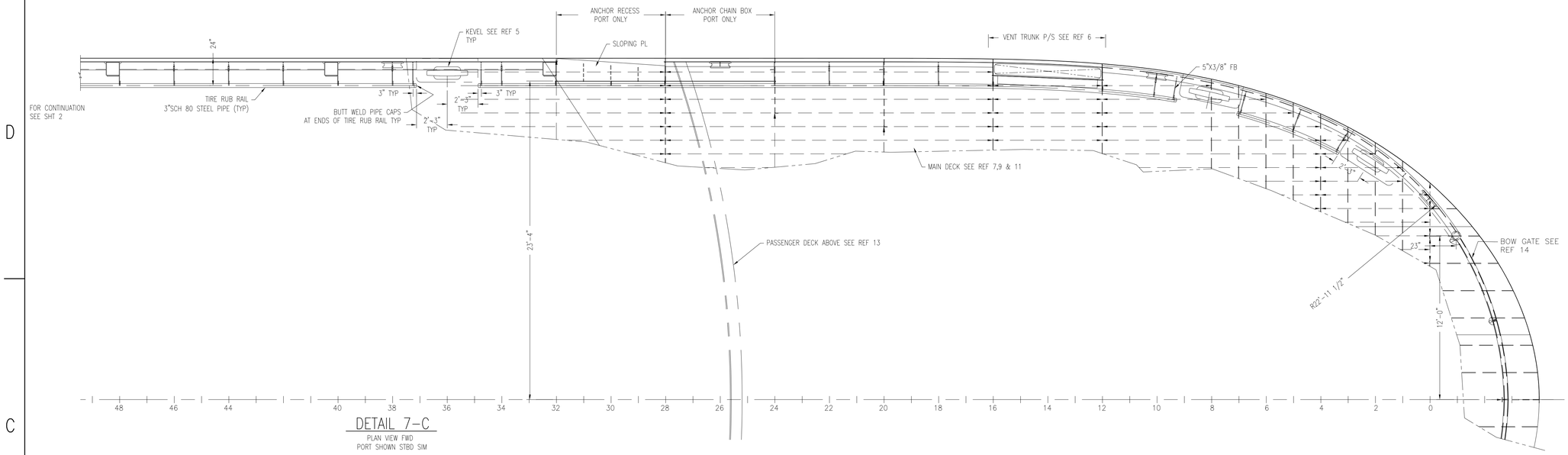
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

PASSENGER DECK SCANTLINGS

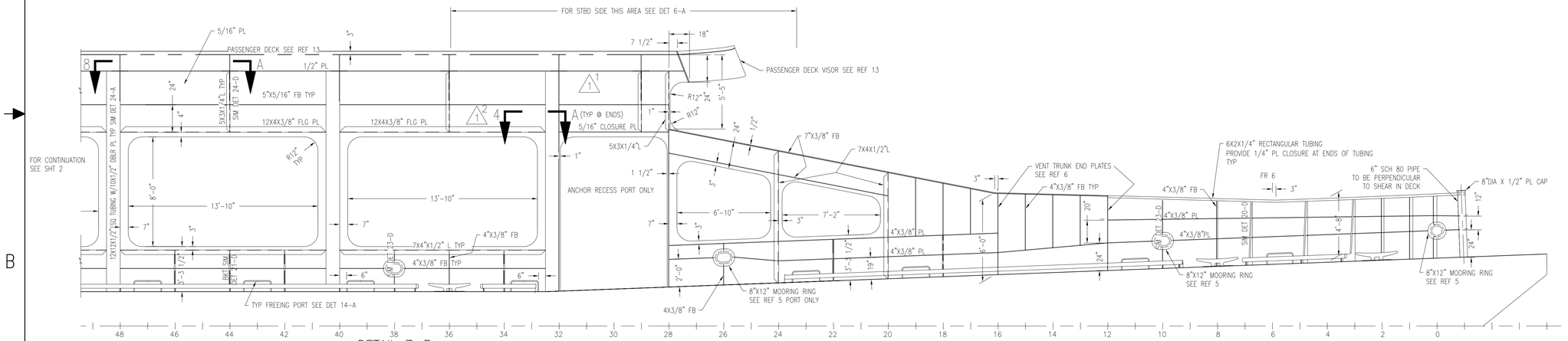
DRAWN BY: B. JAMES	DATE: 7/30/10	DWG NO.	152-02
CK'D BY: KHK	HULL No. 413	SHT 1 OF 1	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 0	

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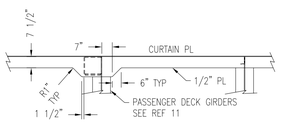
DETAIL 7-C

PLAN VIEW FWD
PORT SHOWN STBD SIM



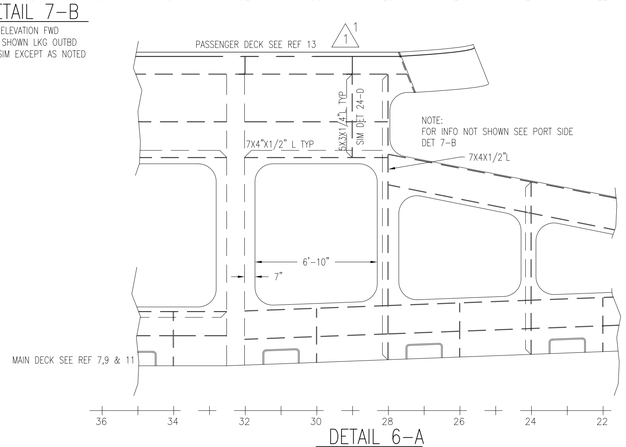
DETAIL 7-B

ELEVATION FWD
PORT SHOWN LKG OUTBD
STBD SIM EXCEPT AS NOTED



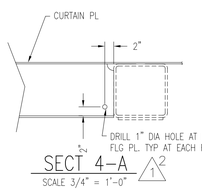
SECTION 8-A

HORIZONTAL PL AT TOP OF COLUMNS
PORT SHOWN STBD SIM



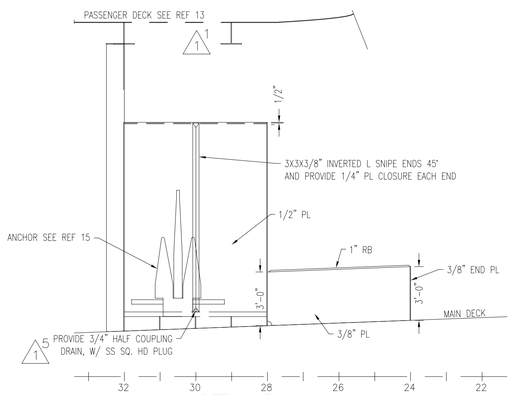
DETAIL 6-A

PARTIAL STBD CURTAIN PL
LKG INBD



SECT 4-A

SCALE 3/4" = 1'-0"



DETAIL 3-A

ANCHOR RECESS 23'-4" OFF CL PORT ONLY
LKG OUTBD

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REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	VARIES VARIES 16-B 16-A 3-A	1. REVISED DEPTH OF PAX DECK TRANS DK GIRDS @ FR 29 & 32 & REVISED LOCATION OF HEADER ON CURTAIN PLATES TO SUIT. 2. ADDED DRAIN HOLES IN HORIZ FLG PL'S ON CURTAIN PL. ADDED SECTION 4-A. 3. REVISED BULWARK PIPE STANCHION SIZE @ FR 104. 4. ADDED SLIDE BOLT DETAILS INFO FOR BULWARK GATE. 5. ADDED DRAIN PLUG @ DET 3-A. ABOVE CHANGES PER DEVELOPMENT OF DWG 152-02 & OWNERS COMMENTS.	7/30/10	MB/BJ /KK

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-150-1

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. ALL WELDING TO BE 3/16" DBL CONT UNLESS NOTED OTHERWISE.
3. ALL STEEL TO BE ABS GR "A" OR EQUIVALENT EXCEPT AS NOTED.
4. BULWARK CAP SHALL BE INTERNALLY COATED WITH A PRESERVATIVE AND SEAL WELDED TO BE WATERTIGHT

NO.	REFERENCES	DWG NO.
15	ANCHOR HANDLING	581-01
14	GATE DETAILS	169-01
13	PASSENGER DECK SCANTLINGS	152-02
12	FRAMES, FR. 73-STERN	117-03
11	SCANTLING PLANS, FR 73-STERN	110-03
10	FRAMES, FR. 36-72	117-02
9	SCANTLING PLANS, FR 36-72	110-02
8	FRAMES, BOW-FR. 35	117-01
7	SCANTLING PLANS, BOW-FR. 35	110-01
6	MACHINERY SPACE VENTILATION	513-01
5	DECK FITTINGS	582-01
4	LINES PLAN	839-01
3	MOLD LINE CONVENTION	101-03
2	OUTBOARD & INBOARD PROFILE	101-01
1	GENERAL ARRANGEMENTS	101-02

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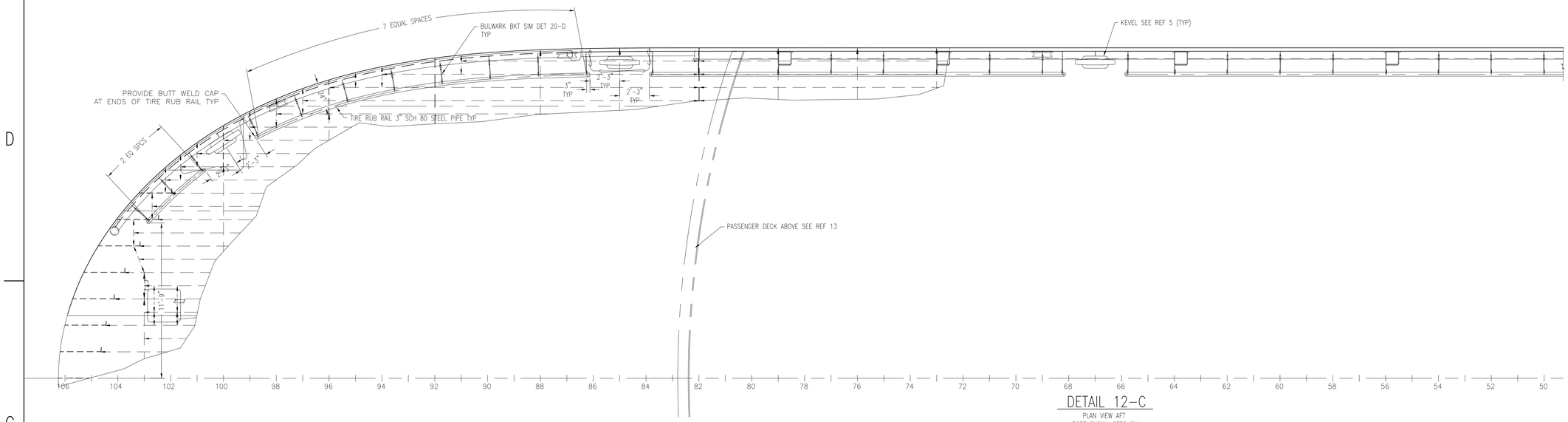
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

BULWARKS AND CURTAIN PLATES

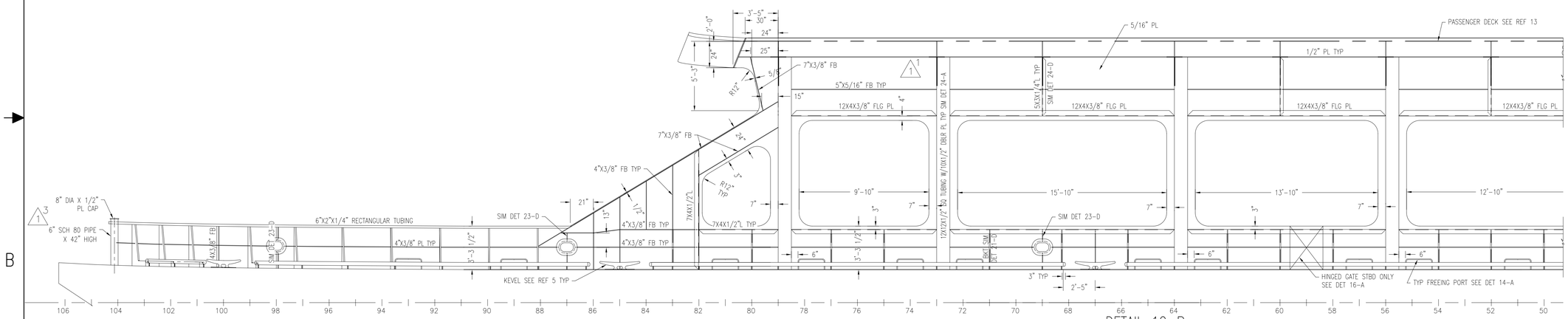
DRAWN BY: B. JAMES	DATE: 2/19/10	DWG NO.	152-03
CK'D BY: KHK	HULL No. 413	SHT 1 OF 3	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1	



FOR CONTINUATION SEE SHEET 1

DETAIL 12-C

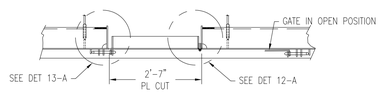
PLAN VIEW AFT
PORT SHOWN STBD SIM



FOR CONTINUATION SEE SHEET 1

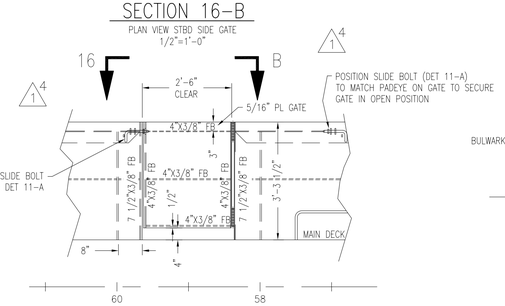
DETAIL 12-B

ELEVATION AFT
PORT SHOWN LKG OUTBD
STBD SIM



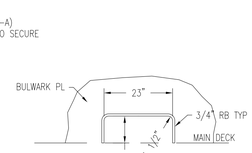
SECTION 16-B

PLAN VIEW STBD SIDE GATE
1/2"=1'-0"



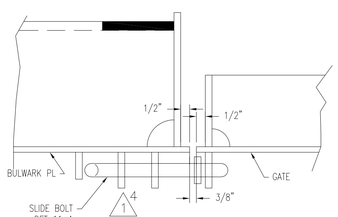
DETAIL 16-A

ELEVATION STBD SIDE GATE
LKG INBD
1/2"=1'-0"



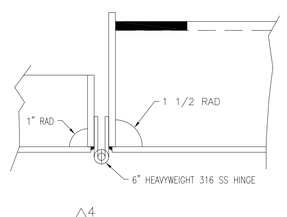
DETAIL 14-A

TYP FREEING PORT
1/2"=1'-0"



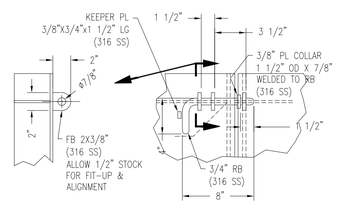
DETAIL 13-A

3"=1'-0"



DETAIL 12-A

3"=1'-0"



DETAIL 11-A

SLIDE BOLT DETAIL
1-1/2"=1'-0"

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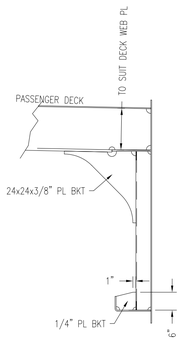
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

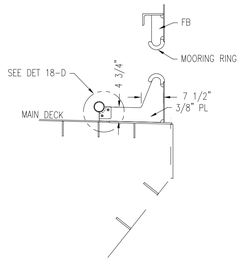
NEW SOUND CLASS FERRY

BULWARKS AND CURTAIN PLATES

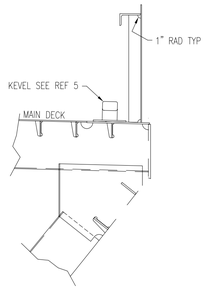
DRAWN BY: B. JAMES	DATE: 2/19/10	DWG NO. 152-03
CK'D BY: KHK	HULL No. 413	SHT 2 OF 3
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1



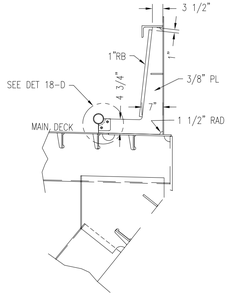
DETAIL 24-D
TYP SECTION BETWEEN COLUMNS
1/2"=1'-0"



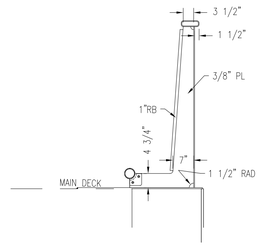
DETAIL 23-D
TYP BULWARK BKT IN WAY OF MOORING RING
1/2"=1'-0"



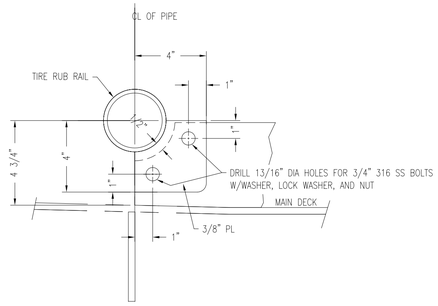
DETAIL 22-D
TYP SECTION IN WAY OF KEVELS
1/2"=1'-0"



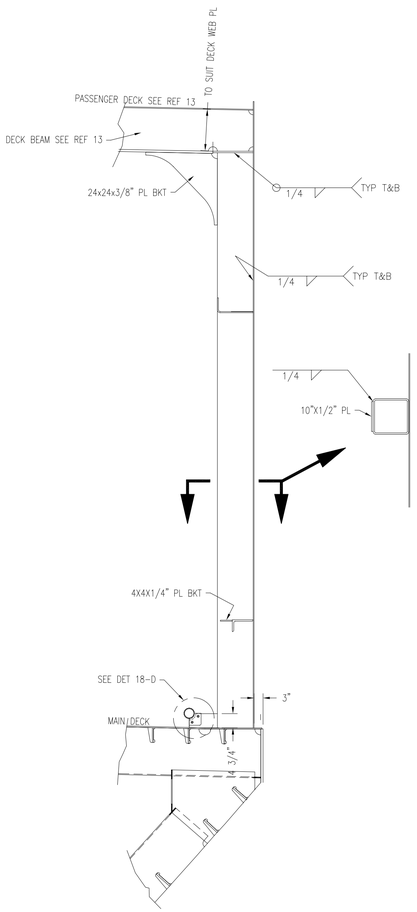
DETAIL 21-D
TYP BKT IN WAY OF CURTAIN PL
1/2"=1'-0"



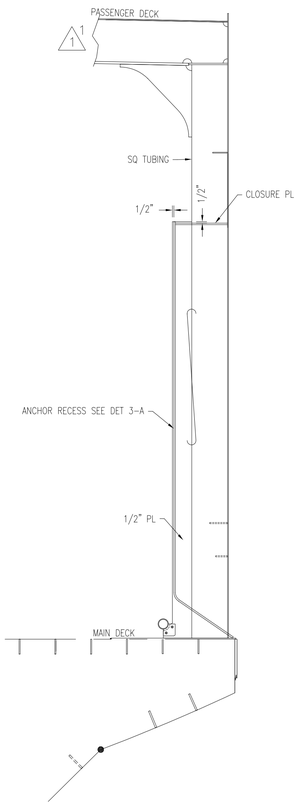
DETAIL 20-D
TYP BULWARK BKT IN WAY OF RECTANGULAR TUBING
1/2"=1'-0"



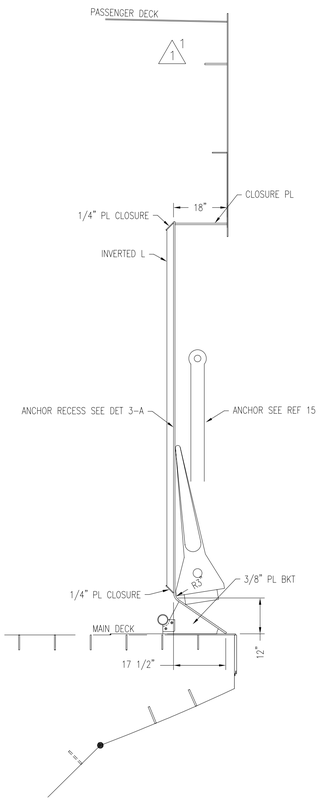
DETAIL 18-D
TYP TIRE RUB RAIL ATTACHMENT
3"=1'-0"



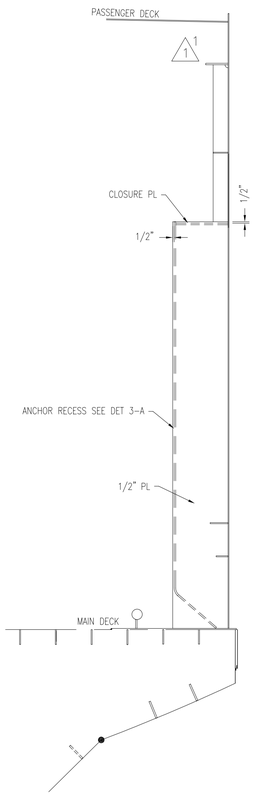
DETAIL 24-A
TYP DETAIL IN WAY OF COLUMNS
PORT SHOWN LKG AFT STBD SIM
1/2"=1'-0"



DETAIL 23-A
DETAIL AT FR 32
PORT SHOWN LKG AFT
1/2"=1'-0"



DETAIL 21-A
DETAIL AT FR 30
PORT SHOWN LKG AFT
1/2"=1'-0"



DETAIL 20-A
DETAIL AT FR 28
PORT SHOWN LKG AFT
1/2"=1'-0"

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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

BULWARKS AND CURTAIN PLATES

DRAWN BY: B. JAMES	DATE: 2/19/10	DWG NO. 152-03 SHT 3 OF 3	
CK'D BY: KHK	HULL No. 413		
SCALE: AS NOTED	G&C Job No. 09-060	REV. 1	

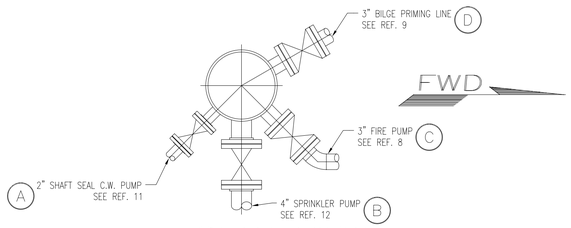
LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
1	20'	16" PIPE, SCH 40, SEAMLESS OR ERW 1/2" WALL (TRIM TO FIT)	BLK STL	ASTM A-53	ANSI B36.10
2	18'	2" PIPE, SCH 40, SEAMLESS (TRIM TO FIT)	BLK STL	ASTM A-53	ANSI B36.10
3	6 LN FT	PERFORATED METAL, 11 GA., 1/4" HOLES ON 3/8" CTRS.	316L SS	ASTM A-480	
4	4	3/8" TOGGLE BOLT W/ WING NUT	BRONZE	ASTM F-594	
5	16	1/2"-13 UNC 316 S.S. BOLT W/LOCKWASHER	BRONZE	ASTM F-593	
6	2	1 1/2" x 16" RUN SOC-O-LET, 3000#	STAINLESS STL 316	ASTM A-403	ANSI B36.11
7	1'	1 1/2" PIPE, SCH 80, SEAMLESS (TRIM TO FIT)	STAINLESS STL 316	ASTM A-312	ANSI B36.19
8	2	1 1/2" FLANGE, 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5

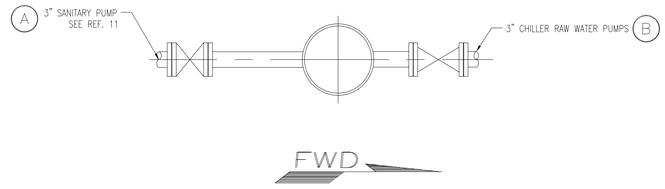
REFERENCES

1.	101-02	GENERAL ARRANGEMENTS
2.	101-01	OUTBOARD & INBOARD PROFILE
3.	110-02	SCANTLING PLANS FR. 36 - FR. 70
4.	200-01	MACHINERY ARRANGEMENT
5.	506-02	FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS
6.	110-03	SCANTLING PLANS, FR 71 - STERN
7.	167-01	SCHEDULE OF OPENING, BELOW DECK
8.	521-02	FIRE MAIN SYSTEM ARRANGEMENT & DETAILS
9.	529-02	BILGE & OILY WATER ARRANGEMENT & DETAILS
10.	533-02	POTABLE WATER SYSTEM ARRANGEMENT & DETAILS
11.	256-02	COOLING PIPING SYSTEM ARRANGEMENT & DETAILS
12.	522-02	SPRINKLER SYSTEM ARRANGEMENT & DETAILS

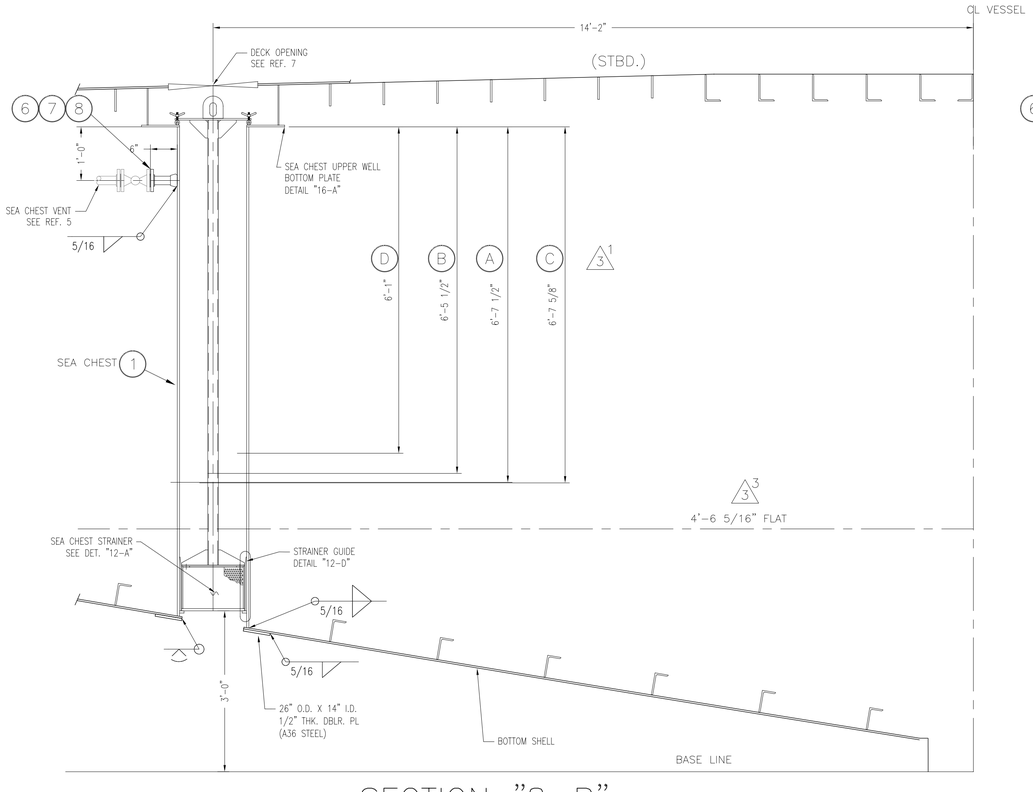
REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	21-A	1. REVISED PC. NO. 7 ON SEA CHEST VENT TO SCH. 80.	5/13/10	JCM/KHK
2	9-D	1. REVISED SEA CHEST STRAINER PLATE CALCULATIONS TO INCLUDE 3" SCH. 80 BILGE PRIMING LINE, AND REQUIRED STRAINER PLATE OPEN AREA TO A.B.S. RULE OF 1 1/2 TIMES TOTAL PIPE OPEN AREA.	3/2/11	JAB/KHK
3	8-C 4-C 3-D 3,6-A	1. ADDED PLAN VIEW FOR SEA CHEST TO SHOW ORIENTATION OF NOZZLES PER AS-BUILT. 2. ADDED REFERENCES 8 THRU 12 TO REFERENCE BLOCK. 3. REVISED HEIGHT OF WALKING FLATS PER AS-BUILT.	4/26/11	JM/KHK



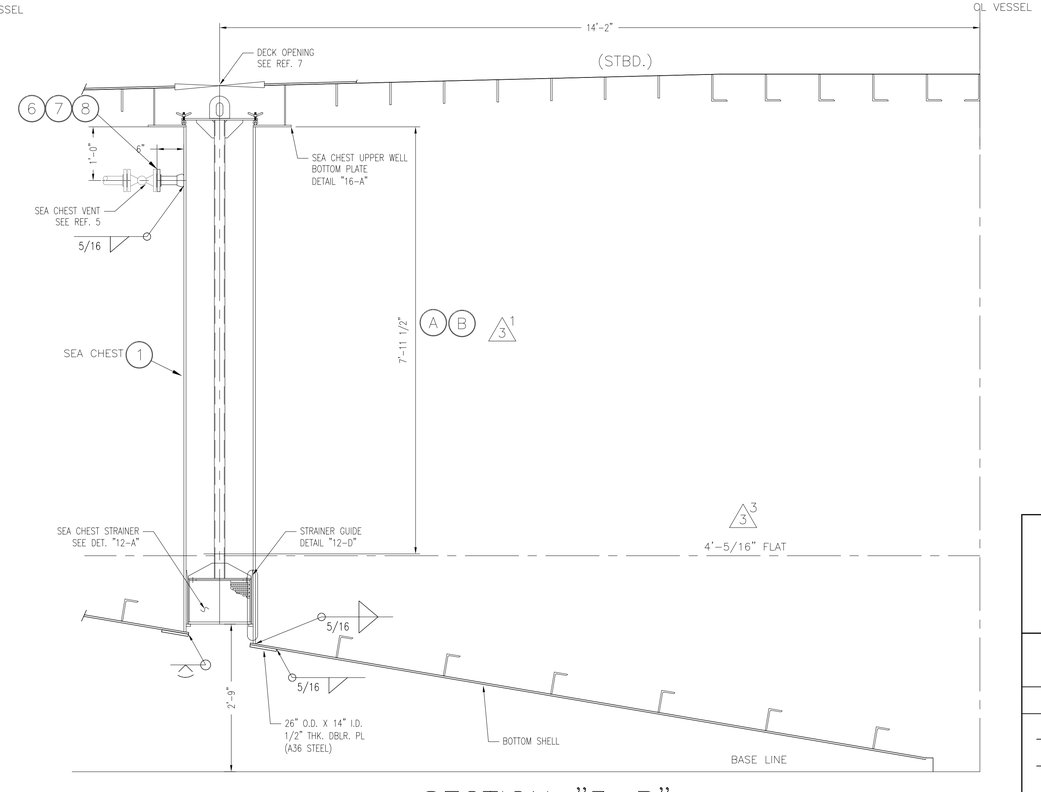
PLAN VIEW
ENGINE ROOM SEA CHEST 3/1
SCALE: 3/4"=1'-0"



PLAN VIEW
TANK ROOM SEA CHEST 3/1
SCALE: 3/4"=1'-0"



SECTION "8-B"
ENGINE ROOM SEA CHEST LOCATION
FR. 71-LOOKING AFT
SCALE: 3/4"=1'-0"



SECTION "3-B"
TANK ROOM SEA CHEST LOCATION
FR. 61-LOOKING AFT
SCALE: 3/4"=1'-0"

GENERAL NOTES

1. FOR SEA SUCTION PIPE CONNECTIONS TO SEA CHEST, REFER TO SPECIFIC SYSTEM DRAWINGS.
2. ALL STEEL PLATE TO BE A36.

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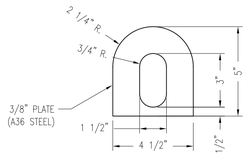
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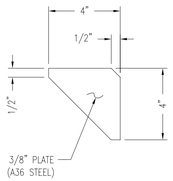
ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

SEA CHESTS

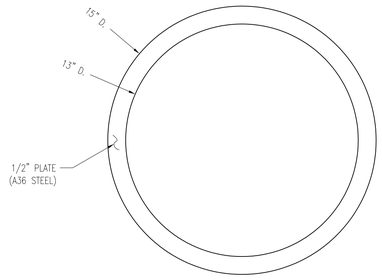
DRAWN BY: J. BEACH	DATE: 12/15/09	DWG NO. 163-01 SHT 1 OF 2	
CK'D BY: KHK	HULL No. 413		
SCALE: 1/2"=1'-0"	G&C Job No. 09-060	REV. 3	



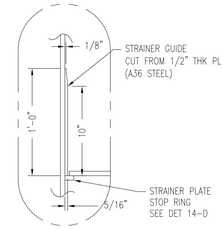
DETAIL "16-D"
LIFTING LUG
(1) STRAINER CONNECTING STEM
(1) PASSENGER DECK
SCALE: 3" = 1'-0"



DETAIL "15-D"
SUPPORT BRACKET
SCALE: 3" = 1'-0"



DETAIL "14-D"
STRAINER PLATE STOP RING
SCALE: 3" = 1'-0"



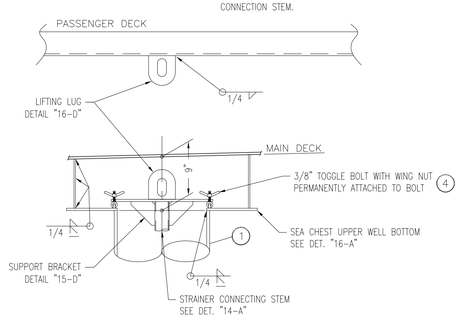
DETAIL "12-D"
STRAINER GUIDE DETAIL
SCALE: 1 1/2" = 1'-0"

△1 2

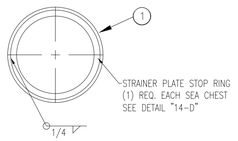
STRAINER PLATE CALCULATIONS
(ENGINE ROOM SEA CHEST)

AREA OF 4" SCH 40 S.S. PIPE (SPRINKLER PUMP)	12.730 SQ. IN.
AREA OF 3" SCH 40 S.S. PIPE (FIRE PUMP)	7.393 SQ. IN.
AREA OF 2" SCH 40 S.S. PIPE (SHAFT SEAL C.W. PUMP)	3.355 SQ. IN.
AREA OF 3" SCH 80 BLK. STL. PIPE (BILGE PRIMING LINE)	6.605 SQ. IN.
TOTAL PIPE OPEN AREA	30.083 SQ. IN.
A.B.S. REQ'D STRAINER PLATE OPEN AREA = (1.5)x(30.083) =	45.125 SQ. IN.
ACTUAL STRAINER PLATE OPEN AREA	59.10 SQ. IN.

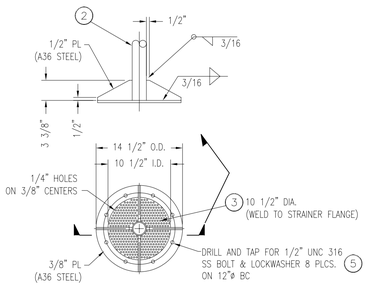
NOTE:
ATTACH LIFTING LUG TO STRUCTURE FOR REMOVAL OF STRAINER CONNECTION STEM.



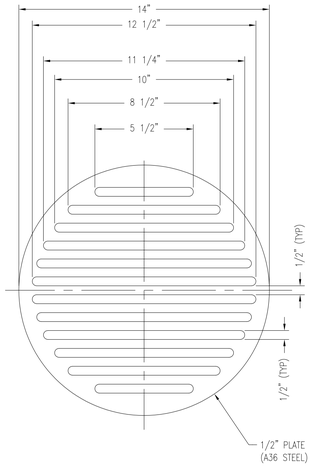
DETAIL "16-B"
SEA CHEST UPPER WELL
SCALE: 1" = 1'-0"



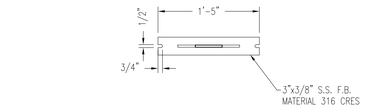
DETAIL "14-C"
STOP RING DETAIL
SEA CHEST BOTTOM
SCALE: 1" = 1'-0"



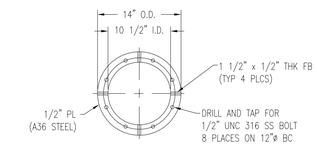
STRAINER TOP PL DETAIL
SCALE: 1" = 1'-0"



DETAIL "9-B"
STRAINER PLATE
SCALE: 3" = 1'-0"

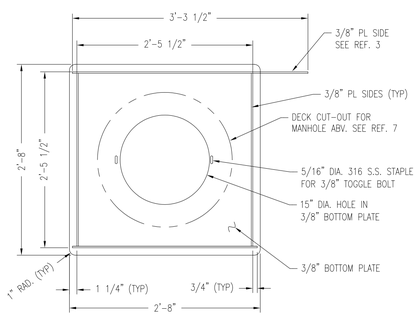


DETAIL "14-B"
TOP PLATE
STRAINER CONNECTING STEM
SCALE: 1" = 1'-0"

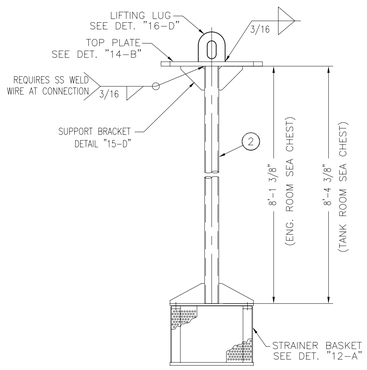


DETAIL "12-B"
STRAINER FLANGE DETAIL
SCALE: 1" = 1'-0"

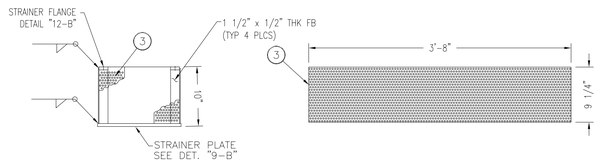
INBOARD



DETAIL "16-A"
SEA CHEST UPPER WELL BOTTOM
SCALE: 1" = 1'-0"



DETAIL "14-A"
STRAINER CONNECTING STEM
SCALE: 1" = 1'-0"



DETAIL "12-A"
STRAINER DETAIL
SCALE: 1" = 1'-0"

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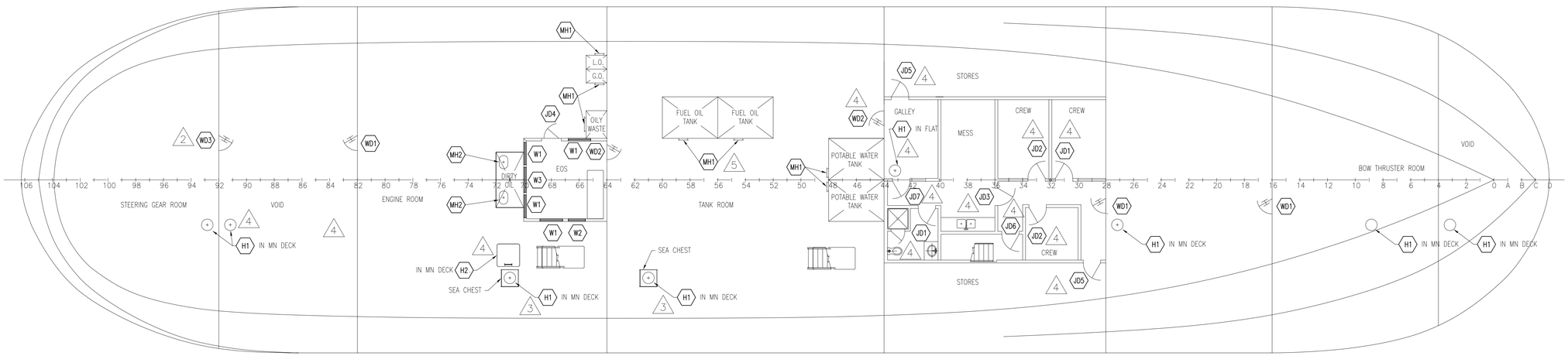
GUARINO & COX, LLC
19399 HELENBIRG RD. SUITE 203
COVINGTON LA. 70433

ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

SEA CHESTS

DRAWN BY: J. BEACH	DATE: 12/15/09	DWG NO.	163-01
CK'D BY: KHK	HULL No. 413	SHT 2 OF 2	
SCALE: NOTED	G&C Job No. 09-060	REV. 3	

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	7–B	1.REVISED SIZE, DESCRIPTION AND P/N OF ITEM NO "H1" PER AGREEMENT W/ NCDOT.	1/15/10	BJ/KK
2	8–D 8–A	1. REVISED HEIGHT OF DOOR @ BHD 92 FROM 26x75" TO 26x54" REV QUANITY OF PART NO WD2 & ADDED PART NO WD3 TO SUIT (PER STERN DRAWING DEVELOPMENT)	2/19/10	CF/KK
3	5–A 6–C	REVISED HATCHES OVER SEACHESTS TO "H1" PER YARD REQUEST. DELETED "H3" FROM BOM. REVISED QTY OF "H1".	3/17/10	KK
4	VAR.	VARIOUS REVISIONS TO MATCH DWG 101–02 REV 7.	6/29/10	BB/KK
5	5–D	RELOCATED F.O. TK MH'S TO INBD BHD PER AS–BUILT STRUCTURE.	7/24/11	KK



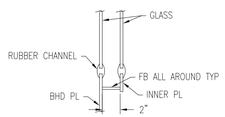
PLAN VIEW BELOW MAIN DECK

SCHEDULE OF OPENINGS

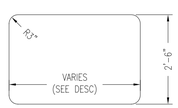
NO	QTY	SIZE	MATERIAL	DESCRIPTION	MANUFACTURER	COMMENTS
JD1	2	28"x80"	STEEL	JOINER DOOR, B–0		LEFT HAND SWING.
JD2	2	28"x80"	STEEL	JOINER DOOR, B–0		RIGHT HAND SWING.
JD3	1	28"x80"	STEEL	JOINER DOOR, B–0		RIGHT HAND REVERSE SWING.
JD4	1	30"x80"	STN STL	JOINER DOOR, FUME TIGHT, FLUSH SILL, W/ 18"X30" WINDOW AND ACOUSTIC AND THERMAL INSULATION		LEFT HAND REVERSE SWING.
JD5	2	28"x72"	STEEL	JOINER DOOR, A–0		LEFT HAND SWING
JD6	1	28"x80"	STEEL	JOINER DOOR, A–60		LEFT HAND SWING
JD7	1	28"x80"	STEEL	JOINER DOOR, A–60		LEFT HAND REVERSE SWING.
MH1	7	15"x23"	STEEL	MANHOLE, RAISED, MULTI–BOLT, S.S. 316 BOLTS	G & S MARINE, INC # 302–5 OR EQ.	
MH2	2	15"x23"	STEEL	MANHOLE, FLUSH, MULTI–BOLT, S.S. 316 BOLTS	G & S MARINE, INC # 300–5 OR EQ.	
H1	8	18" DIA	DUCTILE IRON COVER	HATCH, FLUSH QUICK–ACTING LIFT OFF TYPE W/ SS RING AND SS DOGGING MECHANISM	FREEMAN MARINE 2481–0107 W/ S–K RING OR EQ.	
H2	1	36"X36"	STEEL	HATCH, FLUSH QUICK–ACTING HINGED SPRING BALANCED TYPE, W/ SS RING AND SS DOGGING MECHANISM	CENTEX #219 OR EQUAL	
WD1	3	26"x75"	STEEL	6 DOG, QUICK–ACTING, WATERTIGHT DOOR	G & S MARINE, INC # 104–5 OR EQ.	LEFT HAND SWING
WD2	2	26"x75"	STEEL	6 DOG, QUICK–ACTING, WATERTIGHT DOOR	G & S MARINE, INC # 104–5 OR EQ.	RIGHT HAND SWING
WD3	1	26"x54"	STEEL	6 DOG, QUICK–ACTING, WATERTIGHT DOOR	G & S MARINE, INC # 104–5 OR EQ.	RIGHT HAND SWING
W1	4	SEE DESCRIPTION	SEE DESCRIPTION	FIXED IN RUBBER DOUBLE PANE WINDOWS 1/4" SAFETY PLATE GLASS W/ 2" AIR GAP BETWEEN PANES. FOR 30"X39" BHD CUT OUT SEE DET 4–A		VENDOR TO SUPPLY GLASS AND RUBBER SEE DET 4–B
W2	1	SEE DESCRIPTION	SEE DESCRIPTION	FIXED IN RUBBER DOUBLE PANE WINDOWS 1/4" SAFETY PLATE GLASS W/ 2" AIR GAP BETWEEN PANES. FOR 30"X30" BHD CUT OUT SEE DET 4–A		VENDOR TO SUPPLY GLASS AND RUBBER SEE DET 4–B
W3	1	SEE DESCRIPTION	SEE DESCRIPTION	FIXED IN RUBBER DOUBLE PANE WINDOWS 1/4" SAFETY PLATE GLASS W/ 2" AIR GAP BETWEEN PANES. FOR 30"X44" BHD CUT OUT SEE DET 4–A		VENDOR TO SUPPLY GLASS AND RUBBER SEE DET 4–B

GENERAL NOTES:

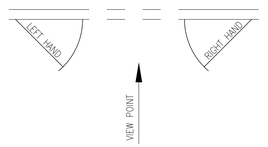
1. ALL WINDOW GLAZING TO BE TEMPERED MONOLITHIC GLASS
2. DETAILS OF ALL CLOSURES ARE SHOWN ON MANUFACTURER'S DRAWINGS
3. ALL DOORS SHALL MEET THE FIRE BOUNDARY REQUIREMENTS OF THE BULKHEAD IN WHICH THEY ARE MOUNTED.
4. ALL JOINER DOORS ARE TO BE FURNISHED BY THE JOINER SUBCONTRACTOR.
5. ALL CLOSURES ARE TO MEET U.S.C.G. REQUIREMENTS. VENDORS SHALL BE RESPONSIBLE FOR PROVIDING DRAWINGS FOR U.S.C.G. APPROVAL.
6. SEE STRUCTURAL DRAWINGS FOR PLATE CUTS FOR CLOSURES.
7. ALL WATERTIGHT DOORS & HATCHES ARE NORMALLY CLOSED EXCEPT WHEN ACTUALLY USED FOR PASSAGE.
8. HATCHES SHALL BE INSULATED TO THE FIRE RATING OF THE DECK IN WHICH THEY ARE MOUNTED.



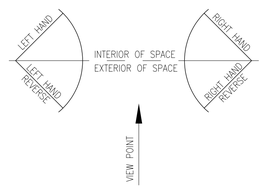
DETAIL 4–B
TYP DBL GLASS INSTALLATION
1 1/2"=1'–0"



DETAIL 4–A
BHD CUT OUT DETAIL FOR WINDOWS
1/2"=1'–0"



DETAIL 2–B
WATERTIGHT DOOR HANDING
NOT TO SCALE



DETAIL 2–A
JOINER TYPE DOOR HANDING
NOT TO SCALE

NO.	REFERENCES	DWG NO.
11	FRAMES, FR 72–STERN	117–03
10	CONSTRUCTION PROFILE & LONG'L BHDS, FR 72–STERN	116–03
9	SCANTLING PLANS, FR 72–STERN	110–03
8	FRAMES, FR 36–FR 72	117–02
7	CONSTRUCTION PROFILE & LONG'L BHDS, FR 36–FR 72	116–02
6	SCANTLING PLANS, FR 36–FR 72	110–02
5	FRAMES, BOW–FR. 35	117–01
4	CONSTRUCTION PROFILE & LONG'L BHDS, BOW–FR. 35	116–01
3	SCANTLING PLANS, BOW–FR. 35	110–01
2	GENERAL ARRANGEMENTS	101–02
1	OUTBOARD & INBOARD PROFILE	101–01

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ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCHEDULE OF OPENINGS
BELOW MAIN DECK

DRAWN BY: B. JAMES	DATE: 12/4/09	DWG NO. 167–01 SHT 1 OF 1
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'–0"	G&C Job No. 09–060	REV. 5

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SCHEDULE OF OPENINGS

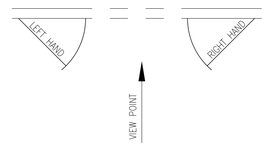
NO	QTY	SIZE	MATERIAL	DESCRIPTION	MANUFACTURER	COMMENTS
JD1	1	30"x75"	STEEL	JOINER DOOR, A-60		RIGHT HAND SWING.
JD2	1	36"X80"	STEEL	JOINER DOOR, B-0		LEFT HAND SWING.
JD3	1	36"X80"	STEEL	JOINER DOOR, B-0		RIGHT HAND SWING.
JD4	1	15"X80"	STEEL	JOINER DOOR, A-0		RIGHT HAND REVERSE SWING.
JD5	1	24"X80"	STEEL	JOINER DOOR, B-0		RIGHT HAND SWING.
JD6	1	30"X80"	STEEL	JOINER DOOR, A-0		LEFT HAND SWING.
JD7	1	30"X80"	STEEL	JOINER DOOR, B-0		LEFT HAND SWING.
JD8	1	30"X80"	STEEL	JOINER DOOR, A-0		RIGHT HAND REVERSE SWING.
JD9	1	28"X80"	STEEL	JOINER DOOR, B-0		RIGHT HAND SWING.
JD10	1	30"X80"	STEEL	JOINER DOOR, A-0		RIGHT HAND SWING.
JD11	1	48"X80"	STEEL	JOINER DOOR, A-60		LEFT HAND SWING. W/ MAGNETIC HOLD BACKS
JD12	2	48"X80"	STEEL	JOINER DOOR, A-60		RIGHT HAND SWING. W/ MAGNETIC HOLD BACKS
JD13	2	48"X80"	STEEL	JOINER DOOR, A-60		RIGHT HAND REVERSE SWING. W/ MAGNETIC HOLD BACKS
JD14	1	48"X80"	STEEL	JOINER DOOR, A-60		LEFT HAND REVERSE SWING. W/ MAGNETIC HOLD BACKS
JD15	1	48"X80"	STEEL	JOINER DOOR, A-0		LEFT HAND REVERSE SWING. W/ MAGNETIC HOLD BACKS
H1	1	18" DIA	DUCTILE IRON COVER	HATCH, FLUSH QUICK-ACTING LIFT OFF TYPE W/ STL RING AND SS DOGGING MECHANISM	FREEMAN MARINE 2481-0107 W/ S-K RING OR EQ.	
H2	1	18" DIA	DUCTILE IRON COVER	HATCH, FLUSH QUICK-ACTING LIFT OFF TYPE W/ STL RING AND SS DOGGING MECHANISM A-60	FREEMAN MARINE 2481-0107 W/ S-K RING OR EQ.	INSULATED TO A-60
2 H3	1	4'-1"X3'-9"	STEEL	HATCH, 4 DOG RAISED, HINGED, WATERTIGHT W/ 4" COAMING	SIM TO CENTEX DRAWING NO. 201 OR EQ.	SEE NOTE 9
1 4 MH1	1	15"x23"	STEEL	MANHOLE, RAISED, MULTI-BOLT, S.S. 316 BOLTS	G & S MARINE, INC # 302-5 OR EQ.	
WD1	1	28"x54"	STEEL	6 DOG, QUICK-ACTING, WATERTIGHT DOOR	G & S MARINE, INC # 104-5 OR EQ.	LEFT HAND SWING
WD2	1	28"X54"	STEEL	6 DOG, QUICK ACTING, WATERTIGHT DOOR	G & S MARINE, INC # 104-5 OR EQ.	RIGHT HAND SWING
WD3	1	28"x63"	STEEL	6 DOG, WATERTIGHT DOOR	G & S MARINE, INC # 102-5 OR EQ.	RIGHT HAND SWING
WE1	2	64"X80"	STEEL	DOUBLE WEATHERTIGHT DOOR W/ CRASH BAR & SS MARINE TYPE DOOR CLOSURE		
WE2	3	30"X80"	STEEL	WEATHERTIGHT DOOR		RIGHT HAND REVERSE SWING.
WE3	2	30"X80"	STEEL	WEATHERTIGHT DOOR		LEFT HAND REVERSE SWING.
WE4	1	48"X80"	STEEL	DOUBLE WEATHERTIGHT DOOR		
WE5	1	48"X80"	STEEL	WEATHERTIGHT DOOR		RIGHT HAND REVERSE SWING.
WE6	1	48"X80"	STEEL	WEATHERTIGHT DOOR		LEFT HAND SWING.
WE7	1	30"X56"	STEEL	WEATHERTIGHT DOOR		RIGHT HAND REVERSE SWING.
W1	12	SEE DESCRIPTION	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, PLATE CUT 4'-0"X7'-0" W/ 9" RAD CORNERS 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W2	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W3	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W4	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W5	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W6	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W7	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W8	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
1 1 W9	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
1 1 W10	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
1 1 W11	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
1 1 W12	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W13	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W14	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		

CONTINUED

NO	QTY	SIZE	MATERIAL	DESCRIPTION	MANUFACTURER	COMMENTS
W15	2	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
W16	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W17	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W18	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W19	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W20	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W21	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W22	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W23	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W24	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W25	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W26	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W27	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W28	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W29	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W30	4	SEE DESCRIPTION	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, PLATE CUT 3'-5" W X 3'-2" H W/ 4" RAD CORNERS 3/8" THICK LAMINATED SAFETY GLASS		
W31	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W32	1	SEE DESCRIPTION	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, PLATE CUT 3'-8" W X 3'-0" H W/ 4" RAD CORNERS 3/8" THICK LAMINATED SAFETY GLASS		
W33	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
W34	1	SEE DESCRIPTION	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, PLATE CUT 6'-1 1/2" W X 3'-1" H W/ 4" RAD CORNERS 3/8" THICK LAMINATED SAFETY GLASS		TO BE FITTED WITH PANTOGRAPH WIPERS, WYNN MODEL 1801
W35	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS		
1 2 W36	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		
1 2 W37	1	CUT FROM TEMPLATE	SS FRAME	FIXED WINDOW, CLAMP IN TYPE, SIZE TO SUIT PL CUT 3/8" THICK LAMINATED SAFETY GLASS (IAW ANSI Z26.1), DARK TINT		

REVISIONS

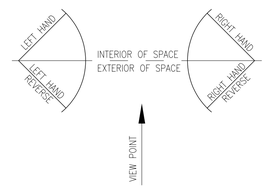
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	8-A 5-C 23-C 14-C 8-C	1) REV QTY OF W9, W10, W11 & W12 FROM 2 TO 1 2) ADD W36 & W37 3) REV W12 TO W36 & W9 TO W37 4) ADDED EMER. GEN. F.O. DAY TK AND MH AND ADDED PC NO MH1 PER DEVELOPMENT	9/27/10	BB/KK
2	8-A 12-D	ADDED HATCH TO ACCESS AREA UNDER PILOTHOUSE. ADDED NO H3	12/21/10	BJ/KK



DETAIL 2-B
WATERTIGHT DOOR HANDING
NOT TO SCALE

GENERAL NOTES:

1. ALL WINDOW GLAZING TO BE LAMINATED SAFETY GLASS, EXCEPT AS NOTED.
2. DETAILS OF ALL CLOSURES ARE SHOWN ON MANUFACTURER'S DRAWINGS
3. ALL DOORS SHALL MEET THE FIRE BOUNDARY REQUIREMENTS OF THE BULKHEAD IN WHICH THEY ARE MOUNTED.
4. ALL JOINER DOORS ARE TO BE FURNISHED BY THE JOINER SUBCONTRACTOR.
5. ALL CLOSURES ARE TO MEET U.S.C.G. REQUIREMENTS. VENDORS SHALL BE RESPONSIBLE FOR PROVIDING DRAWINGS FOR U.S.C.G. APPROVAL.
6. SEE STRUCTURAL DRAWINGS FOR PLATE CUTS FOR CLOSURES.
7. ALL WATERTIGHT DOORS & HATCHES ARE NORMALLY CLOSED EXCEPT WHEN ACTUALLY USED FOR PASSAGE.
8. HATCHES SHALL BE INSULATED TO THE FIRE RATING OF THE DECK IN WHICH THEY ARE MOUNTED.
9. HATCH "H3" WILL BE INSTALLED ON A VERTICAL BULKHEAD. THE HINGES SHALL BE CONFIGURED TO SUPPORT THE LOADS IMPOSED AND SHALL OPERATE PROPERLY IN THIS POSITION.



DETAIL 2-A
JOINER AND WEATHER TIGHT TYPE DOOR HANDING
NOT TO SCALE

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NO.	REFERENCES	DWG NO.
9	SCHEDULE OF OPENINGS, BELOW DECK	167-01
8	FILLS, VENTS & SOUNDS SCHEMATIC	506-01
7	PILOT HOUSE CONSTRUCTION	154-01
6	02 DECK AND BHDS BELOW	153-01
5	PASSENGER DECK SCANTLINGS	152-02
4	MID-DECK STRUCTURE	152-01
3	FIRE ZONE BOUNDARIES	635-01
2	GENERAL ARRANGEMENTS	101-02
1	OUTBOARD & INBOARD PROFILE	101-01

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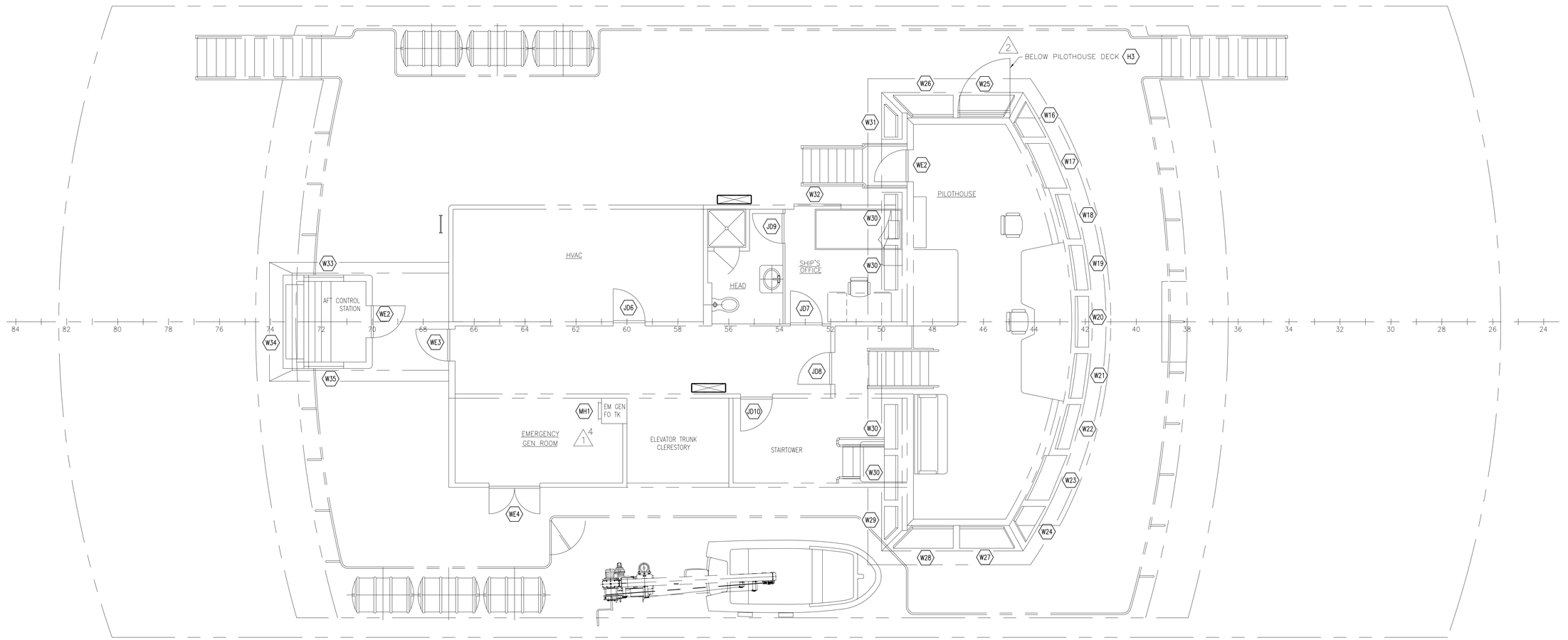
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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCHEDULE OF OPENINGS
ABOVE DECK

DRAWN BY:	B. JAMES	DATE: 8/19/10	DWG NO. 168-01
CK'D BY:	KHK	HULL No. 413	SHT 1 OF 4
SCALE:	NONE	G&C Job No. 09-060	REV. 2



02 DECK/ PILOT HOUSE

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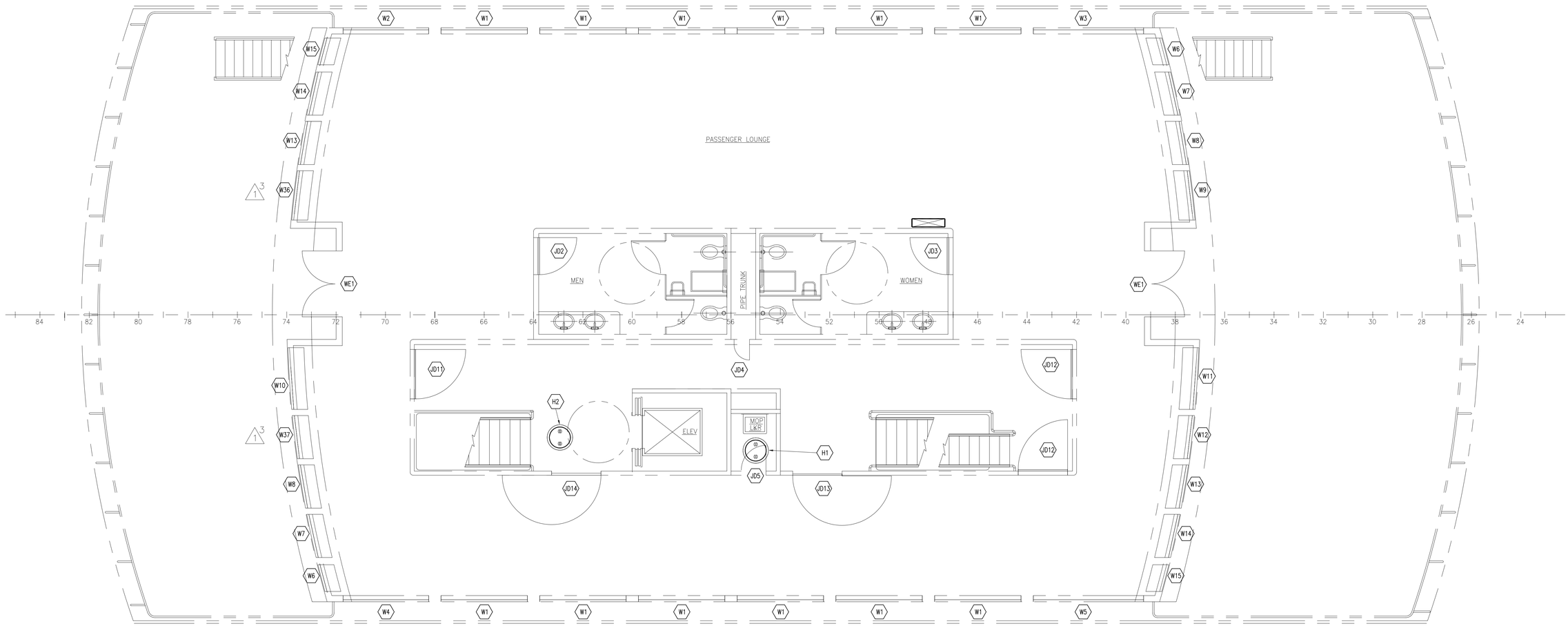
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCHEDULE OF OPENINGS
ABOVE DECK

DRAWN BY: B. JAMES	DATE: 8/19/10	DWG NO. 168–01 SHT 2 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'–0"	G&C Job No. 09–060	REV. 2

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PASSENGER DECK

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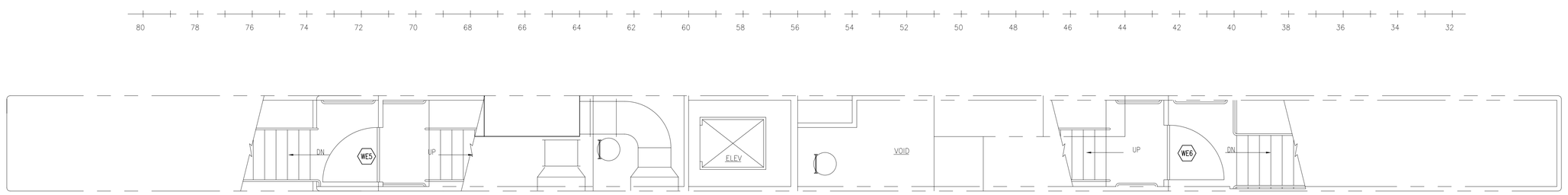
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

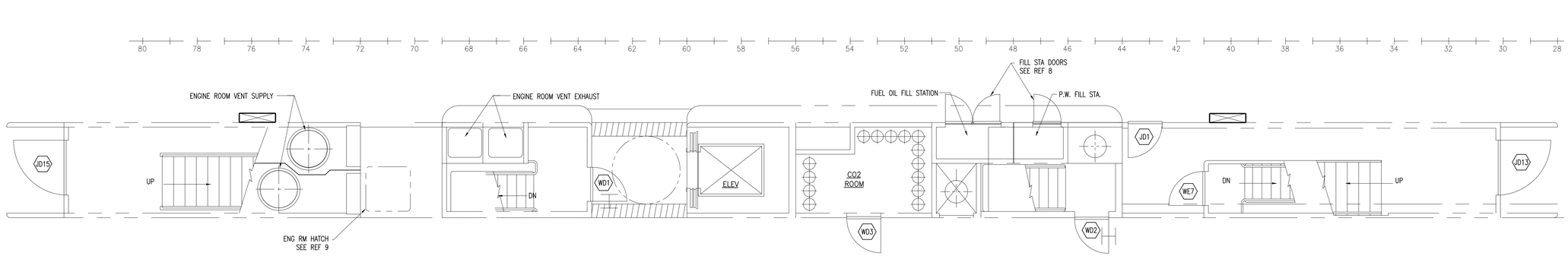
SCHEDULE OF OPENINGS
ABOVE DECK

DRAWN BY: B. JAMES	DATE: 8/19/10	DWG NO. 168–01 SHT 3 OF 4	
CK'D BY: KHK	HULL No. 413		
SCALE: 1/4"=1'–0"	G&C Job No. 09–060	REV. 2	

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MID DECK



MAIN DECK

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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

SCHEDULE OF OPENINGS
ABOVE DECK

DRAWN BY: B. JAMES	DATE: 8/19/10	DWG NO. 168–01 SHT 4 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'–0"	G&C Job No. 09–060	REV. 2

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BILL OF MATERIAL

ITEM NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC NO.	PART NO.	REMARKS
1	2	6"	TAIL SHAFT 6" DIA x 24'-3" LG	STN. STL.	AQUAMET 22		SEE DET 14-D
2	2	5"	LINE SHAFT 5" DIA x 12'-5 11/16 LG	STL	ABS GR 2 OR EQUIV.		SEE DET 10-D
3	2	SEE DET 24-C	COMPANION COUPLING	STL		DWG. 3084-680-247	SUPPLIED W/ Z.F. GEAR INCLUDES COUPLING BOLTS
4	6	1 1/4" W x7/8"DP x10 3/8" LG	COUPLING KEY	STL	AISI 1018 COLD-DRAWN		SEE DET 22-C
5	6	6 1/2" DIA x 1" THK	THRUST PLATE	STL	ABS GR. A OR EQUIV.		SEE DET 23-C
6	18	1"-8UNC x 4" LG	HEX HEAD BOLTS - HIGH STRENGTH SAE GRADE 8	STL	ASTM A449		HEADS DRILLED FOR 18 GA 18-20 304 STN STL LK WIRE
7	2	FOR 5" SHAFT	BULKHEAD STUFFING BOX	VAR		MODEL 1790M	JOHNSON DURAMAX GREASE SERVICE TYPE 10
8	2	6" SCH 80 PIPE 6" LG	MOUNTING TUBE FOR BULKHEAD STUFFING BOX	STL	ASTM A-53		
9	2	10 1/8" x 1" TK	MOUNTING FLANGE FOR BULKHEAD STUFFING BOX	STL	ABS GR 2 OR EQUIV.		SEE DET 18-C
10	16	5/8"-11UNC 2 3/4" LG	BOLT HEX HEAD W/NUTS FOR BULKHEAD STUFFING BOX	STN STL	TYPE 316		
11	2	SEE DET 20-D	LINE SHAFT AFT COUPLING	STL	ABS GR A OR EQUIV.		
12	2	SEE DET 24-D	TAIL SHAFT FWD COUPLING	STL	ABS GR 2 OR EQUIV.		
13	24	1"-8UNC 6 3/4" LG	BOLT HEX HEAD W/ NUT - HIGH STRENGTH GR 8 FITTED	STL	ASTM A449		SEE DET 17-C
14	2	FOR 6" SHAFT	STERN TUBE SEAL	VAR			DEEP SEA SEALS LTD (WARTSILA) DWG. NO. H76214 -W/ MOUNTING BOLTS & GASKET
15	2	16 1/2" OD x 2" THICK	ADAPTER PLATE FOR STERN TUBE SEAL	STL	ABS GR A OR EQUIV.		SEE DET 9-C
16	2	16 1/2" OD x 2" THK	STERN TUBE FLG	STL	ABS GR A OR EQUIV.		SEE GEN NOTE 6, SEE DET 12-C
17	12	5/8"-11UNC 3 1/4" LG	HEX HEAD BOLTS	STN STL	TYPE 316		
18	4	5/8" DIA x 1" LG.	DOWEL PIN	STN STL	TYPE 316		
19	2	7"OD x 5.995"ID x 26 1/2" LG	SHAFT LINER FOR STERN TUBE BEARING	BRONZE	ASTM B505		SAE 660, UNS C93200 OR EQUAL SEE GEN NOTE 2 & 3, SEE DET 13-A
20	2	FOR 7" SHAFT	STERN TUBE BEARING	VAR		861782100 "GAVEL"	JOHNSON DURAMAX, SEE DET 13-A1
21	2	12"OD x 8 1 /2"ID x 62.375" LG	MECH TUBING (HOUSING FOR STERN TUBE BEARING)	STL	ASTM A519		GRADE 1026 HR OR EQUAL SEE GEN NOTE 4 & 6, SEE DET 13-B
22	2	10" SCH 80 PIPE 11"-5 5/8" LG	STERN TUBE PIPE	STL	ASTM A-53		ANSI B36.10 GR B SEE GEN NOTE 4 & 6
23	2	7"OD x 5.995"ID x 28" LG	SHAFT LINER FOR STRUT BEARING	BRONZE	ASTM B 505		SAE 660, USN C93200 OR EQUAL SEE GEN NOTE 2 & 3, SEE DET 15-A
24	2	FOR 7" SHAFT	STRUT BEARING	VAR		861782100 "GAVEL"	JOHNSON DURAMAX, SEE DET 15-A1
25	2	12"OD x 8 1 /2"ID x 28" LG	MECH TUBING (HOUSING FOR STRUT BEARING)	STL	ASTM A519		GRADE 1026 HR OR EQUAL SEE GEN NOTE 4 & 6, SEE DET 15-B
26	16	5/8"-11UNC x 2" LG	HEX HEAD BOLTS	STN STL	TYPE 316		
27	2	1 3/8"W x 1"DP x 14 1/8"LG	PROPELLER KEY	STL	AISI 1018 COLD-DRAWN		SEE DET 20-C
28	2	SEE DET 17-D	PROPELLER PLAIN NUT	BRONZE			
29	2	SEE DET 18-D	PROPELLER JAM NUT	BRONZE			
30	2	20" DIA x 1/2" INSERT PL	STERN TUBE BHD INSERT	STL	ABS GR. A OR EQUIV.		
31	2	FOR 5" SHAFT	PILLOW BLOCK BEARING, CYLINDRICAL, SPLIT-TYPE	VAR			CRAFT MODEL S1 BCH 500-FL
32	8	7/8"-9UNC x 4" LG	HEX HEAD BOLTS - HIGH STRENGTH SAE GRADE 5	STL	ASTM A449		
33	2	12" SCH 40 PIPE x 6" LG	ROPE GUARD	STL	ASTM A-53		SEE DET 19-B

SHAFT CALCULATION - TAIL SHAFT

$$D = 100K \sqrt[3]{(H/R)[c_1/(U + c_2)]}$$

$$D = 100 \times 1.29 \sqrt[3]{\frac{1133}{557.1}\ [3.695\ /(60{,}000 + 23{,}180)]}$$

D req'd = 5.79"

K = 1.29
c_1 = 3.695
c_2 = 23180
H = 1180 BHP x 0.96 MECH. EFF'Y
H = 1133 SHP
R = 1800 ENGINE RPM / 3.231 GEAR RATIO
R = 557.1 SHAFT RPM
U = 60,000 PSI

SHAFT CALCULATION - LINE SHAFT

$$D = 100K \sqrt[3]{(H/R)[c_1/(U + c_2)]}$$

$$D = 100 \times 1.1 \sqrt[3]{\frac{1133}{557.1}\ [3.695\ /(60{,}000 + 23{,}180)]}$$

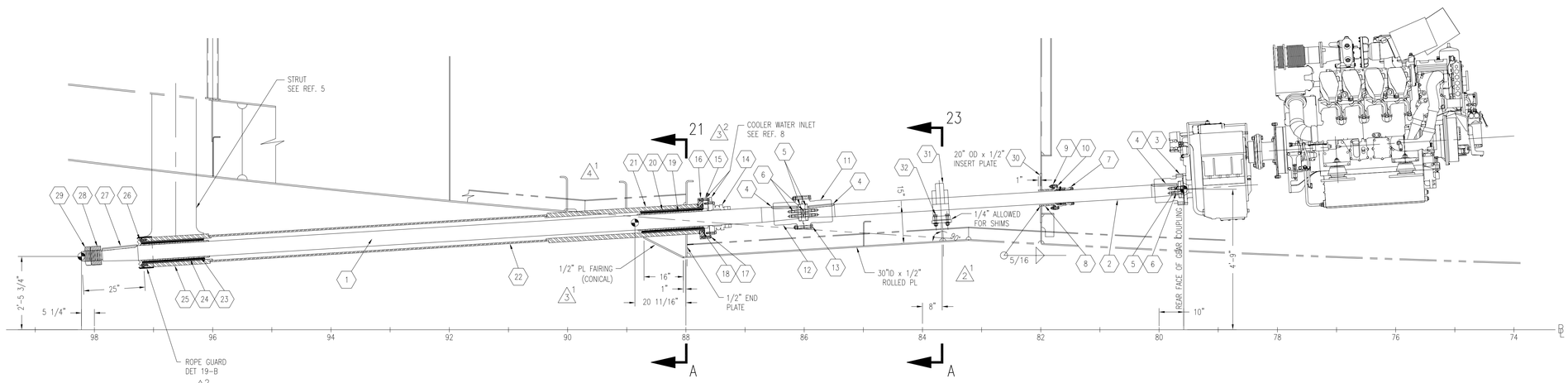
D req'd = 4.936"

K = 1.1
c_1 = 3.695
c_2 = 23180
H = 1180 BHP x 0.96 MECH. EFF'Y
H = 1133 SHP
R = 1800 ENGINE RPM / 3.231 GEAR RATIO
R = 557.1 SHAFT RPM
U = 60,000 PSI

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	9-C	1. ADDED 3/4" HOLE THRU STERN TUBE SEAL ADAPTER FOR STERN TUBE COOLING WATER SUPPLY PER DEVELOPMENT OF REF 8.	6/30/10	JCM/KHK
2	5-B 4-A 23-A	1. REVISED (ITEM 31) PILLOW BLOCK MAKE AND MODEL. 2. REVISED (ITEM 32) PILLOW BLOCK MOUNTING BOLT SIZE & REV FOUNDATION PER CHANGE IN PILLOW BLOCK.	8/11/10	CF/KHK
3	13-B 14-C 6-A 9,14-C 6-A	1. REVISED LENGTH OF STERN TUBE BEARING HOUSING (ITEM 21) & STERN TUBE PIPE (ITEM 22) & REVISE SHAFT ELEVATION TO SUIT - PER SHIPYARD COMMENTS. 2. ADDED COUNTER-BORE TO STERN TUBE SEAL ADAPTER PLATE, ITEM 15, PER MACHINE SHOP AS-BUILT.	3/3/11	CF/KHK
4	6-A 8-A,B 19-B	1. ADDED INDICATION OF TRSV FLG PLATES AT FR 89 & 90 PER H-413-RFI-S-079. 2. ADDED INDICATION OF ROPE GUARD. DET 19-B ADDED TO SUIT. PER AS BUILT CONDITION.	5/6/11 7/23/11	MH/KK

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ABS RULES FOR BUILDING AND CLASSING STEEL VESSELS UNDER 90 METERS IN LENGTH AND USCG REGULATIONS FOR VESSELS INSPECTED UNDER SUBCHAPTER H.
2. LINER OUTSIDE DIAMETERS SHALL BE MACHINED AFTER THE LINERS ARE INSTALLED ON THE SHAFTS.
3. OUTSIDE DIAMETERS OF SHAFTS SHALL BE VERIFIED PRIOR TO MACHINING INSIDE DIAMETERS OF LINERS FOR INTERFERENCE FIT. (CLASS FN 2)
4. SHOTBLAST INTERIORS OF STERN TUBES TO SSPC-SP-10. APPLY TWO COATS OF COAL TAR EPOXY AT 8 MILS DFT EACH. APPLY TWO COATS OF ANTIFOULING COATING AT 2 MILS DFT EACH. THE FIRST COAT OF ANTI-FOULING SHALL BE APPLIED WHILE THE SECOND COAT OF COAL TAR EPOXY IS STILL TACKY.
5. ALL WORK TO BE TEMPLATED FROM VESSEL.
6. FORWARD END OF STERN TUBE FLANGE TO BE MACHINED AFTER STERN TUBE IS INSTALLED. STERN TUBE AND STRUT BARREL SHALL BE LINE-BORED TO MATCH THE DIAMETER AND ANGLE OF THE BEARINGS.
7. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
8. SHAFT TAPER AND PROPELLER SHAFT HUB SHALL COMPLY WITH SAE J755 STANDARDS.
9. LINE SHAFT BEARINGS, STERN TUBE AND STRUT BEARINGS, AND SHAFT SEALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
10. PROPELLER AND SHAFT COUPLINGS SHALL BE "BLUE FIT" IN ACCORDANCE WITH ABS REQUIREMENTS.



SHAFT ELEVATION
10'-0" OFF CL VESSEL
SCALE 1/2" = 1'-0"

NO.	REFERENCES	DWG NO.
8	COOLER PIPING SYSTEM SCHEMATIC	256-01
7	MACHINERY ARRANGEMENT	200-01
6	MAIN ENGINE FOUNDATION	182-01
5	STRUT DETAILS	114-02
4	LINES PLAN	839-01
3	SCANTLING PLANS, FR. 73-STERN	110-03
2	FRAMES, FR. 73-STERN	117-03
1	CONSTRUCTION PROFILE & LONG'L BHDS, FR. 73-STERN	116-03

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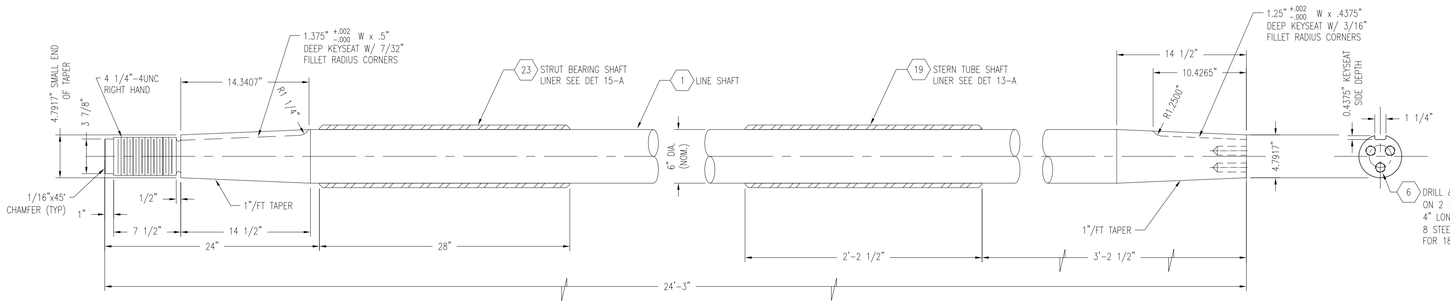
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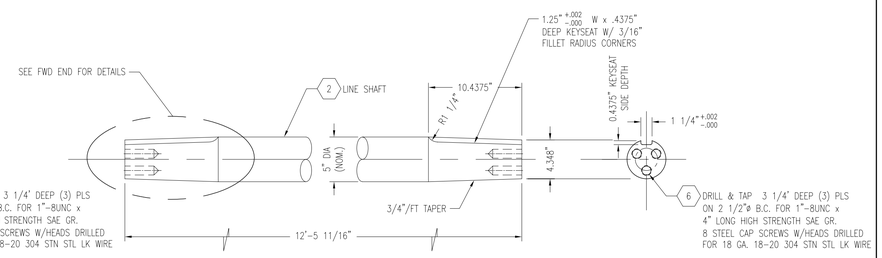
SHAFT ARRANGEMENT

DRAWN BY: C FIELDS	DATE: 5-4-10	DWG NO.	243-01
CK'D BY: KHK	HULL No. 413	SHT 1 OF 3	
SCALE: NOTED	G&C Job No. 09-060	REV. 4	

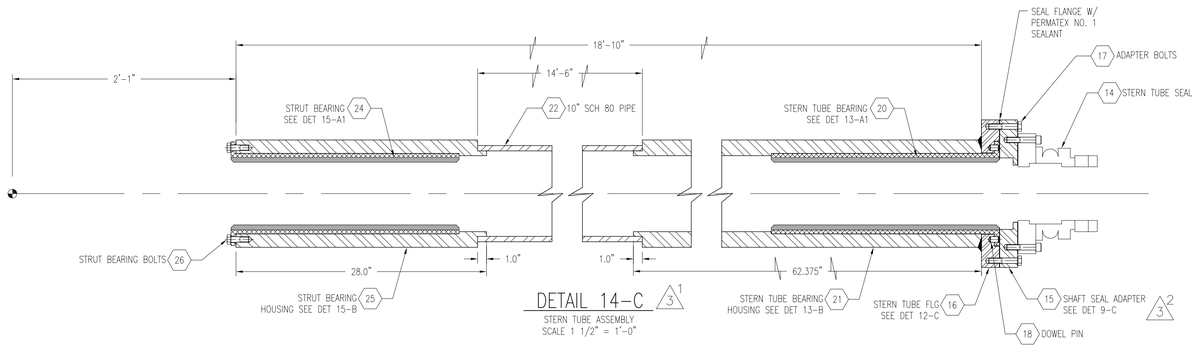
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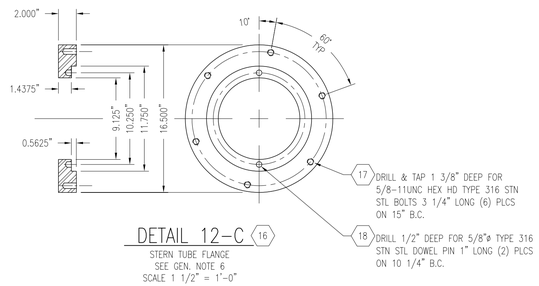
DETAIL 14-D
TAIL SHAFT
SCALE 1 1/2" = 1'-0"



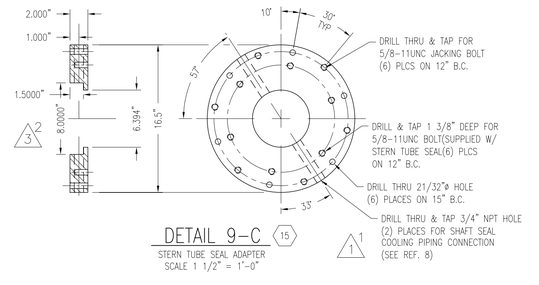
DETAIL 10-D
LINE SHAFT
SCALE 1 1/2" = 1'-0"



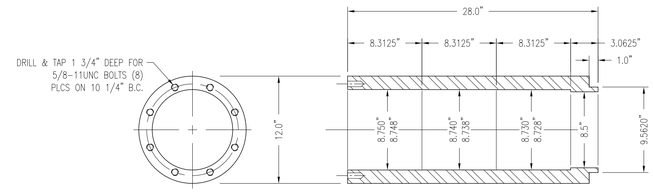
DETAIL 14-C
STERN TUBE ASSEMBLY
SCALE 1 1/2" = 1'-0"



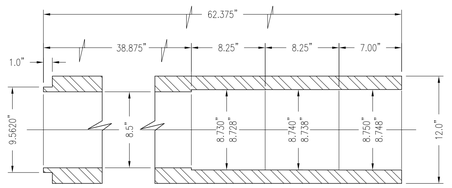
DETAIL 12-C 16
STERN TUBE FLANGE
SEE GEN. NOTE 6
SCALE 1 1/2" = 1'-0"



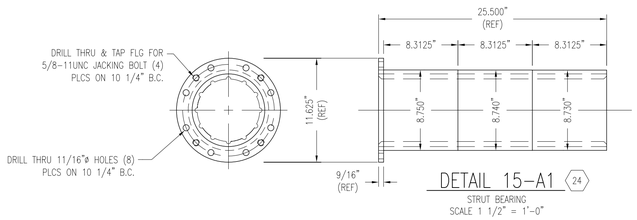
DETAIL 9-C 15
STERN TUBE SEAL ADAPTER
SCALE 1 1/2" = 1'-0"



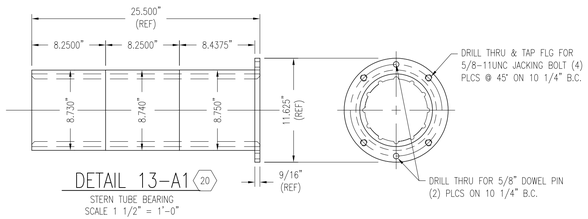
DETAIL 15-B 25
STRUT BEARING HOUSING
SCALE 1 1/2" = 1'-0"



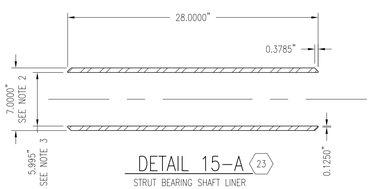
DETAIL 13-B 21
STERN TUBE BEARING HOUSING
SCALE 1 1/2" = 1'-0"



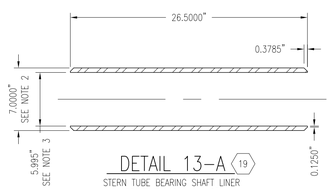
DETAIL 15-A1 24
STRUT BEARING
SCALE 1 1/2" = 1'-0"



DETAIL 13-A1 20
STERN TUBE BEARING
SCALE 1 1/2" = 1'-0"



DETAIL 15-A 23
STRUT BEARING SHAFT LINER
SCALE 1 1/2" = 1'-0"



DETAIL 13-A 19
STERN TUBE BEARING SHAFT LINER
SCALE 1 1/2" = 1'-0"

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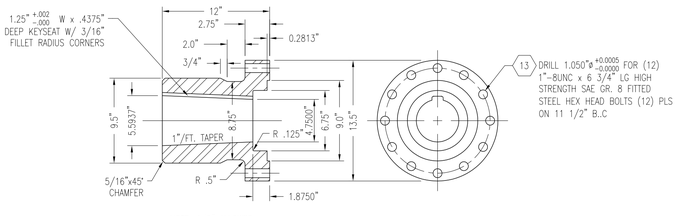
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SHAFT ARRANGEMENT

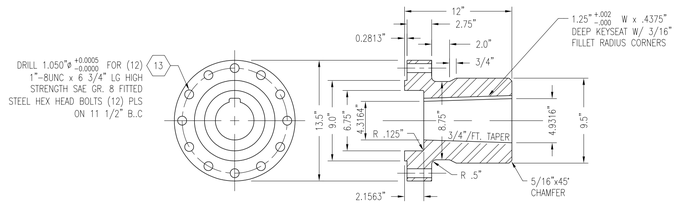
DRAWN BY: C FIELDS	DATE: 5-4-10	DWG NO.	243-01
CK'D BY: KHK	HULL No. 413	SHT 2 OF 3	
SCALE: NOTED	G&C Job No. 09-060	REV. 4	



NOTE: 1/2" ALLOWED FOR DRAW

DETAIL 24-D (12)

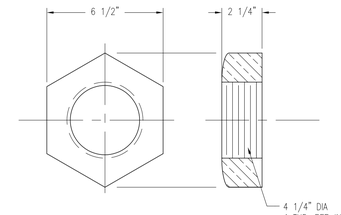
TAIL SHAFT FWD COUPLING
SHIPYARD FABRICATED
SCALE 1 1/2" = 1'-0"



NOTE: 1/2" ALLOWED FOR DRAW

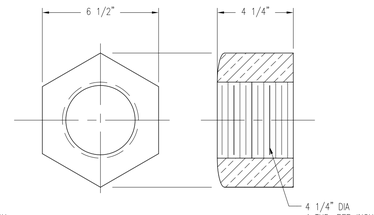
DETAIL 20-D (11)

LINE SHAFT AFT COUPLING
SHIPYARD FABRICATED
SCALE 1 1/2" = 1'-0"



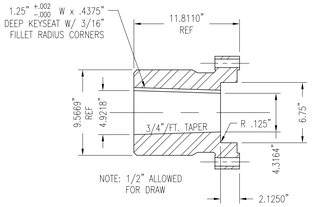
DETAIL 18-D (29)

PROPELLER JAM NUT
SCALE 3" = 1'-0"



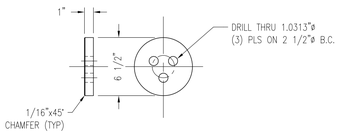
DETAIL 17-D (28)

PROPELLER PLAIN NUT
SCALE 3" = 1'-0"



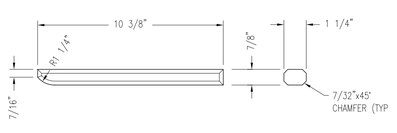
DETAIL 24-C (3)

COMPANION COUPLING DETAIL
SUPPLIED BY ZF
SCALE 1 1/2" = 1'-0"



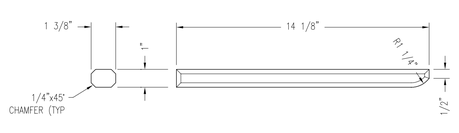
DETAIL 23-C (5)

THRUST PLATE
SCALE 1 1/2" = 1'-0"



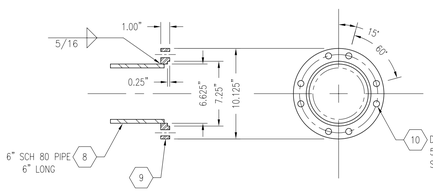
DETAIL 22-C (4)

COUPLING KEY DETAIL
SCALE 3" = 1'-0"



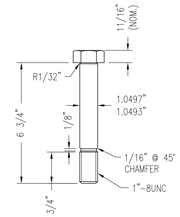
DETAIL 20-C (27)

PROPELLER KEY DETAIL
SCALE 3" = 1'-0"



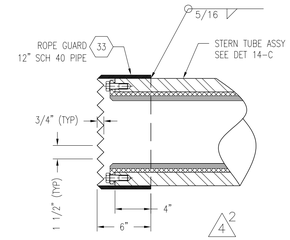
DETAIL 18-C

BULKHEAD STUFFING BOX MOUNTING FLANGE
SCALE 1 1/2" = 1'-0"



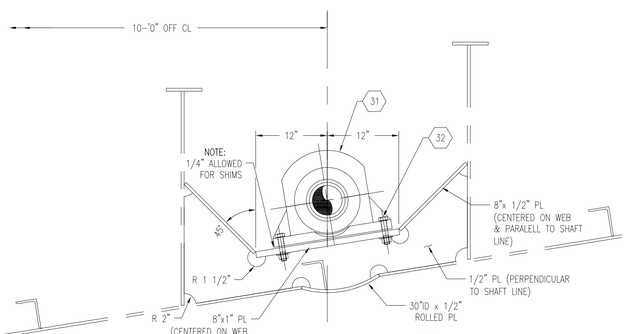
DETAIL 17-C (13)

FITTED BOLT DETAIL
(FOR SHIPYARD FABRICATED COUPLING)
SCALE 3" = 1'-0"



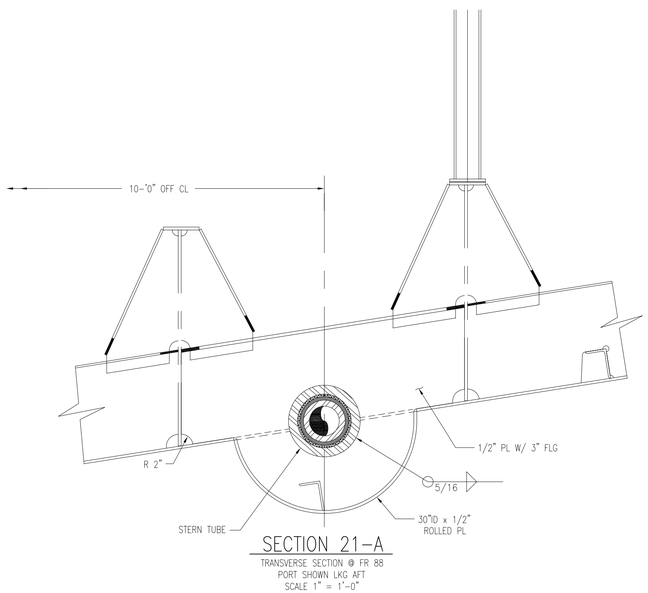
DETAIL 19-B (33)

ROPE GUARD
SCALE 1 1/2" = 1'-0"



SECTION 23-A

TRANSVERSE SECTION @ 8" FWD FR 84
PORT SHOWN LKG AFT
SCALE 1" = 1'-0"



SECTION 21-A

TRANSVERSE SECTION @ FR 88
PORT SHOWN LKG AFT
SCALE 1" = 1'-0"

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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

SHAFT ARRANGEMENT

DRAWN BY: C FIELDS	DATE: 5-4-10	DWG NO. 243-01 SHT 3 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 4

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES		REMARKS
			MATERIAL	GASKETS	BOLTING		BODY	TRIM	
FRESH WATER COOLING	2" & ABV	CARBON STEEL SCH 40 ASTM A106 GRADE B SMLS ANSI B36.10 SCH 80 SHALL BE USED AT PENETRATIONS TO KEEL COOLERS	FLANGED, SLIP-ON CARBON STEEL 150# ASTM A105 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: 316 STAINLESS STL GRADE 316 ASTM F593 NUTS: 316 STAINLESS STEEL GRADE 316 ASTM F594	CARBON STEEL BUTT WELD 150#, SCH 80 ASTM A234 ANSI B16.9	DUCTILE IRON FLANGED, 125# ASTM A-395 ANSI B16	BRZ TRIM RENEWABLE DISC & SEAT	
	1 1/2" & BELOW		UNION, GROUND JOINT MAL IRON SCREWED, 150# ASTM A197 ANSI B16.3			MAL IRON SCREWED, 150# ASTM A197 ANSI B16.3	BRONZE SCREWED ASTM B62		
SEA WATER COOLING	2 1/2" & OVER	△1 5 316 STAINLESS STL., SCH 40, ASTM A-312 SMLS (SCH 80 OUTBD OF SEACHEST AND OVBD VALVES)	FLANGE, 316 STAINLESS STEEL, SLIP-ON, 150#, ASTM A-182	GARLOCK STYLE 3000	BOLTS: 316 STAINLESS STL GRADE 316 ASTM F593 NUTS: 316 STAINLESS STEEL GRADE 316 ASTM F594	316 STAINLESS STEEL BUTT WELD, SCH. 40, ASTM A403 (SCH 80 OUTBD OF SEACHEST AND OVBD VALVES)	BALL: FLANGED ENDS 150# STAINLESS STEEL, ASTM A351/A744 CF8M	STAINLESS STEEL BALL AND STEM TEFLON SEATS AND SEALS	
	2" & UNDER		UNION, 316 STAINLESS STEEL SOCKET WELD, GROUND JOINT, 3000#, ASTM A-182			316 STAINLESS STEEL SOCKET WELD, 3000#, ASTM A-182	GATE: STAINLESS STEEL, THREADED, ASTM A351/A744 CF8M (FLANGED @ SEACHEST CONN.)	STEM OR DISK CRES, ASTM A182	

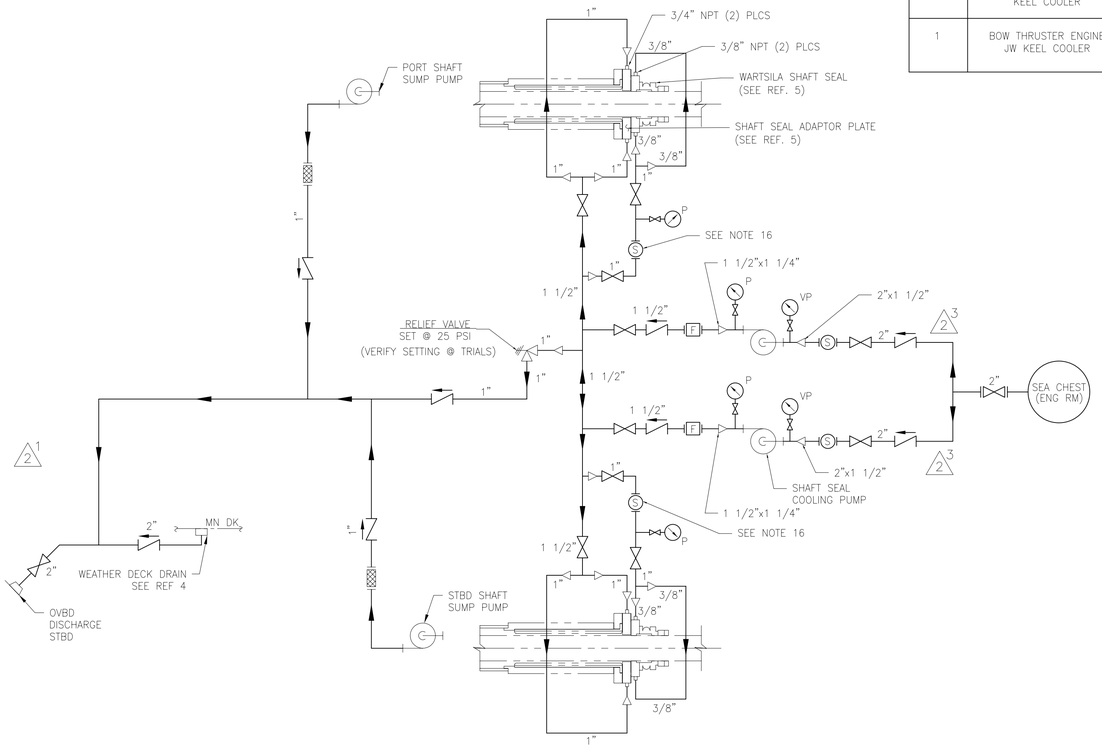
PUMP LIST

QTY.	SERVICE	TYPE	MODEL	CAPACITY	DRIVE	REMARKS
2	REDUCTION GEAR COOLING PUMP	CENTRIFUGAL	MP SERIES 60 1 1/4" X 1" w/5" IMPELLER	50 GPM @ 50' TDH	ELECTRIC MOTOR 208V, 3 PH	CAST IRON w/BRONZE IMPELLER & S.S. TRIM
2	SHAFT SEAL COOLING PUMP	CENTRIFUGAL	MP SERIES 80 1 1/2" X 1 1/4" w/5.5" IMPELLER	60 GPM @ 80' TDH	ELECTRIC MOTOR 208V, 3 PH	CAST IRON w/BRONZE IMPELLER & S.S. TRIM
2	MAIN ENGINE JACKET WATER PREHEATER		KIM HOTSTART CSM 1"x1"		ELECTRIC MOTOR SINGLE PHASE	
2	SHAFT SUMP PUMP	SUBMERSIBLE	GOULDS MODEL SERIES EP0411AC		1/4 HP, 115 VOLTS PIGGYBACK FLOAT, 20' CORD	THERMOPLASTIC SEMI-OPEN IMPELLER THERMOPLASTIC CASING & BASE

△1 1
△2 4

KEEL COOLER LIST

QTY.	SERVICE	MODEL
4	MAIN ENGINE KEEL COOLER	FERNSTRUM D24135W-ZE1
2	REDUCTION GEAR KEEL COOLER	FERNSTRUM BN1045B-ZE1
2	GENERATOR JW KEEL COOLER	FERNSTRUM D14184U-ZE1
1	BOW THRUSTER ENGINE AFTERCOOLER & GEAR KEEL COOLER	FERNSTRUM CN12111C-ZE1
1	BOW THRUSTER ENGINE JW KEEL COOLER	FERNSTRUM D16111U-ZE1



SHAFT SEAL COOLING PIPING SCHEMATIC

REFERENCES

1.	200-01	MACHINERY ARRANGEMENT
2.	256-02	COOLING PIPING SYSTEM ARRANGEMENT & DETAILS
3.	256-03	COOLER INSTALLATION
4.	526-01	WEATHER DECK DRAINS
5.	243-01	SHAFT ARRANGEMENT
6.	NANCE D210009-P04	CONDENSER SEA WATER PIPING DIAGRAM

△2 2
△1 3

PIPING SYMBOLS

	GATE VALVE
	BUTTERFLY VALVE
	SWING CHECK VALVE
	BALL VALVE
	GLOBE VALVE
	PRESSURE RELIEF VALVE
	CENTRIFUGAL PUMP
F	FLOW SWITCH
S	SIMPLEX STRAINER
	FLEXIBLE CONNECTION
	RUBBER BELLOW w/ FLANGES (SUPPLIED BY MTU)
LL	LOW LEVEL ALARM
	LIQUID LEVEL GAUGE
	THERMOMETER IN THERMAL WELL
P	PRESSURE GAUGE W/SHUT-OFF VALVE
VP	VACUUM PRESSURE GAUGE W/SHUT-OFF VALVE
	JACKET WATER PREHEATER
	VENT
	CAMLOCK
	DIRECTION OF FLOW
	REDUCER
	CAMLOCK

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	7-C 11-B 11-D	1. ADDED JACKET WATER PREHEATER TO PUMP LIST & ADDED PIPE SIZE FOR M.E. J.W. PIPING. 2. ADDED EXPANSION TANKS FOR THE GENERATORS & BOW THRUSTER ENGINES.	9/6/10 9/24/10	JM/KHK JM/KHK
	3-A,D	3. ADDED REF 6 & LIFTED RESV #1.	7/23/11	KK
2	8-A	1. ADDED CHECK VALVES & 1" SHAFT SUMP PUMP LINES TO OVBD DISCHARGE LINE @ WEATHER DECK DRAIN.	9/14/11	
	3-D	2. CHANGED REFERENCE NO. 4 FROM 521-01 FIRE MAIN SYSTEM SCHEMATIC TO 526-01 WEATHER DECK DRAINS.	9/14/11	
	5-A 8-C	3. ADDED CHECK VALVES IN PUMP SUCTION LINES. 4. ADDED SHAFT SUMP PUMP TO PUMP LIST.	9/23/11 9/23/11	
		– ABOVE REVS PER AS-BUILT –		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED IN REFERENCE 1.
3. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
4. EXPANSION TANKS SHALL BE INSTALLED AT LEAST TWO FEET ABOVE THE TOP OF THE HIGH POINT WITHIN A SYSTEM. EACH EXPANSION TANK SHALL BE PROVIDED WITH A LOW LEVEL ALARM @ 50%. CONTRACTOR SHALL VERIFY EXPANSION TANK SIZE.
5. PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS AND EQUIPMENT.
6. PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. TUBING AND FITTINGS ARE TO BE MADE FROM 316 STAINLESS STEEL. TUBING WALL THICKNESS SHALL BE 0.035 INCHES.
7. AVOID POCKETS IN THE PIPE LINES AND PROVIDE WITH FITTINGS, VALVES, OR TRAPS TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED FOR DRAINING.
8. THE PIPING SYSTEM SHALL BE CLEANED, FLUSHED, FILLED AND HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH USCG AND ABS REQUIREMENTS.
9. PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. CARE SHALL BE EXERCISED TO PLACE PIPE HANGERS SO THAT STRAIN IS AVOIDED WHERE PIPING IS CONNECTED TO MACHINERY. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
10. VENT LINES TO THE EXPANSION TANK SHALL BE INSTALLED AT ALL PIPING SYSTEM HIGH POINTS TO ALLOW COMPLETE AIR REMOVAL.
11. PIPE BENDS IN ACCORDANCE WITH 46 CFR 56.80-5 MAY BE SUBSTITUTED FOR ELBOWS WHERE FEASIBLE.
12. INSULATE JACKET WATER PIPING AS NEEDED FOR PERSONNEL PROTECTION IN ACCORDANCE WITH ASTM F683 USING REMOVABLE BLANKET TYPE INSULATION.
13. ELECTRICALLY ISOLATE KEEL COOLERS FROM HULL AT ALL ATTACHMENT POINTS AND AT EACH NOZZLE.
14. FLEXIBLE CONNECTIONS FOR PIPING 2" AND ABOVE SHALL BE GARLOCK "EZ-FLOW" STYLE 206 SPOOL TYPE EXPANSION JOINTS, OR EQUIVALENT, WITH STEEL FLANGE, RETAINING RINGS RATED HEAVYWEIGHT, CHLOROBUTYL CARCASS, AND HYPLON LINER, NEOPRENE COVER. ASSEMBLIES WITH THE STANDARD FACTORY APPLIED HYPLON PAINT ON THE EXTERIOR ARE PROHIBITED. FLEXIBLE CONNECTIONS UNDER 2" SHALL BE AEROQUIP 2651, OR EQUIVALENT, WITH REUSABLE APPROVED SAE 37° SWIVEL END FITTINGS. HOSE LENGTH SHALL NOT EXCEED 24".
15. ALL FLANGED CONNECTIONS SHALL BE PROVIDED WITH 316 S.S., GR 316, ASTM F593 HEX HD. BOLTS, 316 S.S., GR. 316, ASTM F594 NUTS AND 316 S.S. WASHERS.
16. STRAINERS SUPPLYING COOLING WATER TO SHAFT SEALS SHALL BE FITTED WITH 80 MESH STRAINER BASKET SCREENS.

△1 3 RESERVATIONS:
~~RESERVE HVAC SEA WATER COOLING PIPING PENDING VENDOR INFORMATION.~~

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-256-1

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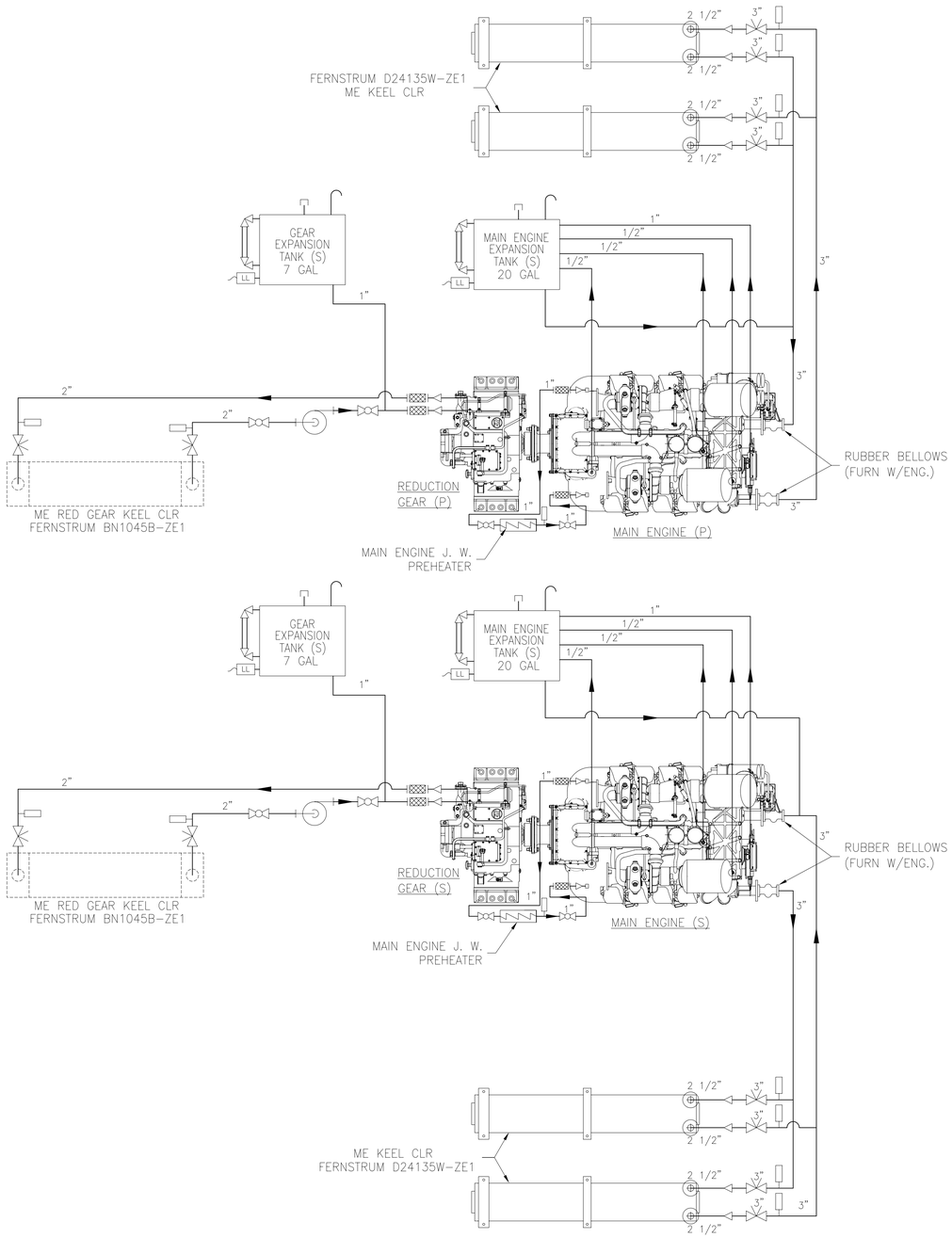
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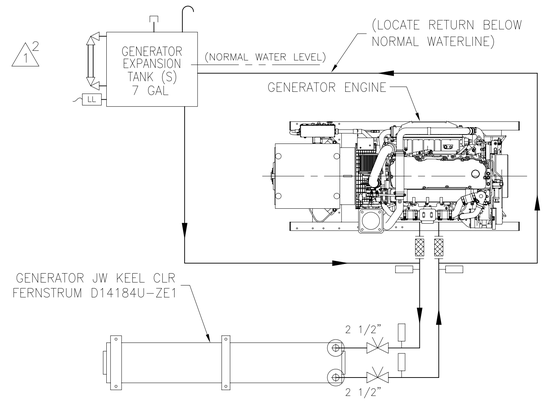
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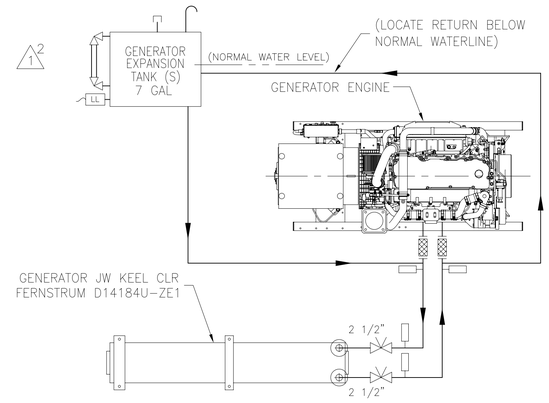
COOLING PIPING SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 6/30/10	DWG NO.	256-01
CK'D BY: KHK	HULL No. 413	SHT 1 OF 2	
SCALE: NONE	G&C Job No. 09-060	REV. 2	

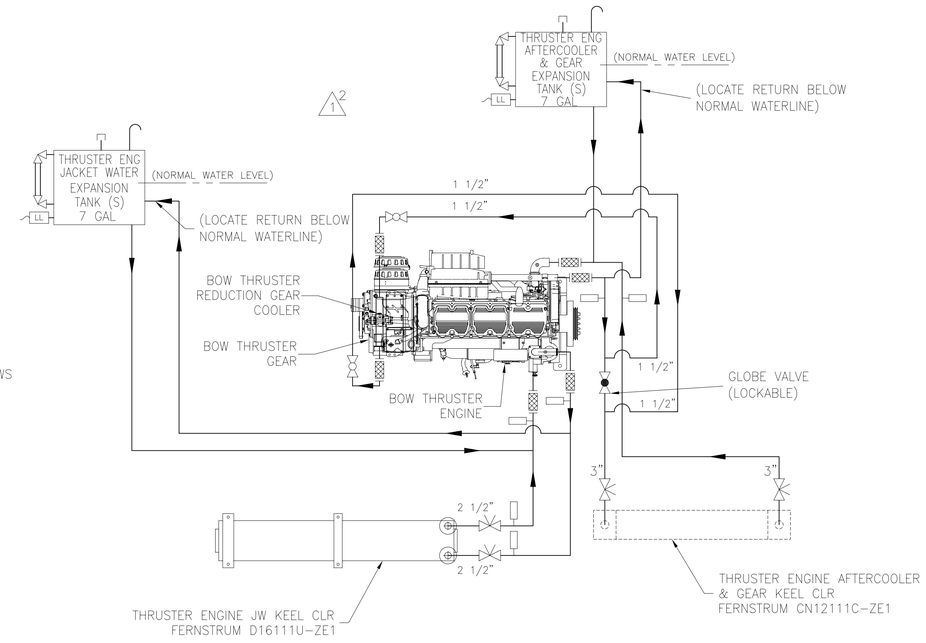


MAIN ENGING COOLING PIPING SCHEMATIC





GENERATOR ENGING COOLING PIPING SCHEMATIC



BOW THRUSTER ENGING COOLING PIPING SCHEMATIC

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-256-1

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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

COOLING PIPING SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 6/30/10	DWG NO. 256-01
CK'D BY: KHK	HULL No. 413	SHT 2 OF 2
SCALE: NONE	G&C Job No. 09-060	REV. 2

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE	REMARKS
1	5 FT	PIPE, 20", SCH 10, SEAMLESS	CARB STL	ASTM A-53	ANSI B36.10
2	3 FT	PIPE, 10", SCH 10, SEAMLESS	CARB STL	ASTM A-53	ANSI B36.10
3	80 FT	PIPE, 3", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
4	80 FT	PIPE, 2 1/2", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
5	100 FT	PIPE, 2", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
6	20 FT	PIPE, 1 1/2", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
7	2 FT	PIPE, 1 1/4", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
8	100 FT	PIPE, 1", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
9	200 FT	PIPE, 1/2", SCH 40, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10
10	60 FT	PIPE, 2", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
11	100 FT	PIPE, 1 1/2", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
12	60 FT	PIPE, 1", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
13	1 FT	PIPE, 3/4", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
14	10 FT	PIPE, 3/8", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
15	2 FT	PIPE, 1/4", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
16	20 FT	PIPE, 2 1/2", SCH 80, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10 (SHELL PENETRATION)
17	8 FT	PIPE, 2", SCH 80, SEAMLESS	CARB STL	ASTM A-106, GR B	ANSI B36.10 (SHELL PENETRATION)
18	3 FT	PIPE, 2", SCH 80, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
19	14	ELBOW 90°, 2 1/2", BUTT WELD, SCH 80	CARB STL	ASTM A-234	ANSI B16.9
20	28	ELBOW 90°, 3", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
21	38	ELBOW 90°, 2 1/2", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
22	10	ELBOW 90°, 2", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
23	6	ELBOW 90°, 1 1/2", SCREWED, 150 LB	MAL. IRON	ASTM A-197	ANSI B16.3
24	A/R	ELBOW 90°, 1", SCREWED, 150 LB	MAL. IRON	ASTM A-197	ANSI B16.3
25	8	ELBOW 45°, 3", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
26	4	ELBOW 45°, 2 1/2", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
27	6	ELBOW 90°, 2", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
28	10	ELBOW 90°, 1 1/2", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
29	10	ELBOW 90°, 1", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
30	10	ELBOW 90°, 3/4", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
31	AS REQD	ELBOW 90°, 1/2", SCREWED, 150 LB	MAL. IRON	ASTM A-197	ANSI B16.3
32	4	ELBOW 180°, 1/2", OPEN PATTERN, SCREWED, 150 LB	MAL. IRON	ASTM A-197	ANSI B16.3
33	4	ELBOW 90°, 2", BUTT WELD, SCH 80	CARB STL	ASTM A-234	ANSI B16.9
34	2	REDUCER, CONC., 2"x 1", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
35	10	REDUCER, CONC., 3"x 2 1/2", BUTT WELD, SCH 80	CARB STL	ASTM A-234	ANSI B16.9
36	2	REDUCER, CONC., 2"x 1 1/4", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
37	11	TEE, 1 1/2", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
38	4	TEE, 1", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
39	4	TEE, 3", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
40	2	TEE, 2", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
41	2	REDUCING INSERT, 2"x1/4", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
42	2	REDUCING INSERT, 1 1/2"x1 1/4", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
43	7	REDUCING INSERT, 1 1/2"x1", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
44	2	REDUCING INSERT, 2"x1 1/2", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
45	4	REDUCING INSERT, 1"x3/4", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
46	4	REDUCING INSERT, 1"x3/8", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
47	2	REDUCING INSERT, 1"x1/4", SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
48	2	PIPE SLEEVE, 3 1/2", DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 3" PIPE	CARB STL	ASTM A-106	ANSI B16.11
49	2	PIPE SLEEVE, 3", DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 2 1/2" PIPE	CARB STL	ASTM A-106	ANSI B36.10
50	2	PIPE SLEEVE, 2", DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 1 1/2" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.10
51	3	ELBOW 45°, 2", BUTT WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
52	2	BUSHING, 1 1/2"x1/4", THREADED 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
53	2	BUSHING, 1"x1/4", THREADED 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
54	2	BUSHING, 3/4"x1/4", THREADED 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
55	2	THREAD-O-LET, 1 1/2", 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
56	2	THREAD-O-LET, 1", 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
57	26	THREAD-O-LET, 3/4", 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
58	1	COUPLING, FULL, 1", THREADED 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
59	24	COUPLING, HALF, 1/2", THREADED 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
60	6	COUPLING, HALF, 1", THREADED 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
61	4	COUPLING, HALF, 2", THREADED 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
62	12	FLANGE, 3", 150#, SLIP-ON, FLAT FACE	FORGED STEEL	ASTM A-105	ANSI B16.5
63	12	FLANGE, 2 1/2", 150#, SLIP-ON, FLAT FACE	FORGED STEEL	ASTM A-105	ANSI B16.5
64	8	FLANGE, 2", 150#, SLIP-ON, FLAT FACE	FORGED STEEL	ASTM A-105	ANSI B16.5
65	22	FLANGE, 3", 150#, SLIP-ON, RF	FORGED STEEL	ASTM A-105	ANSI B16.5
66	12	FLANGE, 2 1/2", 150#, SLIP-ON, RF	FORGED STEEL	ASTM A-105	ANSI B16.5
67	16	FLANGE, 2", 150#, SLIP-ON, RF	FORGED STEEL	ASTM A-105	ANSI B16.5

CONTINUED ZONE 14-D

REFERENCES

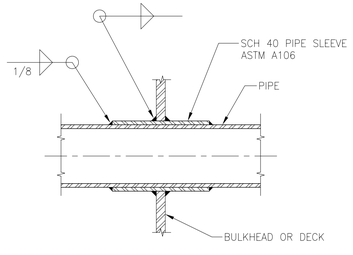
1.	101-02	GENERAL ARRANGEMENTS
2.	200-01	MACHINERY ARRANGEMENT
3.	163-01	SEA CHESTS
4.	110-01	SCANTLING PLANS BOW-FR. 35
5.	568-01	BOW THRUSTER INSTALLATION
6.	533-01	POTABLE WATER SYSTEM SCHEMATIC
7.	256-03	COOLER INSTALLATION
8.	521-01	FIRE MAIN SYSTEM SCHEMATIC
9.	243-01	SHAFT ARRANGEMENT
10.	256-01	COOLING PIPING SCHEMATIC

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED IN REFERENCE 1.
3. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
4. EXPANSION TANKS SHALL BE INSTALLED AT LEAST TWO FEET ABOVE THE TOP OF THE HIGH POINT WITHIN A SYSTEM. EACH EXPANSION TANK SHALL BE PROVIDED WITH A LOW LEVEL ALARM @ 50%. CONTRACTOR SHALL VERIFY EXPANSION TANK SIZE.
5. PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS AND EQUIPMENT.
6. PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. TUBING AND FITTINGS ARE TO BE MADE FROM 316 STAINLESS STEEL. TUBING WALL THICKNESS SHALL BE 0.035 INCHES.
7. AVOID POCKETS IN THE PIPE LINES AND PROVIDE WITH FITTINGS, VALVES, OR TRAPS TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED FOR DRAINING.
8. THE PIPING SYSTEM SHALL BE CLEANED, FLUSHED, FILLED AND HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH USCG AND ABS REQUIREMENTS.
9. PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. CARE SHALL BE EXERCISED TO PLACE PIPE HANGERS SO THAT STRAIN IS AVOIDED WHERE PIPING IS CONNECTED TO MACHINERY. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
10. VENT LINES TO THE EXPANSION TANK SHALL BE INSTALLED AT ALL PIPING SYSTEM HIGH POINTS TO ALLOW COMPLETE AIR REMOVAL.
11. PIPE BENDS IN ACCORDANCE WITH 46 CFR 56.80-5 MAY BE SUBSTITUTED FOR ELBOWS WHERE FEASIBLE.
12. INSULATE JACKET WATER PIPING AS NEEDED FOR PERSONNEL PROTECTION IN ACCORDANCE WITH ASTM F683 USING REMOVABLE BLANKET TYPE INSULATION.
13. ELECTRICALLY ISOLATE KEEL COOLERS FROM HULL AT ALL ATTACHMENT POINTS AND AT EACH NOZZLE.
14. FLEXIBLE CONNECTIONS FOR PIPING 2" AND ABOVE SHALL BE GARLOCK "EZ-FLOW" STYLE 206 SPOOL TYPE EXPANSION JOINTS, OR EQUIVALENT, WITH STEEL FLANGE, RETAINING RINGS RATED HEAVYWEIGHT, CHLOROBUTYL CARCASS, AND HYPLON LINER, NEOPRENE COVER. ASSEMBLIES WITH THE STANDARD FACTORY APPLIED HYPLON PAINT ON THE EXTERIOR ARE PROHIBITED. FLEXIBLE CONNECTIONS UNDER 2" SHALL BE AEROQUIP 2651, OR EQUIVALENT, WITH REUSABLE APPROVED SAE 37° SWIVEL END FITTINGS. HOSE LENGTH SHALL NOT EXCEED 24". YARD TO ADAPT HOSE FITTINGS TO ENGINE CONNECTIONS.
15. ALL FLANGED CONNECTIONS SHALL BE PROVIDED WITH 316 S.S., GR 316, ASTM F593 HEX HD. BOLTS, 316 S.S., GR. 316, ASTM F594 NUTS AND 316 S.S. WASHERS.
16. STRAINERS SUPPLYING COOLING WATER TO SHAFT SEALS SHALL BE FITTED WITH 80 MESH STRAINER BASKET SCREENS.
17. WHERE ENGINES ARE NOT SUPPLIED WITH MATING FLANGES FROM THE MANUFACTURER AT COOLING CONNECTIONS, YARD SHALL FABRICATE SUITABLE FLANGES FROM PLATE.



DETAIL "4-A"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE

RESERVATIONS:
RESERVE HVAC SEA WATER COOLING PIPING PENDING VENDOR INFORMATION.

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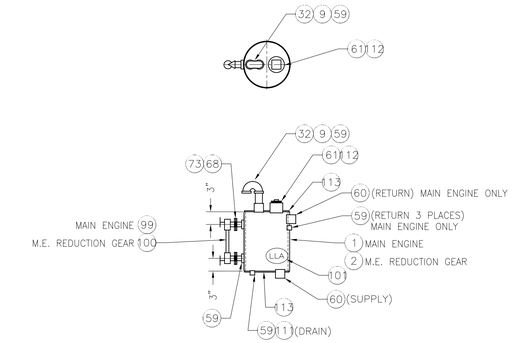
COOLING PIPING SYSTEM ARRANGEMANT & DETAILS

DRAWN BY: JCM	DATE: 8/20/10	DWG NO. 256-02 SHT 1 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 0

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LIST OF MATERIALS, CONTD FROM ZONE 7-A

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
68	9	FLANGE, 1/2", 150#, SLIP-ON, RF	FORGED STEEL	ASTM A-105	ANSI B16.5
69	2	FLANGE, 2", 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5
70	2	GASKET, 3", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
71	4	GASKET, 2 1/2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
72	10	GASKET, 2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
73	8	GASKET, 1/2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
74	2	GATE VALVE, 2", 150# FLANGED, RF, RISING STEM, SS RENEWABLE DISC & SEAT	STAINLESS STL	CF8M	ANSI B-16.34
75	5	GATE VALVE, 2", 150# SCR'D, SS RENEWABLE DISC & SEAT	STAINLESS STL	CF8M	ANSI B-16.34
76	5	GATE VALVE, 1 1/2", 150# SCR'D, SS RENEWABLE DISC & SEAT	STAINLESS STL	CF8M	ANSI B-16.34
77	5	GATE VALVE, 1", 150# SCR'D, SS RENEWABLE DISC & SEAT	STAINLESS STL	CF8M	ANSI B-16.34
78	2	BALL VALVE, 2", 150#, FULL PORT, FLG'D.	CARB STL		ANSI B-16.34
79	4	BALL VALVE, 1 1/2", 150#, FULL PORT, SCR'D.	BRONZE	ASTM B-62	
80	2	TEE, 1", SCRD, 150#	MAL IRON	ASTM A-197	ANSI B16.3
81	8	BALL VALVE, 1/4", THREADED, FPT, TEFLON SEAT & SEALS	STAINLESS STL	ASTM A351/A744	FULL PORT, S.S. BALL & STEM
82	2	CHECK VALVE, SWING CHECK, 1 1/2", 150#, THD, BRZ TRIM, RENEWABLE DISC	STAINLESS STL	ASTM A-182	ANSI B16.34
83	1	CHECK VALVE, SWING CHECK, 1", 150#, THD, BRZ TRIM, RENEWABLE DISC	STAINLESS STL	CF8M	ANSI B16.34
84	10	BUTTERFLY VALVE, 3", 150# LUG TYPE	DUCTILE IRON	ASTM A-395	KEYSTONE FIG. 129 OR EQ.
85	6	BUTTERFLY VALVE, 2 1/2", 150# LUG TYPE	DUCTILE IRON	ASTM A-395	KEYSTONE FIG. 129 OR EQ.
86	5	BUTTERFLY VALVE, 2", 150# LUG TYPE	DUCTILE IRON	ASTM A-395	KEYSTONE FIG. 129 OR EQ.
87	1	GLOBE VALVE, 3", 150# FLANGED, RF, RENEWABLE SEAT RINGS	STAINLESS STL	ASTM A-351	ANSI B-16.34
88	1	RELIEF VALVE, 1", 150# SCR'D., SET @ 25 PSI	STAINLESS STL	ASTM A-182	ANSI B-16.34
89	2	EXPANSION JOINT, 3", SINGLE ARCH, FLANGED ENDS	RUBBER	COML	ANSI B16.1/B16.5 GARLOCK EZ-FLOW OR EQ
90	6	EXPANSION JOINT, 2 1/2", SINGLE ARCH, FLANGED ENDS	RUBBER	COML	ANSI B16.1/B16.5 GARLOCK EZ-FLOW OR EQ
91	4	EXPANSION JOINT, 2", SINGLE ARCH, FLANGED ENDS	RUBBER	COML	ANSI B16.1/B16.5 GARLOCK EZ-FLOW OR EQ
92	2	STRAINER, 2", SIMPLEX, 150#, THD, STN. STL. BASKET	BRONZE	ASTM B62	HAYWARD MOD 72 W/SSTL BASKET & TRIM
93	2	STRAINER, 1", "SIMPLEX", 150#, THD, STN. STL. BASKET	BRONZE	ASTM B62	HAYWARD MOD 72 W/SSTL BASKET & TRIM, SEE NOTE 16
94	2	FLOW SWITCH, PADDLE-TYPE, 1" NPT	BRASS	MCM-CARR 4971K5	FURN BY EMI AS PART OF MONITORING SYSTEM
95	4	PRESSURE GAUGE, 1/4", 2 1/2" DIAL	STAINLESS STL	ASHCROFT DURALIFE	0-100 PSI
96	2	VACUUM/PRESSURE GAUGE, 1/4"	STAINLESS STL	ASHCROFT DURALIFE	30/0/30
97	26	THERMOMETER, 1/2" NPT	STAINLESS STL		20-240 F
98	26	THERMOWELL, 3/4"X1/2" NPT	STAINLESS STL		
99	2	LIQUID LEVEL GAUGE, 1/2" FLG'D. ENDS, w/BALL CHECK ISLN VLVS	ALLOY		GEMS SURESITE OR EQ (MAIN ENG EXP. TK)
100	2	LIQUID LEVEL GAUGE, 1/2" FLG'D. ENDS, w/BALL CHECK ISLN VLVS	ALLOY		GEMS SURESITE OR EQ (M.E. GEAR EXP. TK)
101	4	LOW LEVEL ALARM, 1/4"		COML	FURN BY EMI AS PART OF MONITORING SYSTEM
102	2	HOSE ASSEMBLY, 1 1/2", S.S. REUSABLE END FITTINGS			AEROQUIP OR EQ (SEE NOTE 14)
103	4	HOSE ASSEMBLY, 1", S.S. REUSABLE END FITTINGS			AEROQUIP OR EQ (SEE NOTE 14)
104	AS REQD	UNION, 1 1/2", SCREWED, 150 LB	MAL. IRON	ASTM A-197	ANSI B16.3
105	AS REQD	UNION, 2", 3000 LB, SOCKET-WELD	STAINLESS STL	ASTM A-182	ANSI B16.11
106	AS REQD	UNION, 1 1/2", 3000 LB, SOCKET-WELD	STAINLESS STL	ASTM A-182	ANSI B16.11
107	AS REQD	UNION, 1", 3000 LB, SOCKET-WELD	STAINLESS STL	ASTM A-182	ANSI B16.11
108	AS REQD	UNION, 3/4", 3000 LB, SOCKET-WELD	STAINLESS STL	ASTM A-182	ANSI B16.11
109	AS REQD	UNION, 3/8", 3000 LB, SOCKET-WELD	STAINLESS STL	ASTM A-182	ANSI B16.11
110	1 FT	PIPE, 1 1/4", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
111	4	PLUG, 1/2", THREADED 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
112	4	PLUG, 2", THREADED 3000 LB	FORGED STEEL	ASTM A-105	ANSI B16.11
113	6 SQ FT	PLATE, STEEL, 1/4"	STEEL	A36	
114	2	REDUCING INSERT, 1 1/2" SOCKET-WELD X 1" NPT, 3000 LB	STAINLESS STEEL	ASTM A-182	ANSI B16.11
115	A/R	ELBOW, 90 DEG, 3/8", SOCKET-WELD, 3000 LB	STAINLESS STEEL	ASTM A-182	ANSI B16.11



DETAIL "9-D"
TYPICAL EXPANSION TANK
SCALE: NONE

COOLING SYSTEM	CAPACITY	PIPE SIZE	LENGTH	REQ'D
MAIN ENGINE	20 GAL	20" SCH 10	24"	2
M. E. REDUCTION GEAR	7 GAL	10" SCH 10	18"	2

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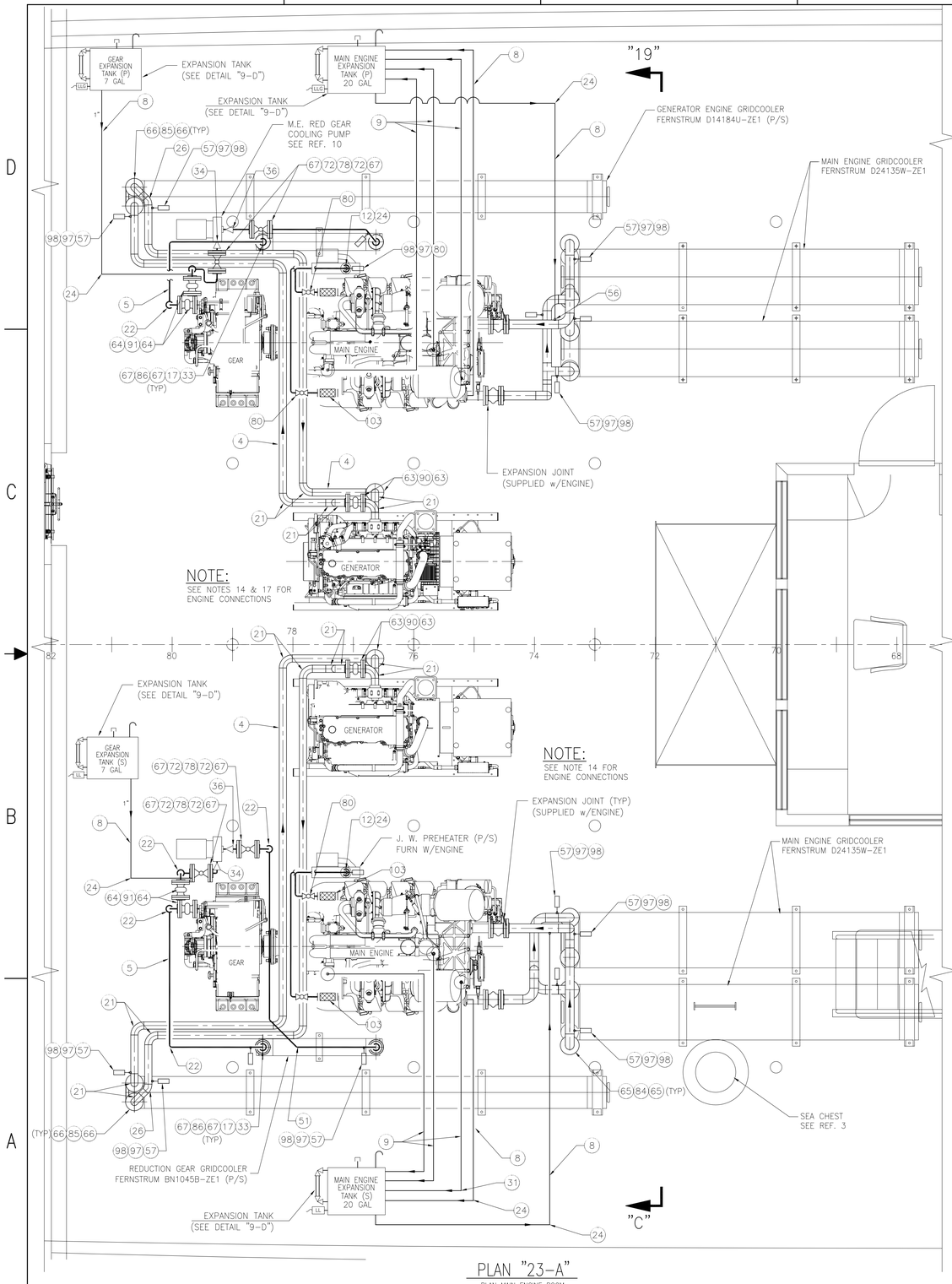
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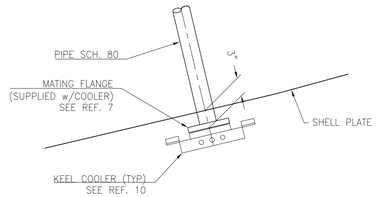
COOLING PIPING SYSTEM
ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 8/20/10	DWG NO. 256-02 SHT 2 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 0



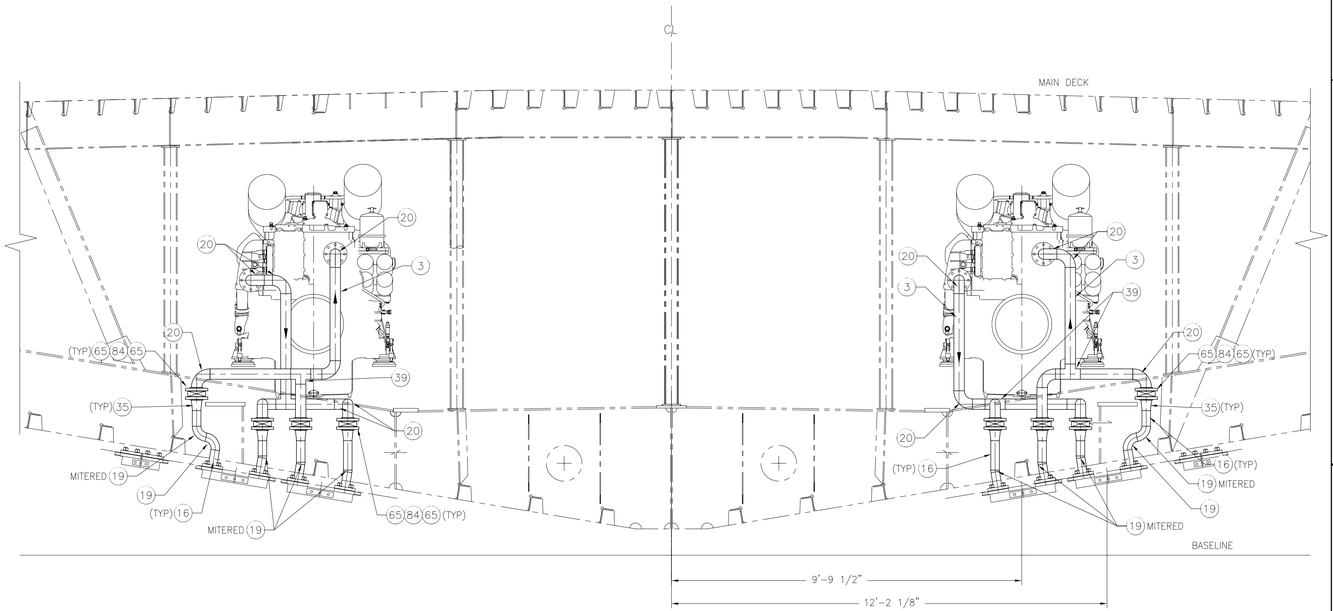
PLAN "23-A"

PLAN MAIN ENGINE ROOM
SCALE: 1/2"=1'-0"



DETAIL "17-D"

TYPICAL MATING FLANGE INSTALLATION
SCALE: 1"=1'-0"



SECTION "19-C"

FRAME 73 LOOKING AFT
PORT SIDE SHOWN, STBD SIM BUT OPPOSITE HAND
SCALE: 1/2"=1'-0"

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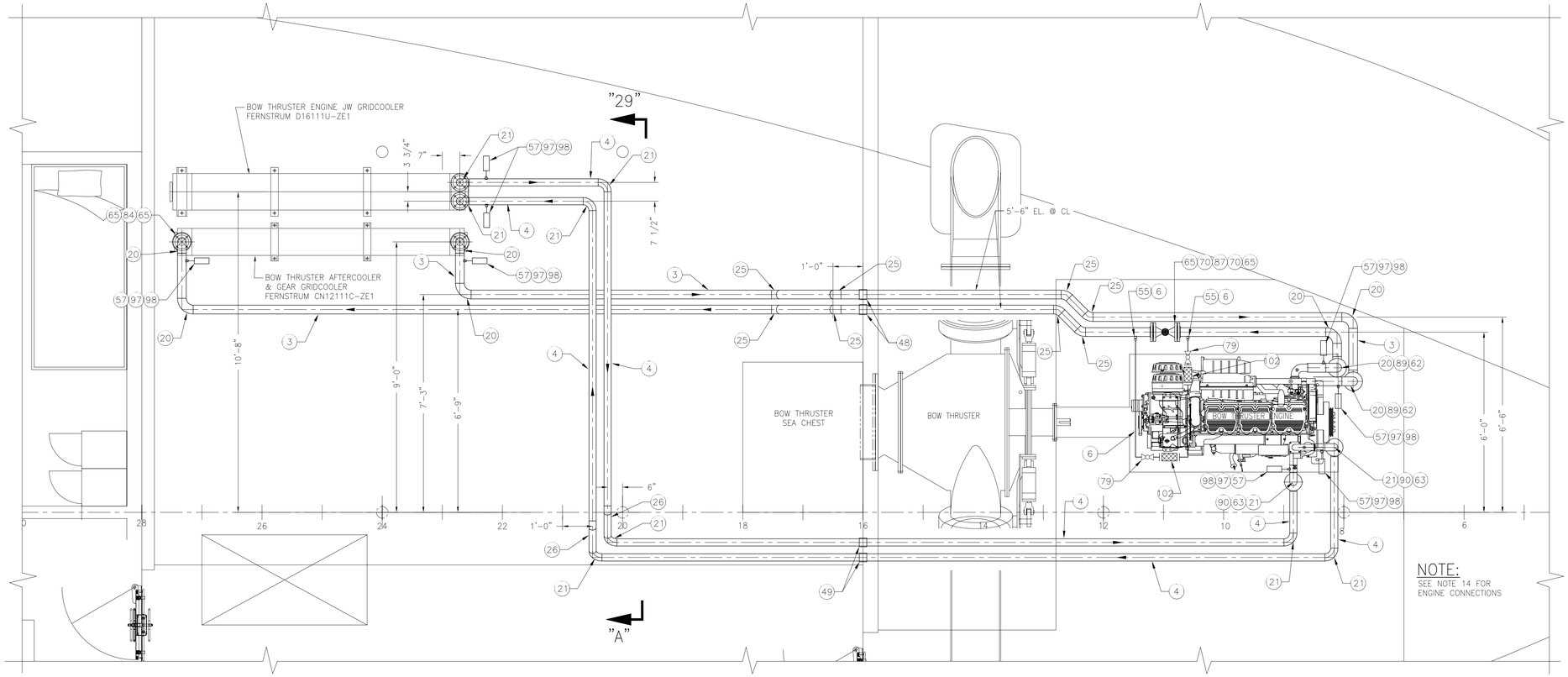
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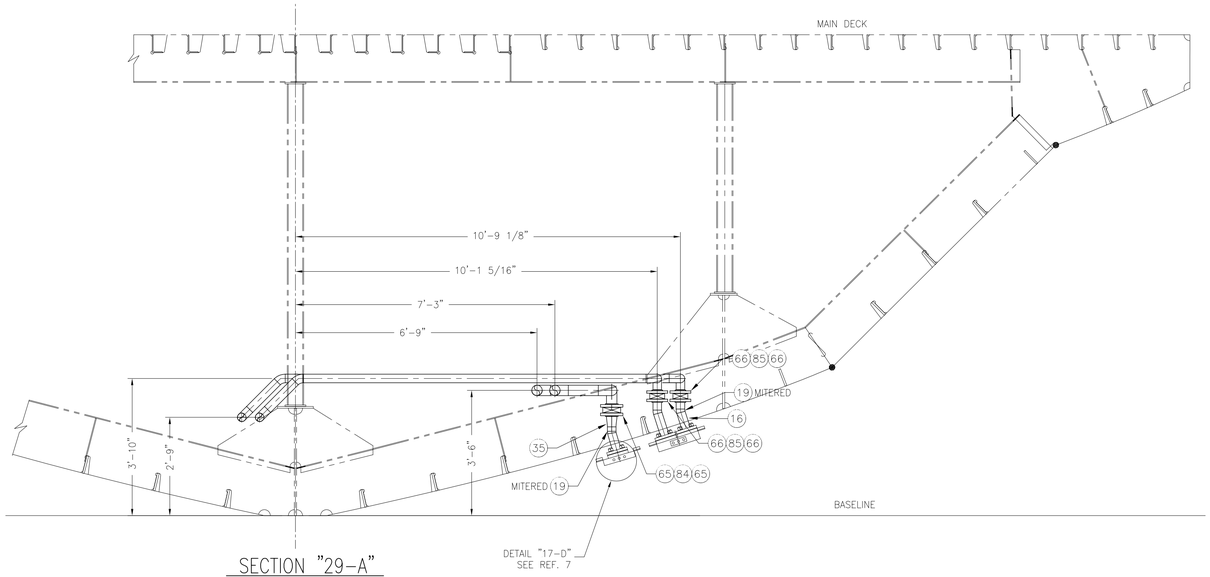
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COOLING PIPING SYSTEM ARRANGEMENT & DETAILS

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CK'D BY:	KHK	HULL No. 413	SHT 3 OF 5
SCALE:	1/4"=1'-0"	G&C Job No. 09-060	REV. 0



PLAN "30-B"
BOW THRUSTER COOLING PIPING SYSTEM
SCALE: 1/2"=1'-0"



SECTION "29-A"
FRAME 20 LOOKING AFT
PORT SIDE
SCALE: 1/2"=1'-0"

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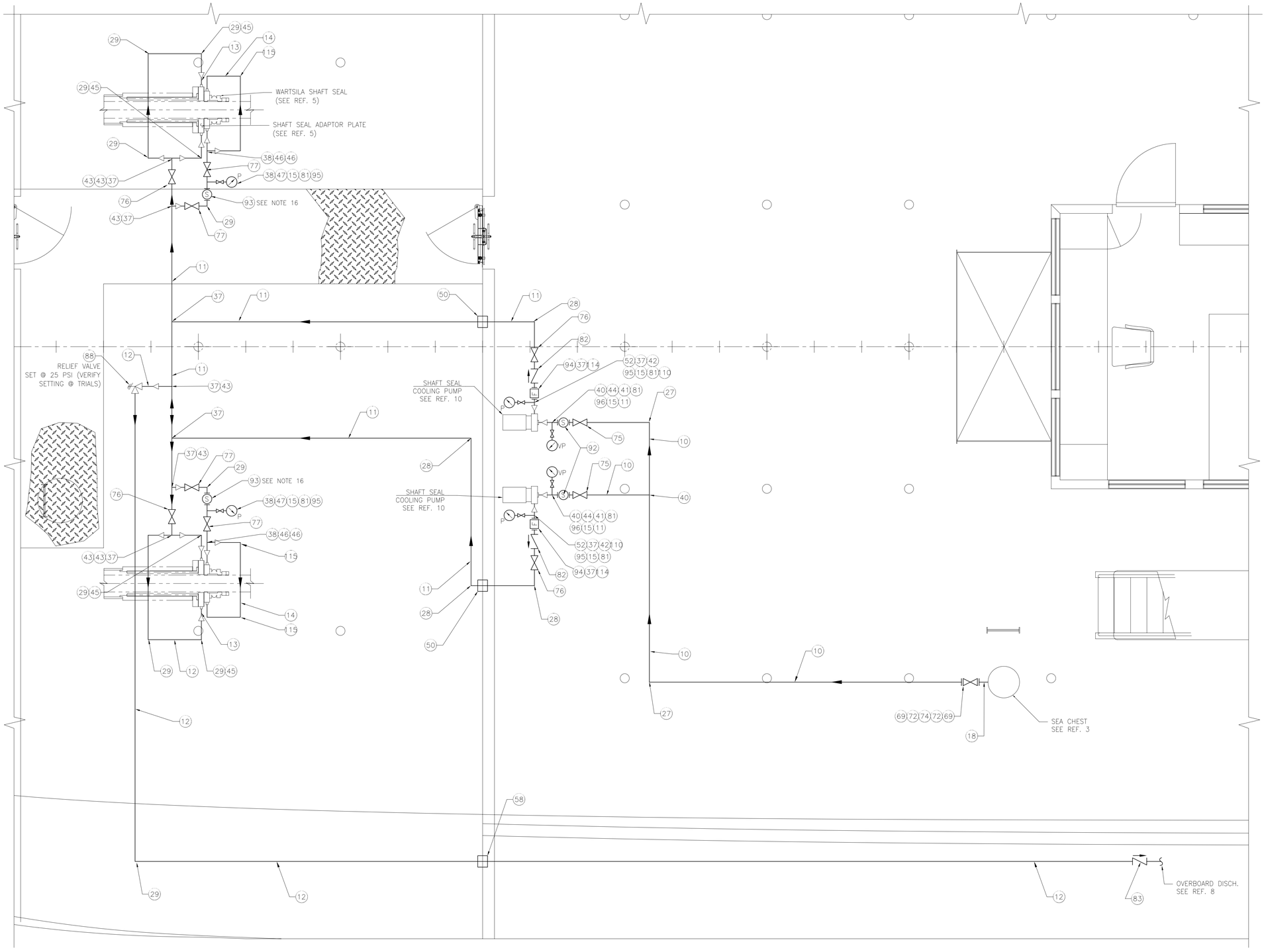
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NEW SOUND CLASS FERRY

COOLING PIPING SYSTEM ARRANGEMENT & DETAILS

DRAWN BY:	JCM	DATE: 8/20/10	DWG NO. 256-02
CK'D BY:	KHK	HULL No. 413	SHT 4 OF 5
SCALE:	NOTED	G&C Job No. 09-060	REV. 0



PLAN "37-A"
SHAFT SEAL COOLING PIPING SYSTEM
SCALE: 1/2"=1'-0"

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NEW SOUND CLASS FERRY

COOLING PIPING SYSTEM
ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 8/20/10	DWG NO. 256-02 SHT 5 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 0

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS MATERIAL	TAKEDOWN JOINTS GASKETS	TAKEDOWN JOINTS BOLTING	FITTINGS	VALVES BODY	VALVES TRIM	REMARKS
FUEL OIL SERVICE & TRANSFER	2" & BELOW	CARBON STEEL SCH 40 ASTM A53 OR A106 SEAMLESS ANSI B36.10	FLANGES: FORGED STEEL 150#, SLIP ON RAISED FACE ASTM A105 ANSI B16.5 UNIONS: FORGED STEEL 3000# S.W. GROUND JOINT ASTM A105 MSS SP-83	GARLOCK STYLE 3300	BOLTS: STEEL (GALV) ASTM A307 GR B ANSI B18.2.1 NUTS: STEEL (GALV) ASTM A563 GR A ANSI B18.2.2	FORGED STEEL 3000#, S.W. ASTM A234 OR A105 ANSI B16.11	GATE: NRS STAINLESS STEEL FLANGED, 150# ASTM A351 CF8M ANSI B16.34 BALL: FULL PORT STAINLESS STEEL THREADED, 150# ASTM A351 CF8M MSS SP-110 CHECK VALVE STAINLESS STEEL THREADED, 150# ASTM A351 CF8M ANSI B16.34	STAINLESS TRIM STAINLESS STEM & BALL TFE SEAT & SEAL STAINLESS DISC & SEAT	
	EXTERIOR	316 STAINLESS STEEL SCH 40 ASTM A312 SEAMLESS ANSI B36.19	FLANGES: 316 STAINLESS STEEL 150#, SLIP ON RAISED FACE ASTM A182 ANSI B16.5		BOLTS: 316 S.S. ASTM F193 ANSI B18.2.1 NUTS: 316 S.S. ASTM F594 ANSI B18.2.2	316 STAINLESS STL. 150#, BUTT WELD ASTM A182 ANSI B16.9	GATE: RISING STEM, STAINLESS STEEL FLANGED, 150# ASTM A351 CF8M ANSI B16.34	STAINLESS TRIM	ALL COMPONENTS EXPOSED TO WEATHER

REFERENCES

1.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
2.	264-01	LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC
3.	200-01	MACHINERY ARRANGEMENT
4.	101-01	OUTBOARD & INBOARD PROFILE
5.	101-02	GENERAL ARRANGEMENT

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	12-B 13-D 13-B 16-B 13-D 10-B	1. REVISED ENGINE RETURN LINES IN THE TANKS TO TERMINATE NEAR THE BOTTOM OF FUEL OIL TANKS & EMERGENCY GENERATOR TANK. 2. ADDED EQUALIZING LINE TO FUEL OIL TANKS. 3. ADDED A SHUT-OFF VALVE ON THE RETURN LINES OF EACH ENGINE.	11/5/10	JM/KHK
2	10-C 15-C 1-B 7-C 12-A 12-D	1. ADDED FUEL OIL FILL STATIONS FWD AND AFT OUTBOARD PORT AND STBD. PER OWNERS REQUEST. 2. DELETED GEN. NOTE #14, CHANGED FUEL TRANSFER PUMP TO A HAND PUMP AND DELETED RETURN/OVER-FLOW LINE TO EMERGENCY F.O. TANK. DELETED SYS OPERATING CONDS FOR XFER SYS. ABOVE REVS PER OWNERS REQUEST & AS-BUILT CONFIGURATION.	3/15/11 7/22/11	JCM/KK JCM/KK

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS AND BE IN COMPLIANCE WITH U.S. COAST GUARD REGULATIONS FOR SUBCHAPTER "H" VESSELS.
2. LOCATE T-WRENCH FOR REMOTE FUEL OIL SUPPLY SHUT-OFF DECK BOX ON BULKHEAD ADJACENT TO DECK BOX.
3. FLEXIBLE HOSE ASSEMBLIES SHALL BE USCG APPROVED FOR FUEL OIL SERVICE. END FITTINGS SHALL USE 37° SWIVEL FLARE ON BOTH ENDS. HOSE ASSEMBLIES SHALL BE PRESSURE RATED FOR AT LEAST 5 TIMES THE WORKING PRESSURE OF THE PUMP.
4. PIPE TO TANK SHUT OFF VALVE SHALL BE SCH 80.
5. DO NOT ROUTE PIPING CONTAINING FUEL OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL FUEL OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450 DEGREES OR GREATER.
6. PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
7. EACH FUEL OIL TANK SHALL BE FITTED WITH HIGH AND LOW LEVEL ALARMS, INTEGRATED WITH THE SHIP'S ALARM SYSTEM. THE HIGH LEVEL ALARM IN THE EMERGENCY GENERATOR FUEL OIL TANK SHALL STOP THE FUEL OIL PUMP.
8. DRIP PANS SHALL BE PROVIDED BENEATH ALL FILTERS AND STRAINERS. EACH DRIP PAN SHALL BE FITTED WITH LOW POINT DRAIN VALVE.
9. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE INDICATION.
10. PIPE THREAD SEALING TAPE AND GALVANIZED PIPE SHALL NOT BE USED.
11. PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS APPROPRIATE FOR THE SERVICE AND PIPE MATERIAL AND FABRICATED AND INSTALLED IN ACCORDANCE WITH ASTM F708. FLEXIBLE PIPING CONNECTIONS SHALL MEET THE REQUIREMENTS OF 46 CFR PART 56, PARAGRAPH 56.60-25.
12. GAUGE PIPING ASSEMBLIES SHALL BE IN ACCORDANCE WITH ASTM F721. TUBING AND FITTINGS SHALL BE 316 STAINLESS STEEL. ROOT VALVES SHALL BE BALL TYPE, BUILT OF 316 STAINLESS STEEL.
13. PROVIDE INTERLOCK SO THAT ONE RETURN VALVE IS ALWAYS OPEN.

△2 2

PUMP LIST

QTY.	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	FUEL TRANSFER (NOTE 14)	HAND PUMP SLIDING-VANE TYPE	BLACKMER PA-210A	10 GAL PER 115 REV	MANUAL

LIST OF EQUIPMENT

PIECE No.	QTY	DESCRIPTION	REMARKS
1	2	MAIN ENGINE FUEL OIL FILTER	RACOR 751000MAX
2	2	GENERATOR ENGINE FUEL OIL FILTER	RACOR 75500MAX
3	1	BOW THRUSTER ENGINE FUEL OIL FILTER	RACOR 75900MAX
4	1	EMERGENCY GENERATOR ENGINE FUEL OIL FILTER	RACOR 75500MAX

△2 2

SYMBOLS LIST

	SPILL DRIP PAN (NOTE 8)
	FLEXIBLE HOSE ASSEMBLY (NOTE 3)
	REDUCER/ENLARGER
	FLOW DIRECTION
	SWING CHECK VALVE
	BHD/DECK PENETRATION
DF	DIFFERENTIAL PRESSURE GAUGE (NOTE 12)
	DUPLEX FUEL FILTER
	BALL VALVE
	GATE VALVE W/ REACH ROD
	GATE VALVE
	MANUAL HAND PUMP
	SIMPLEX STRAINER

△2 2

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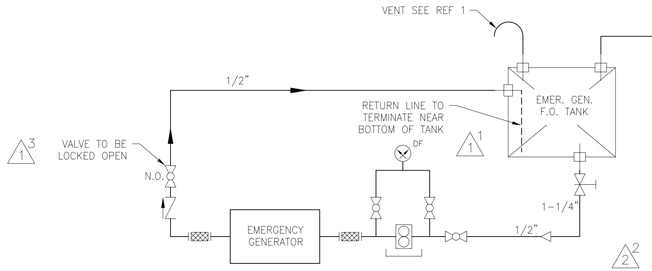
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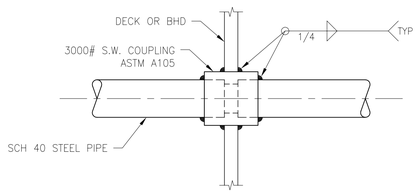
NEW SOUND CLASS FERRY

FUEL OIL SYSTEM SCHEMATIC

DRAWN BY: JM	DATE: 4/27/10	DWG NO. 261-01
CK'D BY: RA	HULL No. 413	SHT 1 OF 2
SCALE: NONE	G&C Job No. 09-060	REV. 2

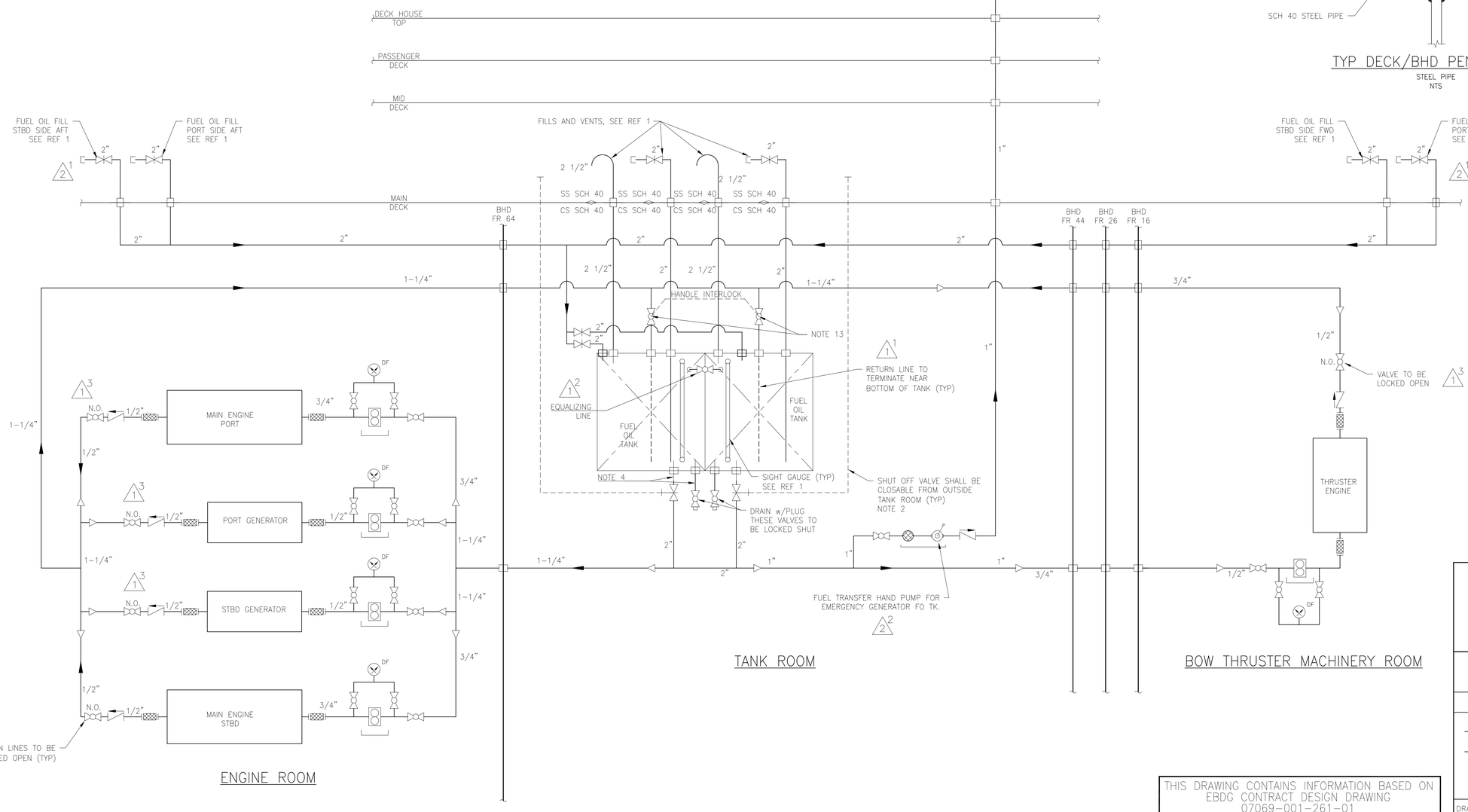


EMERGENCY GENERATOR ROOM



TYP DECK/BHD PENTETRATION

STEEL PIPE
NTS



TANK ROOM

ENGINE ROOM

BOW THRUSTER MACHINERY ROOM

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NEW SOUND CLASS FERRY

FUEL OIL SYSTEM SCHEMATIC

DRAWN BY: JM	DATE: 4/27/10	DWG NO. 261-01	
CK'D BY: RA	HULL No. 413	SHT 2 OF 2	
SCALE: NONE	G&C Job No. 09-060	REV. 2	

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
1	8'	PIPE, 2", SCH 40, SEAMLESS, BLACK	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
2	180'	PIPE, 1 1/4", SCH 40, SEAMLESS, BLACK	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
3					
4	80'	PIPE, 1", SCH 40, SEAMLESS, BLACK	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
5					
6	220'	PIPE, 3/4", SCH 40, SEAMLESS, BLACK	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
7	50'	PIPE, 1/2", SCH 40, SEAMLESS, BLACK	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
8					
9	2	ELBOW, 90°, 2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
10	12	ELBOW, 90°, 1 1/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
11					
12	11	ELBOW, 90°, 1", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
13					
14	16	ELBOW, 90°, 3/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
15	34	ELBOW, 90°, 1/2", THD, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
16					
17	2	TEE, 2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
18	11	TEE, 1 1/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
19	1	TEE, 1", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
20	12	TEE, 1/2", THD, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
21					
22	2	COUPLING, 2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
23	10	COUPLING, 1 1/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
24	10	COUPLING, 1", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
25	6	COUPLING, 3/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
26	1	COUPLING, 1/2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
27	A/R	UNION, 1 1/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
28	A/R	UNION, 1", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
29	A/R	UNION, 3/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
30	A/R	UNION, 1/2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	ANSI B16.11
31	2	PLUG, PIPE, 1", THD.	CARBON STEEL	ASTM A-105	ANSI B16.11
32	1	REDUCER INSERT, 2" x 1 1/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
33	1	REDUCER INSERT, 2" x 1", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
34	3	REDUCER INSERT, 1 1/4" x 3/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
35	7	REDUCER INSERT, 1 1/4" x 1/2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
36	1	REDUCER INSERT, 1" x 3/4", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
37	2	REDUCER INSERT, 3/4" x 1/2", SW, FORGED STEEL, 3000#	CARBON STEEL	ASTM A-105	MSS SP-79
38					
39	4	FLANGE, 2", 150#, SLIP-ON, RAISED FACE	CARBON STEEL	ASTM A-105	ANSI B16.5
40					
41	2	FLANGE, 1", 150#, SLIP-ON, RAISED FACE	CARBON STEEL	ASTM A-105	ANSI B16.5
42	1	VALVE, SWING CHECK, 1", NPT, CLASS 150	STAINLESS STEEL	ASTM A-351	ANSI B16.34
43	6	VALVE, SWING CHECK, 1/2", NPT, CLASS 150	STAINLESS STEEL	ASTM A-351	ANSI B16.34
44					
45	3	VALVE, BALL, 1 1/4", 3-PIECE, NPT, CLASS 150, FULL PORT	STAINLESS STEEL	ASTM A-351	MSS SP-110
46	3	VALVE, BALL, 1", 3-PIECE, NPT, CLASS 150, FULL PORT	STAINLESS STEEL	ASTM A-351	MSS SP-110
47	24	VALVE, BALL, 1/2", 3-PIECE, NPT, CLASS 150, FULL PORT	STAINLESS STEEL	ASTM A-351	MSS SP-110, 6 VALVES TO HAVE LOCKABLE HANDLES, SEE NOTE 16
48					
49	2	VALVE, GATE, 2", 150#, FLG'D, W/REMOTE QUICK SHUT-OFF SPINDLE	STAINLESS STEEL	ASTM A-351	ANSI B16.10
50	1	VALVE, GATE, 1 1/4", 150#, SCR'D, W/REMOTE QUICK SHUT-OFF SPINDLE	STAINLESS STEEL	ASTM A-351	ANSI B16.10
51					
52	1	STRAINER, SIMPLEX, 1", THD	CAST STEEL	HAYWARD MODEL 72	BASKET MESH-40
53	2	FUEL FILTER, DUPLEX, MAIN ENGINE			REF 5
54	1	FUEL FILTER, DUPLEX, THRUSTER ENGINE			REF 5
55	3	FUEL FILTER, DUPLEX, GENERATORS			REF 5
56					
57	6	DIFFERENTIAL PRESSURE GAUGE	ASHCROFT	1127, 4 1/2", 1/2" NPT	RANGE 0-30
58	1	FUEL TRANSFER PUMP			REF 5
59	4	GASKET, 2", FULL FACE, 1/8" THK	ARAMID FIBER W/NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
60	2	GASKET, 1", FULL FACE, 1/8" THK	ARAMID FIBER W/NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000

REFERENCES

1.	101-02	GENERAL ARRANGEMENT
2.	101-01	OUTBOARD & INBOARD PROFILE
3.		- NOT USED -
4.	200-01	MACHINERY ARRANGEMENT
5.	261-01	FUEL OIL PIPING SCHEMATIC
6.	264-01	LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC
7.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
8.	506-02	FILLS, VENTS & SOUNDS PIPING ARRANGEMENT & DETAILS
9.	521-02	FIRE MAIN PIPING ARRANGEMENT & DETAILS
10.	529-02	BILGE SYSTEM ARRANGEMENT & DETAILS

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS AND BE IN COMPLIANCE WITH U.S. COAST GUARD REGULATIONS FOR SUBCHAPTER "H" VESSELS.
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13. PROVIDE INTERLOCK SO THAT ONE RETURN VALVE IS ALWAYS OPEN.
14. EMERG. GENERATOR FUEL TRANSFER PUMP SHALL BE CONTROLLED BY RUN/STOP PUSH BUTTONS LOCATED NEAR THE EMERGENCY GENERATOR FUEL TANK.
15. CONNECTIONS TO ENGINES ARE TO BE SHIPFIT TO SUIT VENDOR RECOMMENDATIONS.
16. BALL VALVES ON RETURN LINES AT ENGINES TO HAVE LOACKABLE HANDLES AND SHALL BE LOCKED IN OPEN POSITION EXCEPT WHEN ACTUALLY SERVICING ENGINE.

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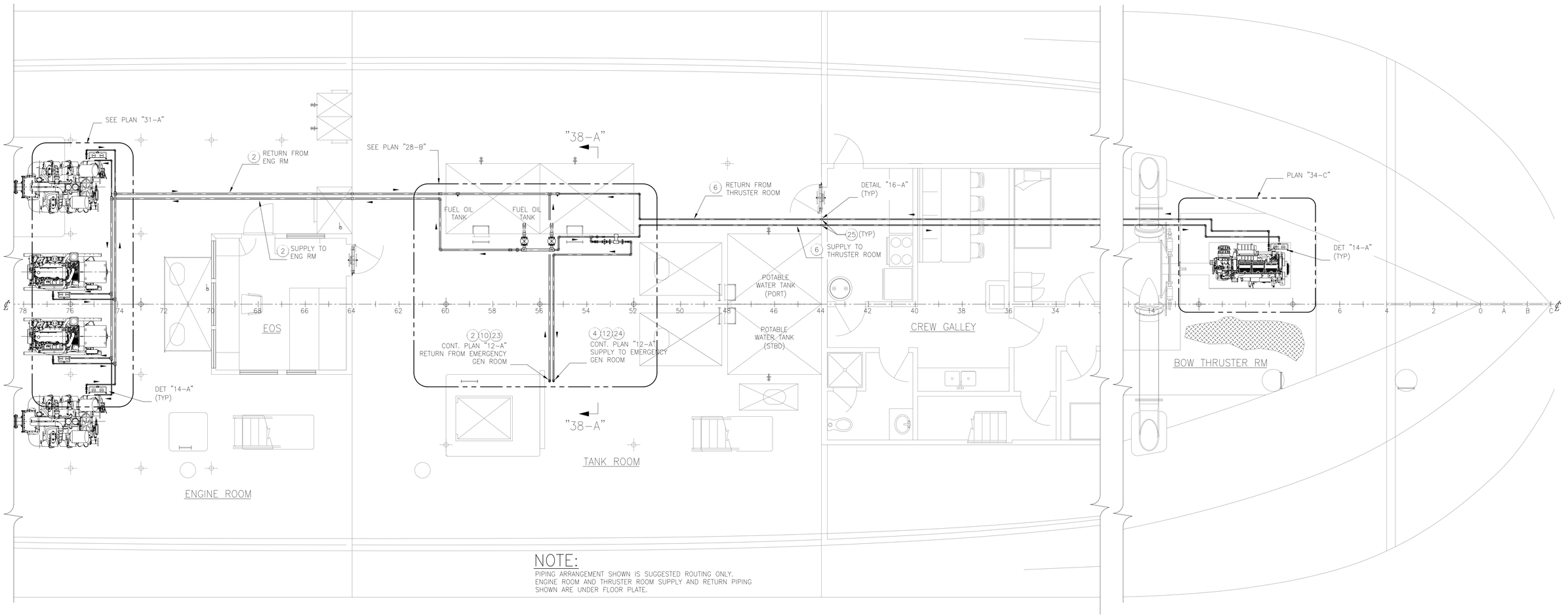
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NEW SOUND CLASS FERRY

FUEL OIL SYSTEM ARRANGEMENT & DETAILS

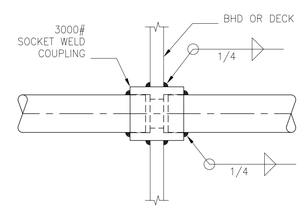
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CK'D BY: KHK	HULL No. 413	SHT 1 OF 5	
SCALE: NONE	G&C Job No. 09-060	REV. 0	



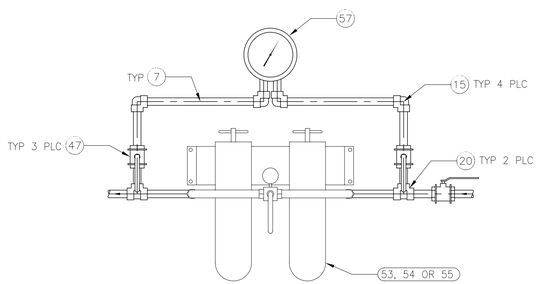
NOTE:

PIPING ARRANGEMENT SHOWN IS SUGGESTED ROUTING ONLY. ENGINE ROOM AND THRUSTER ROOM SUPPLY AND RETURN PIPING SHOWN ARE UNDER FLOOR PLATE.

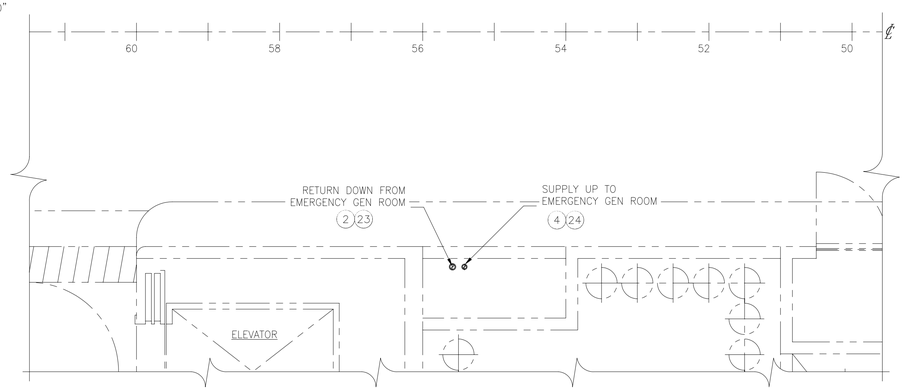
PLAN "13-C"
LOWER DECK
SCALE: 1/4" = 1'-0"



DETAIL "16-A"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE



DETAIL "14-A"
TYPICAL FUEL FILTER ARRANGEMENT
SCALE: NONE



PLAN "12-A"
MAIN DECK OVERHEAD @ MID DECK CASING
SCALE: 1/2"=1'-0"

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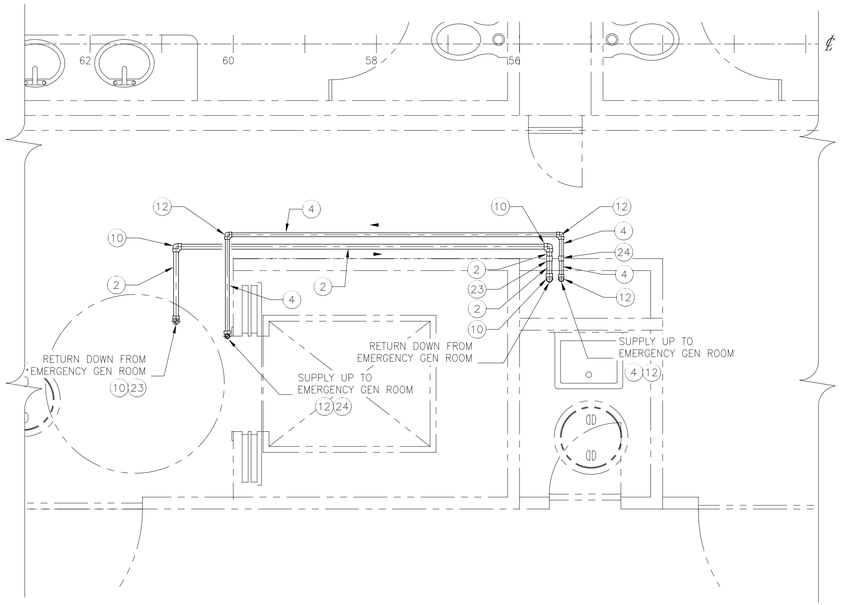
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NEW SOUND CLASS FERRY

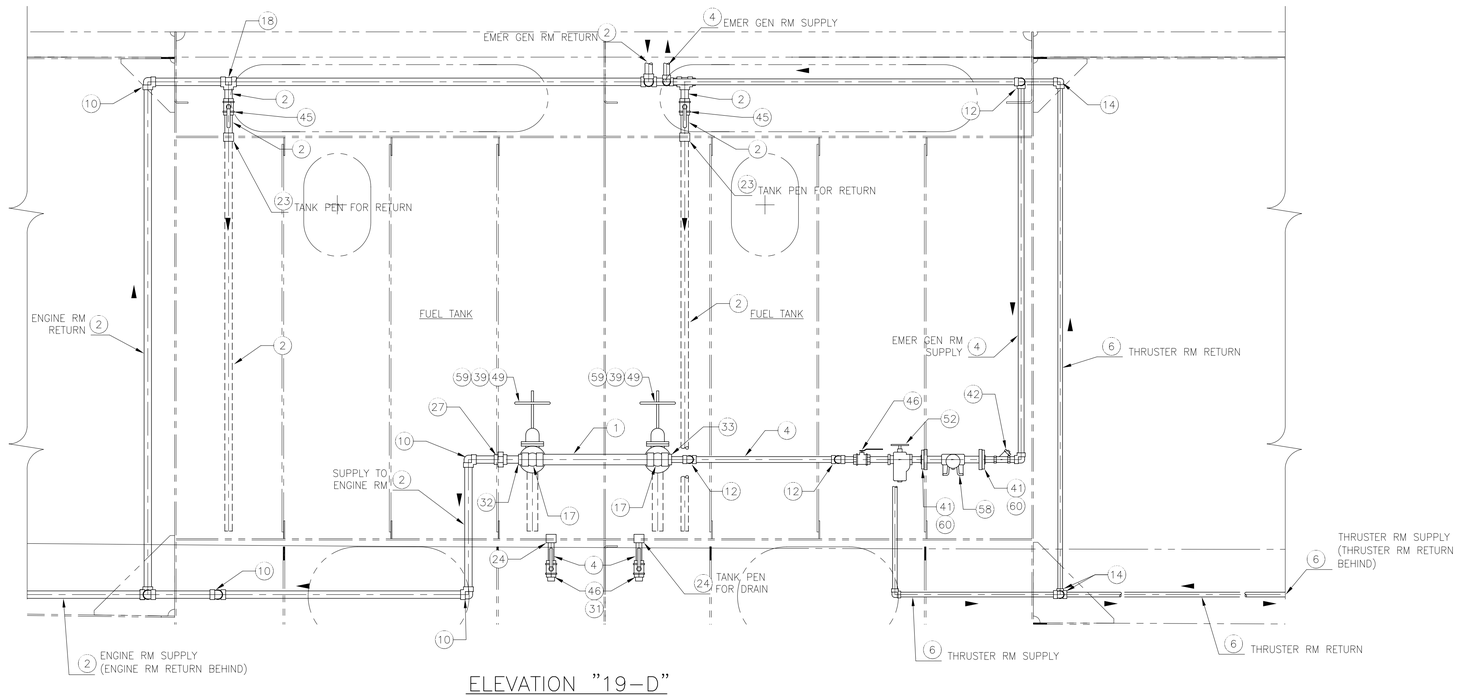
FUEL OIL SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 11/5/10	DWG NO. 261-02 SHT 2 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: 1/2"=1'-0"	G&C Job No. 09-060	REV. 0

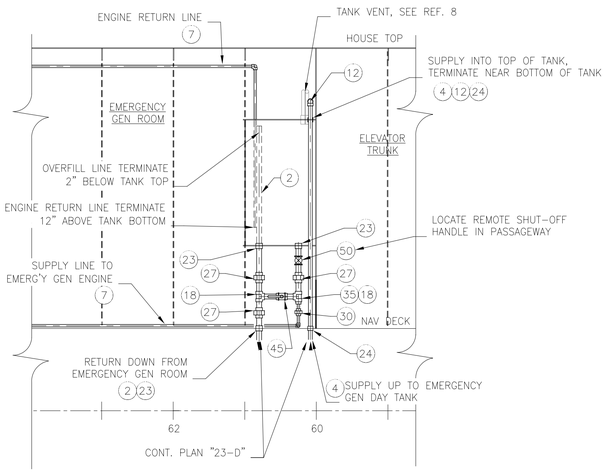
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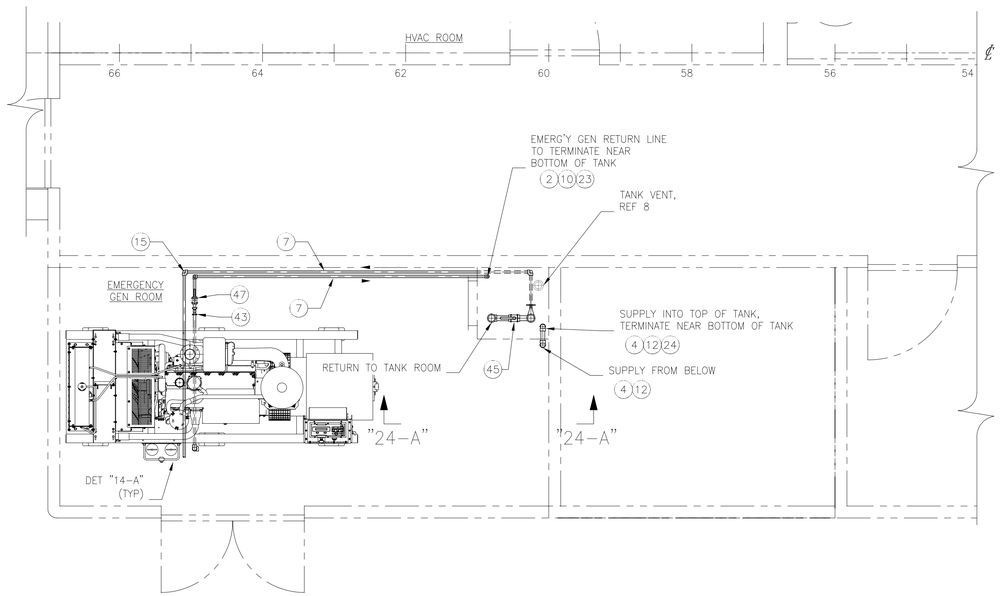
PLAN "23-D"
PASSENGER DECK
SCALE: 1/2"=1'-0"



ELEVATION "19-D"
FUEL TANK CONNECTION DETAIL
SCALE: 3/4"=1'-0"



ELEVATION "24-A"
SCALE: 1/2"=1'-0"



PLAN "19-A"
NAV DECK
SCALE: 1/2"=1'-0"

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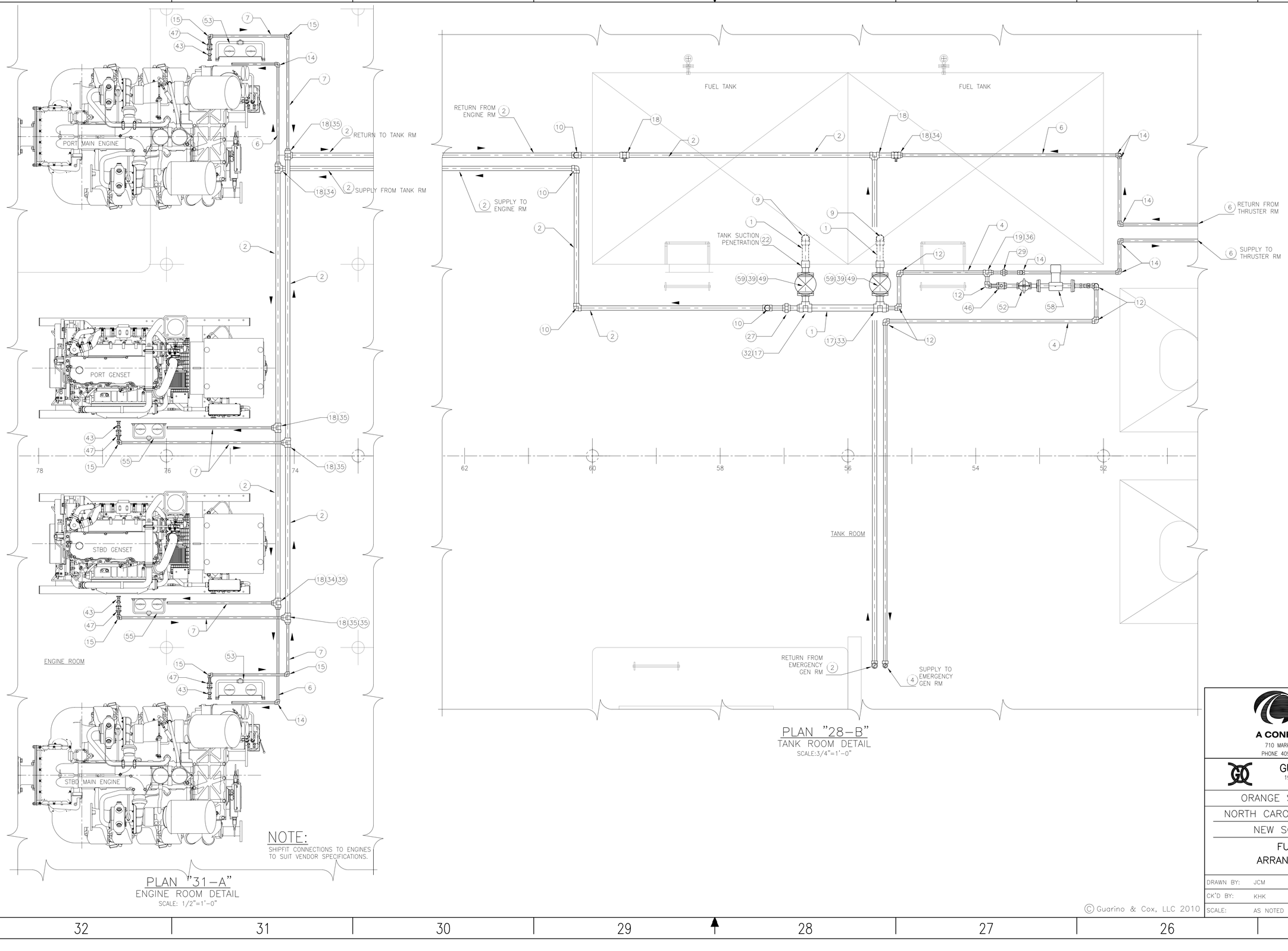
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NEW SOUND CLASS FERRY

FUEL OIL SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 11/5/10	DWG NO. 261-02 SHT 3 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 0



NOTE:
SHIPFIT CONNECTIONS TO ENGINES TO SUIT VENDOR SPECIFICATIONS.

PLAN "31–A"
ENGINE ROOM DETAIL
SCALE: 1/2"=1'–0"

PLAN "28–B"
TANK ROOM DETAIL
SCALE:3/4"=1'–0"

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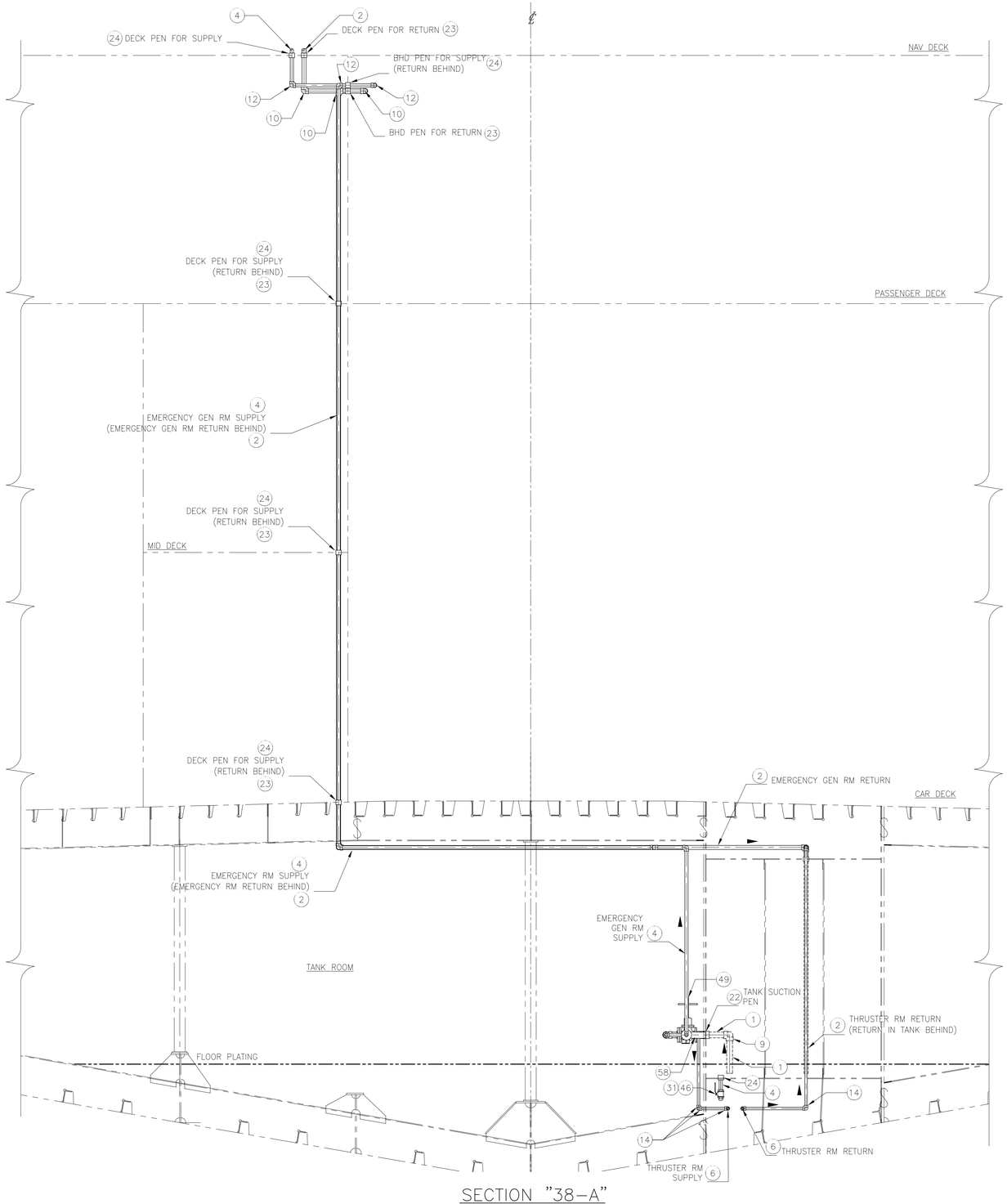
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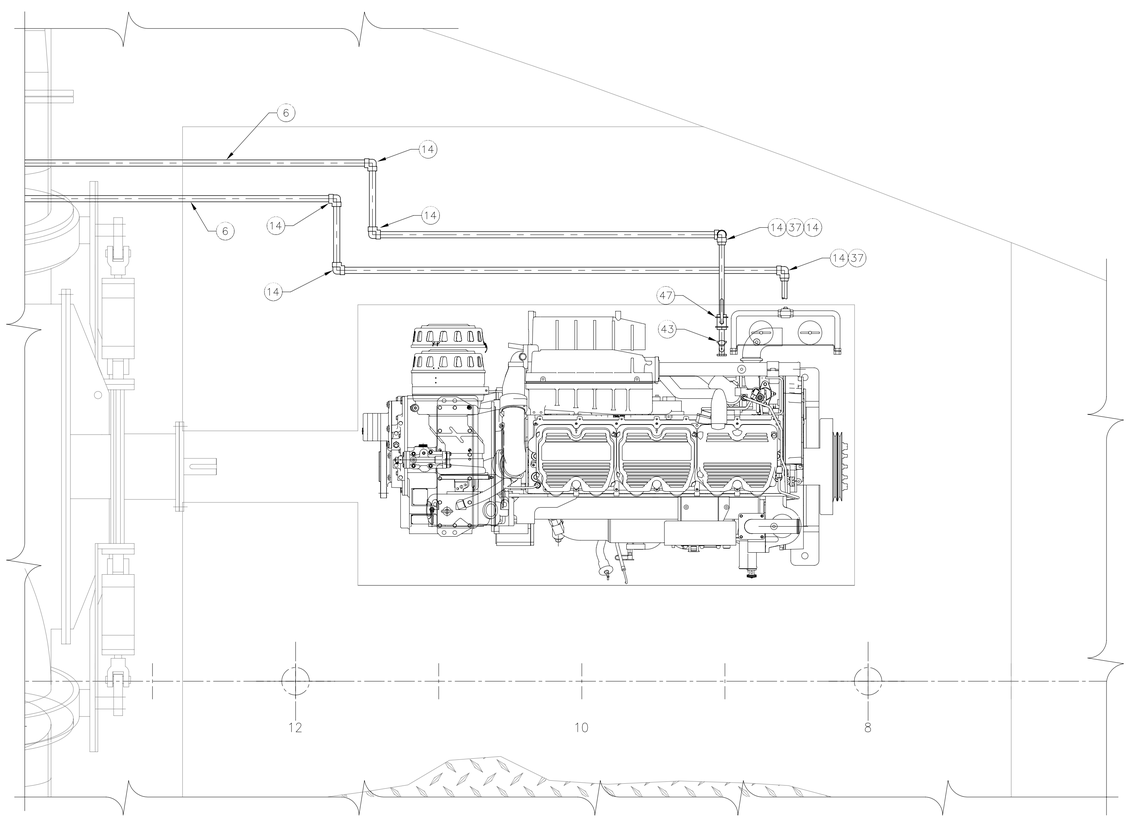
NEW SOUND CLASS FERRY

FUEL OIL SYSTEM
ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 11/5/10	DWG NO. 261–02 SHT 4 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09–060	REV. 0



SECTION "38-A"
FR 52 LOOKING AFT
SCALE: 1/2"=1'-0"



PLAN "34-C"
BOW THRUSTER FUEL OIL SYSTEM
SCALE: 1"=1'-0"

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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

FUEL OIL SYSTEM
ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 11/5/10	DWG NO. 261-02 SHT 5 OF 5
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 0

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MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES		REMARKS
			MATERIAL	GASKETS	BOLTING		BODY	TRIM	
LUBE OIL, GEAR OIL & DIRTY OIL INTERIOR	2" & BELOW	CARBON STEEL SCH 40 ASTM A53 OR A106 SEAMLESS ANSI B36.10	FLANGES: FORGED STEEL 150#, SLIP ON RAISED FACE ASTM A105 ANSI B16.5 UNIONS: FORGED STEEL 3000# S.W. GROUND JOINT ASTM A105 MSS SP-83	GARLOCK STYLE 3300	BOLTS: STEEL (GALV) ASTM A307 GR B ANSI B18.2.1 NUTS: STEEL (GALV) ASTM A563 GR A ANSI B18.2.2	FORGED STEEL 3000#, S.W. ASTM A234 OR A105 ANSI B16.11	BALL: FULL PORT STAINLESS STEEL FLANGED, 150# ASTM A351 CF8M MSS SP-110	STAINLESS STEM & BALL TFE SEAT & SEAL	USE FOR VALVES AT L.O. AND G.O. TANKS (SUCTION SIDE)
							BALL: FULL PORT STAINLESS STEEL THREADED, 150# ASTM A351 CF8M MSS SP-110 CHECK VALVE: STAINLESS STEEL THREADED, 150# ASTM A351 CF8M ANSI B16.34 QUICK-CLOSING: CARBON STEEL THREADED, 150# ASTM A105 ANSI B16.34	STAINLESS STEM & BALL TFE SEAT & SEAL STAINLESS DISC & SEAT	
DIRTY OIL EXTERIOR	2"	316 STAINLESS STEEL SCH 40 ASTM A312 SEAMLESS ANSI B36.19	FLANGES: 316 STAINLESS STEEL 150#, SLIP ON RAISED FACE ASTM A182 ANSI B16.5	GARLOCK STYLE 3300	BOLTS: 316 S.S. ASTM F193 ANSI B18.2.1 NUTS: 316 S.S. ASTM F594 ANSI B18.2.2	316 STAINLESS STL. 150#, BUTT WELD ASTM A182 ANSI B16.9	GATE: RISING STEM, STAINLESS STEEL FLANGED, 150# ASTM A351 CF8M ANSI B16.34	STAINLESS TRIM	ALL COMPONENTS EXPOSED TO WEATHER

△1 2

REFERENCES

1.	101-02	GENERAL ARRANGEMENT
2.	200-01	MACHINERY ARRANGEMENT
3.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
4.	101-01	OUTBOARD & INBOARD PROFILE
5.	506-02	FILLS, VENTS & SOUNDS ARRG'T. & DETAILS
6.	261-01	FUEL OIL SYSTEM SCHEMATIC
7.	529-01	BILGE & OILY WATER SYSTEM SCHEMATIC

△1 1

PIPING SYMBOLS

	NEW PIPE
	DIRECTION OF FLOW ARROW
	REDUCER
	DECK OR BHD PENETRATION
	SPIGOT
	GATE VALVE
	SWING CHECK VALVE
	SIMPLEX STRAINER
	"Y" STRAINER
	POSITIVE DISPLACEMENT PUMP
	CAMLOCK
	FLEXIBLE HOSE ASSEMBLY
	SPILL CONTAINMENT/DRIP PAN
	QUICK ACTING SELF CLOSING GATE VALVE
	BALL VALVE
P	PRESSURE GAUGE, LOCAL READING 0-150 PSI

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	3-D 14-C 15-C 7-C 12-B 14-C	1. ADDED REF. 7 & A CONNECTION TO DIRTY OIL TANK FROM OILY WATER SEPARATOR PER DEVELOPMENT. 2. DELETED LUBE OIL, GEAR OIL & DIRTY OIL PUMPS FROM SYSTEM, DELETED PUMP LIST & ADDED A SUCTION FROM THE OILY BILGE PUMP FOR DIRTY OIL TANK DISCHARGE, PER C/O #008. 3. DELETED DRAIN LINE FROM F.O. TKS.	5/17/10 9/7/10	JCM/ KHK JCM/KK
2	10-C 12-B 1-B	1. DELETED FILL PIPING TO MAIN ENGINES AND GEARS & ADDED NOTE 11 PER DEVELOPMENT.	9/14/10	JCM/KK

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
3. GEAR OIL AND LUBE OIL TANK SPIGOT VALVES SHALL BE PLACED HIGH ENOUGH ABOVE THE CONTAINMENTS TO ACCOMMODATE A 5 GALLON BUCKET.
4. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED BY REF. (1).
5. PIPING SHALL BE RIGIDLY SUPPORTED BY HANGERS APPROPRIATE FOR THE SERVICE AND PIPE MATERIAL AND FABRICATED AND INSTALLED IN ACCORDANCE WITH ASTM F708. FLEXIBLE PIPING CONNECTIONS SHALL NOT BE LONGER THAN 30 INCHES AND SHALL MEET THE REQUIREMENTS OF THE USCG, 46 CFR PART 56, PARAGRAPH 56.60-25.
6. PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR NEW GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. TUBING AND FITTINGS SHALL BE 316 STAINLESS STEEL. ROOT VALVES SHALL BE BALL TYPE. ROOT AND GAUGE VALVES SHALL BE MANUFACTURED FROM 316 STAINLESS STEEL.
7. DRIP PANS WITH UPTURNED, SEALED, FLANGED EDGES SHALL BE PROVIDED BENEATH ALL STRAINERS, FILTERS, VALVES, PUMPS, AND ASSOCIATED EQUIPMENT THAT WILL NORMALLY EXPERIENCE LEAKAGE DURING ROUTINE MAINTENANCE. EACH DRIP PAN SHALL BE EQUIPPED WITH A LOW POINT DRAIN VALVE.
8. DO NOT ROUTE PIPING CONTAINING LUBE OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL LUBE OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450° OR GREATER.
9. THE USE OF GALVANIZED PIPE, FITTINGS, COMPONENTS, ETC. SHALL NOT BE PERMITTED.
10. FLEXIBLE HOSE SECTIONS BETWEEN THE ENGINE ATTACHED CONNECTIONS AND VESSEL PIPING SHALL BE 37° SAE FLARE SWIVEL ON BOTH ENDS. FLEXIBLE HOSE SHALL BE FLAME RESISTANT IN ACCORDANCE WITH 46 CFR 56.60-25. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 24" IN LENGTH. FLEXIBLE HOSE SHALL BE AEROQUIP FC 234.
11. MAIN ENGINES AND GEARS SHALL BE MANUALLY FILLED BY PORTABLE OIL CONTAINER.

SYSTEM OPERATION CONDITIONS

L.O./G.O. SYSTEMS

DESIGN PRESSURE	100 PSIG
DESIGN TEMPERATURE	120° F
TEST PRESSURE	150 PSIG

DIRTY OIL SYSTEM

DESIGN PRESSURE	100 PSIG
DESIGN TEMPERATURE	120° F
TEST PRESSURE	150 PSIG

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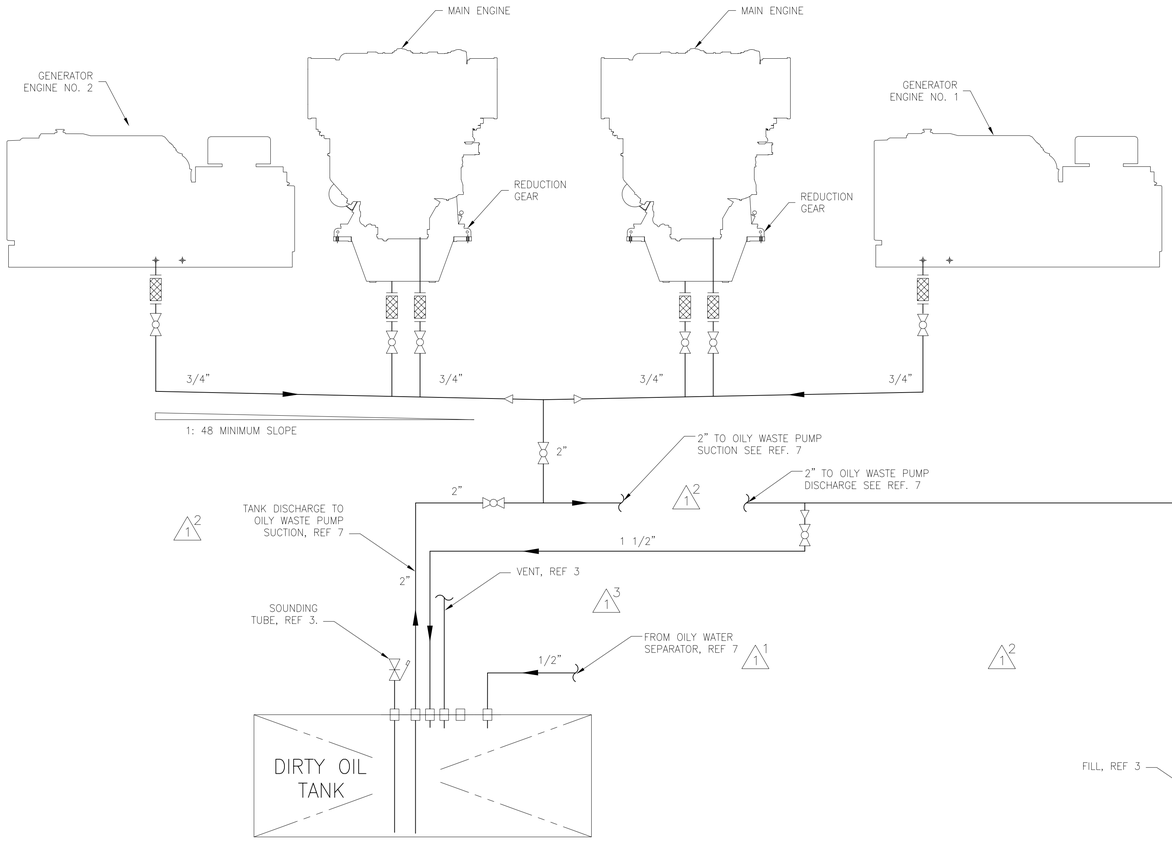
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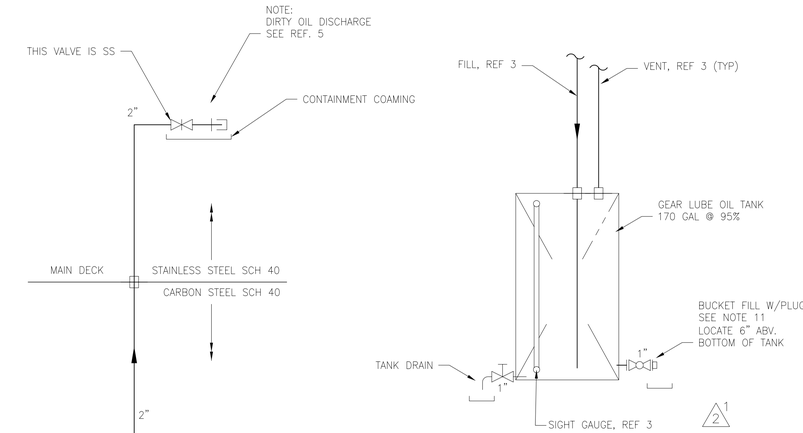
NEW SOUND CLASS FERRY

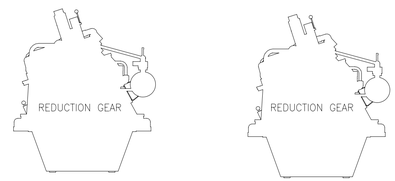
LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC

DRAWN BY: JM	DATE: 4/27/10	DWG NO. 264-01
CK'D BY: RA	HULL No. 413	SHT 1 OF 2
SCALE: NONE	G&C Job No. 09-060	REV. 2

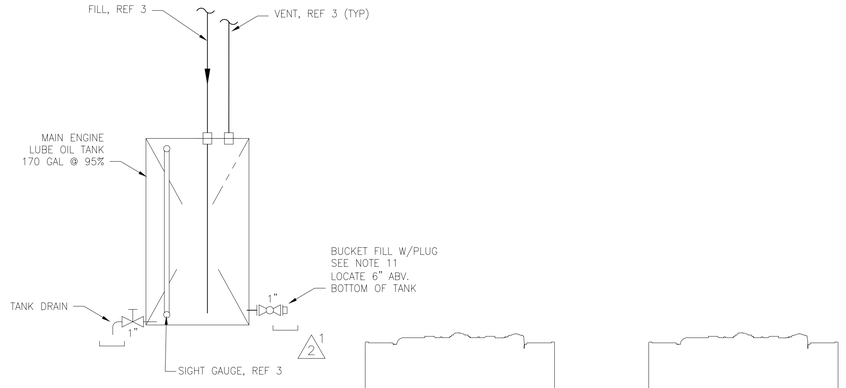


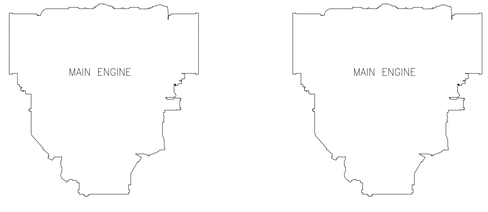
DETAIL "15-C"
DIRTY OIL TRANSFER SYSTEM





DETAIL "10-C"
CLEAN GEAR OIL SERVICE SYSTEM





DETAIL "12-A"
CLEAN MAIN ENGINE LUBE OIL SERVICE SYSTEM

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LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC

DRAWN BY: JM	DATE: 4/27/10	DWG NO. 264-01
CK'D BY: RA	HULL No. 413	SHT 2 OF 2
SCALE: NONE	G&C Job No. 09-060	REV. 2

LIST OF MATERIALS

PIECE No.	QTY	SYM	DESCRIPTION	MANUFACTURER	MODEL/SPECIFICATION	REMARKS
1	40	S	OVERHEAD FLUORESCENT FIXTURE, SURFACE MOUNTED, DRIP PROOF, 2–17 WATT	L.C. DOANE COMPANY	M3–17–2	OR EQUAL
2	28	ES	OVERHEAD FLUORESCENT FIXTURE, SURFACE MOUNTED, DRIP PROOF, 3–17 WATT, 1 LAMP FOR EMERGENCY SERVICE	L.C. DOANE COMPANY	M3–17–3–E1	OR EQUAL, SEE NOTE 4
3	48	R	OVERHEAD FLUORESCENT FIXTURE, RECESSED, DRIP PROOF, 2–17 WATT	L.C. DOANE COMPANY	M100R–17–2	OR EQUAL
4	11	ER	OVERHEAD FLUORESCENT FIXTURE, RECESSED, DRIP PROOF, 3–17 WATT, 1 LAMP FOR EMERGENCY SERVICE	L.C. DOANE COMPANY	M100R–17–3–E1	OR EQUAL, SEE NOTE 4
5	7	ERR	OVERHEAD FLUORESCENT FIXTURE, RECESSED, DRIP PROOF, 3–17 WATT, WIRED FOR 2 CIRCUITS, CENTER LAMP FURNISHED WITH RED FILTER AND ON SEPERATE CIRCUIT	L.C. DOANE COMPANY	M100R–17–3–2C	OR EQUAL
6	7	B	BERTH LIGHT, FLUORESCENT, 2–8 WATT, WITH SWITCH AND RECEPTACLE	L.C. DOANE COMPANY	M450–8–CO–SW	OR EQUAL
7	3		SEARCH LIGHT, 1000 WATT, HALOGEN, WITH ELECTRIC REMOTE OPERATION	CARLISLE & FINCH	125BC–2 (REMOTE CONTROL)	OR EQUAL
8	4	$_1$	FLOODLIGHT, 500 WATT, QUARTZ HALOGEN, BRASS	PAULUHN	746BQMR	OR EQUAL
9	2	$_2$	FLOODLIGHT, 500 WATT, QUARTZ HALOGEN, BRASS, WITH GUARD, HANDLE AND CLAMP	PAULUHN	746BQMR–GRD–HDL	OR EQUAL
10	4	$_3$	FLOODLIGHT, 300 WATT, QUARTZ HALOGEN, STAINLESS STEEL	PAULUHN	QS1603	OR EQUAL
11	18		BULKHEAD FLUORESCENT FIXTURE, WATERTIGHT, 32 WATT YELLOW, BRASS	PAULUHN	F729B7–32YEL	OR EQUAL
12	AS REQ'D		LIGHT SWITCH, 1 POLE, 15 AMP, SURFACE OR RECESS MOUNTED DEPENDING ON LOCATION, WATERTIGHT OR NON–W.T. DEPENDING ON LOCATION	PAULUHN		OR EQUAL
13	2	7	LIGHT SWITCH, DOUBLE POLE, DOUBLE THROW, WITH "OFF" POSITION, 15 AMP, MODIFIED PER DETAIL "4–A" (FOR PILOT HOUSE AND AFT CONTROL STATION LIGHTING CONTROL)	PAULUHN		OR EQUAL
14	AS REQ'D		DUPLEX RECEPTACLE, 20 AMP, 2W3P "U" GROUND, SURFACE OR RECESS MOUNTED DEPENDING ON LOCATION, WATERTIGHT OR NON–W.T. DEPENDING ON LOCATION	PAULUHN		OR EQUAL
15	AS REQ'D		JUNCTION BOX, WATERTIGHT OR NON–W.T. DEPENDING ON LOCATION	PAULUHN		OR EQUAL
16	AS REQ'D	T–6	ELECTRIC CABLE, # 12 AWG, 3 CONDUCTOR, 90 DEGREE C. CONDUCTOR TEMPERATURE, LOW SMOKE TYPE, UNARMORED, ABS & USCG APPROVED			
17	AS REQ'D	T–4	ELECTRIC CABLE, # 14 AWG, 3 CONDUCTOR, 90 DEGREE C. CONDUCTOR TEMPERATURE, LOW SMOKE TYPE, UNARMORED, ABS & USCG APPROVED			

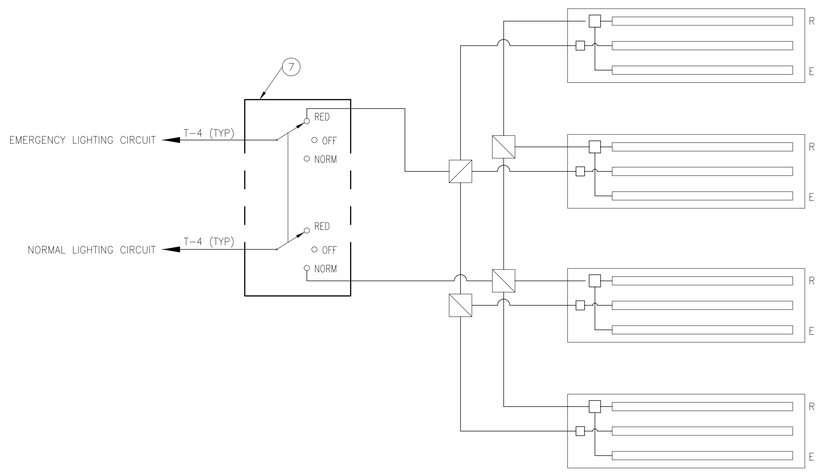
GENERAL NOTES

1. MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER H VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. MAIN SWITCHBOARD IS 3 PHASE 4 WIRE SYSTEM, 208/120V, 60 Hz, WITH GROUNDED NEUTRAL.
3. ALL PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL HAVE METAL ENCLOSURES PROPERLY GROUNDED IN ACCORDANCE WITH SECTION 250–95 OF THE NATIONAL ELECTRICAL CODE.
4. CENTER LAMP/BALLAST OF 3–LAMP FIXTURES ARE WIRED TO THE EMERGENCY LIGHTING BALLAST AND BATTERY.
5. THE PILOTHOUSE AND AFT CONTROL STATION LIGHTING SHALL BE WIRED PER DETAIL 4–A. ALL CENTER LAMPS SHALL BE RED TINTED OR COVERED WITH A RED TINTED COVER.
6. ALL SPACES SHALL HAVE INDIVIDUALLY SWITCHED LIGHTING AT THE ENTRANCE TO THE SPACE. THE OWNER'S REPRESENTATIVE WILL APPROVE LOCATIONS OF ALL SWITCHES AND INDENTIFY THOSE FIXTURES THAT ARE NOT TO BE SWITCHED (FOR SECURITY OR OPERATIONAL CONCERNS).
7. ALL CABLE SHALL BE IEEE–45 LOW SMOKE OR MIL–C–24643.
8. UNLESS NOTED OTHERWISE, ——► (ARROW) INDICATES BRANCH CIRCUIT ROUTED TO ITS RESPECTIVE DISTRIBUTION PANEL.
9. THE LETTER "E" DENOTES AN EMERGENCY LIGHT.

RESERVATIONS

1. CIRCUIT NUMBERS PENDING DEVELOPMENT OF PANELBOARDS.

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APPVD



DETAIL 4–A
PILOTHOUSE & ACS LIGHTING CONTROL

NO.	REFERENCES	DWG NO.
4		
3		
2	ELECTRICAL ONE–LINE DIAGRAM, AC SYSTEM	320–01
1	GENERAL ARRANGEMENTS	101–02

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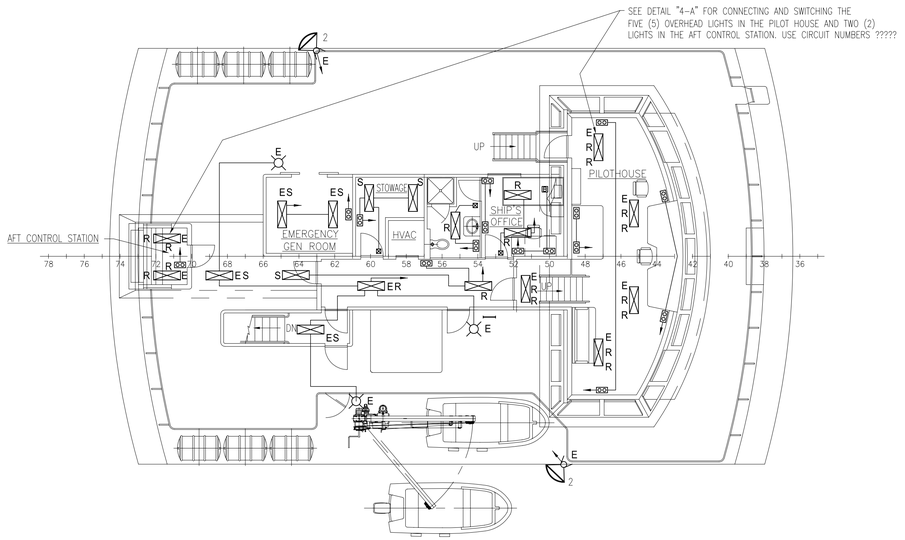
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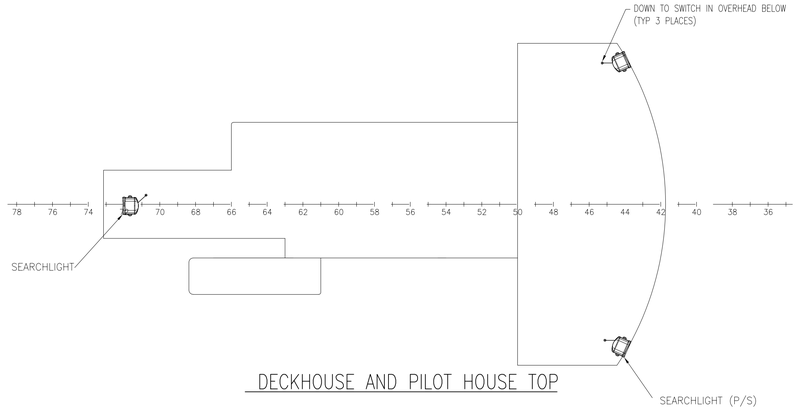
LIGHTING DECK PLAN

DRAWN BY: BJ/MB	DATE: 4/16/10	DWG NO. 330–01 SHT 1 OF 3	
CK'D BY: MTR/KHK	HULL No. 413		
SCALE: NONE	G&C Job No. 09–060	REV. 0	

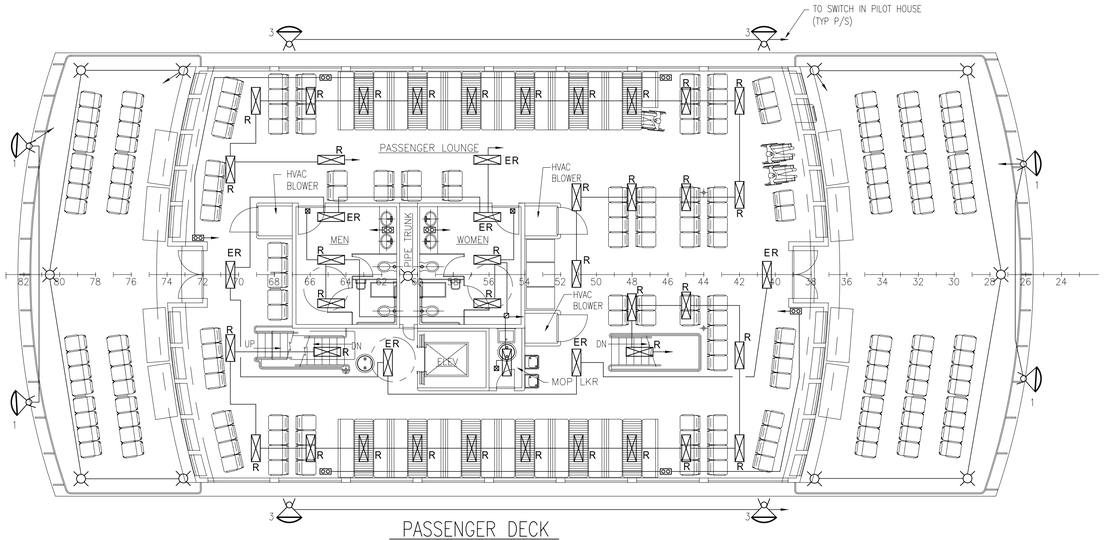
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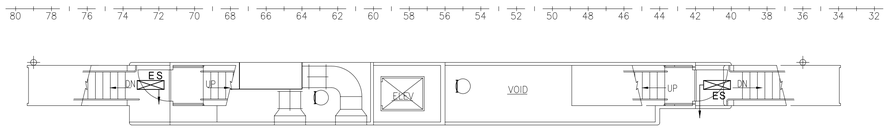
HOUSE TOP/ NAVIGATION BRIDGE DECK



DECKHOUSE AND PILOT HOUSE TOP



PASSENGER DECK



MID DECK

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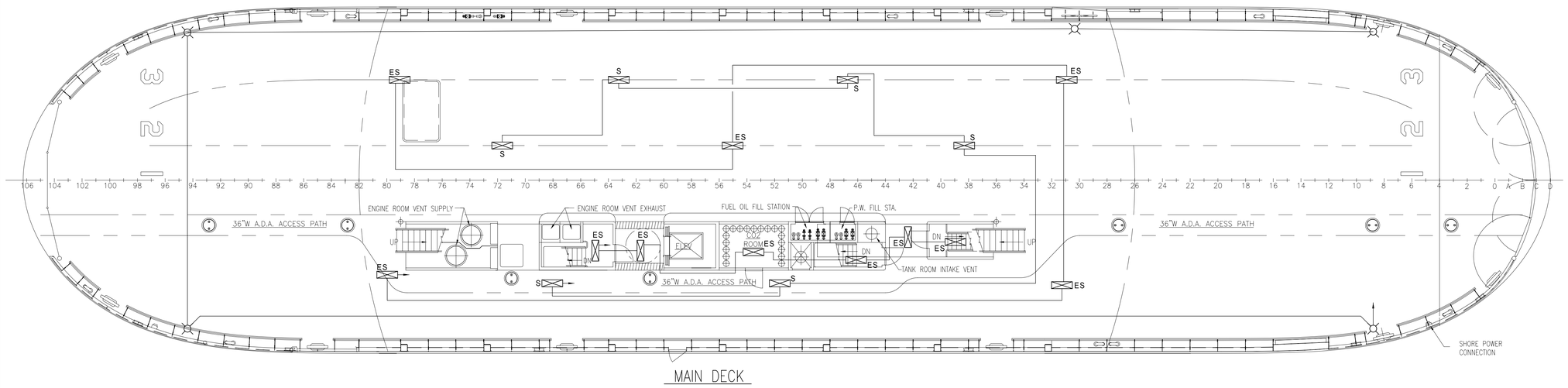
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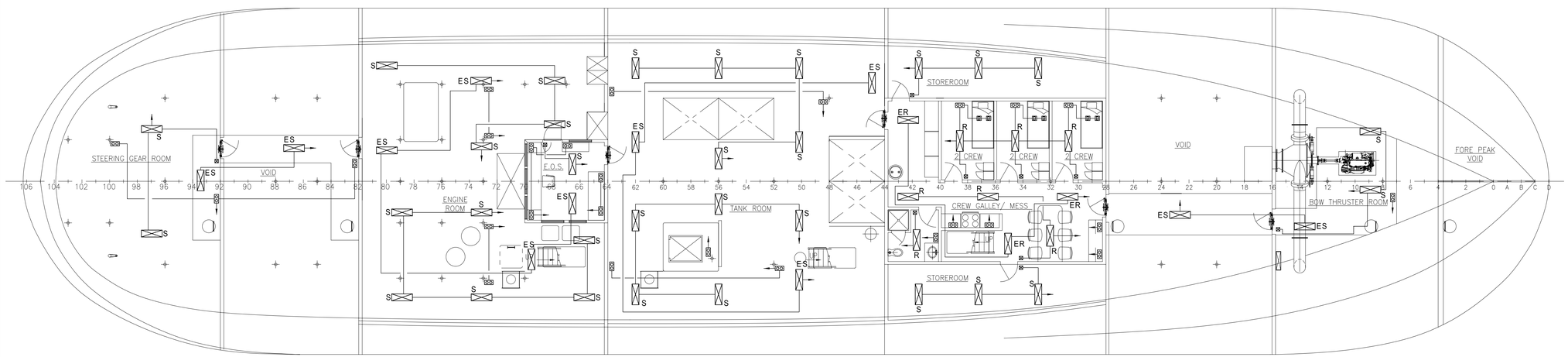
NEW SOUND CLASS FERRY

LIGHTING DECK PLAN

DRAWN BY: BJ/MB	DATE: 4/16/10	DWG NO. 330-01 SHT 2 OF 3
CK'D BY: MTR/KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 0



MAIN DECK



LOWER DECK

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NEW SOUND CLASS FERRY

LIGHTING DECK PLAN

DRAWN BY: BJ/MB	DATE: 4/16/10	DWG NO. 330–01 SHT 3 OF 3
CK'D BY: MTR/KHK	HULL No. 413	
SCALE: 1/8"=1'–0"	G&C Job No. 09–060	REV. 0

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS MATERIAL	TAKEDOWN JOINTS GASKETS	TAKEDOWN JOINTS BOLTING	FITTINGS	VALVES BODY	VALVES TRIM	REMARKS
LUBE OIL, GEAR OIL & FUEL OIL VENTS SOUNDING TUBES & OVERFLOWS NOT LOCATED IN WEATHER	2 1/2" & ABV	CARBON STEEL SCH 40 ASTM A53 GRADE B SMLS ANSI B36.10	FLANGED, SLIP-ON CARBON STEEL 150# ASTM A105 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: STL, GALV ASTM A307 GRADE B ANSI B16.9 NUTS: GALV ASTM A563 GRADE A ANSI B18.2.2	CARBON STEEL, BUTT WELD, SCH 40 ASTM A234 ANSI B16.9	GATE: CARBON STEEL FLANGED, 150# ASTM A105 ANSI B16.5 & B16.34	STAINLESS STEEL RENEWABLE DISC & SEAT	
	2" & BELOW		UNION, GROUND JOINT CARB STEEL SOCKET WELD, 3000# ASTM A105 ANSI B16.11			CARB STEEL, SOCKET WELD, 3000# ASTM A105 ANSI B16.11			
VENTS SOUNDING TUBES & OVERFLOWS LOCATED IN WEATHER	2 1/2" & ABV	STAINLESS STEEL SCH 40 ASTM A312 SMLS ANSI B36.19	FLANGED, SLIP-ON STAINLESS STEEL 150# ASTM A182 ANSI B16.5	GARLOCK STYLE 3000		STAINLESS STEEL, BUTT WELD, SCH 40 ASTM A403 ANSI B16.9	GATE: RISING STEM, STAINLESS STEEL FLANGED, 150# ASTM A182 ANSI B16.5 & B16.34	STAINLESS STEEL RENEWABLE DISC & SEAT	
	2" & BELOW		UNION, GROUND JOINT STAINLESS STEEL SOCKET WELD, 3000# ASTM A182 ANSI B16.11			STAINLESS STEEL, SOCKET WELD, 3000# ASTM A403 ANSI B16.11			
POTABLE WATER VENTS SOUNDING TUBES & OVERFLOWS NOT LOCATED IN WEATHER	2 1/2" & ABV	CARBON STEEL GALV SCH 40 ASTM A53 GRADE B SMLS ANSI B36.10	FLANGED, SLIP-ON CARBON STEEL 150# GALV. ASTM A105 ANSI B16.5	GARLOCK STYLE 3000		CARBON STEEL, GALV, BUTT WELD, SCH 40 ASTM A234 ANSI B16.9	GATE: STAINLESS STEEL FLANGED, 150# ASTM A182 ANSI B16.5 & B16.34	STAINLESS STEEL RENEWABLE DISC & SEAT	
	2" & BELOW		UNION, GROUND JOINT CARBON STEEL GALV SOCKET WELD, 3000# ASTM A182 ANSI B16.11			CARBON STEEL, GALV SOCKET WELD, 3000# ASTM A105 ANSI B16.11			
SEA CHEST VENTS	1" & ABV	STAINLESS STEEL SCH 40 ASTM A312 SMLS ANSI B36.19	FLANGED, SLIP-ON STAINLESS STEEL 150# ASTM A182 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: STL, GALV ASTM A307 GRADE B ANSI B16.9 NUTS: GALV ASTM A563 GRADE A ANSI B18.2.2	STAINLESS STEEL BUTT WELD SCH 40 ASTM A403 ANSI B16.9	BALL: FULL PORT STAINLESS STEEL FLANGED, 150# ASTM A351 MSS-SP 72	STAINLESS STEEL RENEWABLE DISC & SEAT	
	3/4" & BELOW		UNION, GROUND JOINT STAINLESS STEEL SOCKET WELD, 3000# ASTM A182 ANSI B16.11			STAINLESS STEEL SOCKET WELD, 3000# ASTM A403 ANSI B16.11	BALL: FULL PORT STAINLESS STEEL THREADED ASTM A351 MSS-SP 72		
GRAY WATER & BLACK WATER VENTS & MSD VENT	ALL INTERIOR 2" & ABOVE	CARBON STEEL SCH 40, GALV ERW ASTM A53 GRADE B	FLANGE STL GALV 150# WELD NECK ASTM A105 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: STL, GALV ASTM A307 GRADE B ANSI B16.9 NUTS: GALV ASTM A563 GRADE A ANSI B18.2.2	CARBON STEEL, GALV 125# ASTM A234 ANSI B16.12 BUTT WELD	CHECK: BRONZE ASTM B61 & B62 FLANGED MSS-SP-80 150# BALL: FULL PORT BRONZE BODY ASTM B61 150# FLANGED MSS-SP-72	BRONZE DISK AND REGRINDABLE SEAT BRONZE BALL TFE SEAT & SEAL	
	ALL INTERIOR 1-1/2" & BELOW		UNION MAL IRON, GALV 150# ASTM A197 ANSI B16.3 THREADED				CHECK: BRONZE ASTM B61 & B62 SOCKET WELD MSS-SP-80 150# BALL: FULL PORT BRONZE BODY ASTM B61 150# SCREWED MSS-SP-72		
DIRTY OIL & OILY WASTE VENTS & SOUNDING TUBES NOT LOCATED IN WEATHER	2 1/2" & ABV	CARBON STEEL SCH 40 ASTM A53 GRADE B SMLS ANSI B36.10	FLANGED, SLIP-ON CARBON STEEL 150# ASTM A105 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: STL, GALV ASTM A307 GRADE B ANSI B16.9 NUTS: GALV ASTM A563 GRADE A ANSI B18.2.2	CARBON STEEL, BUTT WELD, SCH 40 ASTM A234 ANSI B16.9 CARB STEEL, SOCKET WELD, 3000# ASTM A105 ANSI B16.11	QUICK-CLOSING CARBON STEEL THREADED, 150# ASTM A105 ANSI B16.34	STAINLESS STEEL	
	2" & BELOW		UNION, GROUND JOINT CARB STEEL SOCKET WELD, 3000# ASTM A105 ANSI B16.11						

REFERENCES

1.	101-01	OUTBOARD & INBOARD PROFILE
2.	101-02	GENERAL ARRANGEMENTS
3.	533-01	POTABLE WATER SYSTEM SCHEMATIC
4.	200-01	MACHINERY ARRANGEMENT
5.	261-01	FUEL OIL SYSTEM SCHEMATIC
6.	506-02	FILLS, VENTS & SOUNDS ARRG'T. & DETAILS
7.	163-01	SEA CHESTS
8.	528-01	OVERBOARD DRAINS & SEWAGE SYSTEM SCHEMATIC
9.	551-01	COMPRESSED AIR SYSTEM SCHEMATIC
10.	110-01	SCANTING PLANS BOW-FR. 35
11.	568-01	BOW THRUSTER INSTALLATION

4/1

PIPING SYMBOLS

	PIPE
	DIRECTION OF FLOW
	PIPE UP
	PIPE DOWN
	QUICK CLOSING GATE VALVE
	DECK OR BHD PENETRATION
	GATE VALVE
	BALL VALVE – FULL PORT ONLY
	SOUNDING TUBE TERMINAL
	SIGHT GAUGE, SEE NOTE 5
	CAMLOCK QUICK CONNECT W/DUST CAP SEE NOTE 6
	BALLCHECK VENT W/ SS FLAME SCREEN
	BALLCHECK VENT W/ SS INSECT SCREEN
	VENT W/ SS FLAME SCREEN

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	21-A 11-C 13-C 14-C 15-A 17-C 3-D 14-C 23-D	1. REMOVED AFT VOID COMPARTMENT VENT FROM DETAIL "21-A". 2. DELETED FWD GRAY WATER SUMP TANK & RELOCATED FWD BLACK WATER SUMP TANK TO THE STBD SIDE. 3. ADDED REF. 8 TO MSD VENT, BLACK & GRAY WATER SUMP VENT CALL-OUTS & ADDED NAV BRIDGE DECK PLAN. 4. ADDED DETAIL "17-C" FOR BOW THRUSTER SEA CHEST VENT & REF. 10 & 11. 5. CORRECTED SIZES FOR FUEL OIL TANK FILLS & VENTS AT TANKS. 6. REVISED THE SIZE OF THE LUBE OIL & GEAR OIL TANK VENTS ON DETAIL "23-C" PER DEVELOPMENT.	5/13/10	JCM/KHK
2	VAR 15-A 13-A 9-C 16-A	1. REVISED DECK PLANS TO AGREE WITH LATEST ARRANGEMENT DRAWINGS. 2. ADDED PILOT HOUSE PLAN & REVISED MSD, GRAY & BLACK WATER VENTS TO TERMINATE ON PILOT HOUSE TOP. 3. MODIFIED CALLOUTS ON MAIN DECK PLAN & NAV DECK PLAN.	8/20/10	JCM
3	13-A 16-A 17-B	1. ADDED EMERGENCY GENERATOR DAY TANK, VENT & SOUND & DETAIL "17-B" PER DEVELOPMENT.	10/5/10	JCM/KK
4	VAR VAR 10-C	1. ADDED POTABLE WATER AND FUEL OIL FILL STATIONS FWD AND AFT OUTBOARD PORT AND STBD. PER CHANGE ORDER. 2. ADDED SHEET 4 & REVISED TITLE BLOCKS. 3. REVISED CO2 LKR ARRGT PER AS-BUILT.	4/26/11	JCM/KK

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED BY REF. (4).
3. FOR SOUNDING TUBES, PIPE BENDS WITH A RADII OF 10 FT SHALL BE USED IN LIEU OF ELBOWS.
4. SOUNDING TUBES SHALL BE AS VERTICAL AS PRACTICAL AND SHALL TERMINATE AS CLOSE AS POSSIBLE TO THE DEEPEST POINT OF THE TANK OR VOID.
5. THE FUEL OIL, GEAR OIL, LUBE OIL AND POTABLE WATER TANKS SHALL EACH BE FITTED WITH GEMS SURESITE GAUGES INDICATING THE FULL RANGE OF THE TANKS AS FEASIBLE.
6. THE POTABLE WATER, LUBE OIL, GEAR OIL AND FUEL OIL FILLS SHALL EACH EACH BE FITTED WITH STAINLESS STEEL CAMLOCK FITTINGS WITH LOCKABLE DUST CAPS IN THE FOLLOWING SIZES:
   - 2" POTABLE WATER TANKS, 2 PLACES
   - 2" FUEL OIL TANKS, 2 PLACES
   - 1 1/2" L.O. TANK
   - 1 1/2" GEAR OIL TANK
7. FILL PIPING SHALL BE LABELED AND COLOR CODED AS FOLLOWS:
   - LT BLUE: POTABLE WATER
   - BLACK: FUEL OIL
   - YELLOW: LUBE OIL
   - YELLOW/BLACK: GEAR OIL
8. ALL PIPES, FITTINGS & VALVES EXPOSED TO THE WEATHER SHALL BE STAINLESS STEEL, ALL OTHER PIPES FITTING & VALVES TO BE STEEL.
9. FILL & VENT STATIONS SHALL BE FITTED WITH A REMOVABLE SS WELDED WIRE DOOR WITH LOCKING HASP. FASTENERS AND HARDWARE SHALL BE STAINLESS STEEL.
10. HORIZONTAL PIPE RUNS GREATER THAN 3 FT SHALL BE SLOPED TO ALLOW DRAINAGE. LONGITUDAL RUNS SHALL HAVE A SLOPE OF 1/8 IN FOR EVERY 1 FT. TRANSVERSE PIPE RUNS SHALL HAVE A SLOPE OF 1/4 IN FOR EVERY 1 FT.
11. SPILL CONTAINMENTS TO BE AT LEAST 1/2 BARREL (21 GALLON) CAPACITY.

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-506-01

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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY
FILLS, VENTS & SOUNDS SCHEMATIC

DRAWN BY: J. MELAN	DATE: 12/17/09	DWG NO. 506-01 SHT 1 OF 4	4/2
CK'D BY: K.H.K.	HULL No. 413		
SCALE: NONE	G&C Job No. 09-060	REV. 4	

2" OILY WASTE TANK VENT
2 1/2" LUBE OIL & GEAR OIL TK VENTS, SEE DETAIL "23-C"
LUBE OIL TANK LIQUID LEVEL GAUGE
LUBE OIL TANK
2" POTABLE WATER FILL CONT'D. SHEET 4
2" FUEL OIL FILL CONT'D. SHEET 4
GEAR OIL TANK LIQUID LEVEL GAUGE
2" OILY WASTE TANK VENT, SEE DETAIL "23-C"
GEAR OIL TANK
OILY WASTE TANK
1 1/2" OILY WASTE TANK SOUNDING TUBE, SEE DET "24-A"
1 1/2" DIRTY OIL TANK SOUNDING TUBE, SEE DET "24-A"
DIRTY OIL TANK
ENGINE ROOM
E.O.S.
2" DIRTY OIL TANK VENT, SEE DETAIL "23-C"
FUEL OIL TANK LIQUID LEVEL GAUGE
2" FUEL OIL FILL
FUEL OIL TANK
2" FUEL OIL FILLS
2 1/2" FUEL OIL VENTS
GEN. NOTE 10
2" POTABLE WATER FILL (P/S)
POTABLE WATER TANK LIQUID LEVEL GAUGE
POTABLE WATER TANK
GRAY WATER SUMP
4" MSD VENT UP TO PILOT HOUSE TOP SEE REF. 8
3" GRAY WATER SUMP VENT
2 1/2" FUEL OIL VENTS
2" GEAR OIL FILL
2" LUBE OIL FILL
2" FUEL OIL FILLS
2 1/2" POTABLE WATER VENTS
TANK ROOM
3" BLACK & GRAY WATER SUMP VENTS UP TO NAV. BRIDGE DECK SEE REF. 8
POTABLE WATER TANK LIQUID LEVEL GAUGE
2" POTABLE WATER FILLS
2" POTABLE WATER FILL
2" FUEL OIL FILL
2" POTABLE WATER FILL CONT'D. SHEET 4
2" FUEL OIL FILL CONT'D. SHEET 4
BLACK WATER SUMP
2" BLACK WATER SUMP VENT
1 1/2" SEA CHEST VENT SEE DETAIL "20-C"
1 1/2" SEA CHEST VENT SEE DETAIL "20-C"

LOWER DECK PLAN

2" LUBE OIL FILL
2" GEAR OIL FILL
2" FUEL OIL FILLS
2 1/2" POTABLE WATER VENTS
2 1/2" FUEL OIL VENTS
2" POTABLE WATER FILLS
3" BLACK & GRAY WATER SUMP VENT UP TO PILOT HOUSE TOP
3" BLACK & GRAY WATER SUMP VENT FROM BLW.
4" MSD VENT UP TO PILOT HOUSE TOP SEE REF. 8
FUEL OIL FILL/VENT LKR.
POTABLE WATER FILL/VENT LKR.

MAIN DECK PLAN

2" EMERGENCY GENERATOR DAY TANK VENT UP TO PILOT HSE TOP
EMERGENCY GENERATOR ROOM
EMERGENCY GENERATOR DAY TANK
EMERGENCY GENERATOR DAY TANK LIQUID LEVEL GAUGE
ELEVATOR SHAFT
4" VENT MSD UNIT
3" VENT GRAY WATER HEADER
3" VENT FROM GRAY WATER & BLACK WATER SUMP TANKS
3" VENT BLACK WATER HEADER

NAV BRIDGE DECK PLAN

2" EMERGENCY GENERATOR DAY TANK VENT DETAIL "17-B"
BHD'S BELOW DECK (TYP)
4" VENT MSD UNIT
3" VENT GRAY WATER HEADER
3" VENT FROM GRAY WATER & BLACK WATER SUMP TANKS
3" VENT BLACK WATER HEADER

PILOT HOUSE TOP PLAN

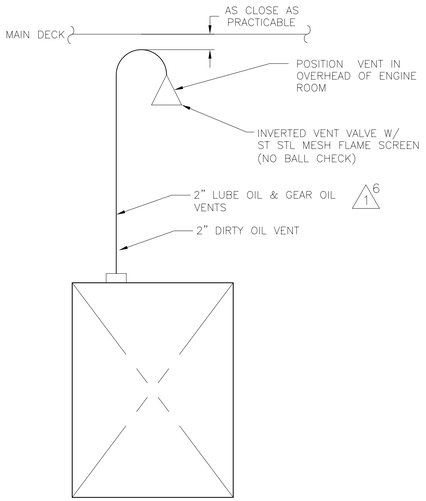
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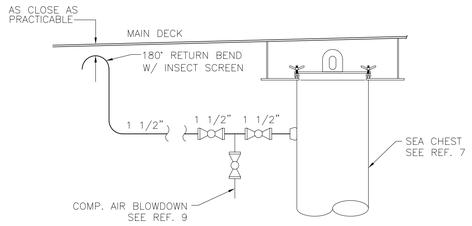
ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY
FILLS, VENTS & SOUNDS SCHEMATIC

DRAWN BY: J. MELAN	DATE: 12/17/09	DWG NO. 506-01	
CK'D BY: K.H.K.	HULL No. 413	SHT 2 OF 4	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 4	



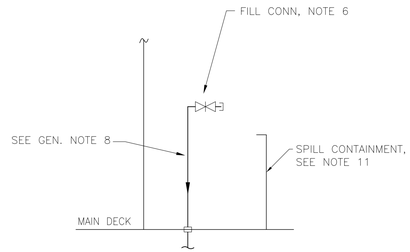
DETAIL "23-C"

LUBE OIL, GEAR OIL & DIRTY OIL TANKS VENT DETAIL



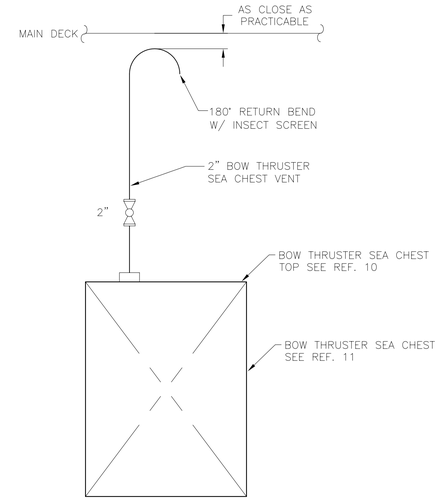
DETAIL "20-C"

SEA CHEST VENT



DETAIL "19-C"

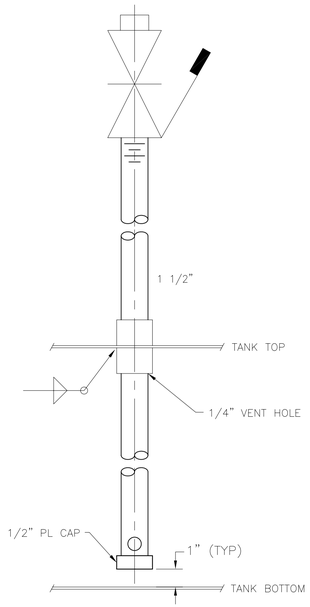
GEAR OIL FILL, LUBE OIL FILL & POTABLE WATER TANKS FILL



DETAIL "17-C"

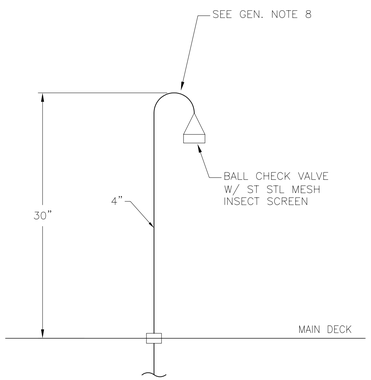
BOW THRUSTER SEA CHEST VENT DETAIL

4
1



DETAIL "24-A"

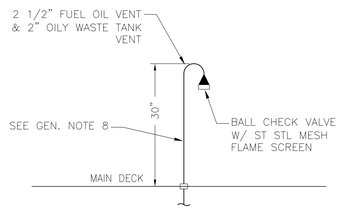
OILY WASTE & DIRTY OIL TANK SOUNDING TUBE



DETAIL "21-A"

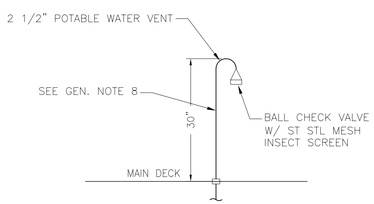
(COMPARTMENT VENTS)
VOID BELOW CREW QUARTERS, FWD VOID, FOREPEAK VOID & STEERING COMPARTMENT
(2 VENTS EACH COMPARTMENT)

1
1



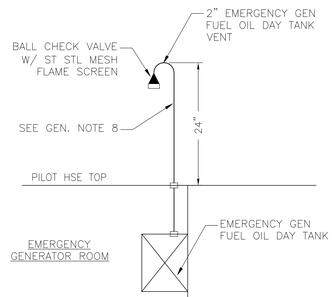
DETAIL "19-B"

FUEL OIL TANK VENT
OILY WASTE TANK VENT



DETAIL "19-A"

POTABLE WATER TANK VENT



DETAIL "17-B"

EMERGENCY GENERATOR FUEL OIL DAY TANK VENT

3
1

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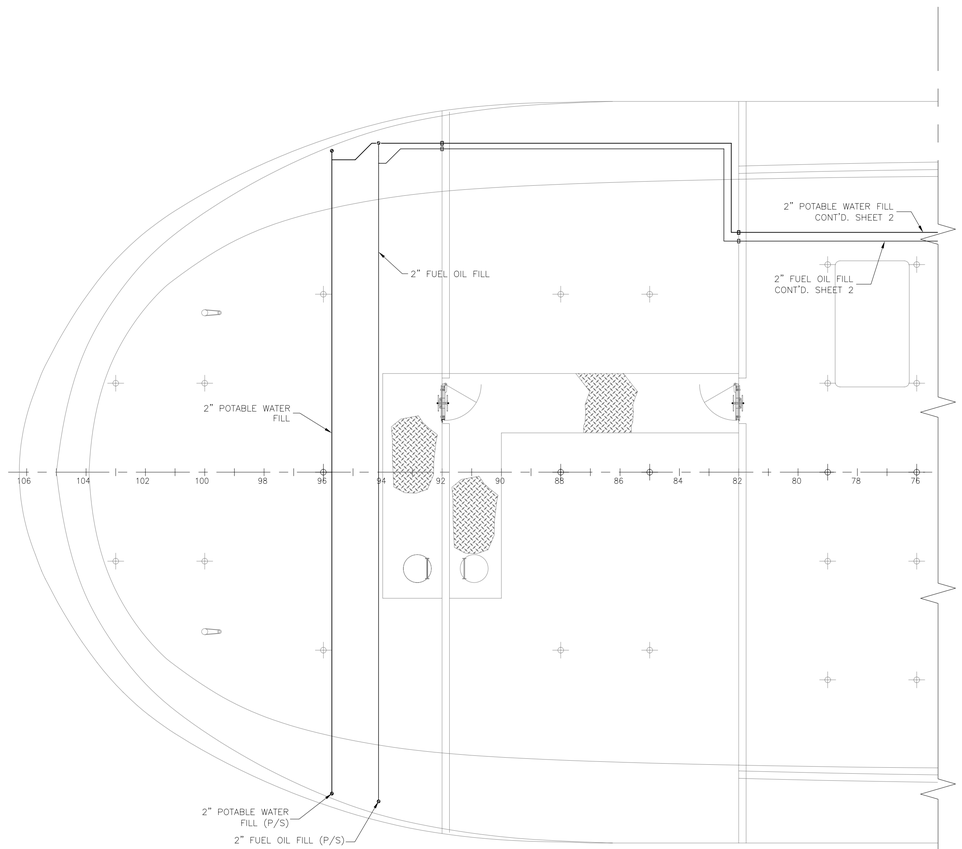
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

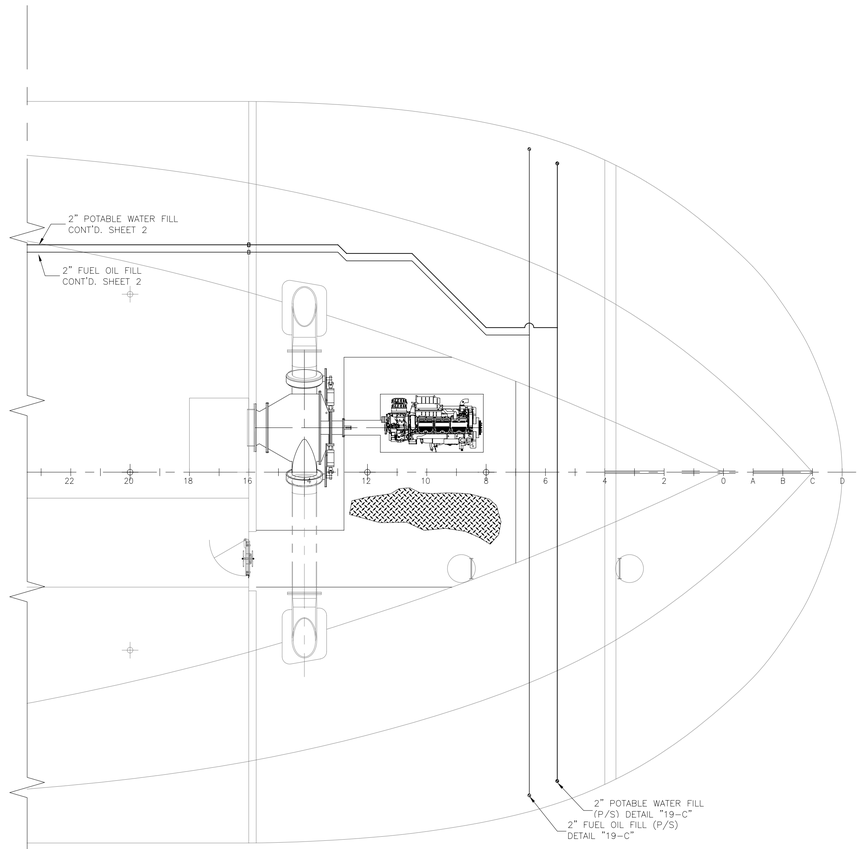
NEW SOUND CLASS FERRY

FILLS, VENTS & SOUNDS SCHEMATIC

DRAWN BY: J. MELAN	DATE: 12/17/09	DWG NO. 506-01 SHT 3 OF 4	4 2
CK'D BY: K.H.K.	HULL No. 413		
SCALE: NONE	G&C Job No. 09-060	REV. 4	



LOWER DECK PLAN AFT



LOWER DECK PLAN FWD

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NEW SOUND CLASS FERRY

FILLS, VENTS & SOUNDS SCHEMATIC

DRAWN BY: JCM	DATE: 3/15/11	DWG NO. 506-01 SHT 4 OF 4	
CK'D BY: KHK	HULL No. 413		2 4
SCALE: AS NOTED	G&C Job No. 09-060	REV. 4	

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE	REMARKS
1	30 FT	1 1/2" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
2	200 FT	1 1/2" PIPE, SCH 40, SEAMLESS	CARB STL	ASTM A-53, GR B	ANSI B36.10
3	70	2" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
4	450 FT	2" PIPE, SCH 40, SEAMLESS	CARB STL	ASTM A-53, GR B	ANSI B36.10
5	320 FT	2" PIPE, SCH 40, SEAMLESS, GALV	CARB STL	ASTM A-53, GR B	ANSI B36.10
6	20 FT	2 1/2" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
7	80 FT	2 1/2" PIPE, SCH 40, SEAMLESS	CARB STL	ASTM A-53, GR B	ANSI B36.10
8	20 FT	2 1/2" PIPE, SCH 40, SEAMLESS, GALV	CARB STL	ASTM A-53, GR B	ANSI B36.10
9	60 FT	3" PIPE, SCH 40, SEAMLESS, GALV.	CARB STL	ASTM A-53, GR B	ANSI B36.10
10	20 FT	3" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
11	50 FT	4" PIPE, SCH 40, SEAMLESS, GALV.	CARB STL	ASTM A-53, GR B	ANSI B36.10
12	40 FT	4" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
13	9	2" 90° ELBOW, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
14	22	2" 90° ELBOW, SOCKET-WELD, 3000 LB	CARB STL	ASTM A-105	ANSI B16.11
15	18	2" 90° ELBOW, SOCKET-WELD, 3000 LB, GALV	CARB STL	ASTM A-105	ANSI B16.11
16	3	2" 180° RETURN, B-WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
17	4	2 1/2" 90° ELBOW, B-WELD, SCH 40, GALV	CARB STL	ASTM A-234	ANSI B16.9
18	2	1 1/2" 90° ELBOW, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
19	4	2 1/2" 180° RETURN, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
20	3	3" 180° RETURN, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
21	11	3" 90° ELBOW, B-WELD, SCH 40, GALV.	CARB STL	ASTM A-234	ANSI B16.9
22	6	1 1/2" 45° ELBOW, SOCKET-WELD, 3000 LB	CARB STL	ASTM A-105	ANSI B16.11
23	2	4" 90° ELBOW, B-WELD, SCH 40, GALV.	CARB STL	ASTM A-234	ANSI B16.9
24	1	4" 45° ELBOW, B-WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
25	9	4" 180° RETURN, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
26	2	1 1/2"x3/4" TEE, REDUCING, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
27	2	1 1/2" 90° ELBOW, SOCKET-WELD, 3000 LB	STAINLESS STL	ASTM A-182	ANSI B16.11
28	6	1 1/2" 90° ELBOW, SOCKET-WELD, 3000 LB	CARB STL	ASTM A-105	ANSI B16.11
29	14	1 1/2" FLANGE, 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5
30	30	2" FLANGE, 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5
31	4	2 1/2" FLANGE, 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5
32	8	3/4" FLANGE, 150#, SLIP-ON, RF	CARB STL	ASTM A-105	ANSI B16.5
33	4	3/4" FLANGE, 150#, SLIP-ON RF	STAINLESS STL	ASTM A-182	ANSI B16.5
34	8	4" FLANGE, 150# SLIP-ON, RF	STAINLESS STL 316	ASTM A-182	ANSI B16.11
35	2	1 1/2" QUICK CLOSING GATE VALVE, 150#, SCR'D., SS TRIM	CARBON STEEL	ASTM A-105	ANSI B16.34
36	1	1" HALF COUPLING, THREADED 3000 LB	STAINLESS STL	ASTM A-403	ANSI B16.11
37	1	1" PIPE PLUG, THR'D.	BRONZE	ASTM B-62	ANSI B16.15
38	2	1 1/2" PIPE PLUG, THR'D.	CARB STL	ASTM A-105	ANSI B16.15
39	3	3" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 2 1/2" PIPE	CARB STL	ASTM A-53, GR B	ANSI B36.10
40	2	2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 1 1/2" PIPE	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
41	7	2 1/2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG FOR 2" PIPE	CARB STL	ASTM A-53	ANSI B36.10
42	17	2 1/2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG FOR 2" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.19
43	3	3 1/2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG FOR 3" PIPE	CARB STL	ASTM A-53	ANSI B36.10
44	3	3 1/2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 3" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.19
45	6	3" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 2 1/2" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.19
46	11	5" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG FOR 4" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.19
47	2	5" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG FOR 4" PIPE	CARB STL	ASTM A-53, GR B	ANSI B36.10
48	8	4" TANK VENT, W/FULL FLOAT, FLANGED, w/INSECT SCREEN	STAINLESS STL 316	1700 SERIES	ROBERT H WAGER CO.
49	2	2 1/2" TANK VENT, W/INSECT SCREEN, FULL FLOAT, FLANGED	STAINLESS STL 316	1700 SERIES	ROBERT H WAGER CO.
50	2	2 1/2" TANK VENT, W/FLAME SCREEN, FULL FLOAT, FLANGED	STAINLESS STL 316	1700 SERIES	ROBERT H WAGER CO.
51	3	2" TANK VENT, W/FLAME SCREEN, THREADED	GALV. STEEL	1600 SERIES	ROBERT H WAGER CO.
52	2	1 1/2" CAMLOCK CAP	STAINLESS STL	316	–
53	13	2" CAMLOCK CAP	STAINLESS STL	316	–
54	2	1 1/2" CAMLOCK FTG, M. ADAPTER x FPT	STAINLESS STL	316	–
55	13	2" CAMLOCK FTG, M. ADAPTER x FPT	STAINLESS STL	316	–
56	AS REQD	2" UNION, 3000 LB, SOCKET-WELD	CARB STL	ASTM A-105	ANSI B16.11
57	AS REQD	1 1/2" UNION, 3000 LB, SOCKET-WELD	CARB STL	ASTM A-105	ANSI B16.11
58	2	1 1/2" GATE VALVE, 150# FLANGED, RF, RISING STEM, SS RENEWABLE DISC & SEAT	STAINLESS STL	ASTM A-182	ANSI B-16.34
59	15	2" GATE VALVE, 150# FLANGED, RF, RISING STEM, SS RENEWABLE DISC & SEAT	STAINLESS STL	ASTM A-182	ANSI B-16.34
60	30	2" GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
61	8	4" GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
62	10	3/4" GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
63	4	2 1/2" GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
64	14	1 1/2", GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
65	3	1 1/2" 180° RETURN, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
66	6	2 1/2" 90° ELBOW, B-WELD, SCH 40	CARB STL	ASTM A-234	ANSI B16.9
67	5	1 1/2" VALVE, BALL, 150#, FULL PORT, FLANGED	STAINLESS STL	ASTM A-351	MSS-SP-72

CONTINUED ZONE 3-B

REFERENCES

1.	101-02	GENERAL ARRANGEMENTS
2.	101-01	OUTBOARD & INBOARD PROFILE
3.	533-01	POTABLE WATER SYSTEM SCHEMATIC
4.	200-01	MACHINERY ARRANGEMENT
5.	261-01	FUEL OIL SYSTEM SCHEMATIC
6.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
7.	264-01	LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC
8.	529-02	BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS
9.	163-01	SEA CHESTS
10.	528-02	OVERBOARD DRAINS & SEWAGE SYS ARRG'T & DETS
11.	551-02	COMPRESSED AIR SYSTEM ARRG'T. & DETAILS
12.	110-01	SCANTLING PLANS BOW-FR. 35
13.	568-01	BOW THRUSTER INSTALLATION
14.	154-01	PILOTHOUSE CONSTRUCTION

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	VAR 55-C 54-A 63-A	1. REVISED DECK PLANS TO AGREE WITH LATEST ARRANGEMENT DRAWINGS. 2. REVISED VENTS IN PLAN "55-C", DETAIL "54-A" & "56-A" & ADDED PLAN "63-A" TO SHOW TERMINATION OF MSD, BLACK & GRAY WATER VENTS.	8/20/10	JCM
2	9-B 11-B 26-D 3-D 60-A 64-A	1. ADDED ZERO DISCHARGE TANK IN TANK ROOM, RELOCATED BLACK WATER TANK TO TANK ROOM & REVISED PIPING & B.O.M. TO SUIT. 2. ADDED EMERGENCY GENERATOR DAY TANK VENT, SIGHT GLASS, DETAIL 60-A & 60-C & REVISED B.O.M. TO SUIT. ADDED REF 14.	9/13/10 10/5/10	JCM
3	VAR 3-B 56-C 45-C	1. ADDED POTABLE WATER AND FUEL OIL FILL STATIONS FWD AND AFT OUTBOARD PORT AND STBD. AND REVISED B.O.M. PER CHANGE ORDER. 2. REVISED CO2 LKR ARRGT PER AS-BUILT.	4/26/11	JCM/KK

LIST OF MATERIALS, CONTD FROM ZONE 7-A

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
68	2	LEVEL INDICATING, 3/4" FLG'D., SIDE x SIDE CONN C TO C= 6'-4"	STAINLESS STL	MOD TYPE BM	GEMS SURESITE MINIATURE SIZE (POT WTR)
69	2	LEVEL INDICATING, 3/4" FLG'D., SIDE x SIDE CONN, C TO C= 3'-5"	STAINLESS STL	MOD TYPE BM	GEMS SURESITE MINIATURE SIZE (L.O./G.O. TK)
70	2	LEVEL INDICATING, 3/4" FLG'D., SIDE x SIDE CONN, C TO C= 6'-10"	STAINLESS STL	MOD TYPE BM	GEMS SURESITE MINIATURE SIZE (F.O. TK)
71	8	3/4" HALF COUPLING, 3000 LB, S.W.	FORGED STL	ASTM A-105	ANSI B16.11
72	4	3/4" HALF COUPLING, 3000 LB, S.W.	STAINLESS STL	ASTM A-182	ANSI B16.11
73	4 FT	3/4" PIPE, SCH 40, SEAMLESS	CARB STL	ASTM A-53, GR B	ANSI B36.10
74	2 FT	3/4" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
75	6	2" PIPE SLEEVE, DECK/BHD PENETRATION, SCH 40. 3" LG, FOR 1 1/2" PIPE	CARB STL	ASTM A-53	ANSI B36.10
~~76~~	~~0~~	~~LATERAL, 3"x2", SCH 40, BW, GALV~~	~~CARBON STEEL~~	~~ASTM A-234~~	~~ANSI B16.9~~
77	5	3" 45° ELBOW, B-WELD, SCH 40, GALV.	CARB STL	ASTM A-234	ANSI B16.9
78	21	2" 45° ELBOW, SOCKET-WELD, 3000 LB	CARB STL	ASTM A-105	ANSI B16.11
79	1	LATERAL, 3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
80	15	2" 45° ELBOW, SOCKET-WELD, 3000 LB, GALV.	CARB STL	ASTM A-105	ANSI B16.11
81	50 FT	4" PIPE, SCH 40, SEAMLESS	CARB STL	ASTM A-53, GR B	ANSI B36.10
82	1 FT	1 1/2" PIPE, SCH 80, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
83	1	LEVEL INDICATING, 3/4" FLG'D., SIDE x SIDE CONN, C TO C= 3'-0"	STAINLESS STL	MOD TYPE BM	GEMS SURESITE MINIATURE SIZE (EMERG'Y GEN F.O. DAY TK)
84	1	2" 180° RETURN, B-WELD, SCH 40	STAINLESS STL	ASTM A-403	ANSI B16.9
85	1	2" TANK VENT, W/FLAME SCREEN, THREADED	STAINLESS STL	1700 SERIES	ROBERT H WAGER CO.
86	4	2" TEE, SOCKET-WELD, 3000 LB	CARB STL	ASTM A-105	ANSI B16.11
87	4	2" TEE, SOCKET-WELD, 3000 LB, GALV.	CARB STL	ASTM A-105	ANSI B16.11
88	8	2" COUPLING, 3000 LB, SCR'D.	STAINLESS STL	ASTM A-182	ANSI B16.11
89	8	2" COUPLING, 3000 LB, S.W.	CARB STL	ASTM A-105	ANSI B16.11
90	2	2" GATE VALVE, 150# FLANGED, RF, RISING STEM, SS RENEWABLE DISC & SEAT	CARB STL	ASTM A-216	ANSI B-16.34
91	4	2" FLANGE, 150#, SLIP-ON, RF	CARB STL	ASTM A-105	ANSI B16.5

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR STEEL VESSELS UNDER 90 METERS.
2. HORIZONTAL PIPE RUNS GREATER THAN 3 FT SHALL BE SLOPED TO ALLOW DRAINAGE. LONGITUDINAL RUNS SHALL HAVE A SLOPE OF 1/8 IN FOR EVERY 1 FT & TRANSVERSE RUNS SHALL HAVE A SLOPE OF 1/4 IN FOR EVERY 1 FT.
3. ALL FLANGED CONNECTIONS SHALL BE PROVIDED WITH 316 S.S. ASTM F593 HEX HD BOLTS, 316 S.S. ASTM F594 NUTS, & 316 S.S. WASHERS.
4. PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.
5. TAKEDOWN JOINTS SHALL BE PROVIDED WHERE NECESSARY FOR REMOVAL & SERVICE OF EQUIPMENT. ADDITIONAL TAKEDOWN JOINTS SHALL BE AVOIDED WHERE PRACTICAL AND SHALL NOT BE LOCATED BEHIND LININGS.
6. PIPING PASSING THROUGH WATERTIGHT OR FIRE BOUNDARIES SHALL BE FITTED WITH SLEEVES WELDED TO THE BOUNDARY AND THE PIPE.
7. IN ACCOMMODATION SPACES PIPES SHALL BE CONCEALED BEHIND LININGS. ACCESS PANELS SHALL BE PROVIDED FOR VALVES AND OTHER COMPONENTS NEEDING SERVICING.
8. UNIONS ARE NOT PERMITTED IN PIPING SYSTEMS BEHIND LININGS, FALSE CEILINGS, OR IN OTHER INACCESSIBLE LOCATIONS.
9. ALL PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.

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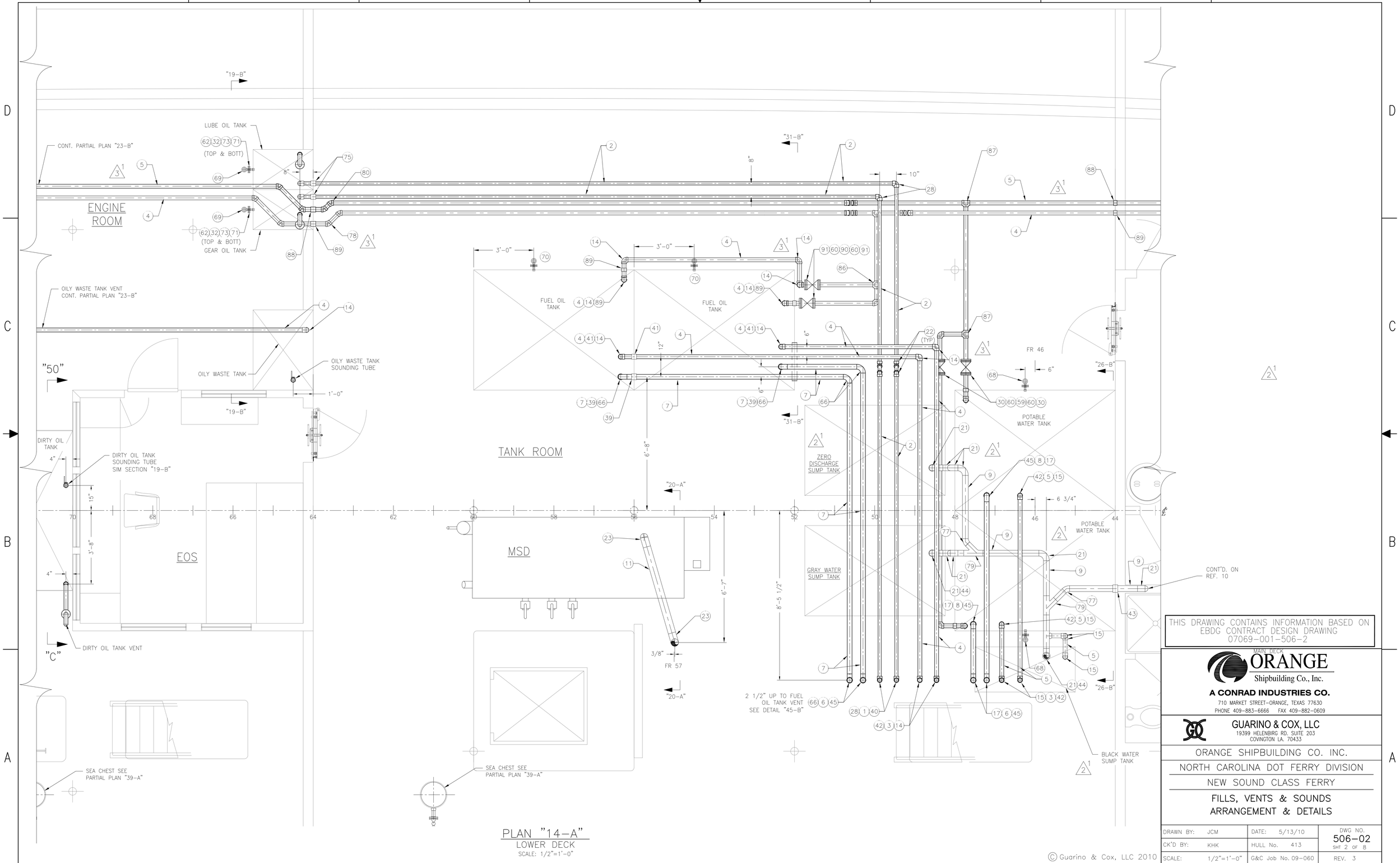
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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS

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CK'D BY: KHK	HULL No. 413	SHT 1 OF 8	
SCALE: NONE	G&C Job No. 09-060	REV. 3	



PLAN "14-A"
LOWER DECK
SCALE: 1/2"=1'-0"

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MAIN DECK

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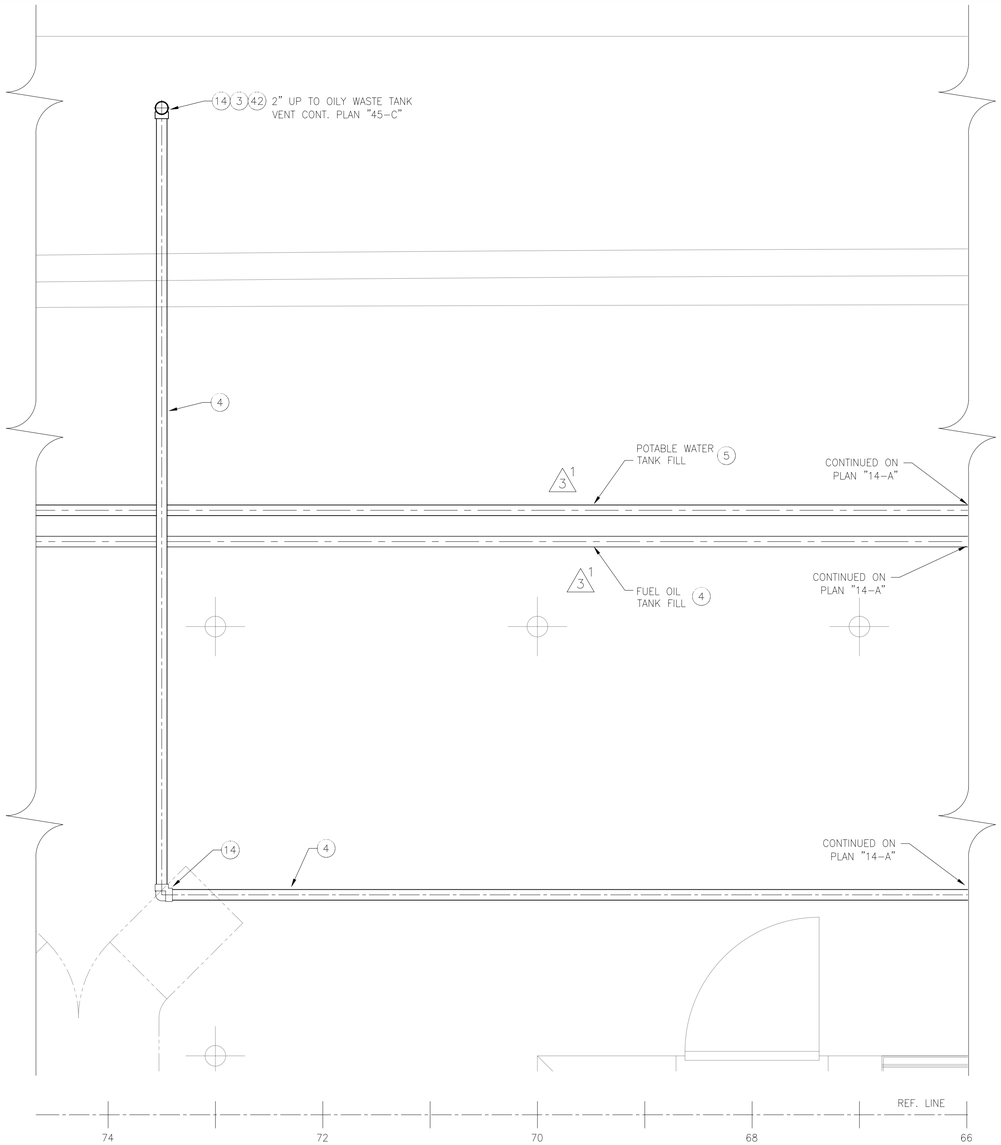
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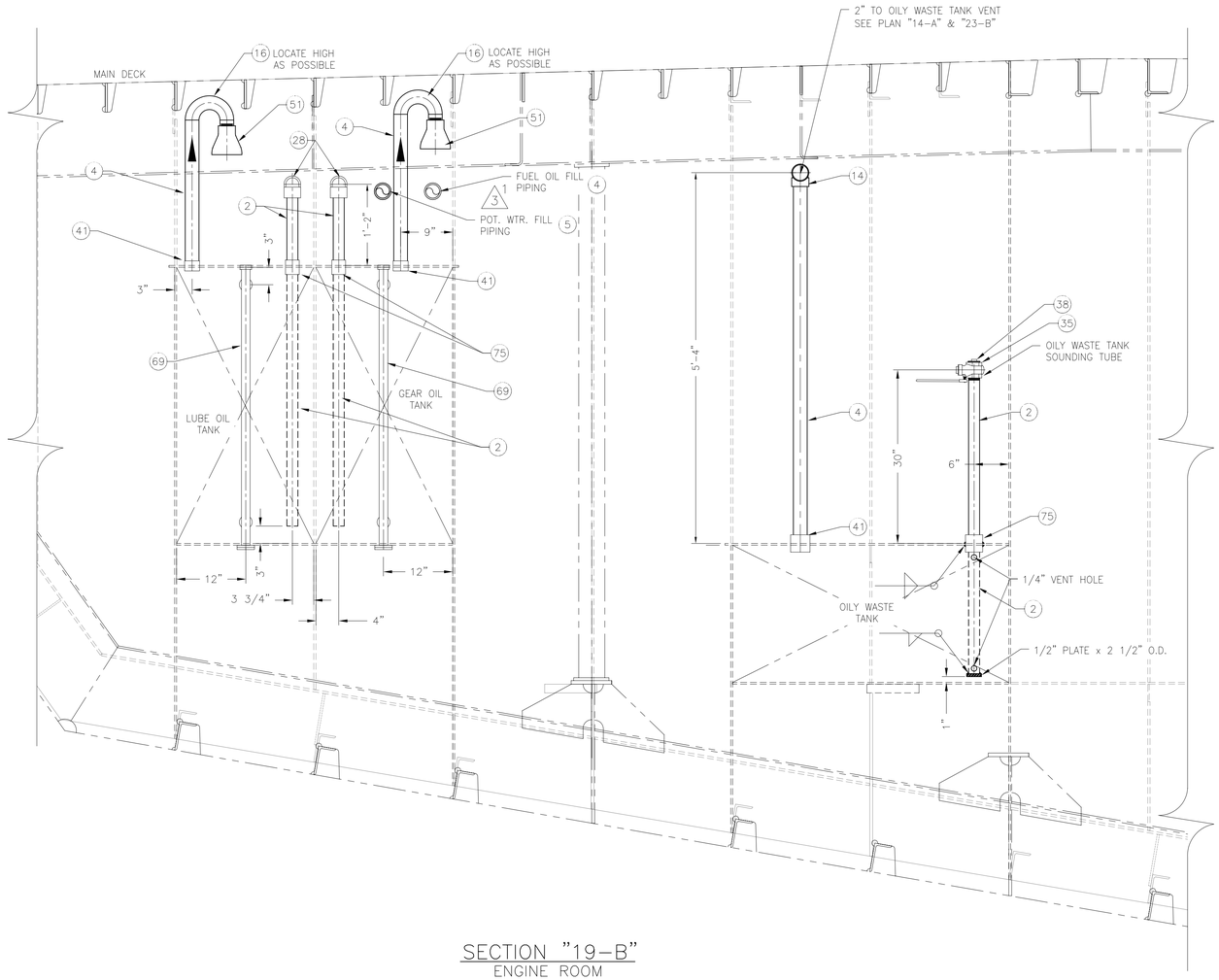
NEW SOUND CLASS FERRY

FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS

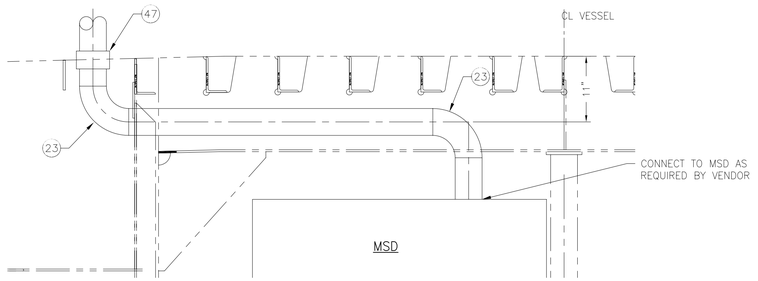
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CK'D BY: KHK	HULL No. 413	
SCALE: 1/2"=1'-0"	G&C Job No. 09-060	REV. 3



PARTIAL PLAN "23-B"
ENGINE ROOM
SCALE: 3/4"=1'-0"



SECTION "19-B"
ENGINE ROOM
FR 66 LKG FWD TO FR 64
SCALE: 1"=1'-0"



SECTION "20-A"
ENGINE ROOM
FR 55 LKG AFT
SCALE: 1"=1'-0"

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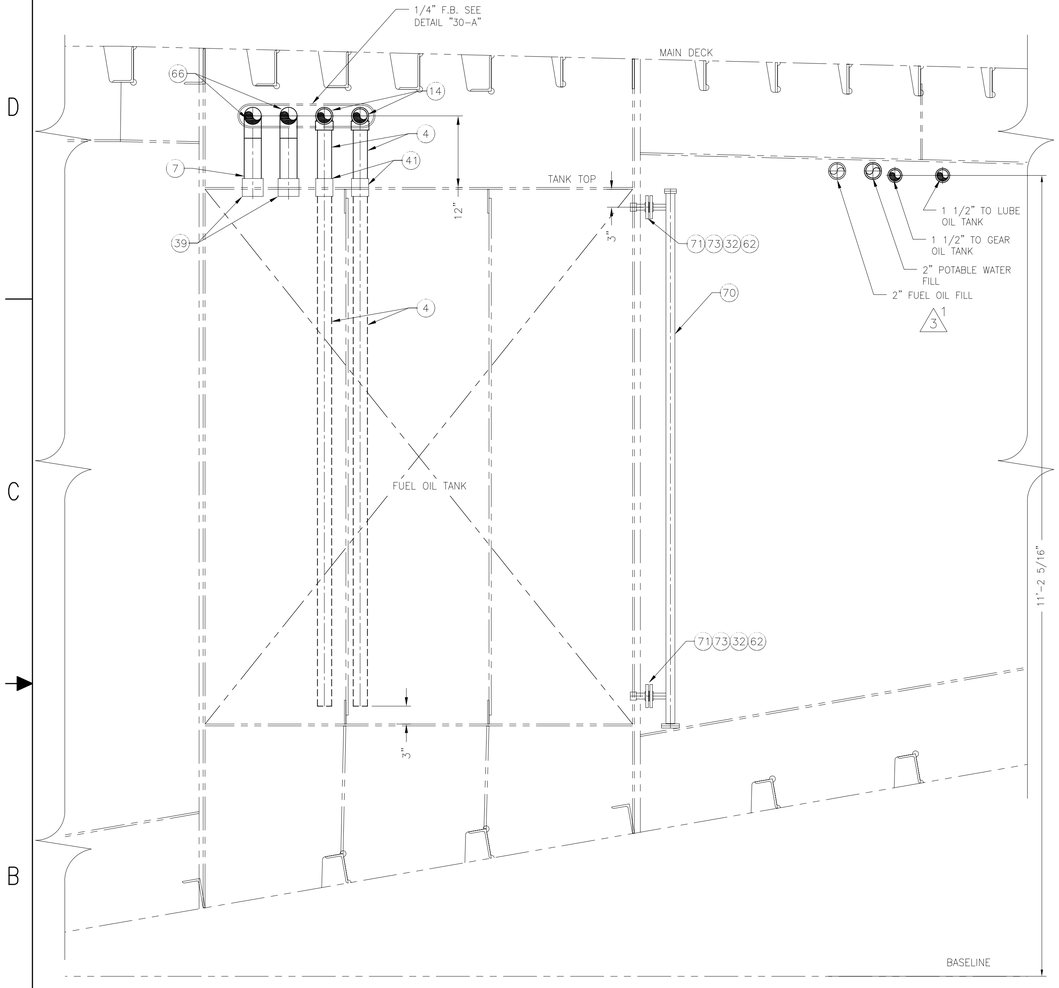
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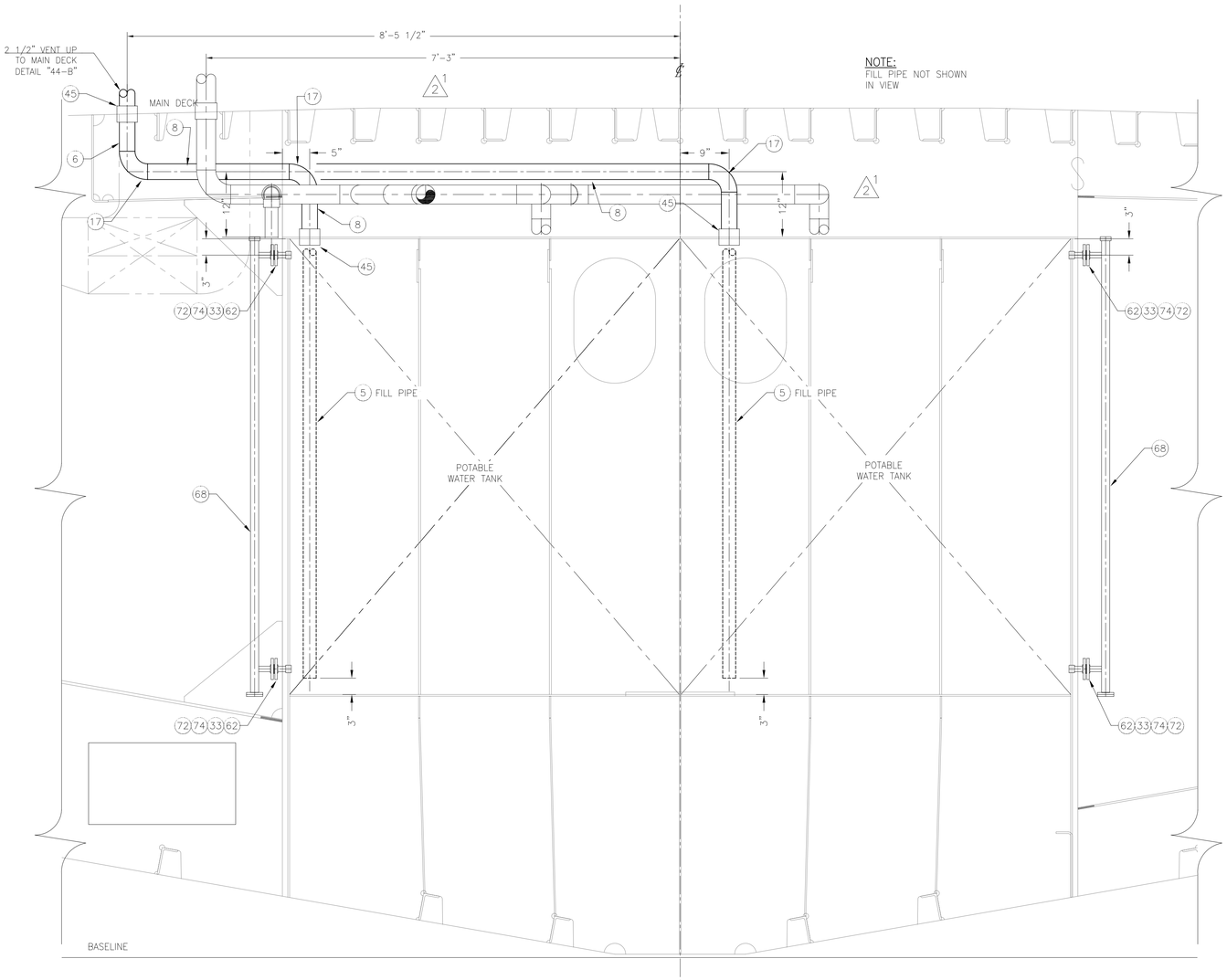
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SCALE: AS NOTED	G&C Job No. 09-060	REV. 3

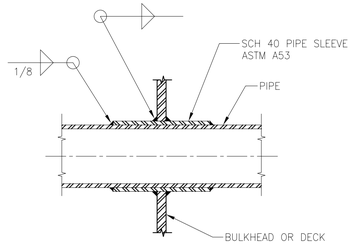


SECTION "31-B"
TANK ROOM
FR 52 LKG AFT
SCALE: 1"=1'-0"

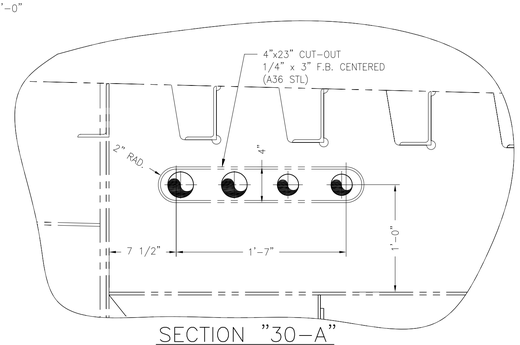


NOTE:
FILL PIPE NOT SHOWN IN VIEW

SECTION "26-B"
TANK ROOM
FR 46 LKG AFT
SCALE: 1"=1'-0"



DETAIL "32-A"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE



SECTION "30-A"
FUEL PIPE PENETRATION SLEEVE
@ FR 52 LKG AFT
SCALE: 1"=1'-0"

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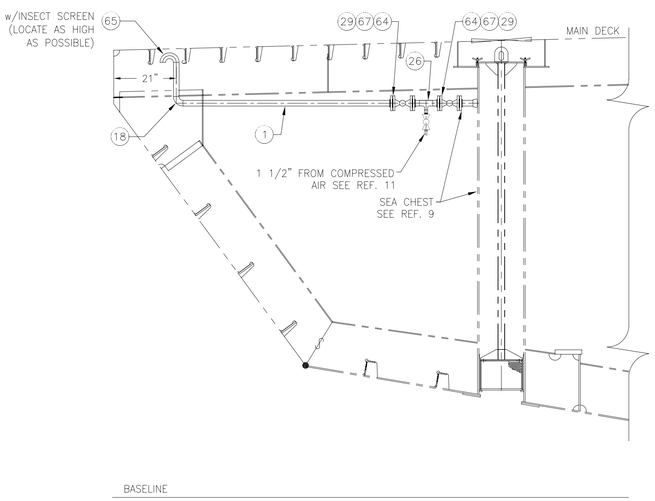
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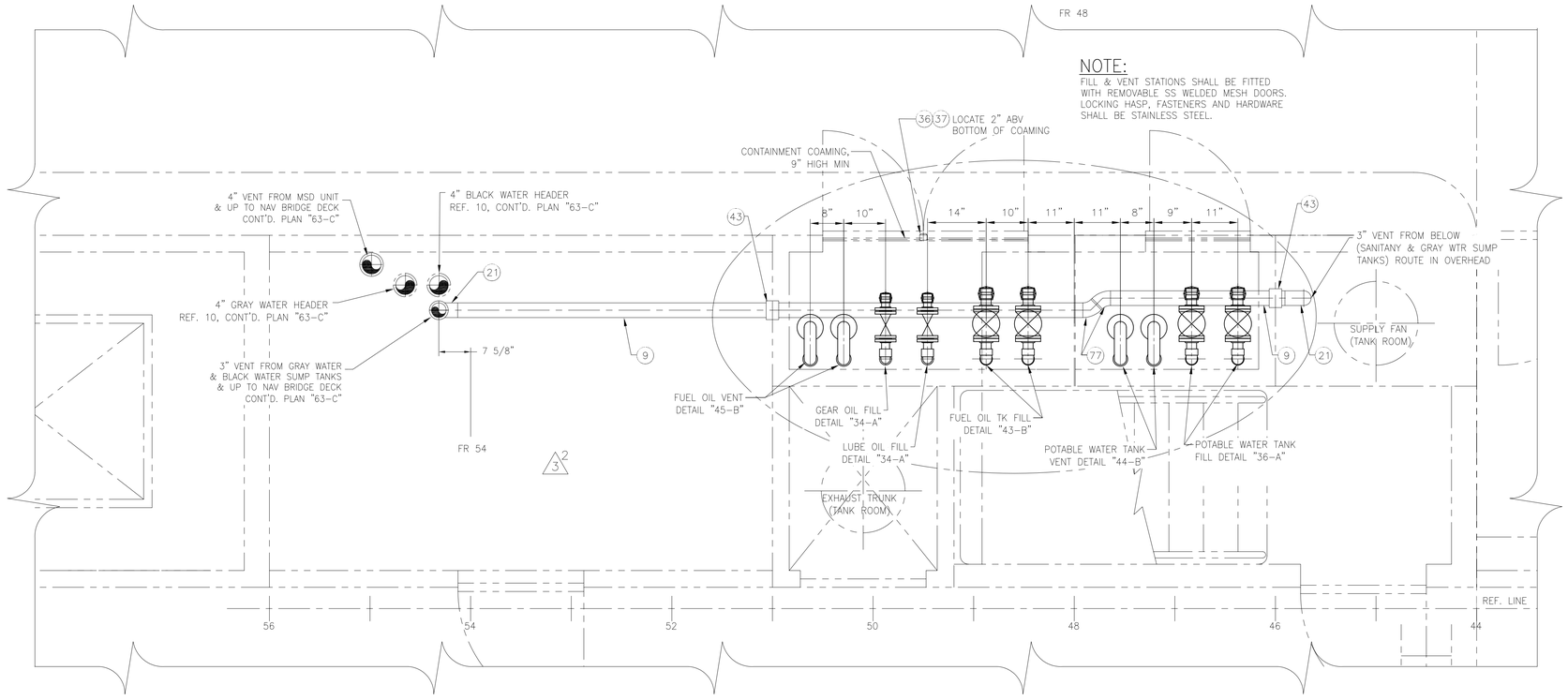
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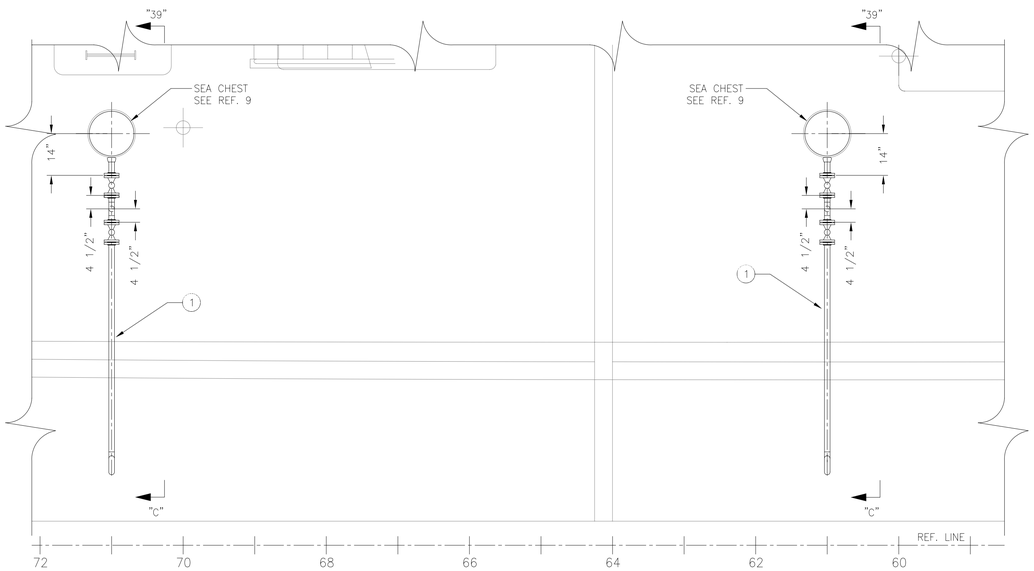
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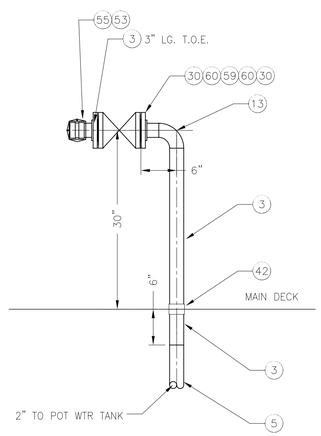
SECTION "39–C"
SEA CHEST VENT & BLOWDOWN
SCALE: 1/2"=1'–0"



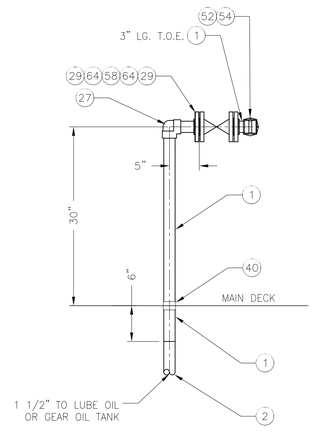
PARTIAL PLAN "35–C"
MAIN DECK
FILL/VENT LOCKER
SCALE: 1/2"=1'–0"



PARTIAL PLAN "39–A"
SEA CHEST VENT DETAIL
SCALE: 1/2"=1'–0"



DETAIL "36–A"
POTABLE WATER TANK FILL
SCALE: 1"=1'–0"



DETAIL "34–A"
LUBE OIL & GEAR OIL TANK FILL
SCALE: 1"=1'–0"

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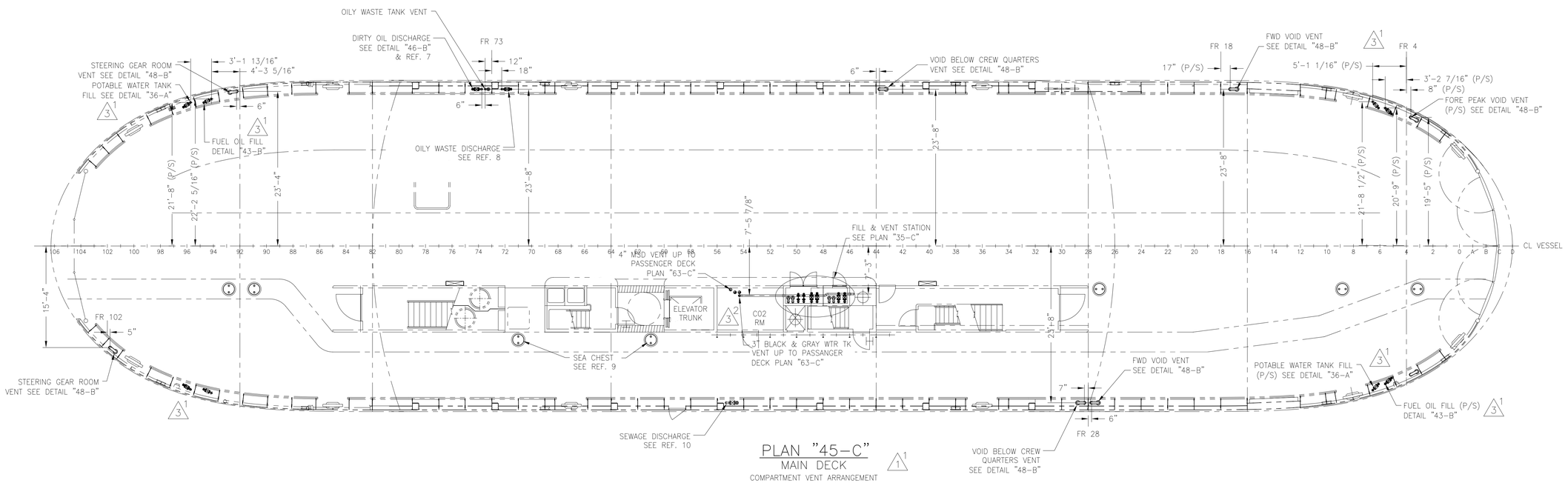
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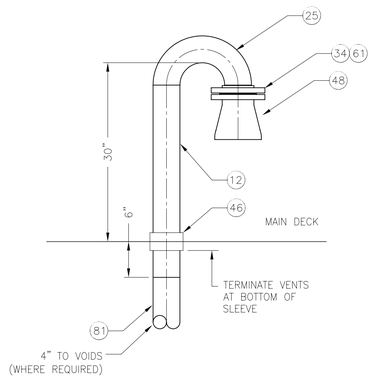
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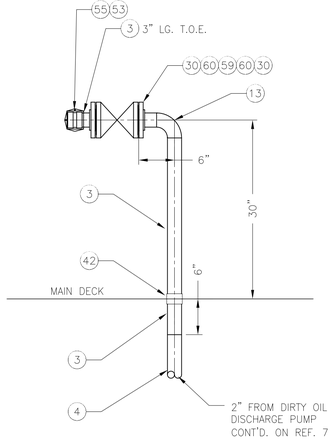
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CK'D BY: KHK	HULL No. 413	SHT 5 OF 8	
SCALE: AS NOTED	G&C Job No. 09–060	REV. 3	



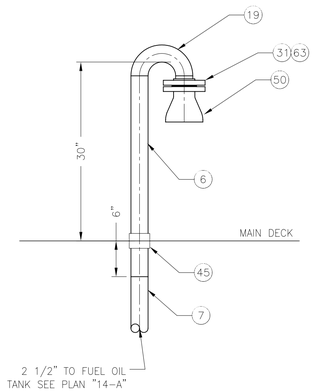
PLAN "45-C"
MAIN DECK
COMPARTMENT VENT ARRANGEMENT
SCALE: 1/8"=1'-0"



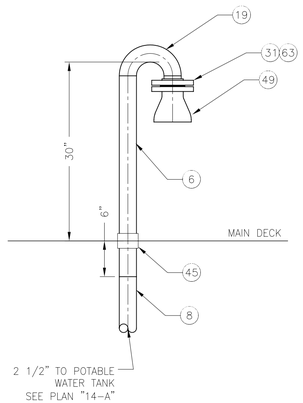
DETAIL "48-B"
COMPARTMENT VENTS
VOID BELOW CREW QUARTERS, FWD VOID, FOREPEAK VOID, STEERING COMPARTMENT (2 VENTS EACH COMPARTMENT)
SCALE: 1" = 1'-0"



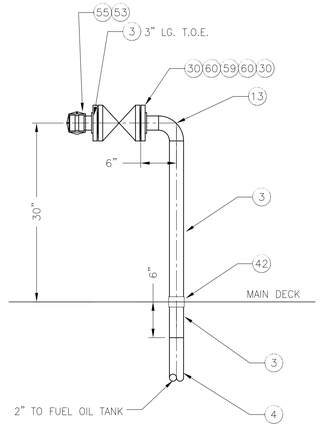
DETAIL "46-B"
DECK DISCHARGE
DIRTY OIL SYSTEM
SCALE: 1" = 1'-0"



DETAIL "45-B"
FUEL OIL TANK VENT
SCALE: 1" = 1'-0"



DETAIL "44-B"
POTABLE WATER VENT
SCALE: 1" = 1'-0"



DETAIL "43-B"
FUEL OIL FILL
SCALE: 1" = 1'-0"

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-506-2

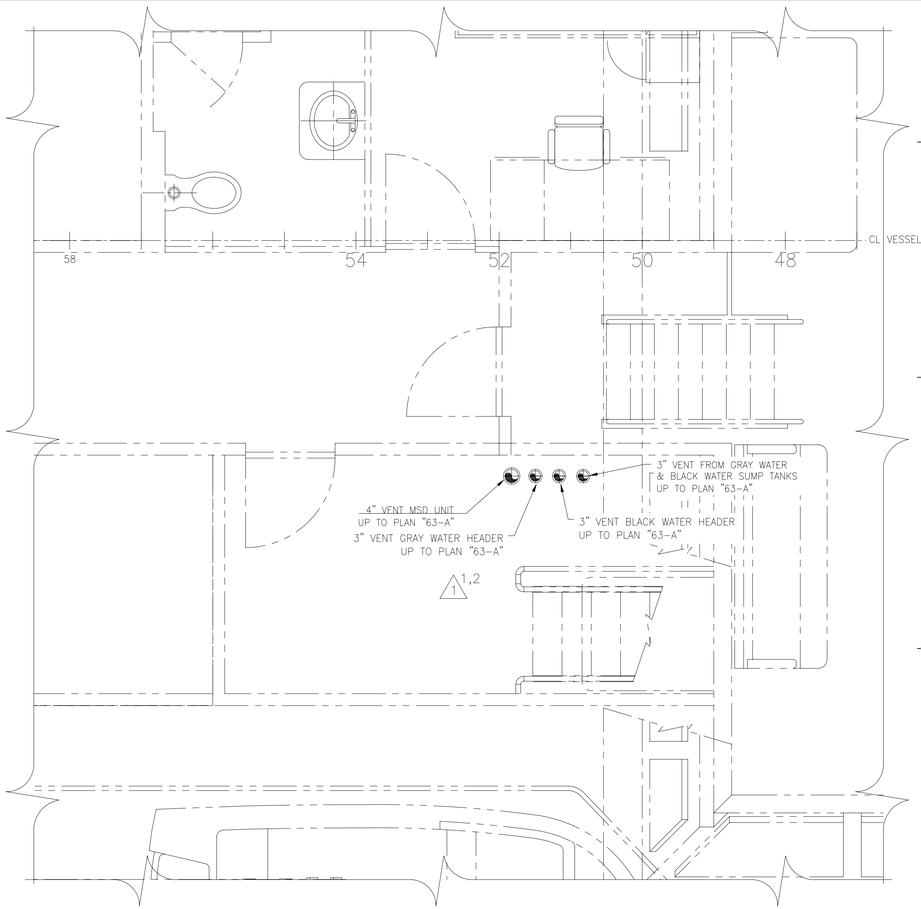
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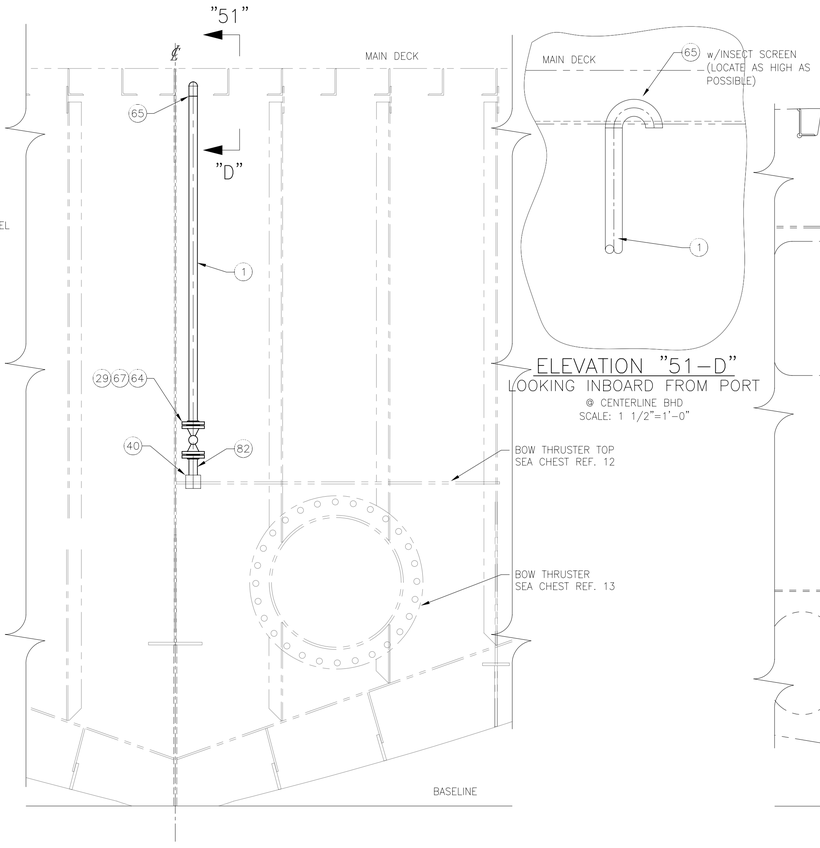
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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY
FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS

DRAWN BY:	JCM	DATE: 5/13/10	DWG NO. 506-02 SHT 6 OF 8
CK'D BY:	KHK	HULL No. 413	
SCALE:	AS NOTED	G&C Job No. 09-060	REV. 3

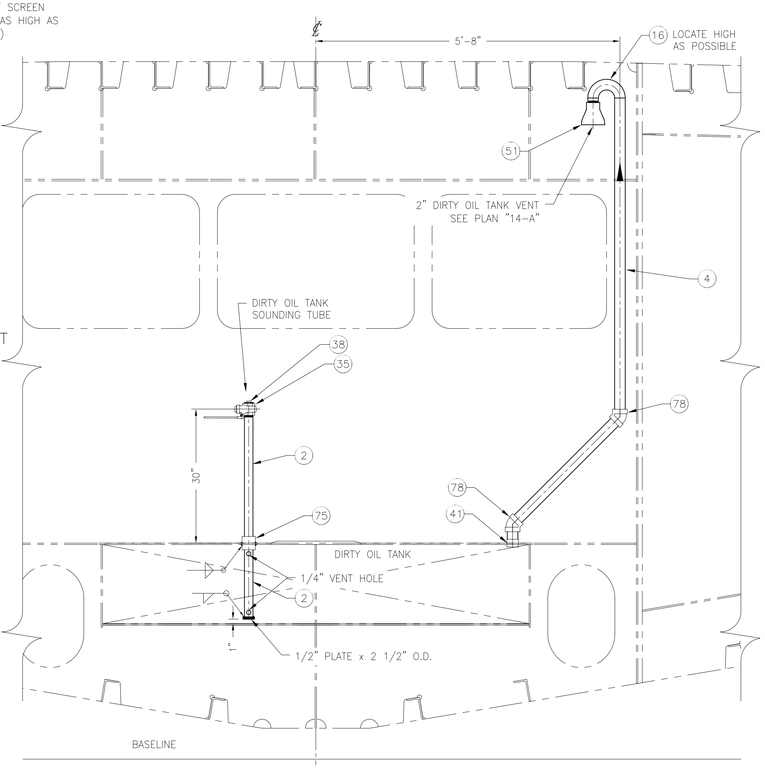


PLAN "55-C"
NAV BRIDGE DECK
MSD, BLACK & GRAY WATER VENTS
SCALE: 1/2"=1'-0"

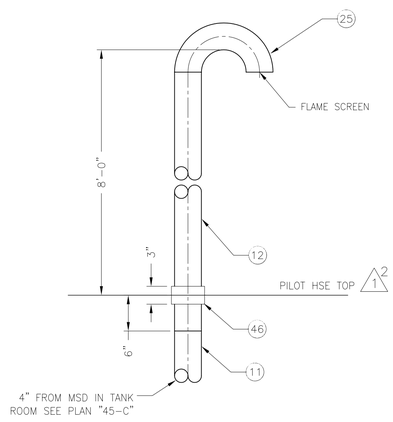


SECTION "52-C"
SECTION @ FR. 16 LOOKING AFT
BOW THRUSTER SEA CHEST
SCALE: 3/4"=1'-0"

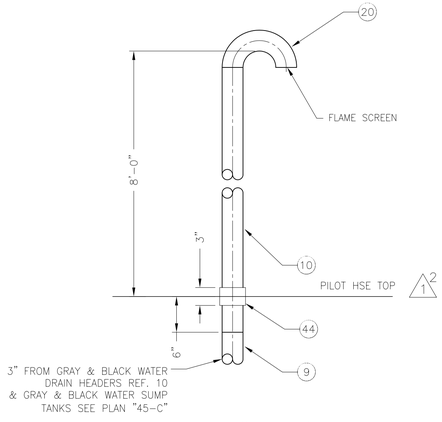
ELEVATION "51-D"
LOOKING INBOARD FROM PORT
@ CENTERLINE BHD
SCALE: 1 1/2"=1'-0"



SECTION "50-C"
SECTION @ FR. 72 LOOKING FWD
@ FR. 70 (E.O.S. BHD)
SCALE: 3/4"=1'-0"



DETAIL "56-A"
MARINE SANITATION DEVICE (MSD) VENT
SCALE: 1" = 1'-0"



DETAIL "54-A"
GRAY & BLACK WATER DRAIN HEADERS
& GRAY & BLACK WATER SUMP TANK VENTS
SCALE: 1" = 1'-0"

THIS DRAWING CONTAINS INFORMATION BASED ON
EBDG CONTRACT DESIGN DRAWING
07069-001-506-2

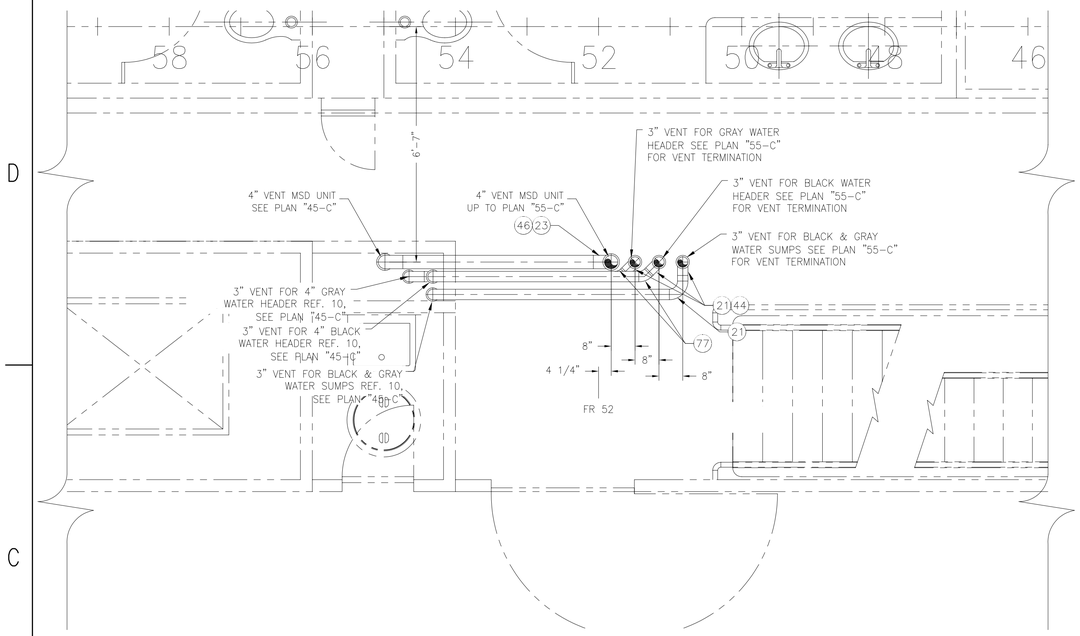
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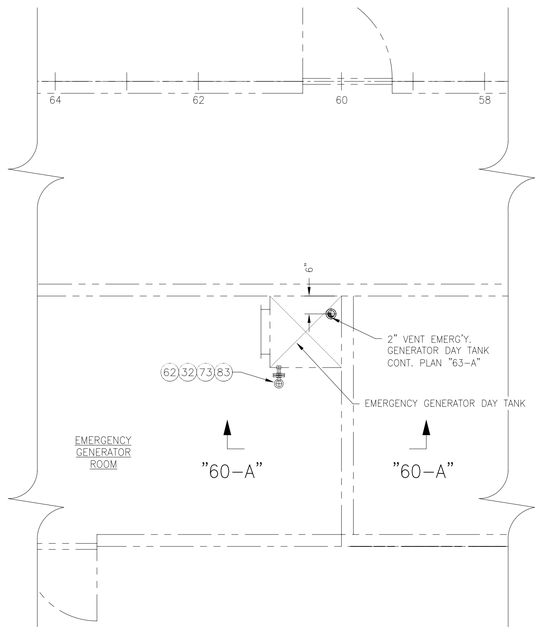
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NEW SOUND CLASS FERRY
FILLS, VENTS & SOUNDS
ARRANGEMENT & DETAILS

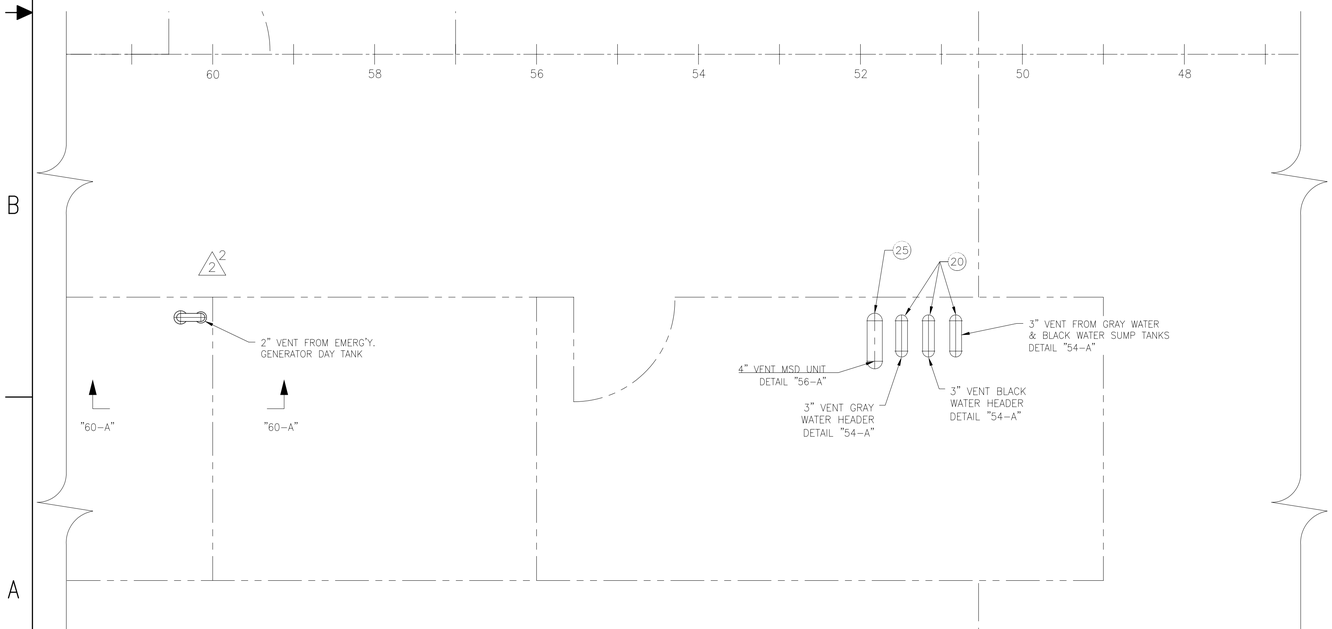
DRAWN BY:	JCM	DATE: 5/13/10	DWG NO. 506-02
CK'D BY:	KHK	HULL No. 413	SHT 7 OF 8
SCALE:	AS NOTED	G&C Job No. 09-060	REV. 3



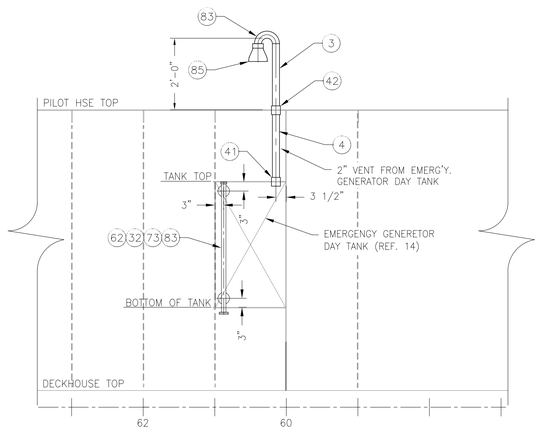
PLAN "63-C"
PASSENGER DECK
MSD, BLACK & GRAY WATER VENTS
SCALE: 1/2"=1'-0"



PLAN "60-C"
NAV BRIDGE DECK
EMERGENCY GENERATOR DAY TANK
SCALE: 1/2"=1'-0"



PLAN "63-A"
PILOT HOUSE TOP
MSD, BLACK & GRAY WATER VENTS
SCALE: 1/2"=1'-0"



ELEVATION "60-A"
EMERGENCY GENERATOR DAY TANK
SCALE: 1/2"=1'-0"

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NEW SOUND CLASS FERRY
FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS

DRAWN BY:	JCM	DATE: 5/13/10	DWG NO. 506-02 SHT 8 OF 8
CK'D BY:	KHK	HULL No. 413	
SCALE:	1/2"=1'-0"	G&C Job No. 09-060	REV. 3

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES		REMARKS
			MATERIAL	GASKETS	BOLTING		BODY	TRIM	
FIREMAIN	2 1/2" & OVER	316 STAINLESS STL., SCH 40, ASTM A-312 SMLS	FLANGE, 316 STAINLESS STEEL, SLIP-ON, 150#, ASTM A-182	GARLOCK STYLE 3000	BOLTS: 316 STAINLESS STL GRADE 316 ASTM F593	316 STAINLESS STEEL BUTT WELD, SCH. 40, ASTM A403 △1	BALL: FLANGED ENDS 150# STAINLESS STEEL, ASTM A351/A744 CF8M	STAINLESS STEEL BALL AND STEM TEFLON SEATS AND SEALS	
	2" & UNDER		UNION, 316 STAINLESS STEEL SOCKET WELD, GROUND JOINT, 3000#, ASTM A-182		NUTS: 316 STAINLESS STEEL GRADE 316 ASTM F594	316 STAINLESS STEEL SOCKET WELD, 3000#, ASTM A-182	GATE: STAINLESS STEEL, THREADED, ASTM A351/A744 CF8M	STEM OR DISK CRES, ASTM A182	

REFERENCES

1.	101-01	OUTBOARD AND INBOARD PROFILE
2.	101-02	GENERAL ARRANGEMENTS
3.	200-01	MACHINERY ARRANGEMENT
4.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
5.	521-02	FIRE MAIN SYSTEM ARRANGEMENT & DETAILS
△3 2 6.	FPS DWG 10079640	MANUAL SPRINKLING SYSTEM
7.	529-01	BILGE & OILY WATER SYSTEM SCHEMATIC
8.	163-01	SEA CHESTS
9.	110-01	SCANTLING PLANS, BOW-FR. 35
△3 2 △2 3		

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
△1	3D 6D 13A 13C 21C 22A	1. REV. FITTINGS CALLOUT IN MATERIAL SCHEDULE & REMOVED REF. TO GEN. NOTE #8 IN PUMP CAPACITY COLUMN. 2. REV. PLANS "13-A" & "13-C" PIPE ROUTING TO AGREE WITH DWG. 521-02. 3. REV. PLANS "21-C" & "22-A" PIPE ROUTING TO AGREE WITH DWG. 521-02.	5/18/10	JB/KK
△2	SHT. 2	1. REV. PLANS "13-A" & "13-C" TO AGREE WITH REVISED ARRANGEMENT DWGS. RELOCATED FIRE STATIONS #3 & #8.	7/07/10	JB/KK
	SHT. 3	2. REV. PLANS "21-C" & "22-A" TO AGREE WITH REVISED ARRANGEMENTS. RELOCATED FIRE STATION #12 & 13.		
	13-C 4-D	3. ADDED SHAFT SEAL COOLING DISCHARGE PIPING TO OVERBOARD DISCHARGE & ADDED REF. #10.	8/13/10	JM/KK
△3	13C VAR	1. REMOVED SHAFT SEAL COOLING DISCHARGE FROM OVERBOARD DISCHARGE IN ENGINE ROOM AND REVISED DRAWING BACKGROUNDS TO AGREE WITH REVISED ARRANGEMENT DRAWINGS.	7/22/11	JB/KK
	4-D	2. REVISED REFERENCE 6 AND REMOVED REFERENCE 10 FROM REFERENCES.	9/28/11	JM/KK
	13A 13C 19A 22A 21C	3. RELOCATED FIRE STATIONS 3, 6, 7, 10, 11 & 12 & REVISED RELATED PIPING.		

PUMP LIST

QTY.	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
2	FIRE SEE GEN NOTE 6	SELF-PRIMING HORIZONTAL CENTRIFUGAL	GOULDS 3796 MTX 2x2x10 (IMPELLER TRIMMED TO 8.5" DIA.)	170 GPM @243' TDH (APPROX)	208 VAC, 3ø 25 HP, 3550 RPM IEEE-841

△1

PIPING SYMBOLS

	DIRECTION OF FLOW		RELIEF VALVE
	REDUCER		GLOBE ANGLE HOSE VALVE
	DECK OR BHD PENETRATION		CAP
	PIPE UP		DUPLEX STRAINER
	PIPE DOWN	P	PRESSURE GAUGE, LOCAL READING 0-150 PSI
	BALL VALVE	VP	VACUUM/PRESSURE GAUGE, LOCAL READING 30-0-30 PSI
	GATE VALVE		CENTRIFUGAL PUMP
	SWING CHECK VALVE		FIRE STATION, GEN NOTE 5
PT	PRESSURE SWITCH		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED BY REFERENCE 5.
3. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
4. DISCHARGE CHECK VALVES SHALL BE ORIENTED IN THE FORE AND AFT DIRECTION.
5. FIRE STATIONS SHALL BE SIZED 1 1/2" AND FITTED WITH ANGLE GLOBE HOSE VALVE, 50 FEET OF 1 1/2" RUBBER-LINED FIRE HOSE, HOSE WRENCH, AND COMBINATION NOZZLE. FIRE HOSE SHALL BE CONNECTED AND STOWED IN APPROVED HOSE RACKS.
6. THE FIRE PUMP SHALL BE CAPABLE OF REMOTE STARTING. SEE REFERENCE 4.
7. LOW POINTS IN THE FIREMAIN SHALL BE FITTED WITH DRAINS.
8. REMOTE PRESSURE DISCHARGE GAUGES FOR THE FIRE PUMP SHALL BE LOCATED IN THE PILOTHOUSE.
9. FIRE HOSES, HYDRANTS AND COUPLINGS SHALL ALL BE N.S.T. FIRE HOSE COUPLING THREAD.
10. FIRE STATIONS IN AREAS ACCESSIBLE TO PASSENGERS, SHALL BE ENCLOSED IN STAINLESS STEEL CABINETS. ALL OTHER FIRE STATIONS SHALL BE OPEN HOSE RACKS.
11. NCDOT TO SUPPLY SUITABLE ADAPTERS FOR FIREMAIN SHORE CONNECTIONS WITH COUPLINGS MATING TO THOSE ON THE SHORE FIRE LINES.

SYSTEM DESIGN CONDITIONS

DESIGN PRESSURE	147 PSIG (MAX)
TEST PRESSURE	147 PSIG
TEMPERATURE	AMBIENT

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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

FIRE MAIN SYSTEM SCHEMATIC

DRAWN BY: J. BEACH	DATE: 1/15/10	DWG NO.	521-01
CK'D BY: K.H.K.	HULL No. 413	SHT 1 OF 3	
SCALE: NONE	G&C Job No. 09-060	REV. 3	

STEERING GEAR COMPARTMENT

VOID

ENGINE ROOM

TANK ROOM

F.S. #9

F.S. #8

F.S. #7

F.S. #6

F.S. #5

1 1/2"

3"

1/4" PRIMING VENT

SEA CHEST (SEE REF. #8)

3" UP TO MAIN DK, PLAN "20-B"

1 1/2" CONT. ON PLAN "13-A"

3" CONT. ON PLAN "13-A"

ISOLATION VALVE

1" DRAIN

FIRE PUMP #1

SPRINKLER SYSTEM DRAIN (SEE REF. #6)

OVERBOARD DISCHARGE

PLAN "13-C"
LOWER DECK AFT

F.S. #4

F.S. #3

F.S. #2

F.S. #1

CREW QUARTERS

VOID

BOW THRUSTER COMPT.

1/4" PRIMING VENT

FIRE PUMP #2

1" DRAIN

BOW THRUSTER SEA CHEST (SEE REF. #9)

1 1/2" FROM PLAN "13-C"

3" FROM PLAN "13-C"

1 1/2" UP TO F.S. #10, PLAN "22-A"

3" FROM FIRE MAIN DECK CONNECTION (SEE PLAN "19-A")

PLAN "13-A"
LOWER DECK FWD.

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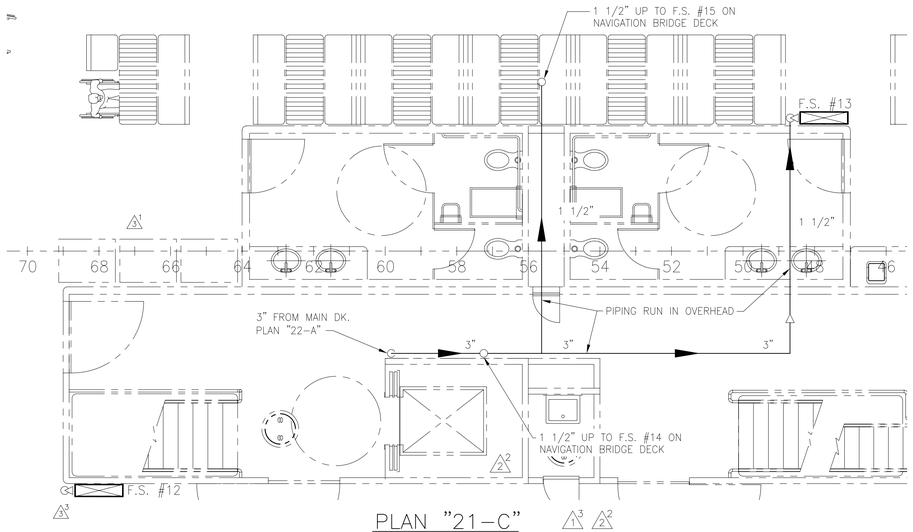
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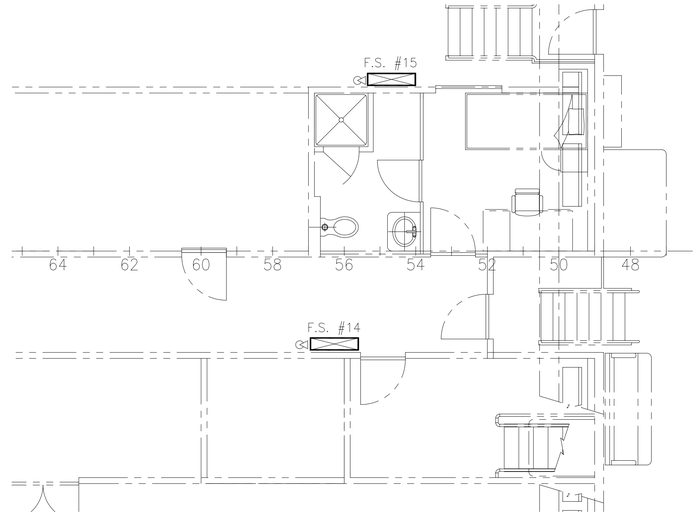
NEW SOUND CLASS FERRY

FIRE MAIN SYSTEM SCHEMATIC

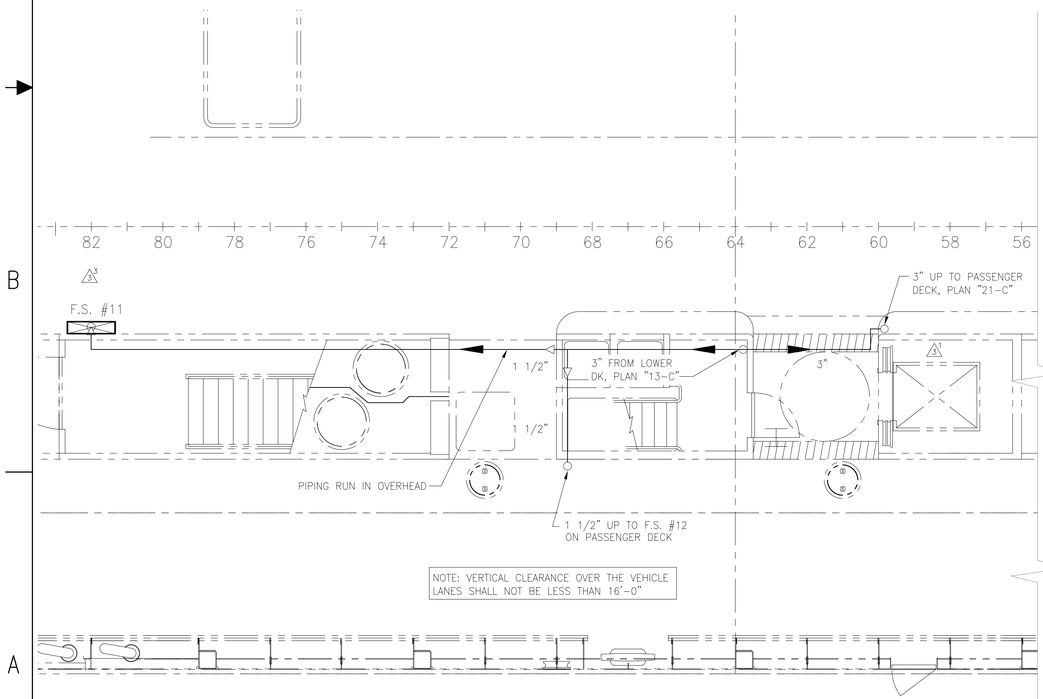
DRAWN BY: J. BEACH	DATE: 1/15/10	DWG NO.	521-01
CK'D BY: K.H.K.	HULL No. 413	SHT 2 OF 3	
SCALE: NONE	G&C Job No. 09-060	REV. 3	



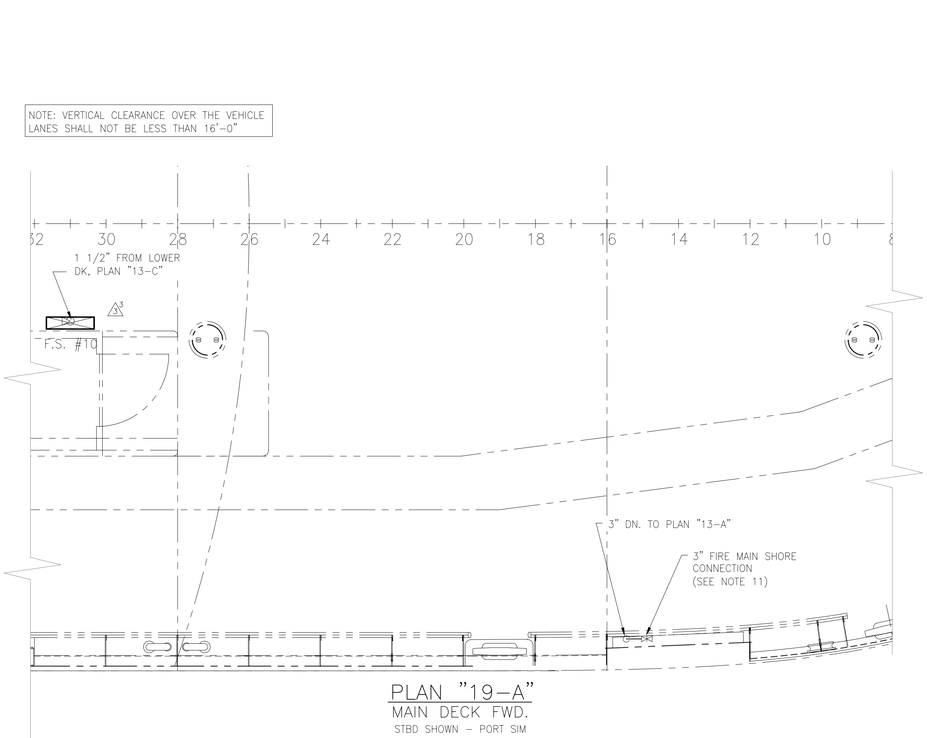
PLAN "21-C"
PASSENGER DECK PLAN



PLAN "18-C"
NAVIGATION BRIDGE DECK PLAN



PLAN "22-A"
MAIN DECK PLAN



PLAN "19-A"
MAIN DECK FWD.
STBD SHOWN - PORT SIM

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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

FIRE MAIN SYSTEM SCHEMATIC

DRAWN BY: J. BEACH	DATE: 1/15/10	DWG NO.	521-01
CK'D BY: K.H.K.	HULL No. 413	SHT 3 OF 3	
SCALE: NONE	G&C Job No. 09-060	REV. 3	

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS	
1	325 FT	3" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
2	50 FT	2" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
3	100 FT	1 1/2" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
4	3 FT	1" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
5	6 FT	1/4" PIPE, SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
6	1 FT	2" PIPE, X-STRG., SEAMLESS	CARBON STL	ASTM A53, GR B	ANSI B36.10	
7	2 FT	3/4" PIPE, X-STRG., SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	
8	1 FT	3" PIPE, X-STRG., SEAMLESS	CARBON STL	ASTM A53, GR B	ANSI B36.10	
9	22	3" FLANGE, 150#, RF	STAINLESS STL 316	ASTM A182	ANSI B16.5	
10	12	2" FLANGE, 150#, RF	STAINLESS STL 316	ASTM A182	ANSI B16.5	
11	2	3" BLIND FLANGE, 150#, RF	STAINLESS STL 316	ASTM A182	ANSI B16.5	
12	8	3" GATE VALVE, 125# FLANGED, RF	STAINLESS STL	ASTM A351/A744	ANSI B16.34, CF8M, CRES STEM & DISC	
13	2	3" SWING CHECK VALVE, 150# FLANGED, RF	STAINLESS STL	ASTM A351/A744	ANSI B16.34, CF8M, CRES DISC	
14	2	2" GATE VALVE, 125# FLANGED, RF	STAINLESS STL	ASTM A351/A744	ANSI B16.34, CF8M, CRES STEM & DISC	
15	2	2" SWING CHECK VALVE, 150# FLANGED, RF	STAINLESS STL	ASTM A351/A744	ANSI B16.34, CF8M, CRES DISC	
16	2	2" PRESSURE RELIEF VALVE, 150# THREADED, 147 P.S.I. SET PRESSURE	STAINLESS STL	ASTM A351	KUNKLE MODEL 171S, CF8M, S.S. TRIM	
17	5	1" BALL VALVE, THREADED, TEFLON SEAT & SEALS	STAINLESS STL	ASTM A351/A744	FULL PORT, S.S. BALL & STEM	
18	8	1/4" BALL VALVE, THREADED, TEFLON SEAT & SEALS	STAINLESS STL	ASTM A351/A744	FULL PORT, S.S. BALL & STEM	
19	2 FT	1" PIPE, X-STRG., SEAMLESS	STAINLESS STL 316	ASTM A312	ANSI B36.19	△1 3
20	14	3" 90° ELBOW, B.W., SCH 40	STAINLESS STL	ASTM A403	ANSI B16.9	△1
21	9	3" 45° ELBOW, B.W., SCH 40	STAINLESS STL	ASTM A403	ANSI B16.9	△1
22	11	2" 90° ELBOW, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	
23	19	1 1/2" 90° ELBOW, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	△1
24	1	3/4" 90° ELBOW, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	
25	2	1 1/2" 45° ELBOW, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	
26	10	3" TEE B.W. SCH 40	STAINLESS STL	ASTM A403	ANSI B16.9	△1
27	1	1 1/2" TEE, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	
28	2	1 1/2"x1" REDUCING INSERT, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	
29	3	1 1/2" TEE, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	△1
30	6	REDUCER, CONCENTRIC 3"x2", B.W., SCH 40	STAINLESS STL	ASTM A403	ANSI B16.9	
31	5	REDUCER, CONCENTRIC 3"x1 1/2", B.W., SCH 40	STAINLESS STL	ASTM A403	ANSI B16.9	△1
32	10	3" DECK/BHD PENETRATIONS, 4" PIPE, SCH. 80, SEAMLESS, 3" LONG	CARBON STL	ASTM A106/A53	SEE DET "11-B"	△1
33	12	1 1/2" DECK/BHD PENETRATIONS, 2" PIPE, SCH. 40, SEAMLESS, 3" LONG	CARBON STL	ASTM A106/A53	SEE DET "11-B"	
34	1	1" 90° ELBOW, SOCKET WELD, 3000#	STAINLESS STL	ASTM A182	ANSI B16.11	△3
35						
36	2	3" DUPLEX BASKET STRAINER, 125# FLANGED	BRONZE	ASTM B62	HAYWARD MOD 50 W/SSTL BASKET & TRIM	
37	2	PRESSURE GAUGE, 1/4"	STAINLESS STL	ASHCROFT DURALIFE	0-160 PSI	
38	2	VACUUM/PRESSURE GAUGE, 1/4"	STAINLESS STL	ASHCROFT DURALIFE	30/0/30	
39	12	1 1/2" SOC-O-LET	STAINLESS STL	ASTM A182	ANSI B16.11	
40	5	1" SOC-O-LET	STAINLESS STL	ASTM A182	ANSI B16.11	△3
41	1	3/4" SOC-O-LET	STAINLESS STL	ASTM A182	ANSI B16.11	
42	8	1/4" SOC-O-LET	STAINLESS STL	ASTM A182	ANSI B16.11	
43	5	1" PIPE CAP, 3000#, THREADED	STAINLESS STL	ASTM A182	ANSI B16.11	
44						
45	22	3" FLG. GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000	
46	12	2" FLG. GASKET, FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000	

REFERENCES

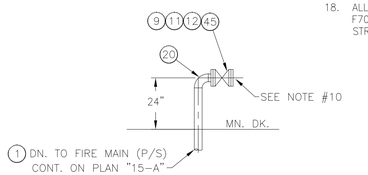
1.	101-01	OUTBOARD AND INBOARD PROFILE
2.	101-02	GENERAL ARRANGEMENTS
3.	200-01	MACHINERY ARRANGEMENT
4.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
5.	521-01	FIRE MAIN SYSTEM SCHEMATIC
6.	529-01	BILGE & OILY WATER SYSTEM SCHEMATIC
7.	533-01	POTABLE WATER SYSTEM SCHEMATIC
8.	522-01	SPRINKLER SYSTEM SCHEMATIC
9.	522-02	SPRINKLER SYSTEM ARRANGEMENT & DETAILS
10.	163-01	SEA CHESTS
11.	568-01	BOW THRUSTER INSTALLATION
△2 12.	256-01	COOLING PIPING SYSTEM SCHEMATIC
13.	256-02	COOLING PIPING SYSTEM ARRANGEMENT & DET'S

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
△	VAR	1. REVISED FIRE MAIN PIPING PER REV. ARRGTS. REVISED LIST OF MATERIALS TO SUIT.	7/8/10	JB/KK
	4-D	2. ADDED REFERENCES #12 & 13.	8/13/10	JM/KK
	13-C 7-D	3. ADDED SHAFT SEAL COOLING DISCHARGE PIPING TO OVERBOARD DISCHARGE & REVISED LIST OF MATERIALS TO SUIT PER DEVELOPMENT.		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
3. DISCHARGE CHECK VALVES SHALL BE ORIENTED IN THE FORE AND AFT DIRECTION.
4. FIRE STATIONS SHALL BE SIZED 1 1/2" AND FITTED WITH ANGLE GLOBE HOSE VALVE, 50 FEET OF 1 1/2" RUBBER-LINED FIRE HOSE, HOSE WRENCH, AND COMBINATION NOZZLE. FIRE HOSE SHALL BE CONNECTED AND STOWED IN APPROVED HOSE RACKS.
5. THE FIRE PUMP SHALL BE CAPABLE OF REMOTE STARTING. SEE REFERENCE 4.
6. LOW POINTS IN THE FIREMAIN SHALL BE FITTED WITH DRAINS.
7. REMOTE PRESSURE DISCHARGE GAUGES FOR THE FIRE PUMP SHALL BE LOCATED IN THE PILOTHOUSE.
8. FIRE HOSES, HYDRANTS AND COUPLINGS SHALL ALL BE N.S.T. FIRE HOSE COUPLING THREAD.
9. FIRE STATIONS IN AREAS ACCESSIBLE TO PASSENGERS, SHALL BE ENCLOSED IN STAINLESS STEEL CABINETS. ALL OTHER FIRE STATIONS SHALL BE OPEN HOSE RACKS.
10. NCDOT TO SUPPLY SUITABLE ADAPTERS FOR FIREMAIN SHORE CONNECTIONS WITH COUPLINGS MATING TO THOSE ON THE SHORE FIRE LINES.
11. ALL FLANGED CONNECTIONS SHALL BE PROVIDED WITH 316 S.S., GR. 316, ASTM F593 HEX HD. BOLTS, 316 S.S., GR. 316, ASTM F594 NUTS AND 316 S.S. WASHERS.
12. PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS FITTINGS WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS AND EQUIPMENT.
13. TAKEDOWN JOINTS SHALL BE PROVIDED WHERE NECESSARY FOR REMOVAL & SERVICE OF EQUIPMENT. ADDITIONAL TAKEDOWN JOINTS SHALL BE AVOIDED WHERE PRACTICAL AND SHALL NOT BE LOCATED BEHIND LININGS.
14. PIPING PASSING THROUGH WATERTIGHT OR FIRE BOUNDARIES SHALL BE FITTED WITH SLEEVES WELDED TO THE BOUNDARY AND THE PIPE.
15. INACCESSIBLE VALVES SHALL BE FITTED WITH REACH RODS OR REMOTE OPERATORS.
16. IN ACCOMMODATION SPACES PIPES SHALL BE CONCEALED BEHIND LININGS. ACCESS PANELS SHALL BE PROVIDED FOR VALVES AND OTHER COMPONENTS NEEDING SERVICING.
17. UNIONS ARE NOT PERMITTED IN PIPING SYSTEMS BEHIND LININGS, FALSE CEILINGS, OR IN OTHER INACCESSIBLE LOCATIONS.
18. ALL PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO THE PIPES.



DETAIL "3-A"
FIRE MAIN SHORE CONNECTION (P/S)
SCALE: NONE

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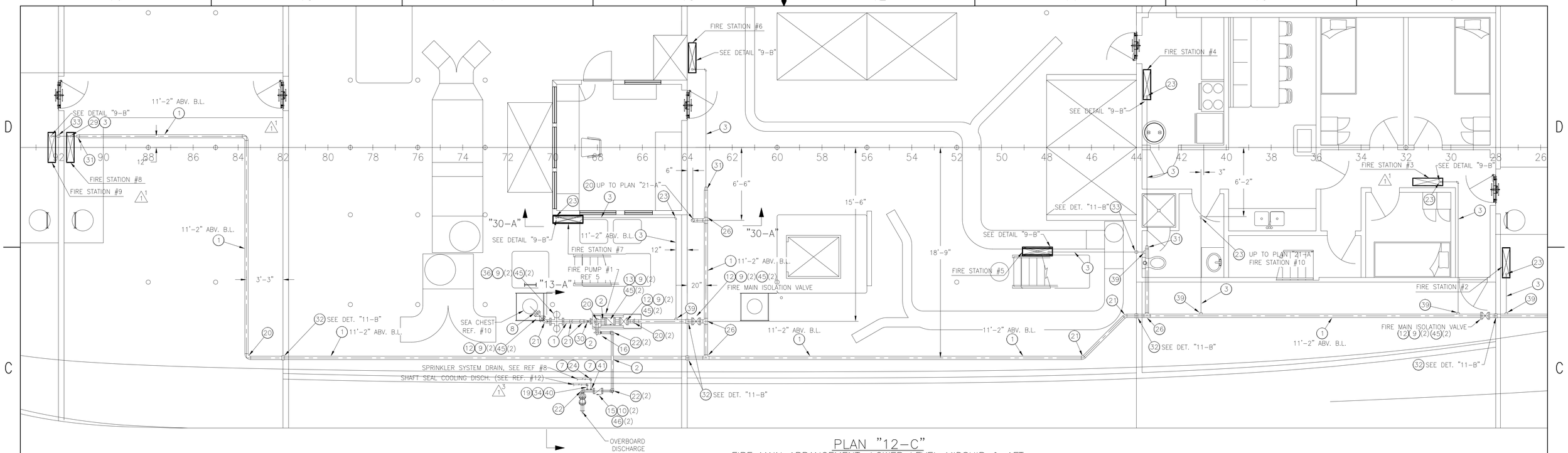
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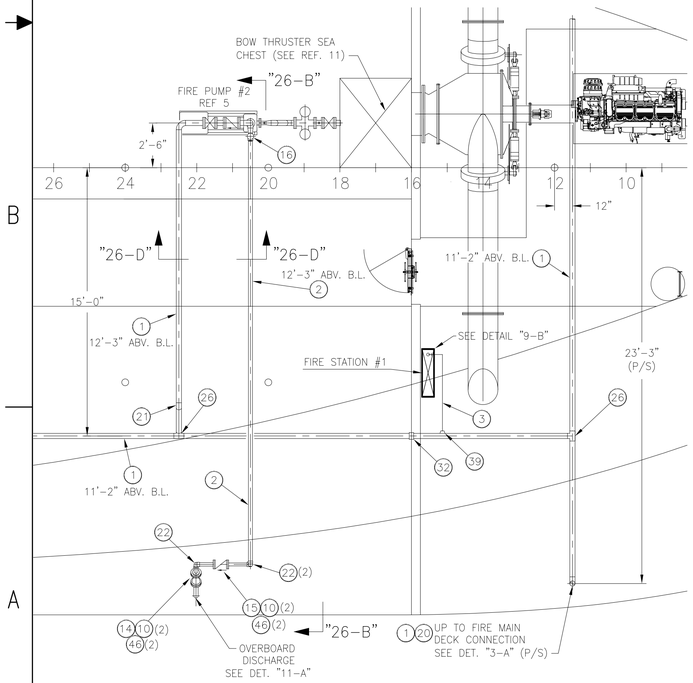
NEW SOUND CLASS FERRY

FIRE MAIN SYSTEM
ARRANGEMENT & DETAILS

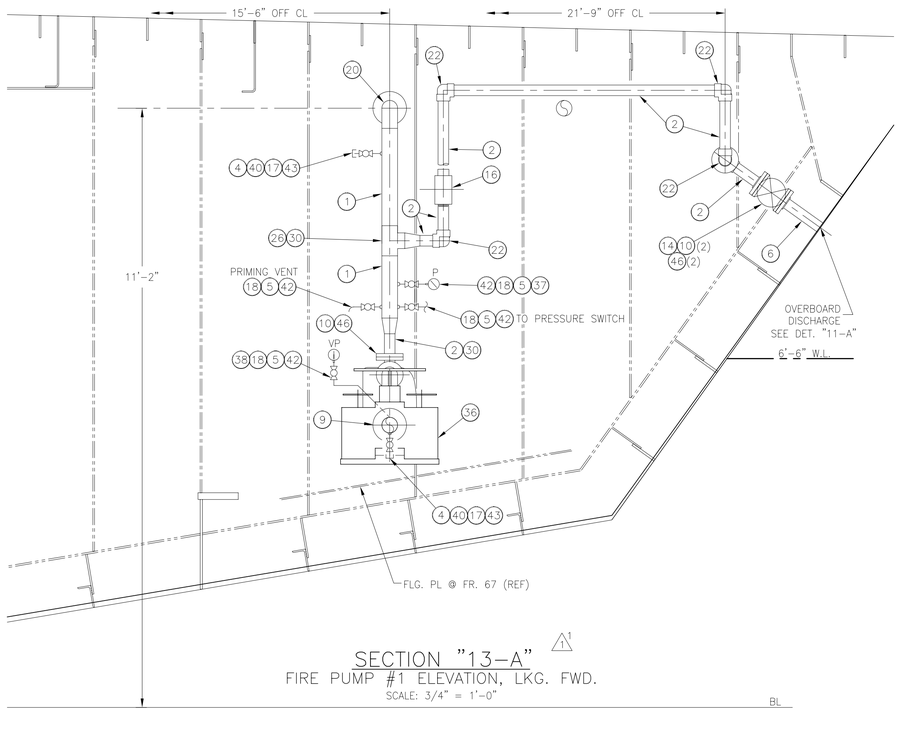
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CK'D BY:	K.H.K.	HULL No. 413	
SCALE:	NONE	G&C Job No. 09-060	REV. 1



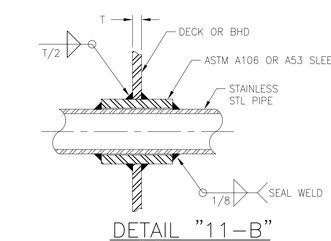
PLAN "12-C"
FIRE MAIN ARRANGEMENT, LOWER LEVEL MIDSHIP & AFT
SCALE: 1/4" = 1'-0"



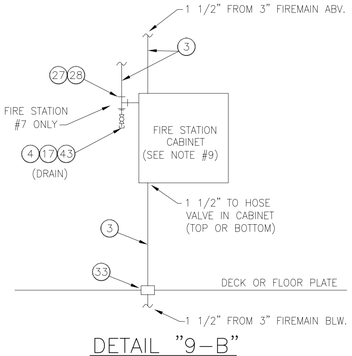
PLAN "15-A"
FIRE MAIN ARRANGEMENT, LOWER LEVEL FWD.
SCALE: 1/4" = 1'-0"



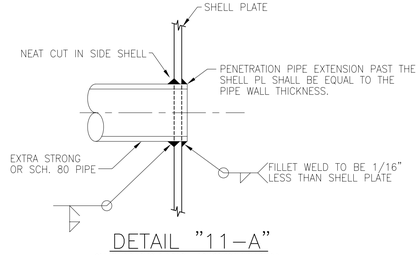
SECTION "13-A"
FIRE PUMP #1 ELEVATION, LKG. FWD.
SCALE: 3/4" = 1'-0"



DETAIL "11-B"
STEEL W.T. OR "A" BOUNDARY PENET. (TYP)
-N.T.S.-



DETAIL "9-B"
TYPICAL FIRE STATION DETAIL
-N.T.S.-



DETAIL "11-A"
OVERBOARD DISCHARGE
-N.T.S.-

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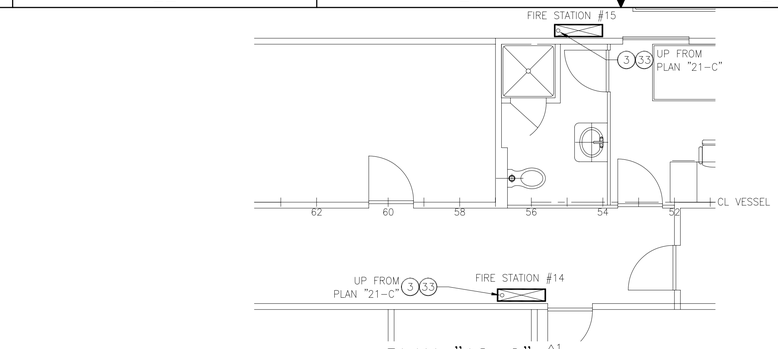
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

FIRE MAIN SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: J. BEACH	DATE: 5/18/10	DWG NO. 521-02 SHT 2 OF 4
CK'D BY: K.H.K.	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 1

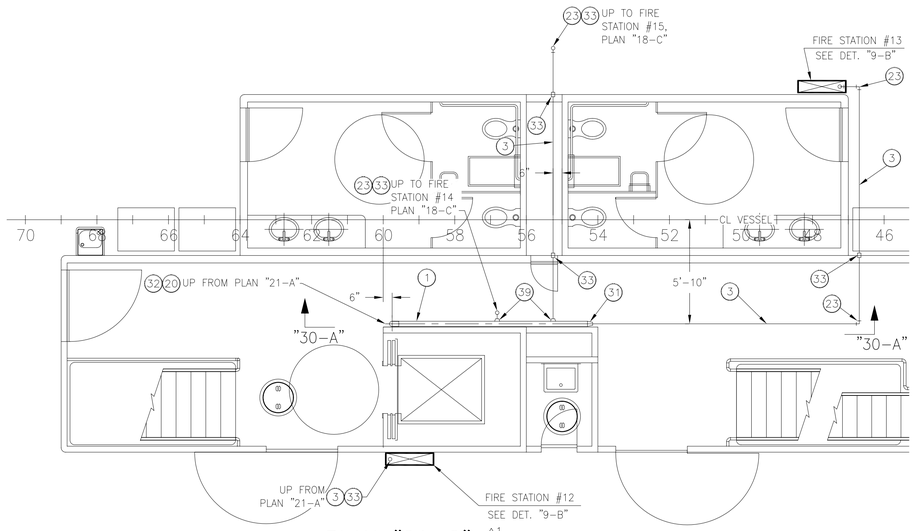
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PLAN "18-C" ⚠1

FIRE STATION ARRANGEMENT, NAVIGATION/BRIDGE DECK

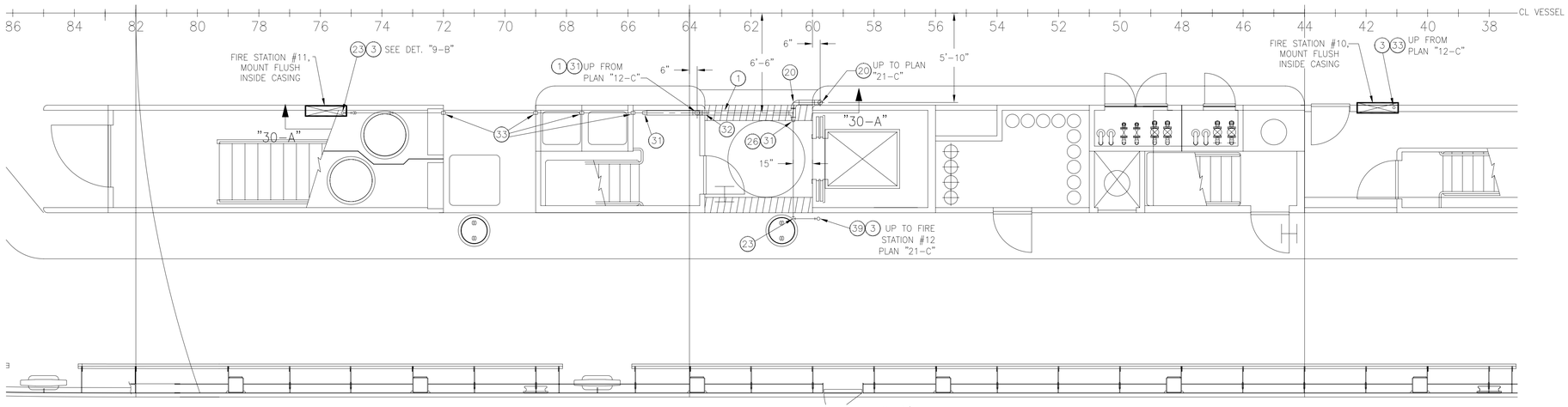
SCALE: 1/4" = 1'-0"



PLAN "21-C" ⚠1

FIRE MAIN ARRANGEMENT, PASSENGER DK

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



PLAN "21-A" ⚠1

FIRE MAIN ARRANGEMENT, MAIN DK

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

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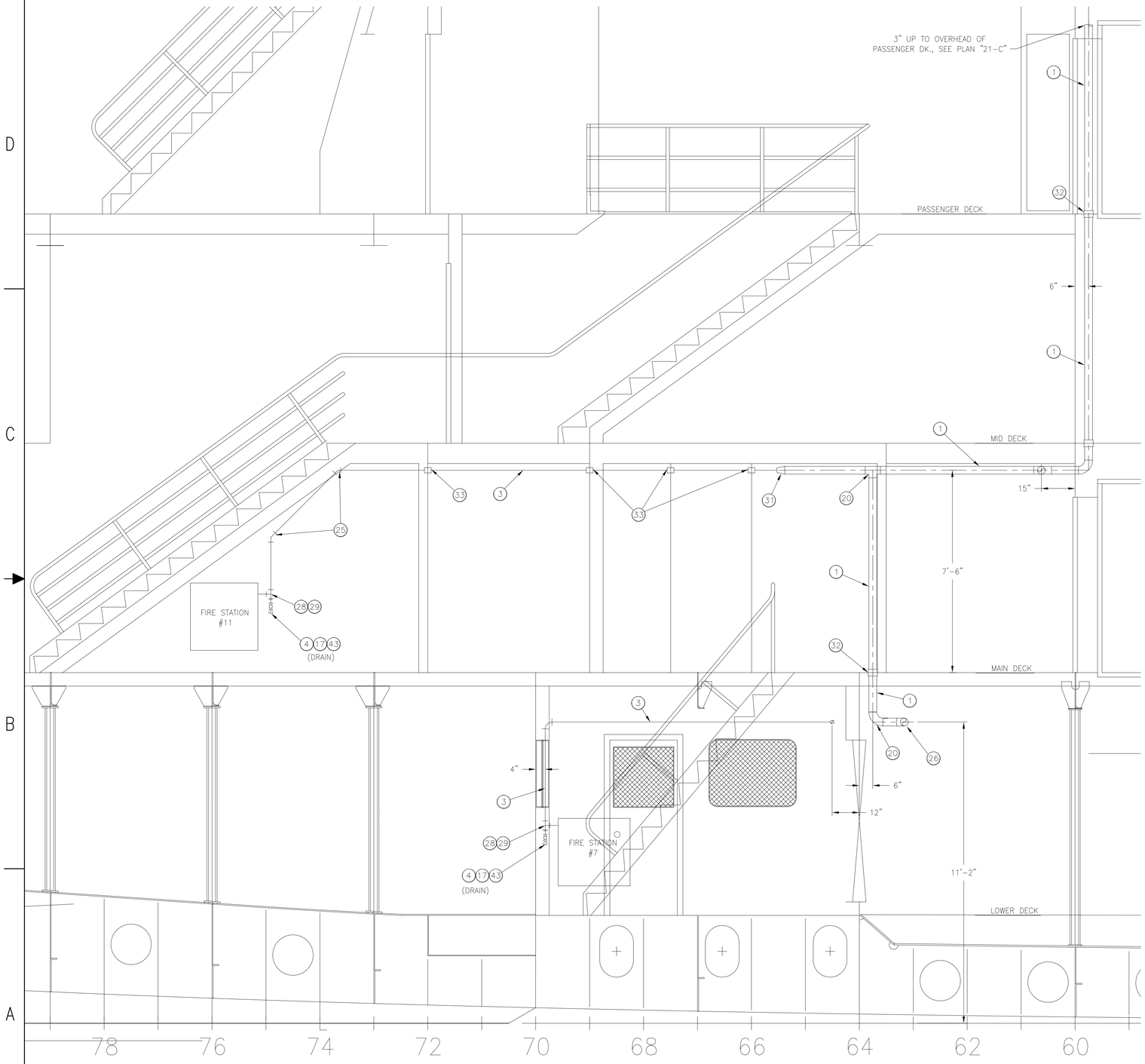
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NEW SOUND CLASS FERRY

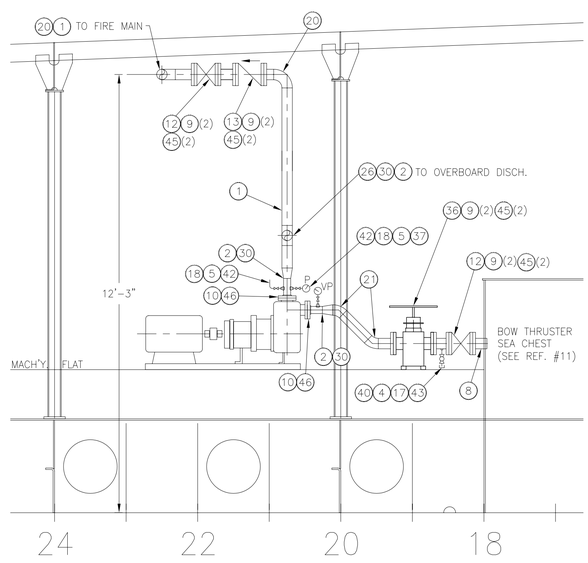
FIRE MAIN SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: J. BEACH	DATE: 5/18/10	DWG NO. 521-02 SHT 3 OF 4	
CK'D BY: K.H.K.	HULL No. 413		
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1	

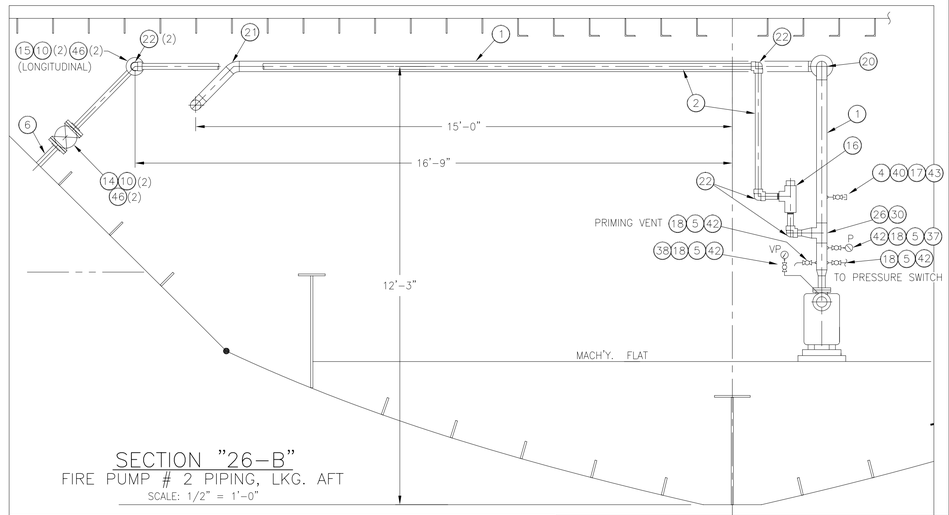
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ELEV "30-A" △1
PIPING ROUTING, LKG INBD
SCALE: 1/2" = 1'-0"



SECTION "26-D"
FIRE PUMP # 2 PIPING, LKG. TO PORT
SCALE: 1/2" = 1'-0"



SECTION "26-B"
FIRE PUMP # 2 PIPING, LKG. AFT
SCALE: 1/2" = 1'-0"

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FIRE MAIN SYSTEM ARANGEMENT & DETAILS

DRAWN BY: J. BEACH	DATE: 5/18/10		DWG NO. 521-02 SHT 4 OF 4
CK'D BY: K.H.K.	HULL No. 413		
SCALE: NOTED	G&C Job No. 09-060		REV. 1

MATERIAL SCHEDULE △1 3

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS MATERIAL	FITTINGS	VALVES BODY	VALVES TRIM
EXTERIOR DECK DRAINS	ALL	BLUCHER–JOSAM SYSTEM 316 STAINLESS STEEL PUSH–FIT, EPDM SEALS, 2" (50 mm)	BLUCHER–JOSAM 316 STAINLESS STEEL	BLUCHER–JOSAM STAINLESS STEEL PUSH–FIT DRAINAGE SYSTEM	STOP CHECK: STAINLESS STEEL THREADED, 150# ASTM A351 CF8M MSS SP–110	RENEWABLE SEAT

SYMBOLS LIST

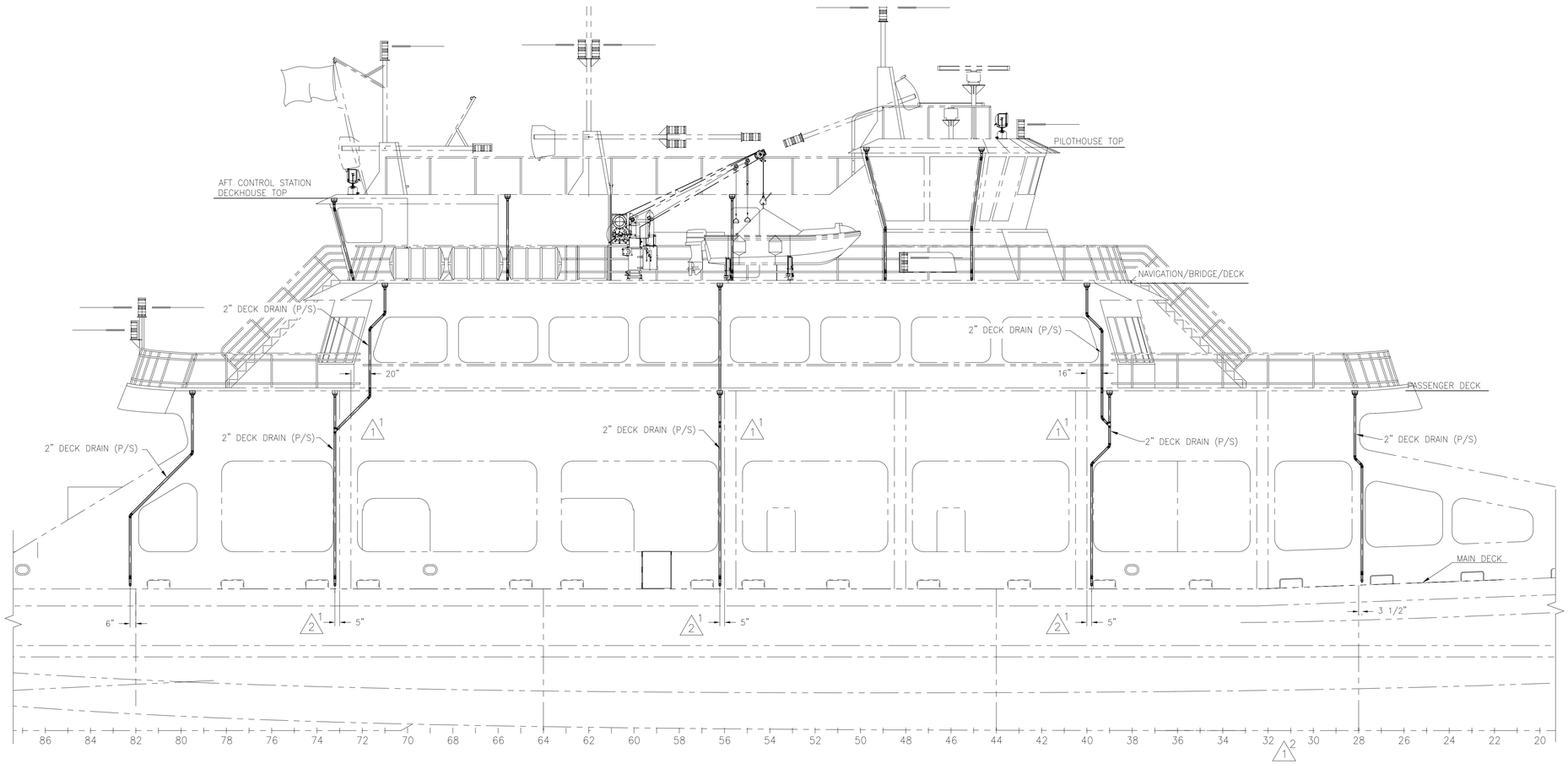
	DECK DRAIN (PLAN)
	DECK DRAIN (PROFILE)
	SWING CHECK VALVE

REFERENCES

1.	101–01	OUTBOARD AND INBOARD PROFILE
2.	101–02	GENERAL ARRANGEMENTS
3.	152–03	BULWARKS & CURTAIN PLATES

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
△1	4–B 5–C 7–B 19–B 3–A	1. COMBINED NAVIGATION/BRIDGE DECK AND PASSENGER DK. DRAINS AT FRS. 39, 56 & 73 PER N.C.D.O.T. COMMENTS OF 2/5/2010. 2. ADDED FR NOS TO PROFILE VIEW.	3/31/10	J.B. / K.K.
△2	4–B 5–C 7–B VAR 12,13 16–A 19–D	1. REV. DIM. FOR DECK DRAINS ON ELEVATION "5–B" TO 5" FROM TUBING TO AGREE WITH PLAN "14–C". 2. REVISED PROFILE & DECK PLANS TO AGREE TO LATEST ARRG'T. DRAWINGS. 3. ADDED DECK DRAINS IN STAIR TOWERS. 4. ADDED DETAIL "19–D".	7/6/10	J.B. / K.K.



ELEVATION "5–B" △2 2
OUTBOARD PROFILE
STARBOARD SIDE SHOWN, PORT OPPOSITE

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ABS RULES FOR BUILDING AND CLASSING STEEL VESSELS UNDER 90 METERS IN LENGTH, AND US COAST GUARD REGULATIONS FOR VESSELS INSPECTED UNDER SUBCHAPTER H.
2. 2" NPS SCH 40 316 STAINLESS STEEL PIPE MAY BE USED WHERE BLUCHER–JOSAM SYSTEM CANNOT BE USED. 2" NPS SCH 80 IS TO BE USED ON DRAINS BELOW MAIN DECK THAT PENETRATE THE SIDE SHELL.
3. INSOFAR AS POSSIBLE, DRAIN PIPES SHALL BE INSTALLED INSIDE THE LINE OF THE STRUCTURE SO AS TO MINIMIZE INTERFERENCE WITH JOINER SYSTEM, PASSAGEWAYS, ETC.
4. PIPING SHALL BE RIGIDLY SUPPORTED BY HANGERS APPROPRIATE FOR DRAIN SERVICE, FABRICATED AND INSTALLED IN ACCORDANCE WITH ASTM F708.

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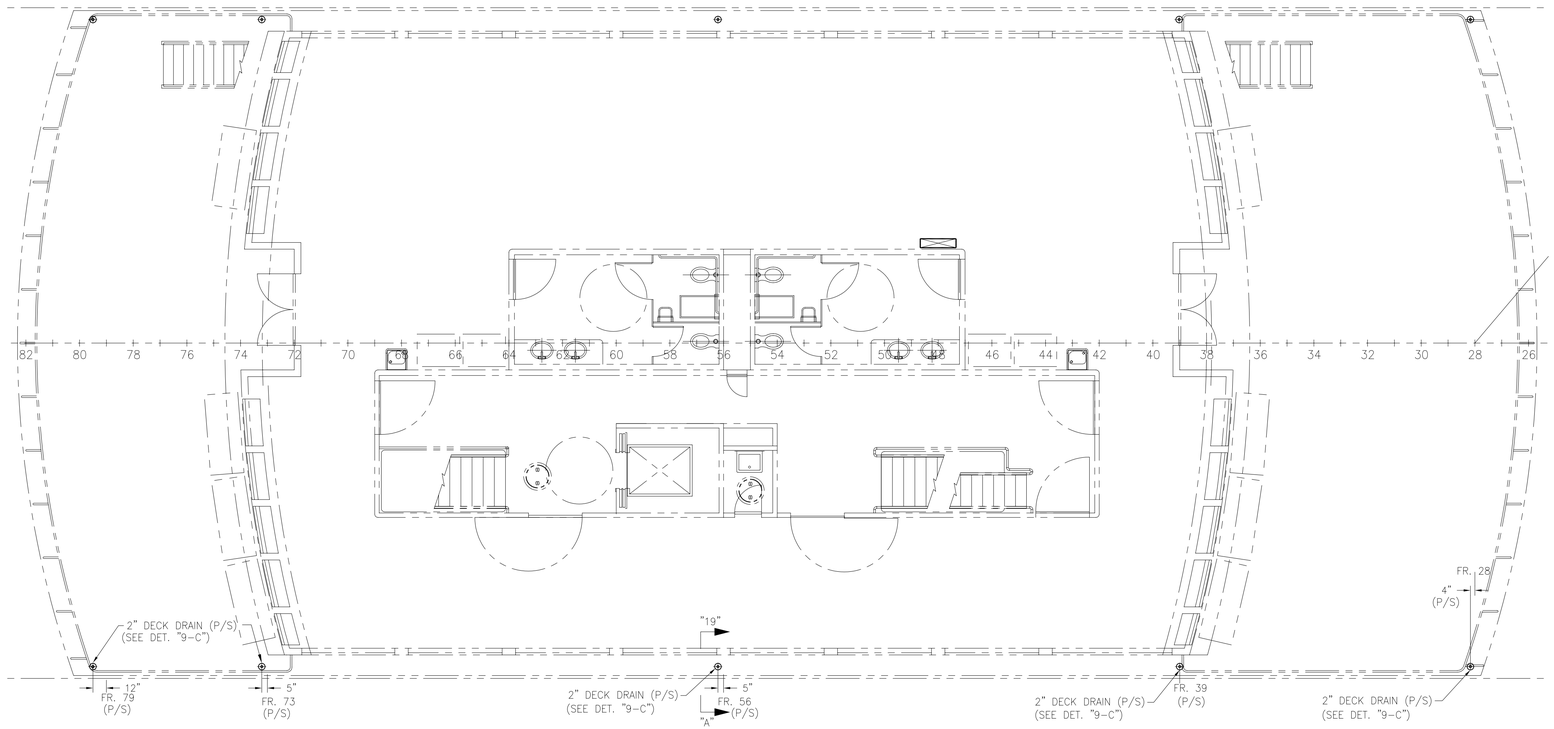
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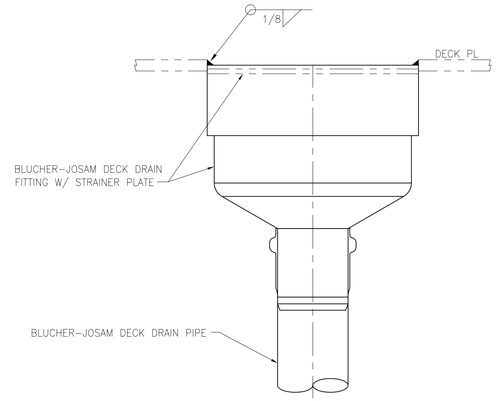
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NEW SOUND CLASS FERRY

WEATHER DECK DRAINS

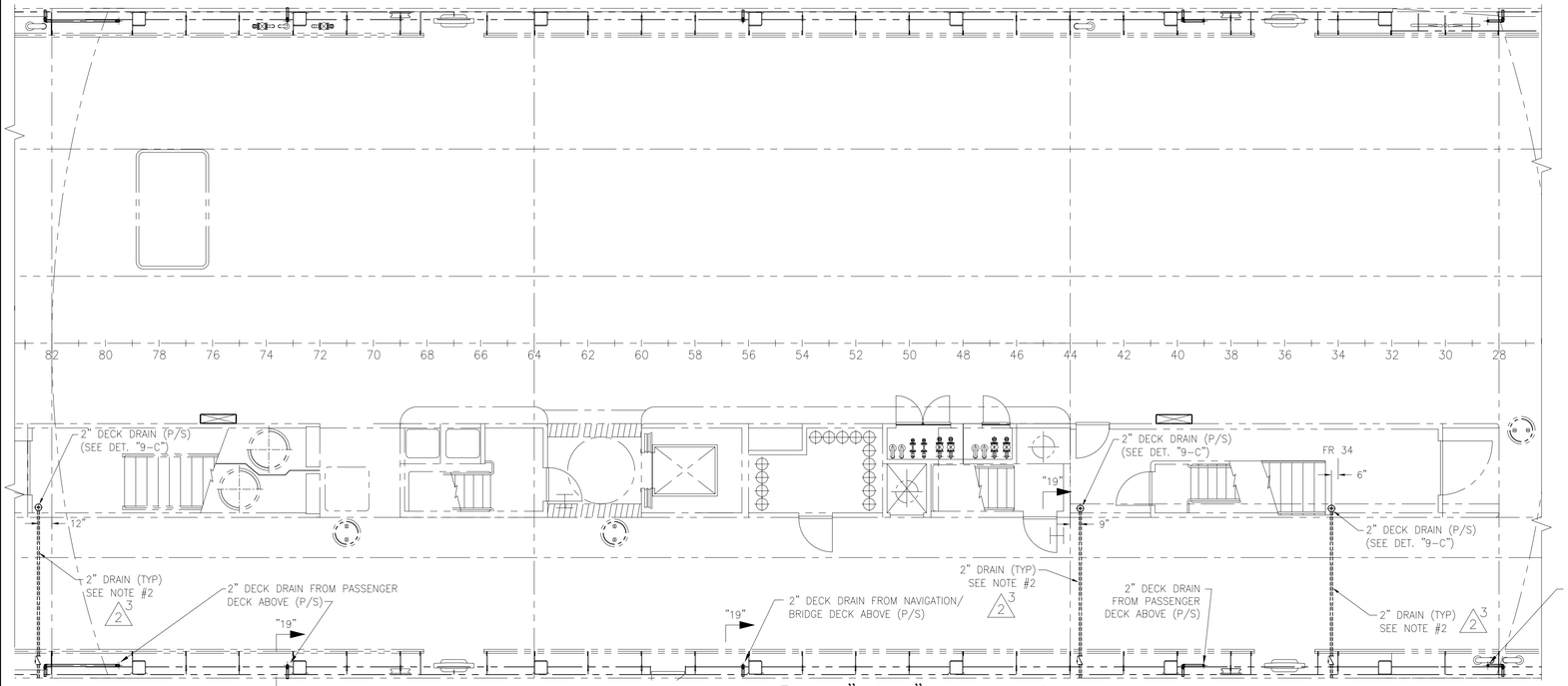
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CK'D BY: R. ALLUMS	HULL No. 413	SHT 1 OF 3	
SCALE: NONE	G&C Job No. 09–060	REV. 2	



PLAN "14-C"
PASSENGER DECK DRAINS



DETAIL "9-C"
TYPICAL DECK DRAIN BOX
BLUCHER-JOSAM DRAIN PIPING SYSTEM
SEE NOTE #2



PLAN "14-A"
MAIN DECK

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07069-001-526-1

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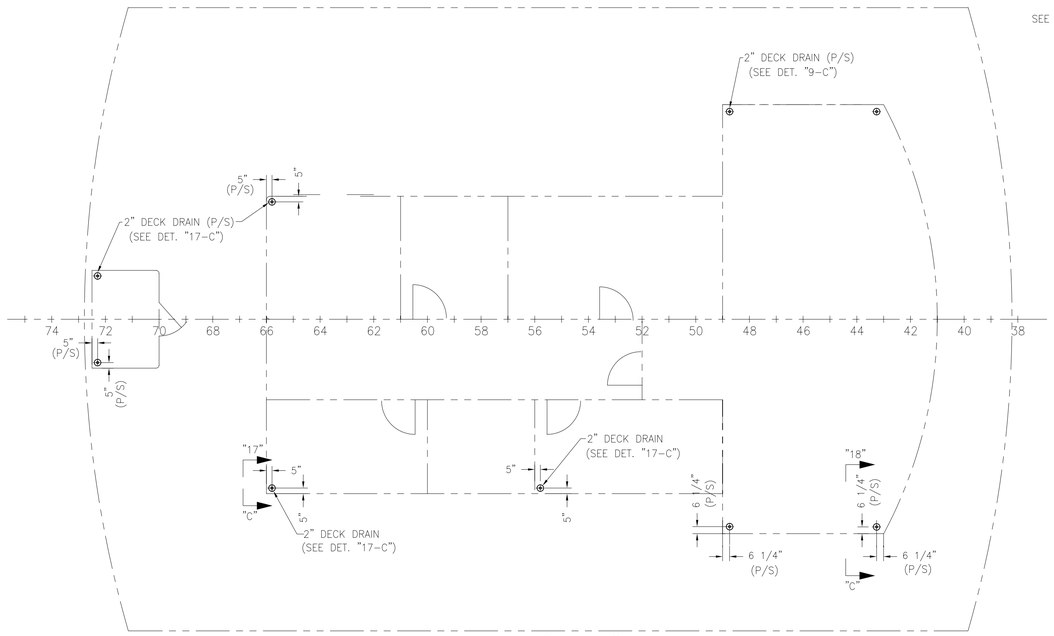
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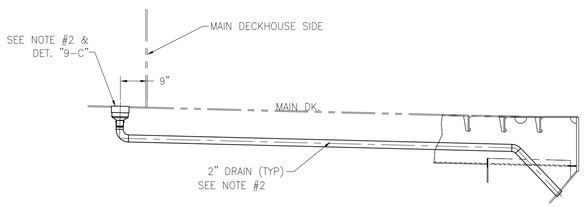
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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

WEATHER DECK DRAINS

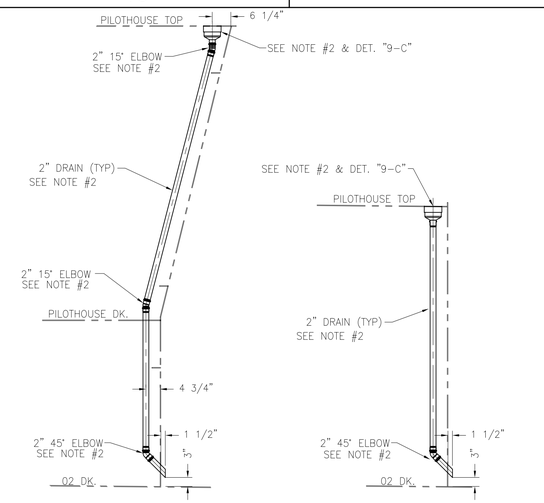
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CK'D BY: R. ALLUMS	HULL No. 413		
SCALE: NONE	G&C Job No. 09-060	REV. 2	



PLAN "22-C"
PILOTHOUSE TOP DRAINS △2 2

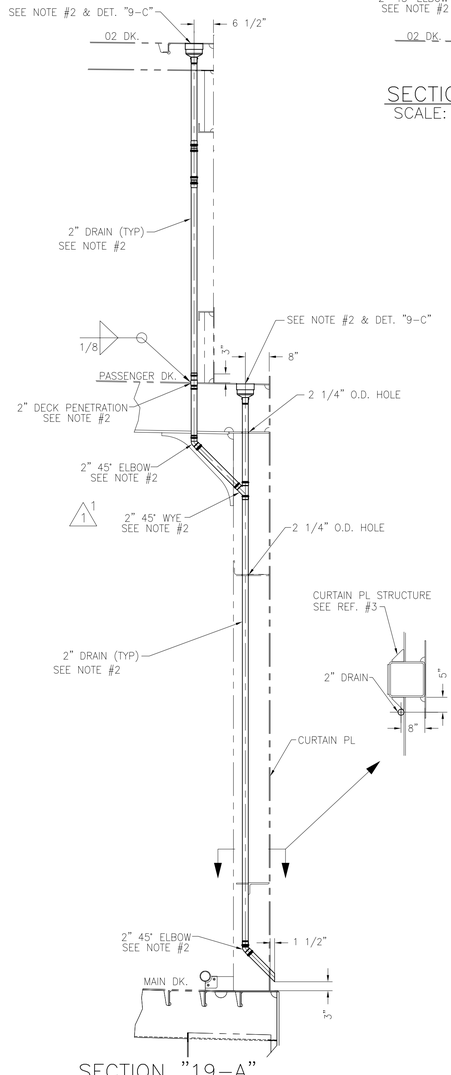


△4 2 SECTION "19-D"
SCALE: 1/2"=1'-0"

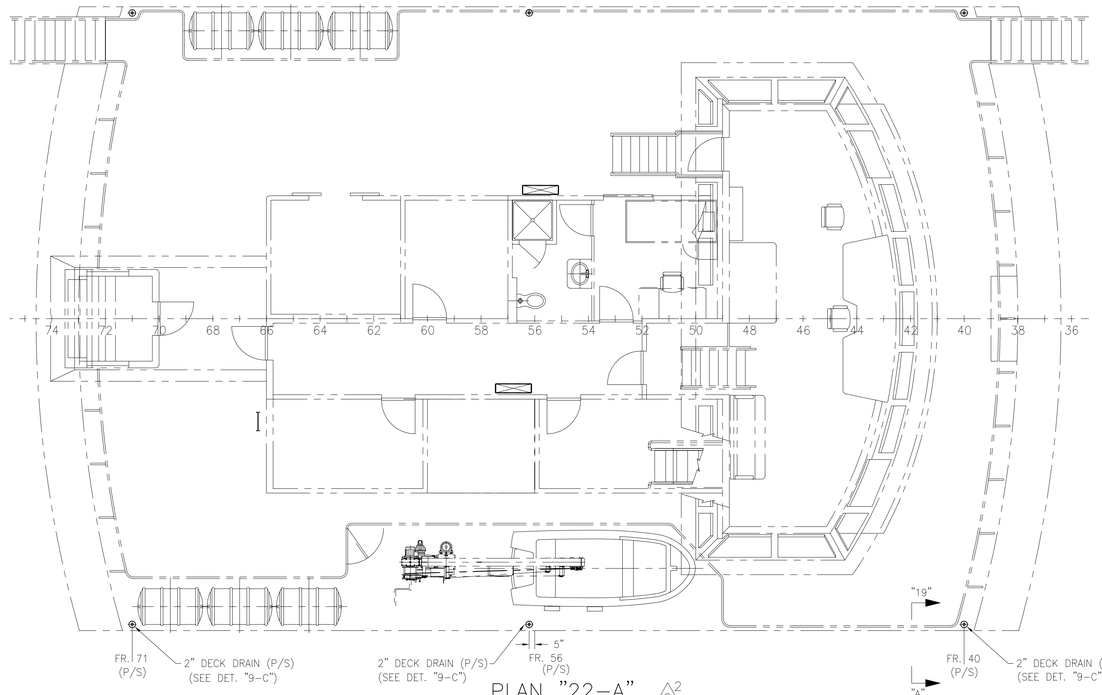


SECTION "18-C"
SCALE: 1/2"=1'-0"

SECTION "17-C"
SCALE: 1/2"=1'-0"



SECTION "19-A"
SCALE: 1/2"=1'-0"



PLAN "22-A"
02 DECK DRAINS △2 2

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ORANGE
Shipbuilding Co., Inc.
A CONRAD INDUSTRIES CO.
710 MARKET STREET-ORANGE, TEXAS 77630
PHONE 409-883-6666 FAX 409-882-0609

GUARINO & COX, LLC
19399 HELENBIRG RD. SUITE 203
COVINGTON LA. 70433

ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

WEATHER DECK DRAINS

DRAWN BY: J. BEACH	DATE: 1/19/10	DWG NO. 526-01 SHT 3 OF 3
CK'D BY: R. ALLUMS	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 2

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES		REMARKS
			MATERIAL	GASKETS	BOLTING		BODY	TRIM	
PLUMBING DRAINS (BLACK & GRAY WATER)	ALL INTERIOR 2" & ABOVE	CARBON STEEL SCH 40, GALV ERW ASTM A53 GRADE B SEE NOTE 14 OR BLUCHER–JOSAM SYSTEM 316 STAINLESS STEEL PUSH–FIT, EPDM SEALS, 2" (50 mm)	FLANGE 150# STL GALV WELD NECK ASTM A105 ANSI B16.5 OR BLUCHER–JOSAM 316 STAINLESS STEEL PUSH–FIT	GARLOCK STYLE 3000	BOLTS: STL, GALV ASTM A307 GRADE B ANSI B16.9 NUTS: GALV ASTM A563 GRADE A ANSI B18.2.2	FORGED STEEL, GALV 150# BUTT WELD ASTM A234 ANSI B16.12 OR BLUCHER–JOSAM STAINLESS STEEL PUSH–FIT DRAINAGE SYSTEM	CHECK: BRONZE ASTM B61 & B62 FLANGED MSS–SP–80 150# BALL: FULL PORT BRONZE BODY ASTM B61 150# FLANGED MSS–SP–72	BRONZE DISK AND REGRINDABLE SEAT BRONZE BALL TFE SEAT & SEAL	
	ALL INTERIOR 1–1/2" & BELOW	UNION – MAL IRON, GALV 150#, ASTM A197 ANSI B16.3 THREADED					CHECK: BRONZE ASTM B61 & B62 SOCKET WELD MSS–SP–80 150# BALL: FULL PORT BRONZE BODY ASTM B61 150# SCREWED MSS–SP–72		
	EXTERIOR	STAINLESS STEEL ASTM A312 TYPE 316 ANSI B36.19 SCH 80	STAINLESS STEEL FLANGES ASTM A182 GRADE 316L WELDED ANSI B16.5 150#		BOLTS: 316 STAINLESS STL GRADE 316 ASTM F593 NUTS: 316 STAINLESS STEEL GRADE 316 ASTM F594	316 STAINLESS STL ASTM A182, GRADE 316L, BUTT OR SOCKET WELDED ANSI B16.9	316 STAINLESS STL FLANGED BALL VALVE ASTM B62 MSS–SP–80	BRZ TRIM RENEWABLE DISC & SEAT	ALL COMPONENTS EXPOSED TO WEATHER

SYMBOLS LIST

	CHECK VALVE
	BALL VALVE, FULL PORT
	BALL VALVE, 3–WAY
	GATE VALVE
	CLEAN–OUT, (SEE NOTE 10)
	DISCHARGE HOSE CONNECTION
	VENT VACUUM BREAKER, (3/4" TYP)
	WATER SEALED TRAP
HLA	HIGH LEVEL ALARM
HL	HIGH LEVEL SWITCH
LL	LOW LEVEL SWITCH
	REDUCER
	BHD PENETRATION FITTING
	CENTRIFUGAL PUMP
	OVERBOARD
1/1 P	PRESSURE GAUGE W/SHUT–OFF VALVE

REFERENCES

1.	101–01	OUTBOARD AND INBOARD PROFILE
2.	101–02	GENERAL ARRANGEMENTS
3.	506–01	FILLS, VENTS AND SOUNDS SCHEMATIC
4.	528–02	OVERBOARD DRAINS & SEWAGE SYSTEM ARRG'T. AND DETAILS

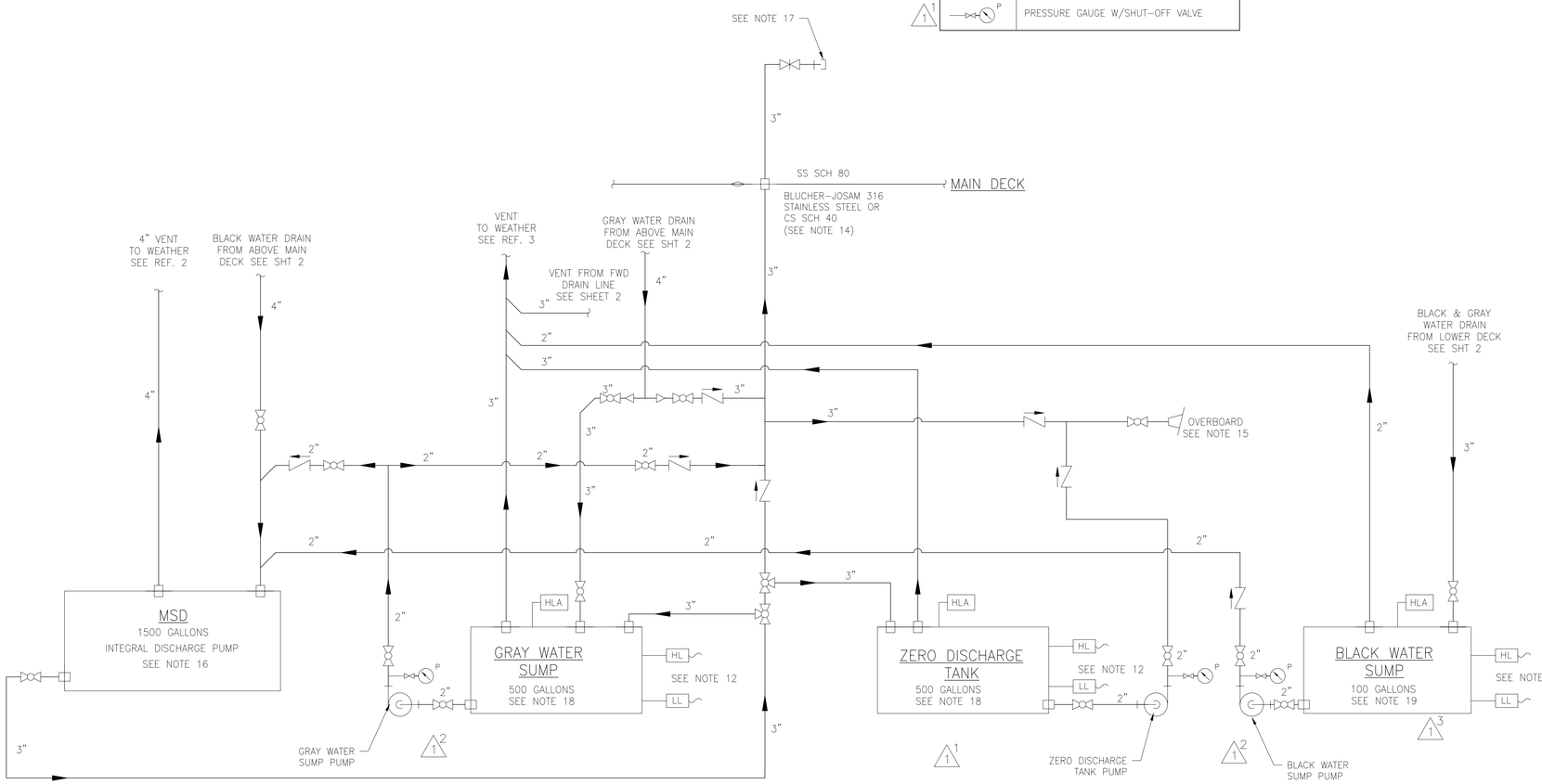
EQUIPMENT TABLE

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	GRAY WATER SUMP	HEADHUNTER SEWAGE PUMP	THRESHER THR–3P/60 2"x2"	30 GPM @ 15' TDH	208V/60HZ/3Φ 3.2 AMPS TEFC MOTOR
1	BLACK WATER SUMP	HEADHUNTER SEWAGE PUMP	THRESHER THR–3P/60 2"x2"	30 GPM @ 15' TDH	208V/60HZ/3Φ 3.2 AMPS TEFC MOTOR
1	BLACK WATER	MSD	OWENS KLEEN TANK, MODEL OW 1125M TYPE II	24 GPM @ 55' TDH	220VAC/60HZ/3Φ 2 HP, ELECTRIC MOTOR
1	ZERO DISCHARGE TANK	HEADHUNTER SEWAGE PUMP	THRESHER THR–3P/60 2"x2"	30 GPM @ 15' TDH	208V/60HZ/3Φ 3.2 AMPS TEFC MOTOR

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	5–A 4–C 3,6–A 3–D 3–A,D 1–B 9,12B	1. ADDED ZERO DISCHARGE TANK & PUMP AND REVISED PIPING, EQUIPMENT TABLE & SYMBOL LIST. 2. REVISED PUMPS FOR THE BLACK WATER & GRAY WATER SUMPS IN THE EQUIPMENT TABLE & REVISED PIPING TO SUIT. 3. REVISED THE SIZE & RELOCATED BLACK WATER SUMP TANK & REVISED PIPING TO SUIT. REV G.N. 19.	11/5/10	JM/KHK
2	10–B	1. ADDED GALLEY SINK TO GALLEY/MESS AREA PER S/Y AS–BUILT COMMENTS..	7/23/10	JB/KHK

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS AND BE IN COMPLIANCE WITH U.S. COAST GUARD REGULATIONS FOR VESSELS INSPECTED UNDER 46 CFR SUBCHAPTER H.
2. PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.
3. TAKEDOWN JOINTS SHALL BE PROVIDED WHERE NECESSARY FOR REMOVAL & SERVICE OF EQUIPMENT. ADDITIONAL TAKEDOWN JOINTS SHALL BE AVOIDED WHERE PRACTICAL AND SHALL NOT BE LOCATED BEHIND LININGS.
4. PIPING PASSING THROUGH WATERTIGHT OR FIRE BOUNDARIES SHALL BE FITTED WITH SLEEVES WELDED TO THE BOUNDARY AND THE PIPE.
5. INACCESSIBLE VALVES SHALL BE FITTED WITH REACH RODS OR REMOTE OPERATORS.
6. IN ACCOMMODATION SPACES PIPES SHALL BE CONCEALED BEHIND LININGS. ACCESS PANELS SHALL BE PROVIDED FOR VALVES AND OTHER COMPONENTS NEEDING SERVICING.
7. UNIONS ARE NOT PERMITTED IN PIPING SYSTEMS BEHIND LININGS, FALSE CEILINGS, OR IN OTHER INACCESSIBLE LOCATIONS.
8. DRAIN PIPING SHALL BE SLOPED A MINIMUM OF 1/4" PER FOOT.
9. ALL PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
10. A SUFFICIENT NUMBER OF PIPE CLEANOUTS SHALL BE PROVIDED TO ALLOW CLEANING AT 25' MAX INTERVALS & NOT MORE THAN (2) 90° BENDS. CLEANOUTS SHALL BE LOCATED IN ACCESSIBLE AREAS AWAY FROM FOOD SERVICE & ELECTRICAL EQUIPMENT.
11. GRAY WATER DRAIN CONNECTIONS SHALL BE MADE WITH 45° Y BRANCHES, 45° ELBOWS AND LONG RADIUS 90° BENDS. BLACK WATER DRAINS SHALL BE MADE WITH SWEEP ELBOWS ONLY.
12. INSTALL HIGH LEVEL ALARM AND PUMP ACTUATION FLOAT SWITCHES IN THE GRAY WATER AND BLACK WATER SUMPS. PUMP SHALL START AT THE 70% LEVEL AND STOP AT THE 10% LEVEL. ALARM SHALL SOUND AT THE 80% LEVEL.
13. AIR GAPS ARE TO BE TWICE THE DIAMETER OF THE PIPE.
14. STEEL PIPING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
15. OVERBOARD DISCHARGE SHALL BE IN ACCORDANCE WITH ASTM F994, TYPE II, CLASS 1.
16. MSD SHALL BE AN OWENS KLEEN TANK, MODEL OW 1125M TYPE II. 220 VAC 3Φ 60 Hz 2 HP TEFC FAN MOTOR, DISCHARGE 24 GPM @ 55 FT TDH.
17. DECK CONNECTION SHALL HAVE 3" CAM LOCK FITTING WITH CAP
18. GRAY WATER SUMP TANK SHALL BE POLYETHYLENE. THE 500 GALLON TANK SHALL BE SECURELY MOUNTED IN THE TANK ROOM WITH GASKETS PROTECTING THE TANK FROM CONTACT WITH STEEL STRUCTURE. FURNISH THE TANK WITH ONE 15X23 MANHOLE.
19. BLACK WATER SUMP TANK SHALL BE POLYETHYLENE. THE 100 GALLON TANK SHALL BE SECURELY MOUNTED IN THE FORWARD VOID WITH GASKETS PROTECTING THE TANK FROM CONTACT WITH STEEL STRUCTURE. FURNISH THE TANK WITH ONE 15X23 MANHOLE.



THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069–001–528–1

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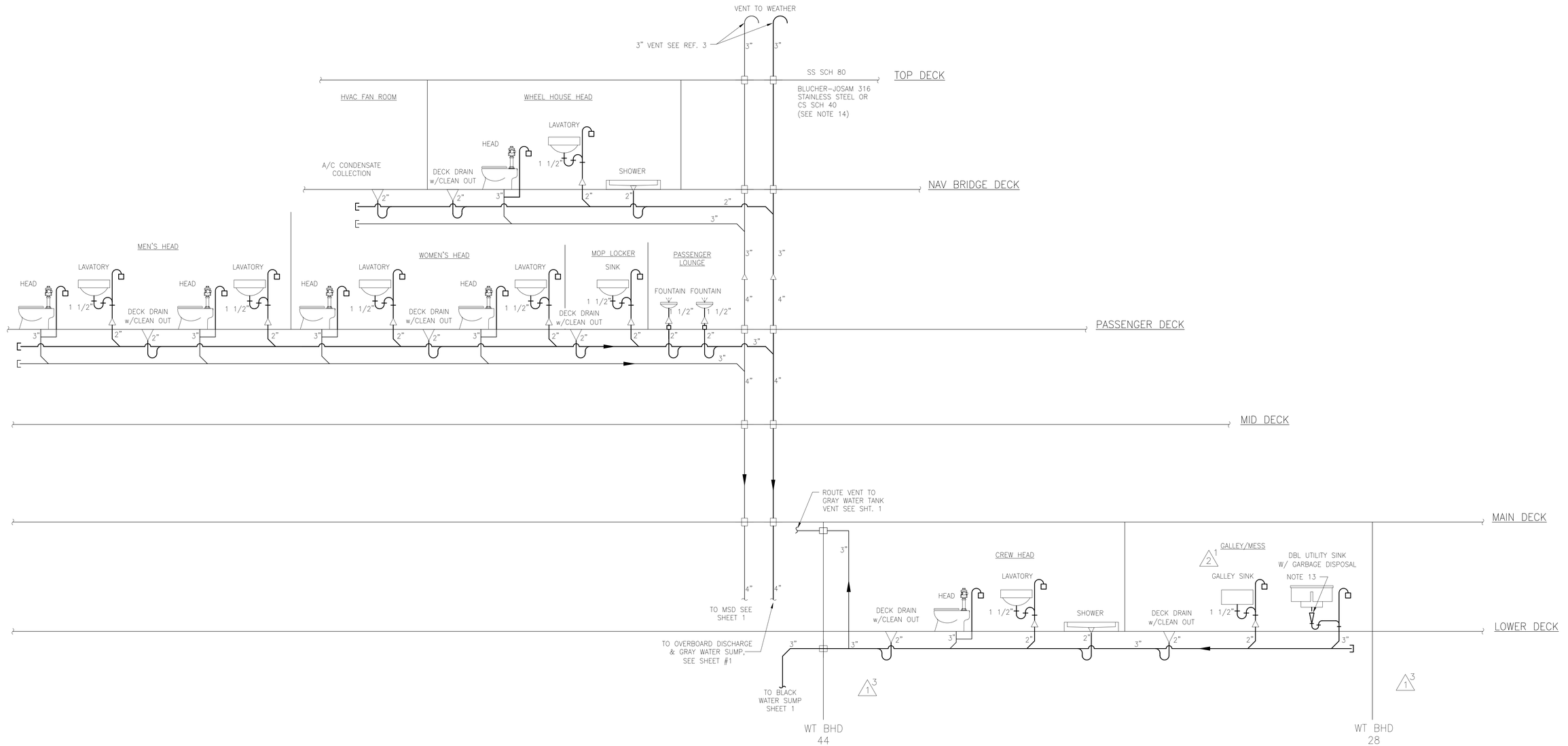
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

OVERBOARD DRAINS & SEWAGE SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528–01 SHT 1 OF 2	
CK'D BY: KHK	HULL No. 413		
SCALE: NONE	G&C Job No. 09–060	REV. 2	



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CK'D BY: KHK	HULL No. 413	SHT 2 OF 2
SCALE: NONE	G&C Job No. 09-060	REV. 2

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS	
1	60 LF	PIPE, 4", PUSH FIT, 316L STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
2	120 LF	PIPE, 3", PUSH FIT, 316L STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
3	100 LF	PIPE, 2", PUSH FIT, 316L STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
4	10 LF	PIPE, 4", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10	
5	4 LF	PIPE, 3", SCH 80, SEAMLESS (SHELL PENETRATION)	CARBON STEEL	ASTM A-53	ANSI B36.10	
6	80 LF	PIPE, 3", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10	
7	30 LF	PIPE, 3", SCH 80, SEAMLESS, STN STL	STAINLESS STEEL	ASTM A-182	ANSI B36.19	
8	100 LF	PIPE, 2", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10	1/2
9	2	PIPE, SLEEVE, DECK/BHD PENETRATION, 5", SCH 80. 3" LG FOR 4" PIPE	STAINLESS STEEL	ASTM A-182	ANSI B36.19	
10	1	PIPE, SLEEVE, DECK/BHD PENETRATION, 3 1/2", SCH 40. 3" LG FOR 3" PIPE	STAINLESS STEEL	ASTM A-182	ANSI B36.19	1/2
11	2	PIPE, SLEEVE, DECK/BHD PENETRATION, 2 1/2", SCH 10. 3" LG FOR 2" PIPE	STAINLESS STEEL	ASTM A-182	ANSI B36.19	
12	5	ELBOW, 90°, 4", LR, SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
13	16	ELBOW, 90°, 3", LR, SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
14	1	ELBOW, 90°, 3", LR, SCH 80, BW, STN. STL.	STAINLESS STL	ASTM A-182	ANSI B16.9	
15	A/R	ELBOW, 90°, 2", 150#, SCR'D., M.I. GALV	MAL. IRON	ASTM A-47	ANSI B16.11	1/2
16	4	ELBOW, 45°, 3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
17	11	ELBOW, 90°, 3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
18	8	ELBOW, 90°, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
19	1	TEE, REDUCING, 4"x3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
20	1	TEE 3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
21	1	LATERAL, 3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
22	1	REDUCER, CONC., 4"x3", SCH 40, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9	
23	3	THREAD-O-LET, 2", 3000#, WELDEDxSCR'D., F.S. GALV	FORGED STEEL	ASTM A-105	ANSI B16.11	1/2
24	1	CAMLOCK FTG, 3", MALE ADAPTER x FPT	STAINLESS STEEL	316	–	
25	1	CAMLOCK CAP, 3"	STAINLESS STEEL	316	–	
26	8	PENETRATION SLEEVE, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
27	11	ELBOW, 45°, 3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
28	4	ELBOW, 45°, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	1/1
29	2	WYE, 4"X3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
30	10	WYE, 3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	1/1
31	4	WYE, 3"x2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
32	14	WYE, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
33	2	REDUCER, CONC., 4"x3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
34	6	REDUCER, ECCEN., 3"x2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	1/1
35	8	PLUG, SOCKET, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
36	6	PENETRATION SLEEVE, 4", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
37	8	PENETRATION SLEEVE, 3", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
38	7	DECK DRAIN, 2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
39	3	GASKET, 4", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000	
40	22	GASKET, 3", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000	
41	2	FLANGE, 3", 150#, SLIP-ON, RAISED FACE, STN. STL.	STAINLESS STL	ASTM A-182	ANSI B16.5	
42	19	FLANGE, 3", 150#, SLIP-ON, RAISED FACE	FORGED STEEL	ASTM A-105	ANSI B16.5	
43	3	FLANGE, 4", 150#, SLIP-ON, RAISED FACE	FORGED STEEL	ASTM A-105	ANSI B16.5	
44	1	VALVE, 3 WAY, 3", 150# FLANGED, RF	STAINLESS STEEL	ASTM A-182	ANSI B-16.34	
45	1	VALVE GATE, 3", 150# FLANGED, RF, RISING STEM	STAINLESS STEEL	ASTM A-182	ANSI B-16.34	
46	1	VALVE BALL, 4", FULL PORT, 150#, FLANGED	STAINLESS STEEL	ASTM A-216 WCB	ANSI B16.34	
47	6	VALVE BALL, 3", FULL PORT, 150#, FLANGED	STAINLESS STEEL	ASTM A-216 WCB	ANSI B16.34	
48	6	VALVE BALL, 2" FEM THD, 400#	BRONZE	ASTM B-62	MSS SP-110, FULL PORT	1/2
49	3	VALVE, SWING CHECK, 3", 150#, FLG	BRONZE	ASTM B-62	ANSI B16.10 & B16.34	
50	3	VALVE, SWING CHECK , 2" FPT, 200#, FEM THD	BRONZE	ASTM B-584	MSS SP-80	1/2
51	6	WATER CLOSET DRAIN CONNECTION, 3", PUSH FIT (TOILET CONNECTION)	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
52	2	SHOWER DRAIN CONNECTION, 2", PUSH FIT (SHOWER CONNECTION)	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
53	1	WYE, 4"X2", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
54	1	ELBOW, 45°, 3" SCH. 80, B.W., GALV.	CARBON STEEL	ASTM A-234	ANSI B16.9	
55	4	ELBOW, 45°, 4", PUSH FIT, STN. STL.	STAINLESS STEEL	ASTM A-182	BLUCHER-JOSAM OR EQ	
56	3	PRESSURE GAUGE, 0-100 PSI, 2 1/2" DIAL, 1/4" MPT BOTTOM CONN	VARIOUS	COML		4/1
57	3	VALVE, BALL, 1/4", THREADED, FULL PORT	STAINLESS STL	ASTM A-351	FULL PORT	
58	3	BUSHING, 2"x1/4", 300#, THD, GALV	MAL. IRON	ASTM A-197	ANSI B16.3	
59	3	TEE, 2", 150#, SCR'D., M.I. GALV	MAL. IRON	ASTM A-47	ANSI B16.11	
60	3	NIPPLE, 1/4", 1" LG	STAINLESS STEEL	ASTM A-182	ANSI B16.11	
61	6	FLOAT SWITCH, WASTEWATER, N.O., 10 AMP, 120/230 VAC, PIPE MOUNT	ABS PLASTIC		CONERY MFG P/N 2900-B3-S1-C2-15	5/1

REFERENCES

1.	101-01	OUTBOARD AND INBOARD PROFILE
2.	101-02	GENERAL ARRANGEMENTS
3.	200-01	MACHINERY ARRANGEMENT
4.	528-01	OVERBOARD DRAINS & SEWAGE SYSTEM SCHEM
5.	533-02	POTABLE WATER SYSTEM ARRG'T. & DETAILS
6.	506-02	FILLS, VENTS & SOUNDS ARRG'T. & DETAILS

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	VAR 46-A 15-C 7-D 15-B 42-B 15-C 9-B 7-D 5-A SHT6	1. REVISED DECK PLANS TO AGREE WITH LATEST GENERAL ARRANGEMENTS & REVISED PIPING IN PLANS "14-A", "23-B", "29-B", "38-B" & B.O.M. TO SUIT. 2. ADDED ZERO DISCHARGE SUMP TANK & PUMP & REVISED PIPING & LIST OF MATERIAL TO SUIT. 3. RELOCATED BLACK WATER TANK TO TANK ROOM & REVISED THE SIZE OF THE TANK. 4. REVISED THE PUMPS FOR THE BLACK WATER & GRAY WATER SUMP TANKS & REVISED PIPING & LIST OF MATERIAL TO SUIT. 5. ADDED DET 43-B AND REVISED TANK DETAILS AND B.O.M. TO SUIT.	7/9/10 9/8/10 11/5/10	JCM JM/KHK KHK

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS AND BE IN COMPLIANCE WITH U.S. COAST GUARD REGULATIONS FOR VESSELS INSPECTED UNDER 46 CFR SUBCHAPTER H.
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8. DRAIN PIPING SHALL BE SLOPED A MINIMUM OF 1/4" PER FOOT.
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16. MSD SHALL BE AN OWENS KLEEN TANK, MODEL OW 1125M TYPE II. 220 VAC 3Φ 60 Hz 2 HP TEFC FAN MOTOR, DISCHARGE 24 GPM @ 55 FT TDH.
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18. BLACK AND GRAY WATER SUMPS SHALL BE POLYETHYLENE. TANKS SHALL BE SECURELY MOUNTED WITH GASKETS PROTECTING THE TANKS FROM CONTACT WITH STEEL STRUCTURE. FURNISH EACH TANK WITH ONE 15X23 MANHOLE.

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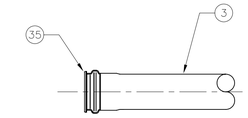
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

OVERBOARD DRAINS & SEWAGE SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528-02 SHT 1 OF 6
CK'D BY: KHK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 1

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DETAIL "9-D"
TYPICAL CLEAN-OUT
GRAY WATER & BLACK WATER DRAINS
SCALE: 3" = 1'-0"

TANK ROOM
CREW SR
CREW SR
CREW SR
CREW DAY ROOM
ELEVATOR TRUNK
MSD
ZERO DISCH. SUMP PUMP SEE REF. 4
ZERO DISCHARGE SUMP TANK SEE PLAN 46-A
POTABLE WATER TANK (P)
POTABLE WATER TANK (S)
3" VENT DRAIN LINE CONT. ON REF. 6 MODIFY FITTING TO ATTACH STEEL PIPE
GRAY WATER SUMP PUMP SEE REF. 4
GRAY WATER SUMP TANK SEE PLAN 46-B
4" GRAY WATER DRAIN FROM ABOVE
T.O.E.
BLACK WATER SUMP TANK SEE PLAN 42-B
4" BLACK WATER DRAIN FROM ABOVE
BLACK WATER SUMP PUMP SEE REF. 4
WATER CLOSET DRAIN
SHOWER
HEAD
CLEANOUT (TYP) DETAIL "9-D"
1 1/2" LAVATORY DRAIN
DECK DRAIN.
FR 56
1'-4 7/16"
1'-10"
7 11/16"
3" UP TO DECK DISCHARGE SEE DETAIL "20-A"
3" OVERBOARD DISCHARGE SEE DETAIL "18-C"

PLAN "14-A"
LOWER DECK
SCALE: 3/8" = 1'-0"

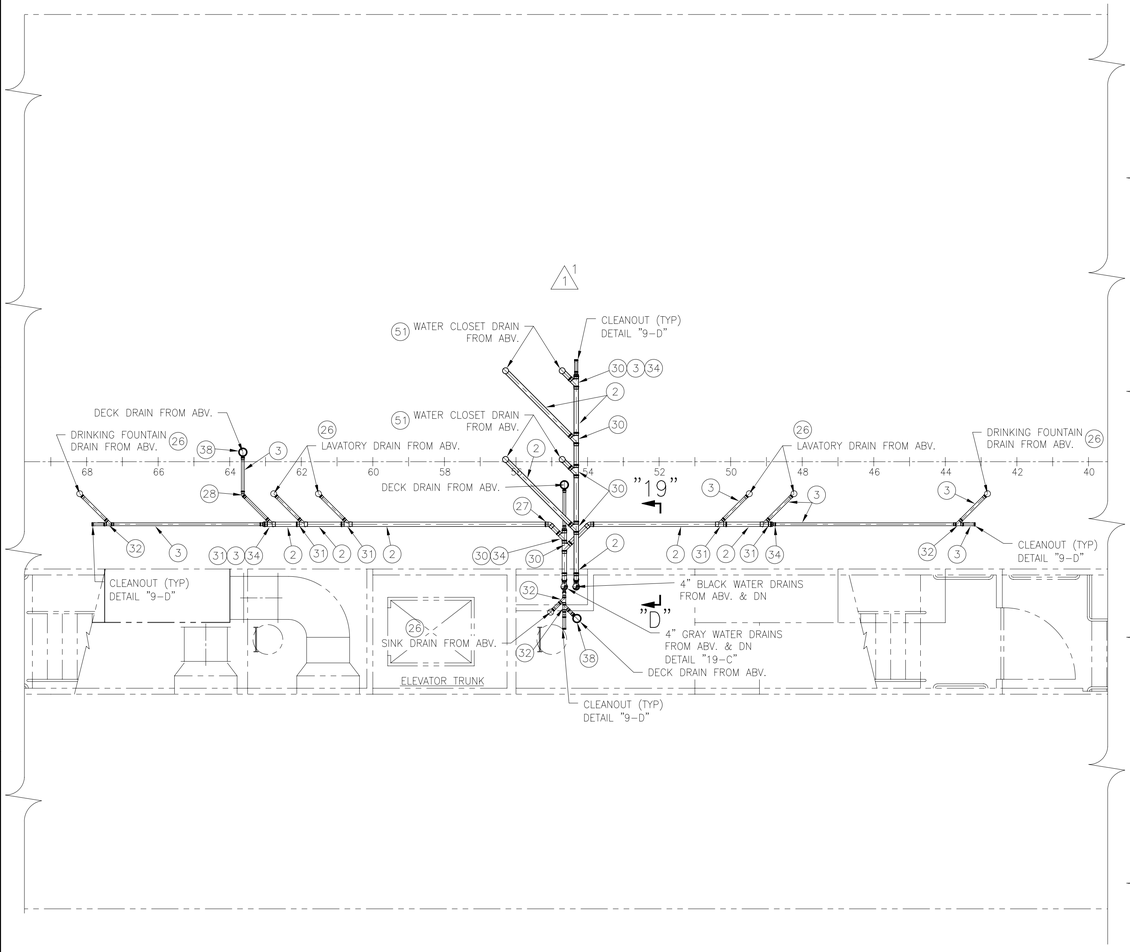
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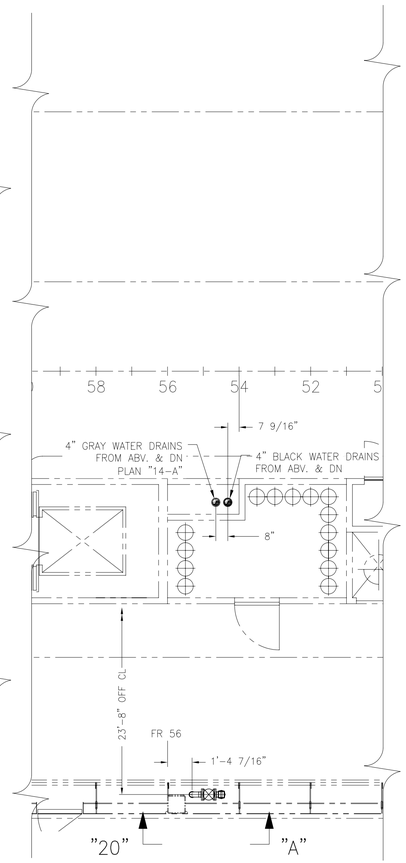
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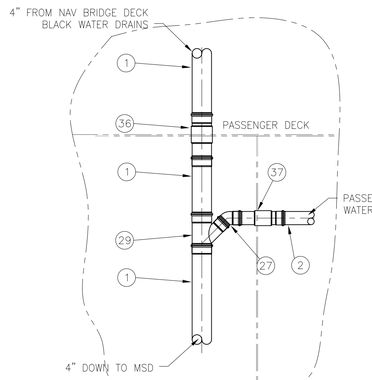
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CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 1



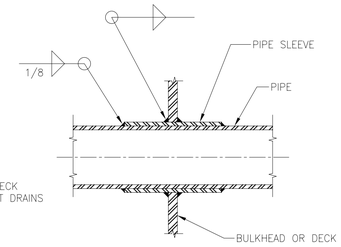
PLAN "23-B"
MID DECK
SCALE: 1/4" = 1'-0"



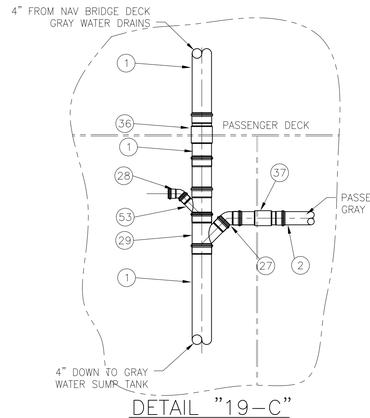
PLAN "21-B"
MAIN DECK
SCALE: 1/4" = 1'-0"



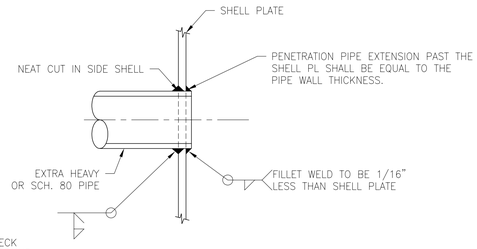
DETAIL "19-D"
VERTICAL DRAIN HEADER
BLACK WATER CONNECTION
SCALE: 3/4"=1'-0"



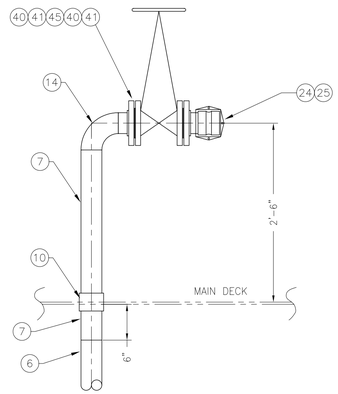
DETAIL "18-D"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE



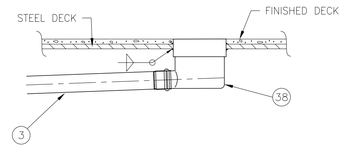
DETAIL "19-C"
VERTICAL DRAIN HEADER
GRAY WATER CONNECTION
SCALE: 3/4"=1'-0"



DETAIL "18-C"
OVERBOARD DISCHARGE
SCALE: NONE



ELEVATION "20-A"
DECK DISCHARGE
GRAY WATER SUMP & MSD UNIT
SCALE: 1" = 1'-0"



DETAIL "19-A"
DECK DRAIN FOR FINISHED DECK
SCALE: NONE

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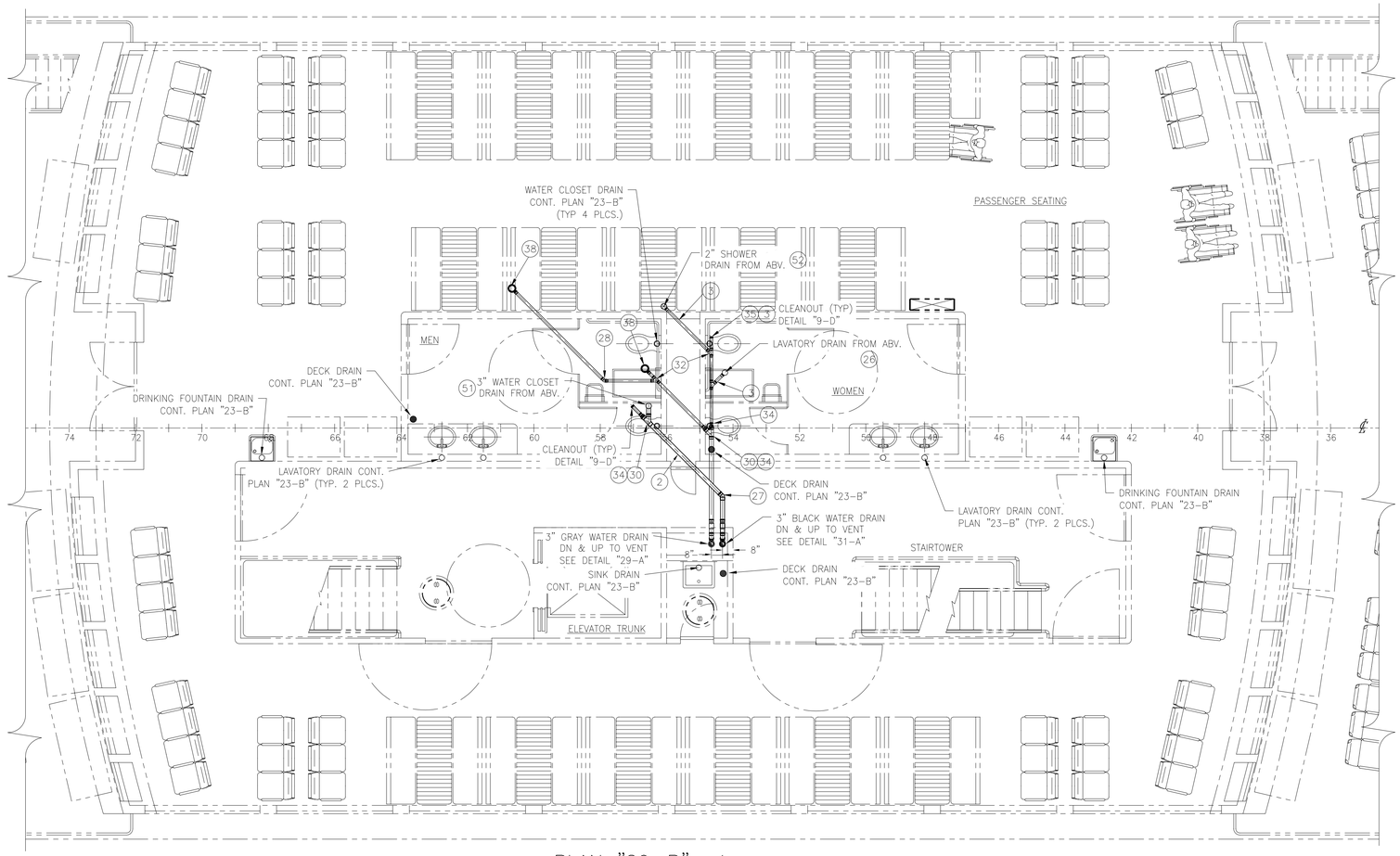
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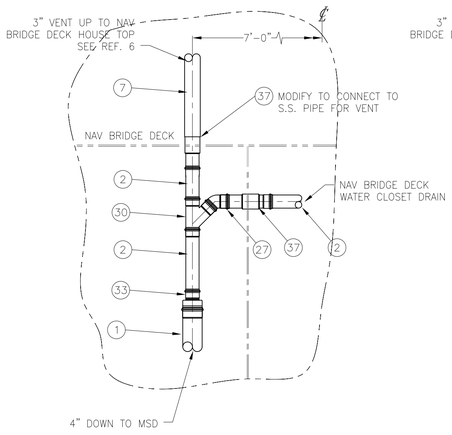
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NEW SOUND CLASS FERRY

OVERBOARD DRAINS & SEWAGE SYSTEM ARRANGEMENT & DETAILS

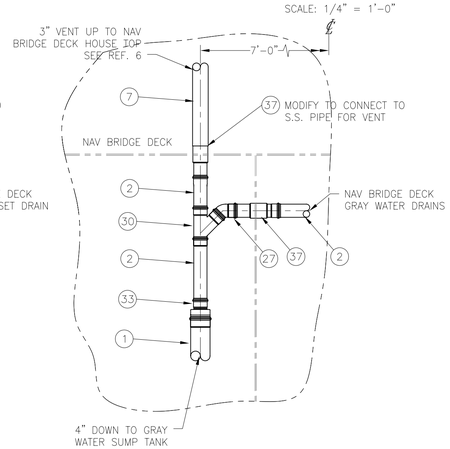
DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528-02
CK'D BY: KHK	HULL No. 413	SHT 3 OF 6
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1



PLAN "29-B"
PASSENGER DECK
SCALE: 1/4" = 1'-0"



DETAIL "31-A"
VERTICAL DRAIN HEADER
BLACK WATER CONNECTION
SCALE: 3/4"=1'-0"



DETAIL "29-A"
VERTICAL DRAIN HEADER
GRAY WATER CONNECTION
SCALE: 3/4"=1'-0"

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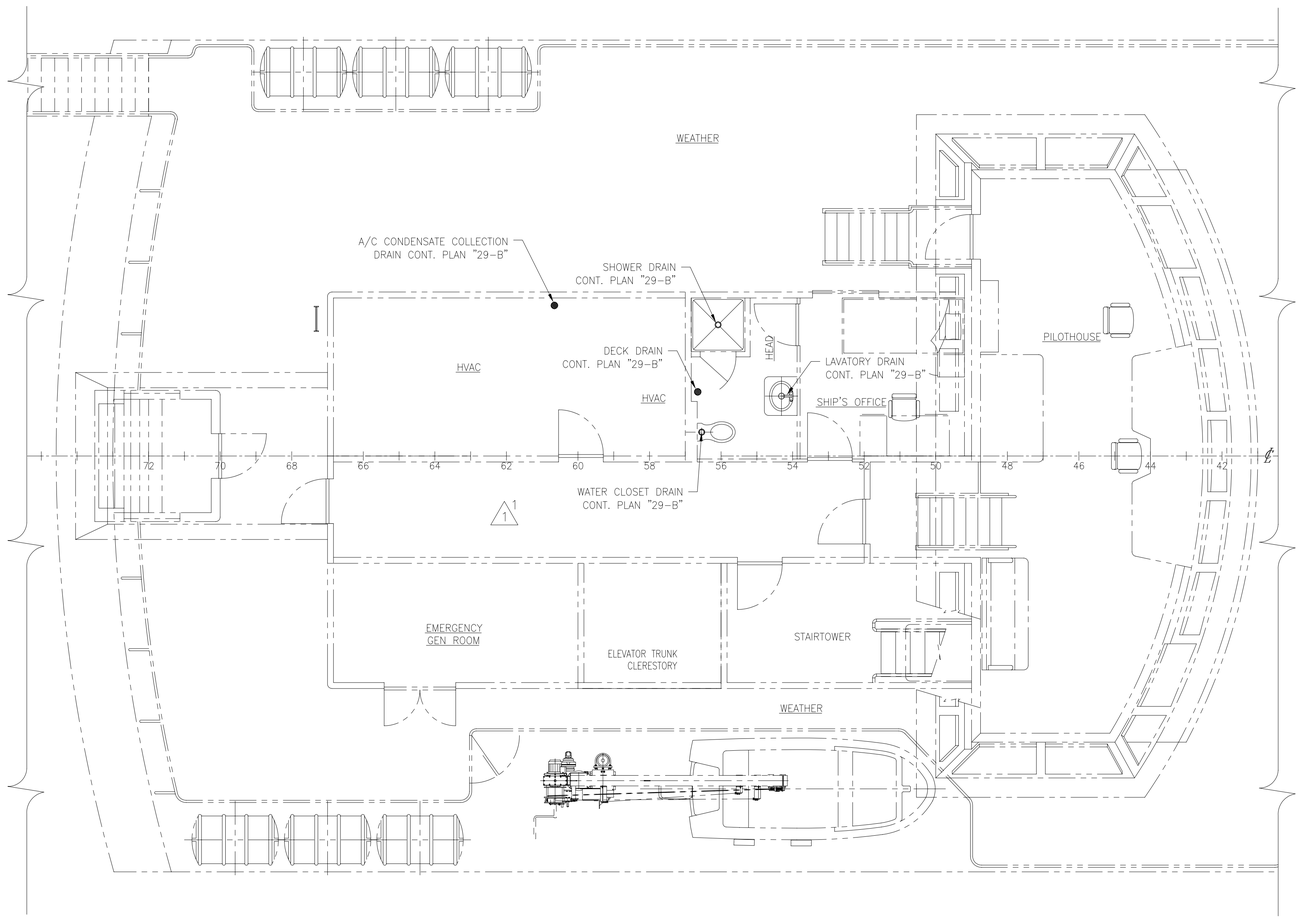
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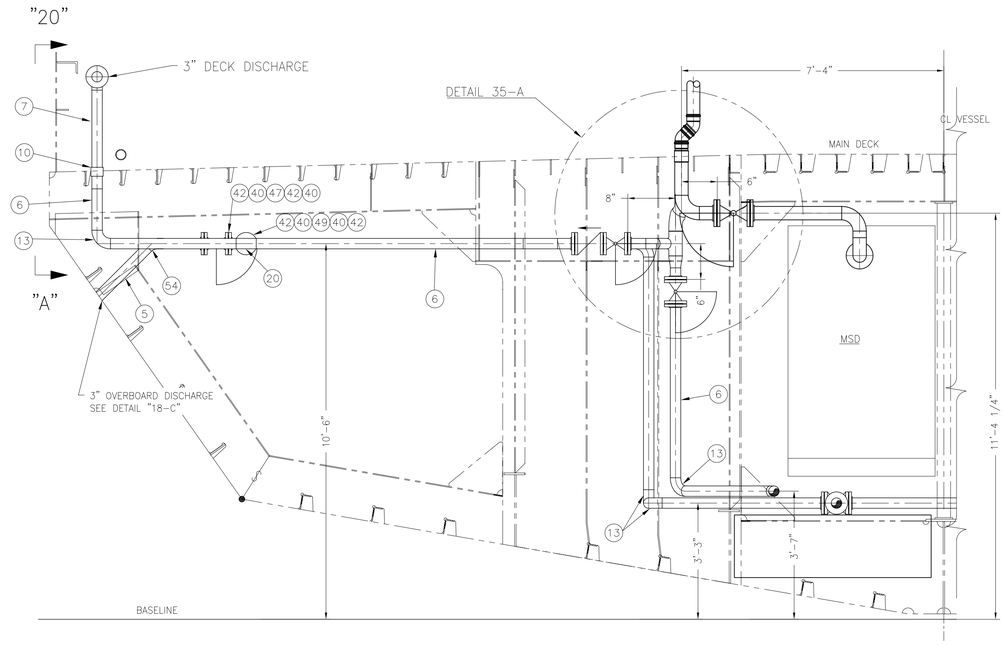
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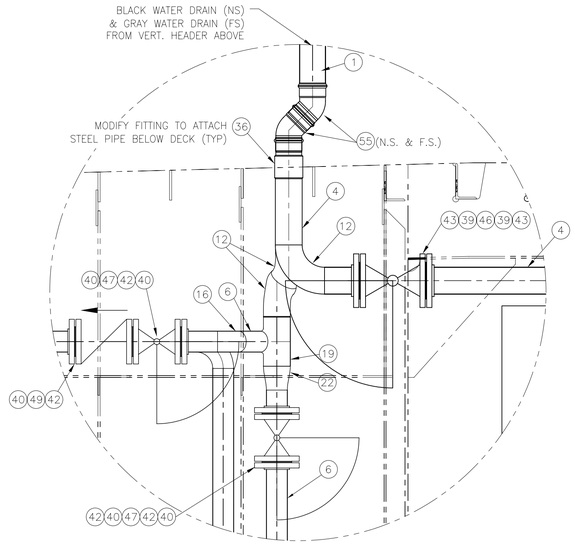
DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528-02 SHT 4 OF 6
CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09-060	REV. 1



PLAN "38-B"
NAVIGATION BRIDGE DECK
SCALE: 1/4" = 1'-0"



SECTION "34-C"
FRAME 55 LOOKING AFT
SCALE: 1/2" = 1'-0"



DETAIL "35-A"
SCALE: 1" = 1'-0"

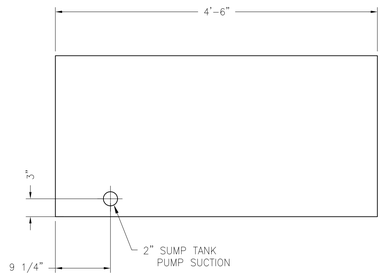
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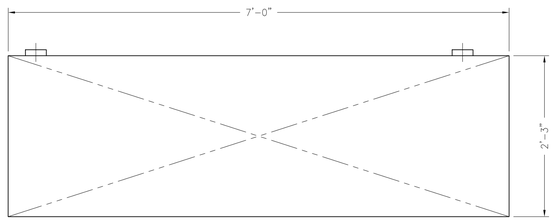
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NEW SOUND CLASS FERRY
OVERBOARD DRAINS & SEWAGE SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528-02 SHT 5 OF 6
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 1

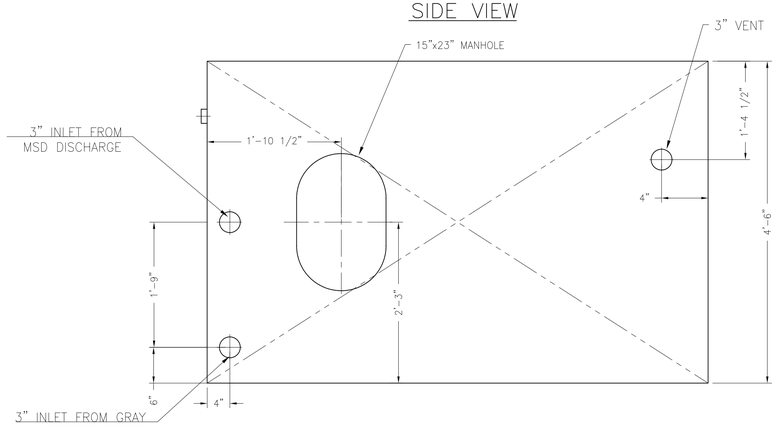
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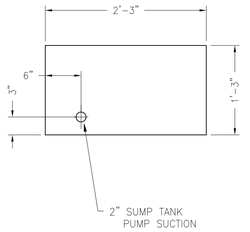
END VIEW

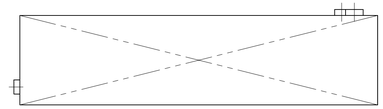


SIDE VIEW

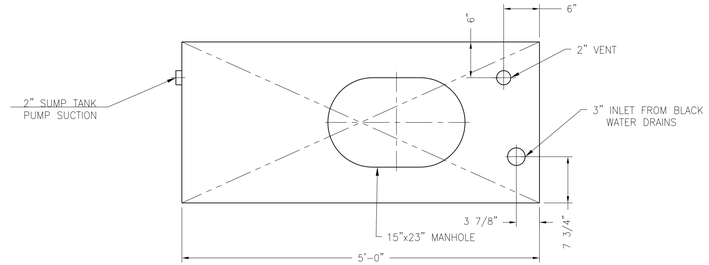


PLAN "46-B"
GRAY WATER TANK (500 GAL) 1/5
SCALE: 1" = 1'-0"

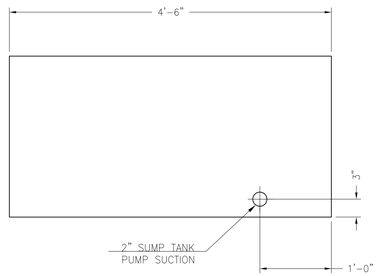




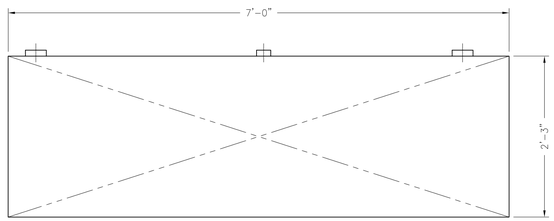
SIDE VIEW



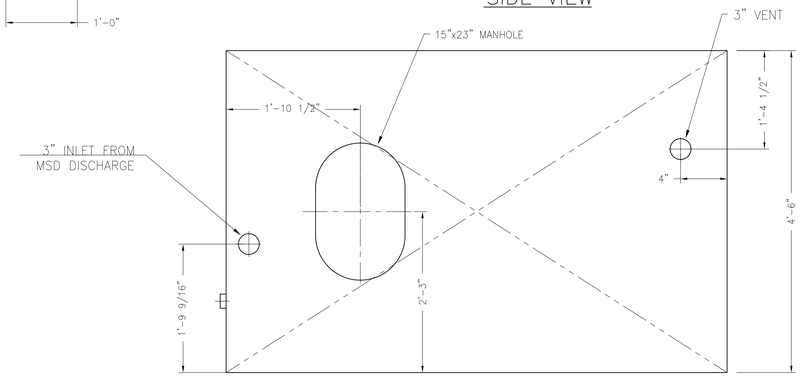
PLAN "42-B"
BLACK WATER TANK (100 GAL) 1/5
SCALE: 1" = 1'-0"



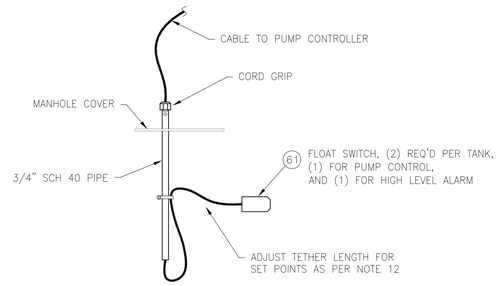
END VIEW



SIDE VIEW



PLAN "46-A"
ZERO DISCHARGE TANK (500 GAL) 1/2 1/5
SCALE: 1" = 1'-0"



DETAIL "43-B"
TYPICAL FLOAT SWITCH INSTALLATION 1/5
N.T.S.

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NEW SOUND CLASS FERRY

OVERBOARD DRAINS & SEWAGE SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 4/26/10	DWG NO. 528-02 SHT 6 OF 6
CK'D BY: KHK	HULL No. 413	
SCALE: 1"=1'-0"	G&C Job No. 09-060	REV. 1

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MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES	
			MATERIAL	GASKETS	BOLTING		BODY	TRIM
BILGE	2 1/2" & OVER	STEEL, GALV SCH 80 ASTM A106, GR B SEAMLESS ANSI B36.10	FLANGED, SLIP-ON GALV STL, 150# ASTM A105 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: 316 S.S. ASTM F593 ANSI B18.2.1 NUTS: 316 S.S. ASTM F594 ANSI B18.2.2	STL BUTTWELD 150#, SCH 80 GALV ASTM A234 ANSI B16.9	DUCTILE IRON FLANGED, 125# ASTM A395, CL B ANSI B16.10 & B16.34	BRZ TRIM RENEWABLE DISC & SEAT
OILY WATER	2" & UNDER		UNIONS, MAL IRON CLASS 300 ASTM A197 THREADED ENDS ANSI B16.3 GALVANIZED			MAL IRON CLASS 300 ASTM A197 THREADED ENDS ANSI B16.3 GALVANIZED	BALL, GLOBE, CHECK, STOP CHECK: BRONZE, THD ASTM B61 OR ASTM B62 MSS-SP-80 150#	BRONZE DISK & REGRINDABLE SEAT UNION BONNET STNLS STL BALL
OILY WATER EXTERIOR	2" & UNDER	STAINLESS STEEL SCH 40 ASTM A312 SMLS ANSI B36.19	FLANGED, SLIP-ON STAINLESS STEEL 150# ASTM A182 ANSI B16.5	GARLOCK STYLE 3000	BOLTS: 316 S.S. ASTM F593 ANSI B18.2.1 NUTS: 316 S.S. ASTM F594 ANSI B18.2.2	STAINLESS STEEL, BUTT WELD, SCH 40 ASTM A403 ANSI B16.9	BALL: FULL PORT STAINLESS STEEL THREADED, 150# ASTM A351 CF8M MSS SP-110	STAINLESS STEM & BALL TFE SEAT & SEAL

△3 1

PIPING SYMBOLS

——►	DIRECTION OF FLOW	⊣	CAP
——▷—	REDUCER		OVERBOARD DISCHARGE
⊟	DECK OR BHD PENETRATION	⊗	SIMPLEX STRAINER
——○	PIPE UP		ROSE BOX, NOTES 9 & 13
——○	PIPE DOWN	P	PRESSURE GAUGE, LOCAL READING 0-150 PSI
	GATE VALVE	P	PRESSURE GAUGE, REMOTE, 0-150 PSI
	GATE VALVE W/ REMOTE OPERATOR	VP	VACUUM/PRESSURE GAUGE, LOCAL READING 30-0-30 PSI
	SWING CHECK VALVE		MANIFOLD W/ STOP CHECK VALVES
	BALL VALVE		CENTRIFUGAL PUMP
	STOPCHECK VALVE		GEAR PUMP
	RELIEF VALVE		PRIMING VENT
	REGULATING VALVE		

△1 1

PUMP LIST

QTY.	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
2	BILGE PUMP	SELF PRIMING HORIZONTAL CENTRIFUGAL NOTE 7	GOULDS 3796 MTX 3x3x13 w/12" IMPELLER	200 GPM @115' TDH	TEFC MOTOR 208 VAC, 3ø 15 HP, 1750 RPM IEEE-841
1	OILY WASTE PUMP	GEAR	VIKING GG-4195 1"x1"	10 GPM @ 1800 RPM RELIEF VALVE SET @ 50 PSI	2 HP 208 V / 3 PH DIRECT-COUPLED
1	OILY WATER SEPARATOR	IMO MEPC 107(49)	BOSS 5T-107	5 GPM	208 VAC, 3ø

△1 1

REFERENCES

1.	101-02	GENERAL ARRANGEMENTS
2.	101-01	OUTBOARD & INBOARD PROFILE
3.	200-01	MACHINERY ARRANGEMENT
4.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
5.	521-01	FIRE MAIN SYSTEM SCHEMATIC
6.	522-01	SPRINKLER SYSTEM SCHEMATIC
7.	264-01	LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC
8.	529-02	BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS
9.	256-01	COOLING PIPING SYSTEM SCHEMATIC
10.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
11.	163-01	SEA CHEST
12.	533-01	POTABLE WATER SYSTEM SCHEMATIC

CALCULATIONS

VESSEL DIMENSIONS:
L = 220.5 FT
B = 50 FT
D = 12.5 FT

PIPE DIAMETER CALCULATIONS: (REF. 46 CFR 56.50-50)

WHERE:
d = INTERNAL PIPE DIAMETER
c = COMPARTMENT LENGTH

BILGE MAIN:
d = 1 + sqrt [L * (B+D) / 2500] = 3.35" MIN.
d = 4"

BILGE BRANCHES:
c = 40' (MAX.)
d = 1 + sqrt [c * (B+D) / 1500] = 2.29" MIN.
d = 3"

BILGE PUMP CAPACITY CALCULATIONS:(REF. 46 CFR 56.50-55)

WHERE:
v = MIN ALLOWED WATER VELOCITY (Ft/Min)
Q = PUMP CAPACITY (GPM)
A = Pipe Cross Sectional Area (Sq Ft)
d = Pipe Inside Diameter (Inches)
Q = VA
= (400 Ft/Min.)(Pi * (3.35/2)^2/144)(7.481 gal/ft^3)
= 183 GPM

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	7-B 2-A 7-A	1. REVISED OILY WASTE PUMP TO A GEAR PUMP. REVISED PUMP DATA LIST, SYMBOLS LIST & SYSTEM OPERATION CONDITIONS CHART PER SHIPYARD REQUEST.	5/14/10	JCM
	15-B	2. REVISED PUMP SYMBOL & PIPE SIZE ON DETAIL "15-B".		
	7-D	3. REVISED ASTM NUMBER FOR BOLTING IN THE MATERIAL SCHEDULE.		
2	12-B 23-C	1. REVISED HOLD PLAN TO AGREE WITH LATEST ARRANGEMENT DRAWINGS.	8/12/10	JCM/KK
	15-B	1. ADDED CONNECTIONS FROM DIRTY OIL SYSTEM TO OILY WASTE PUMP.	9/7/10	JCM/KK
	14-C 3-D	2. REVISED CLEAN WATER SUPPLY TO OWS AND ADDED REF 12.		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED BY REFERENCE 8.
3. GALVANIZING DAMAGED DURING FABRICATION SHALL BE PAINTED WITH "GALVACON" OR EQUAL.
4. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
5. DISCHARGE CHECK VALVES SHALL BE ORIENTED IN THE FORE AND AFT DIRECTION.
6. OVERBOARD SHELL PENETRATIONS SHALL BE LOCATED APPROXIMATELY 8 FEET ABOVE BASELINE. OVERBOARD DISCHARGE VALVES SHALL BE PROVIDED WITH REMOTE CLOSING GEAR TO DECK.
7. THE BILGE PUMPS SHALL BE CAPABLE OF REMOTE STARTING. SEE REFERENCE 4.
8. THE BILGE SUCTION MANIFOLD SHALL BE LOCATED SUCH THAT VALVE HANDLES ARE APPROXIMATELY 24 INCHES ABOVE THE DECK PLATES.
9. BILGE SUCTIONS SHALL HAVE STRAINER BOXES INSTALLED. STRAINER BOXES SHALL BE IN ACCORDANCE WITH ASTM F986, TYPE I, HOT DIP GALVANIZED AFTER FABRICATION.
10. BULKHEAD AND DECK PENETRATIONS SHALL BE VIA CONTINUOUSLY WELDED REINFORCING SLEEVES, COLLARS OR APPROVED COMMERCIAL PENETRATION SLEEVE.
11. AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
12. THE PIPING SHALL BE CLEANED, FLUSHED, FILLED AND HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH USCG AND ABS REQUIREMENTS.
13. BILGE SUCTIONS SHALL BE LOCATED 3" ABOVE SHELL PLATE AT THE COMPARTMENT LOW POINT.
14. OILY WATER SEPERATOR SHALL COMPLY WITH IMO MEPC 107(49) AND 46 CFR 162.050.

SYSTEM OPERATION CONDITIONS

BILGE SYSTEM

DESIGN PRESSURE	58 PSIG MAX.
TEST PRESSURE	58 PSIG
DESIGN TEMPERATURE	AMBIENT

OILY WATER BILGE SYSTEM

DESIGN PRESSURE	50 PSIG MAX.
TEST PRESSURE	50 PSIG
DESIGN TEMPERATURE	AMBIENT

△1 1

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-529-1

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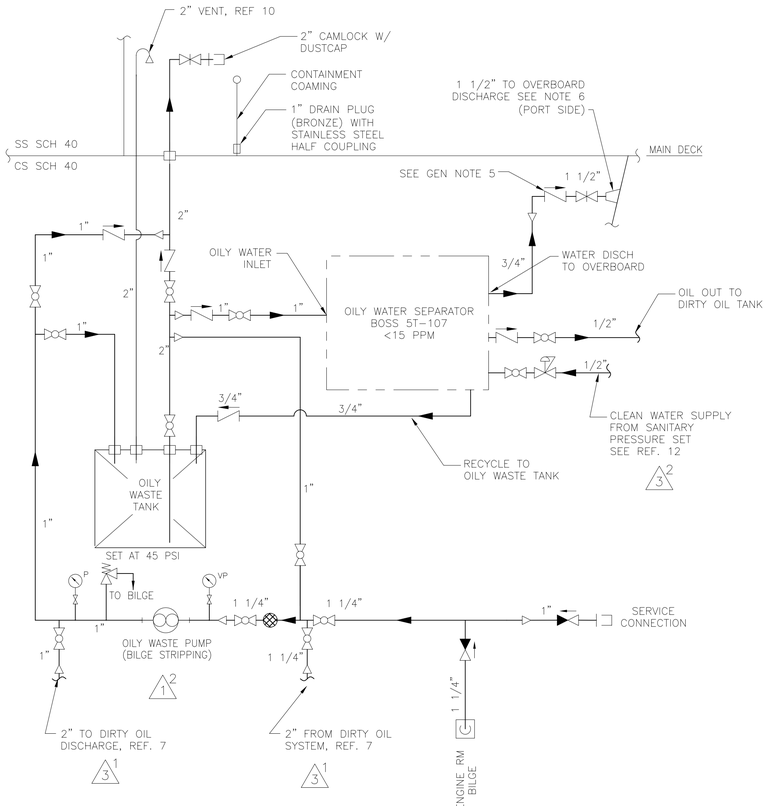
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

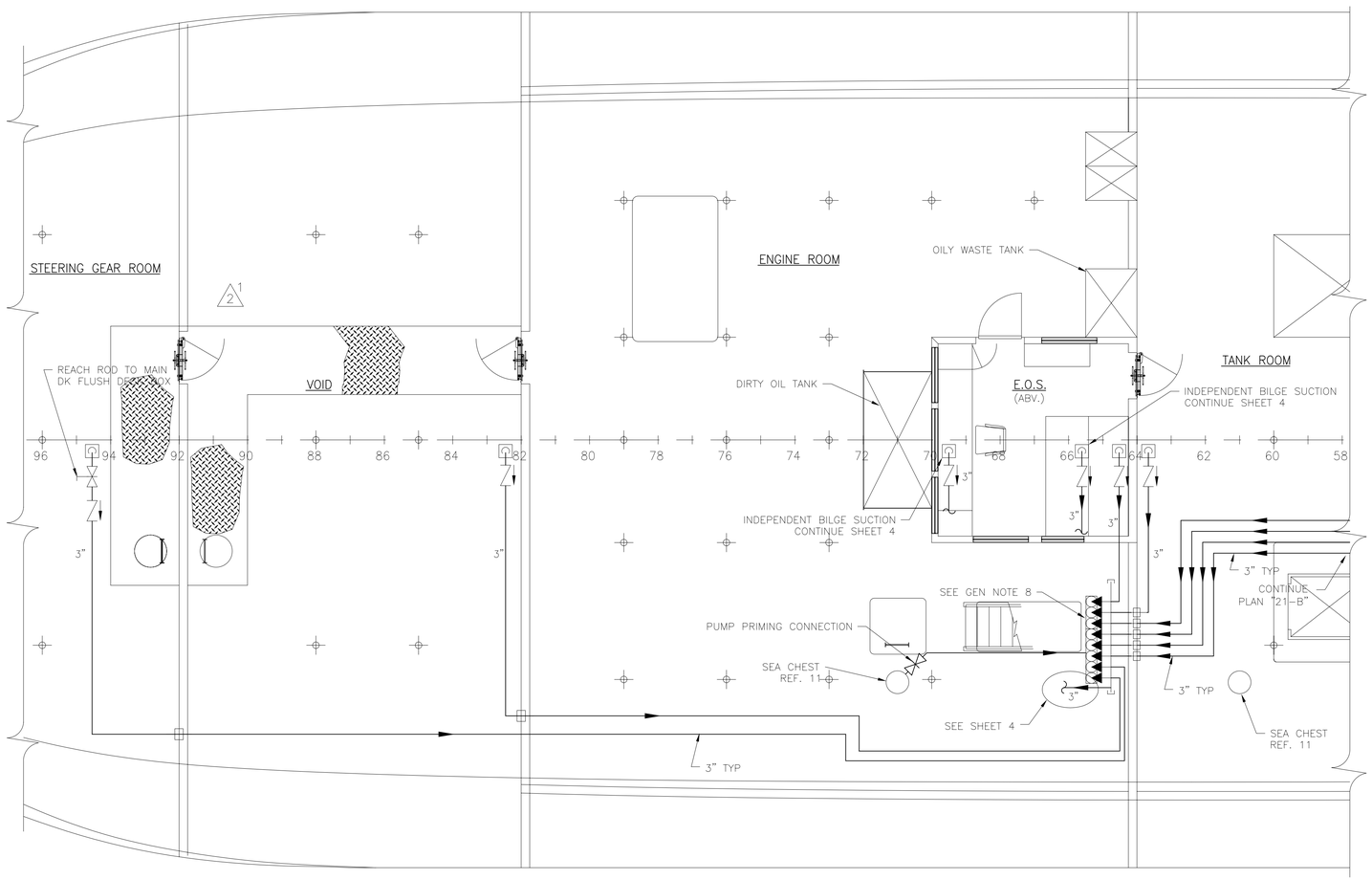
NEW SOUND CLASS FERRY

BILGE & OILY WATER SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 2/9/10	DWG NO. 529-01 SHT 1 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 3



DETAIL "15-B"
OILY WATER BILGE SYSTEM



PLAN "12-B"
HOLD (AFT)

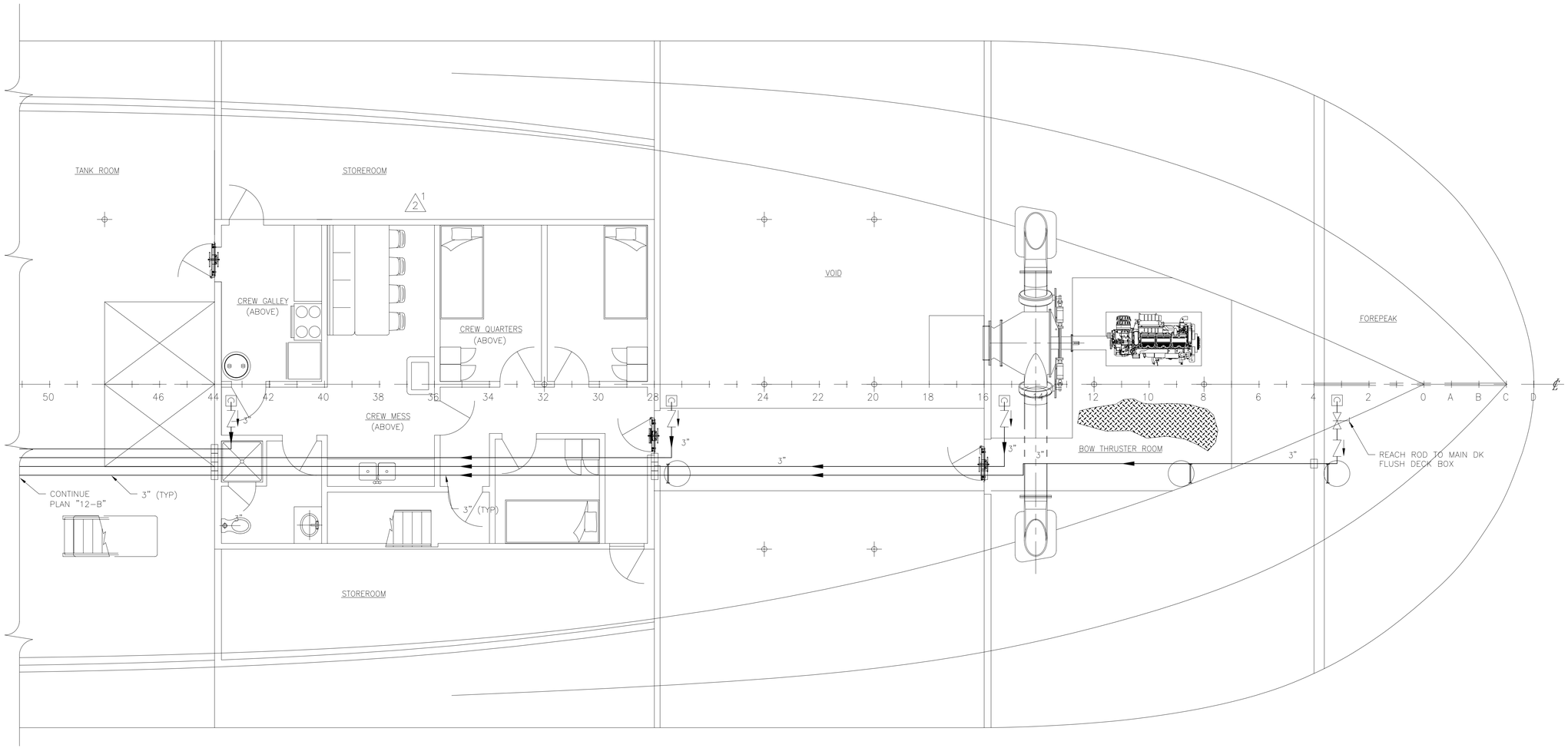
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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY
BILGE & OILY WATER SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 2/9/10	DWG NO. 529-01 SHT 2 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 3



PLAN "21-B"
HOLD (FWD)

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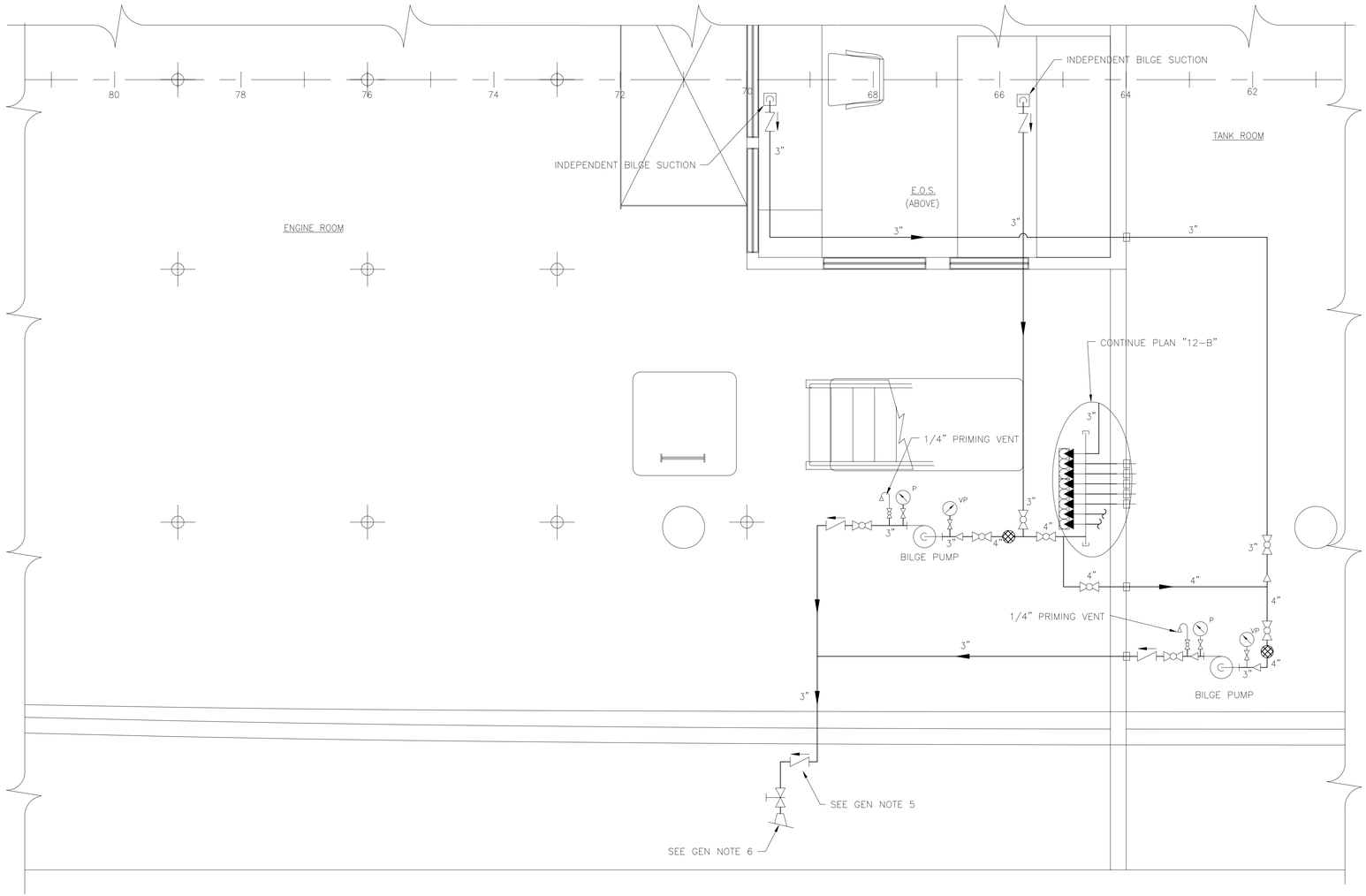
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BILGE & OILY WATER
SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 2/9/10	DWG NO. 529-01 SHT 3 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 3



PLAN "30-B"
BILGE PUMP ARRANGEMENT

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BILGE & OILY WATER SYSTEM SCHEMATIC

DRAWN BY: JCM	DATE: 2/9/10	DWG NO. 529-01 SHT 4 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 3

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
1	580 LF	PIPE, 3", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
2	20 LF	PIPE, 4", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
3	6 LF	PIPE, 1 1/2", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
4	26 LF	PIPE, 2", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
5	12 LF	PIPE, 1 1/4", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
6	25 LF	PIPE, 1", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
7	30 LF	PIPE, 3/4", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
8	8 LF	SQUARE TUBE, 10x10x3/8	STEEL	A36	
9	3	VALVE, BALL, 4", 150#, FLG, FULL PORT, SS TRIM	CAST STEEL	ASTM-216-WCB	ANSI B16.10
10	4	VALVE, GATE, 3", 150#, FLG, BRZ TRIM, RENEWABLE DISC & SEAT	CAST STEEL	ASTM-216-WCB	ANSI B16.10 & B16.34
11	1	VALVE GATE, 2", 150# FLANGED, RF, RISING STEM, SS RENEWABLE DISC & SEAT	STAINLESS STL	ASTM A-182	ANSI B-16.34
12	3	VALVE, BALL, 3", 150#, FLG, FULL PORT, SS TRIM	CAST STEEL	ASTM-216-WCB	ANSI B16.10, FULL PORT
13	2	VALVE, BALL, 2", 150#, THREADED, FULL PORT, BRZ TRIM	BRONZE	ASTM-B62	ANSI B16.10 & B16.34
14	2	VALVE, BALL, 1 1/4", 150#, THREADED, FULL PORT, BRZ TRIM	BRONZE	ASTM-B62	ANSI B16.10 & B16.34
15	4	VALVE, BALL, 1", 150#, THREADED, FULL PORT, BRZ TRIM	BRONZE	ASTM-B62	ANSI B16.10 & B16.34
16	8	VALVE, BALL, 1/4", THREADED, FULL PORT	STAINLESS STL	ASTM A-351	FULL PORT
17	13	VALVE, SWING CHECK, 3", 150#, FLG, BRZ. TRIM, RENEWABLE SEAT RINGS	CAST STEEL	ASTM-216-WCB	MSS-SP-80
18	1	VALVE, SWING CHECK, 1 1/2", 150#, FLG CR13 TRIM RENEWABLE SEAT RINGS	FORGED STEEL	ASTM-A105	MSS-SP-80
19	1	VALVE, SWING CHECK, 2", 125#, THREADED, BRZ TRIM, RENEWABLE DISC	BRONZE	ASTM-B62	ANSI B16.10 & B16.34
20	2	VALVE, SWING CHECK, 1", 125#, THD, BRZ TRIM, RENEWABLE DISC	BRONZE	ASTM-B62	ANSI B16.10
21	8	VALVE, ANGLE GLOBE, STOP CHECK, 3", 150 LB, FLG, BRZ TRIM	CAST STEEL	ASTM-A216	ANSI B16.10 & B16.34
22	2	VALVE, GATE, 1 1/4", 125#, THD, BRZ DISC & REGRINDABLE SEAT, UNION BONNET	BRONZE	ASTM B-61 OR B-62	MSS-SP-80
23	1	VALVE, RELIEF, 1", 125#, THD	BRONZE	ASTM B-61 OR B-62	ANSI B1.20.1
24	4	REDUCER, CONC., 4"x3", SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
25	6	ELBOW, 90°, 4", LR, SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
26	64	ELBOW, 90°, 3", LR, SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
27	1	ELBOW, 90°, 1 1/2", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
28	7	ELBOW, 90°, 2", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
29	3	ELBOW, 90°, 1/2", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
30	4	ELBOW, 90°, 1 1/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
31	9	ELBOW, 90°, 1", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
32	8	ELBOW, 90°, 3/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
33	6	ELBOW, 45°, 3", SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
34	1	ELBOW, 90°, 2", LR, SCH 40, BW,	STAINLESS STL	ASTM A-403	ANSI B16.9
35	1	TEE 3", SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
36	4	TEE 2", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
37	3	TEE 4", SCH 80, BW, GALV	CARBON STEEL	ASTM A-234	ANSI B16.9
38	2	TEE 1 1/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
39	4	TEE 1", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
40	2	BUSHING, 1"x1/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
41	57	FLANGE, 3", 150#, SLIP-ON, RAISED FACE, GALV.	CARBON STEEL	ASTM A-105	ANSI B16.5
42	8	FLANGE, 4", 150#, SLIP-ON, RAISED FACE, GALV.	CARBON STEEL	ASTM A-105	ANSI B16.5
43	2	FLANGE, 2", 150#, SLIP-ON, RF	STAINLESS STL	ASTM A-182	ANSI B16.5
44	1	ADAPTER, 1", MALE NPTxHOSE THD	CARBON STEEL	COML	
45	1	BUSHING, 1 1/2"X3/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
46	3	BUSHING, 2"x1", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
47	2	BUSHIING, 1 1/4"X1", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
48	1	BUSHING, 1 1/4"x1", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
49	1	ELBOW, 90°, 1 1/2", 3000#, S.W.	CARBON STEEL	ASTM A-105	ANSI B16.11
50	6	BUSHING, 3/4"x1/4", 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
51	6	THREADOLET, 3"x3/4", WELD BASExFPT, GALV.	CARBON STEEL	COML	
52	2	STRAINER, SIMPLEX, 4", FLG	CAST IRON	COML	
53	1	STRAINER, SIMPLEX, 1 1/4", THD	CAST IRON	COML	
54	3	PRESSURE GAUGE, 0-100 PSI, 2 1/2" DIAL, 1/4" NPT BOTTOM CONN	VARIOUS	COML	
55	3	VACUUM PRESSURE GAUGE, 30-0-30, 2 1/2" DIAL, 1/4" NPT BOTTOM CONN	VARIOUS	COML	
56	11	BILGE SUCTION STRAINER, HOT-DIP GALV.	CARBON STEEL	ASTM A-36	(YARD FABRICATED)
57	1	CAMLOCK FTG, 2", MALE ADAPTER x FPT	STAINLESS STL	316	–
58	1	CAMLOCK CAP, 2"	STAINLESS STL	316	–
59	20	PIPE, SLEEVE, DECK/BHD PENETRATION, 3 1/2", SCH 40, 3" LG FOR 3" PIPE	CARBON STEEL	ASTM A-53	ANSI B36.10
60	1	PIPE, SLEEVE, DECK/BHD PENETRATION, 2 1/2", SCH 40, 3" LG FOR 2" PIPE	STAINLESS STL	ASTM A-312, TYPE 316	ANSI B36.19
61	8	NIPPLE, 1/4", 1" LG	STAINLESS STEEL	ASTM A-182	ANSI B16.11
62	2	COUPLING, HALF, 1", 3000#, THD, S.S.	STAINLESS STEEL	ASTM A-182	ANSI B16.11
63	1	PLUG, HEX HEAD, 300#, THD, GALV	MALLEABLE IRON	ASTM A-197	ANSI B16.3
64	9	GASKET, 4", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
65	59	GASKET, 3", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
66	2	GASKET, 2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
67	1	PIPE, SLEEVE, DECK/BHD PENETRATION, 5", SCH 40, 3" LG FOR 4" PIPE	CARBON STEEL	ASTM A-53	ANSI B36.10

CONT'D IN ZONE 3-C

USE W/ 21A

REFERENCES

1.	101-02	GENERAL ARRANGEMENTS
2.	101-01	OUTBOARD & INBOARD PROFILE
3.	200-01	MACHINERY ARRANGEMENT
4.	529-01	BILGE & OILY WATER SYSTEM SCHEMATIC
5.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
6.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
7.	506-02	FILLS, VENTS & SOUNDS ARRANGEMENT & DETAILS
8.	521-01	FIRE MAIN SYSTEM SCHEMATIC
9.	522-01	SPRINKLER SYSTEM SCHEMATIC
10.	533-02	POTABLE WATER SYSTEM ARRANGEMENT & DETAILS
11.	264-01	LUBE OIL & DIRTY OIL SYSTEM SCHEMATIC
12.	163-01	SEA CHEST

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. ALL VALVES LOCATED BELOW THE FLOOR PLATES SHALL BE PROVIDED WITH REACH RODS. ALL VALVES SHALL BE PROVIDED WITH VISUAL CLOSURE STATUS.
3. LOW POINTS IN THE SYSTEM SHALL BE FITTED WITH DRAINS.
4. ALL FLANGED CONNECTIONS SHALL BE PROVIDED WITH 316 S.S., GR. 316, ASTM F593 HEX HD. BOLTS, 316 S.S., GR. 316, ASTM F594 NUTS AND 316 S.S. WASHERS.
5. PIPING SHALL BE RUN AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT.
6. TAKEDOWN JOINTS SHALL BE PROVIDED WHERE NECESSARY FOR REMOVAL & SERVICE OF EQUIPMENT. ADDITIONAL TAKEDOWN JOINTS SHALL BE AVOIDED WHERE PRACTICAL AND SHALL NOT BE LOCATED BEHIND LININGS.
7. PIPING PASSING THROUGH WATERTIGHT OR FIRE BOUNDARIES SHALL BE FITTED WITH SLEEVES WELDED TO THE BOUNDARY AND THE PIPE.
8. ALL PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS AND SHALL BE IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
9. GALVANIZING DAMAGED DURING FABRICATION SHALL BE PAINTED WITH "GALVACON" OR EQUAL.
10. DISCHARGE CHECK VALVES SHALL BE ORIENTED IN THE FORE AND AFT DIRECTION.
11. OVERBOARD SHELL PENETRATIONS SHALL BE LOCATED APPROXIMATELY 8 FEET ABOVE BASELINE. OVERBOARD DISCHARGE VALVES SHALL BE PROVIDED WITH REMOTE CLOSING GEAR TO DECK.
12. THE BILGE PUMPS SHALL BE CAPABLE OF REMOTE STARTING. SEE REFERENCE 5.
13. BILGE SUCTIONS SHALL HAVE STRAINER BOXES INSTALLED. STRAINER BOXES SHALL BE IN ACCORDANCE WITH ASTM F986, TYPE I, HOT DIP GALVANIZED AFTER FABRICATION.
14. BULKHEAD AND DECK PENETRATIONS SHALL BE VIA CONTINUOUSLY WELDED REINFORCING SLEEVES, COLLARS OR APPROVED COMMERCIAL PENETRATION SLEEVE.
15. AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
16. THE PIPING SHALL BE CLEANED, FLUSHED, FILLED AND HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH USCG AND ABS REQUIREMENTS.
17. BILGE SUCTIONS SHALL BE LOCATED 3" ABOVE SHELL PLATE AT THE COMPARTMENT LOW POINT.
18. OILY WATER SEPERATOR SHALL COMPLY WITH IMO MEPC 107(49) AND 46 CFR 162.050.

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	3-B	1. REVISED HOLD PLAN TO AGREE WITH LATEST ARRANGEMENT DRAWINGS.	8/12/10	JCM/KK

LIST OF MATERIALS, CONTD FROM ZONE 7-A

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
68	4 LF	PIPE, 2", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
69	5 LF	PIPE, 1/2", SCH 80, SEAMLESS, GALV	CARBON STEEL	ASTM A-106, GR B	ANSI B36.10
70	1	VALVE, REGULATING, 1/2", 150#, THREADED	BRASS	ASTM A-62	WATTS MOD 26A, SET @ 15 PSIG MAX.
71	1	VALVE, BACK FLO PREVENTER, 1" THD, BRZ, WATTS #909	BRONZE	~~ASTM B-61~~ OR B-62	MSS-SP-80
72	1	VALVE, SWING CHECK, 3/4", 125#, THD, BRZ TRIM, RENEWABLE DISC	BRONZE	ASTM B-61 OR B-62	ANSI B1.20.1
73	1	VALVE, GATE, 1 1/2", 150#, FLG CR13 TRIM RENEWABLE DISC & SEAT	FORGED STEEL	ASTM-A105	ANSI B16.10
74	1	VALVE, BALL, 1/2", 150#, THREADED, FULL PORT, BRZ TRIM	BRONZE	ASTM B-61 OR B-62	ANSI B16.10
75	1	COUPLING, FULL, 2", 3000#, THD, S.S.	STAINLESS STEEL	ASTM A-182	ANSI B16.11
76	1	COUPLING, HALF, 3/4", 3000#, THD, S.S.	STAINLESS STEEL	ASTM A-182	ANSI B16.11
77	2	FLANGE, 1 1/2", 150#, SLIP-ON, RAISED FACE, GALV.	CARBON STEEL	ASTM A-105	ANSI B16.5
78	3	GASKET, 1 1/2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
79	1	VALVE, BALL, 1/2", 150#, THREADED, FULL PORT, BRZ TRIM	STAINLESS STL	ASTM A-182	ANSI B-16.34
80	1	VALVE, SWING CHECK, 1/2", 150#, THD, BRZ TRIM, RENEWABLE DISC	STAINLESS STL	ASTM A-182	ANSI B-16.34
81	30 LF	PIPE, 1/2", SCH 80, SEAMLESS	CARBON STEEL	ASTM A-53	ANSI B36.10
82	4	ELBOW, 90°, 1/2", 3000#, S.W.	CARBON STEEL	ASTM A-105	ANSI B16.11
21A	1	VALVE, SWING CHECK, 1-1/4", 150#, THD, BRZ BODY & TRIM	BRONZE	ASTM-B62	ANSI-B16.10 & B16.34

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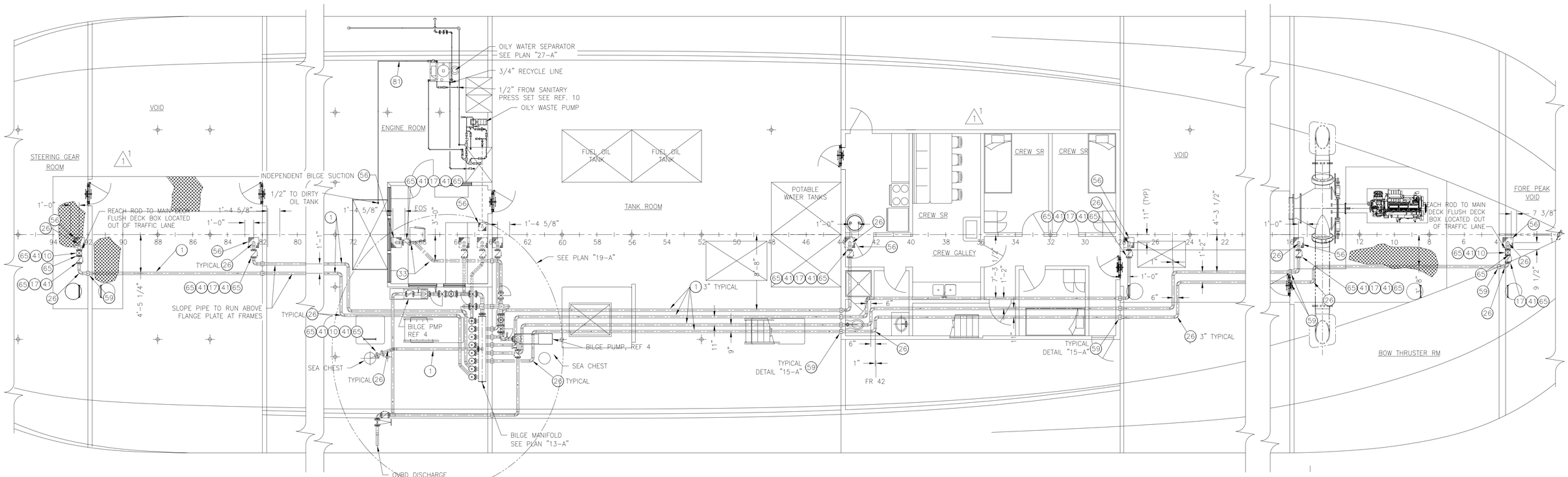
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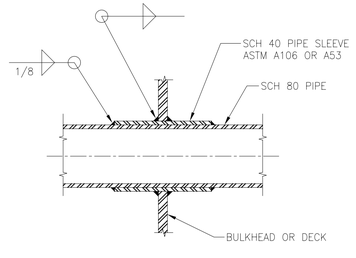
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BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS

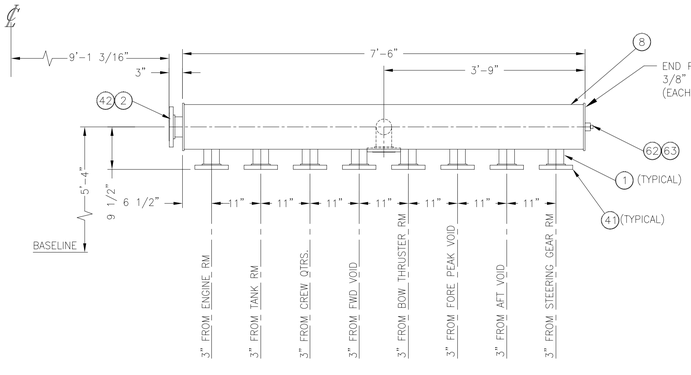
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CK'D BY: KHK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 1



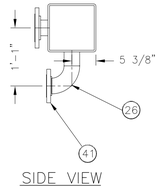
PLAN "13-B"
LOWER DECK
SCALE: 3/16" = 1'-0"



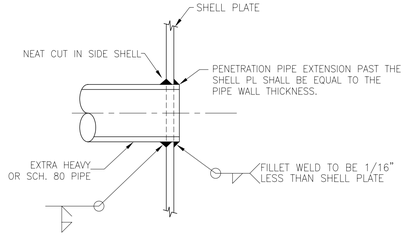
DETAIL "15-A"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE



DETAIL "13-A"
BILGE MANIFOLD
SCALE: 3/4" = 1'-0"



SIDE VIEW



DETAIL "11-A"
OVERBOARD DISCHARGE
SCALE: NONE

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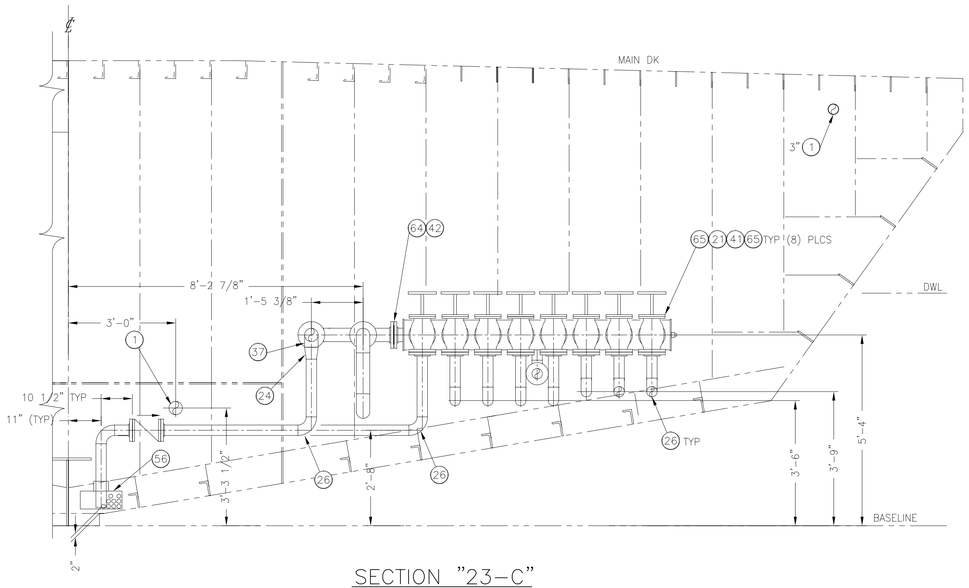
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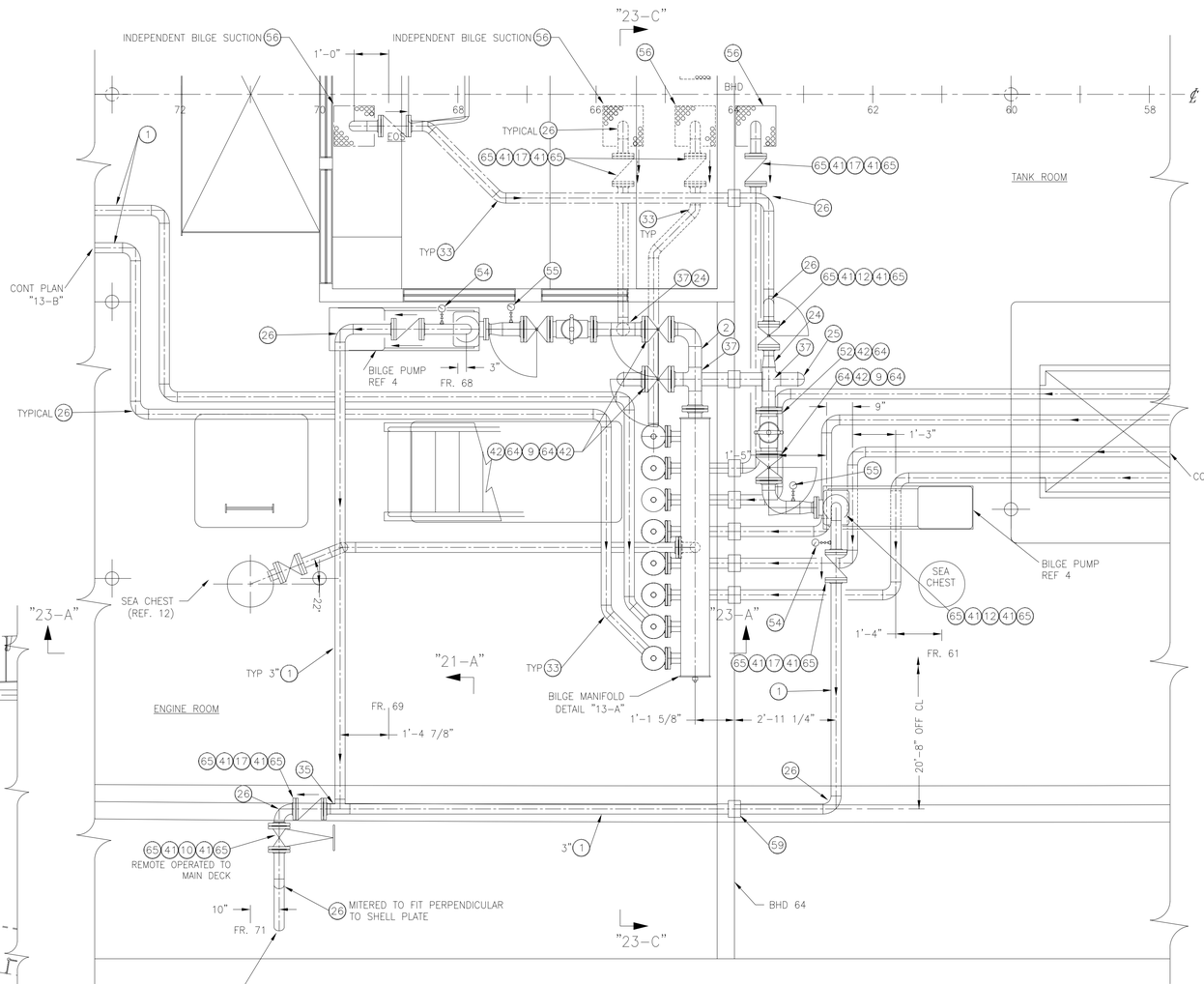
NEW SOUND CLASS FERRY

BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS

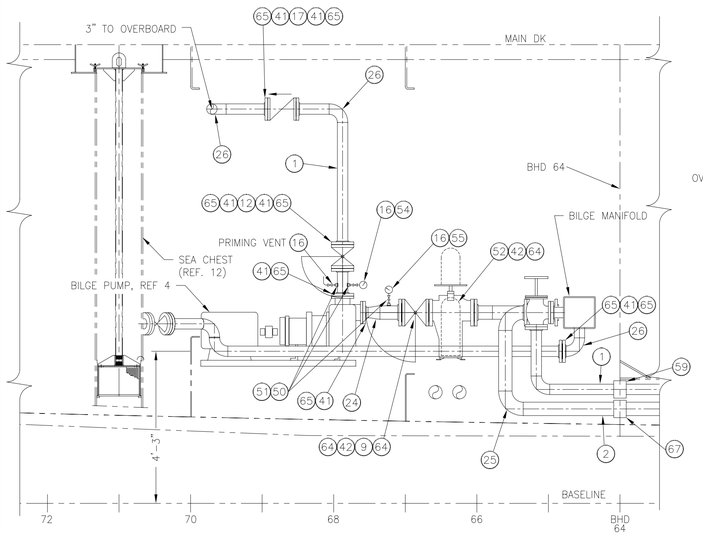
DRAWN BY: JCM	DATE: 5/14/10	DWG NO. 529-02 SHT 2 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 3/16"=1'-0"	G&C Job No. 09-060	REV. 1



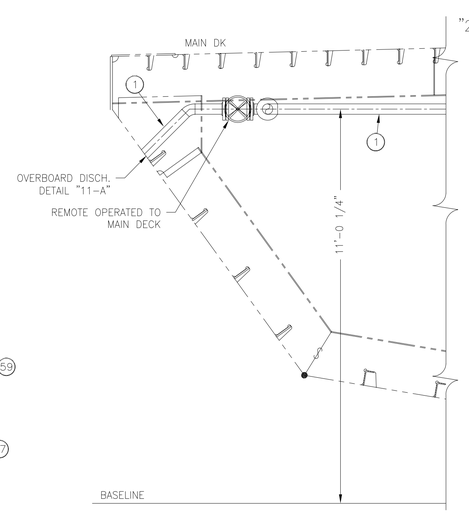
SECTION "23-C"
FR 66 LOOKING FWD
SCALE: 1"=1'-0"



PLAN "19-A"
LOWER DECK
SCALE: 1"=1'-0"



ELEVATION "23-A"
STBD LOOKING INBOARD
SCALE: 1/2"= 1'-0"



SECTION "21-A"
@ FR. 67 LOOKING AFT
SCALE: 1/2"= 1'-0"

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-529-2

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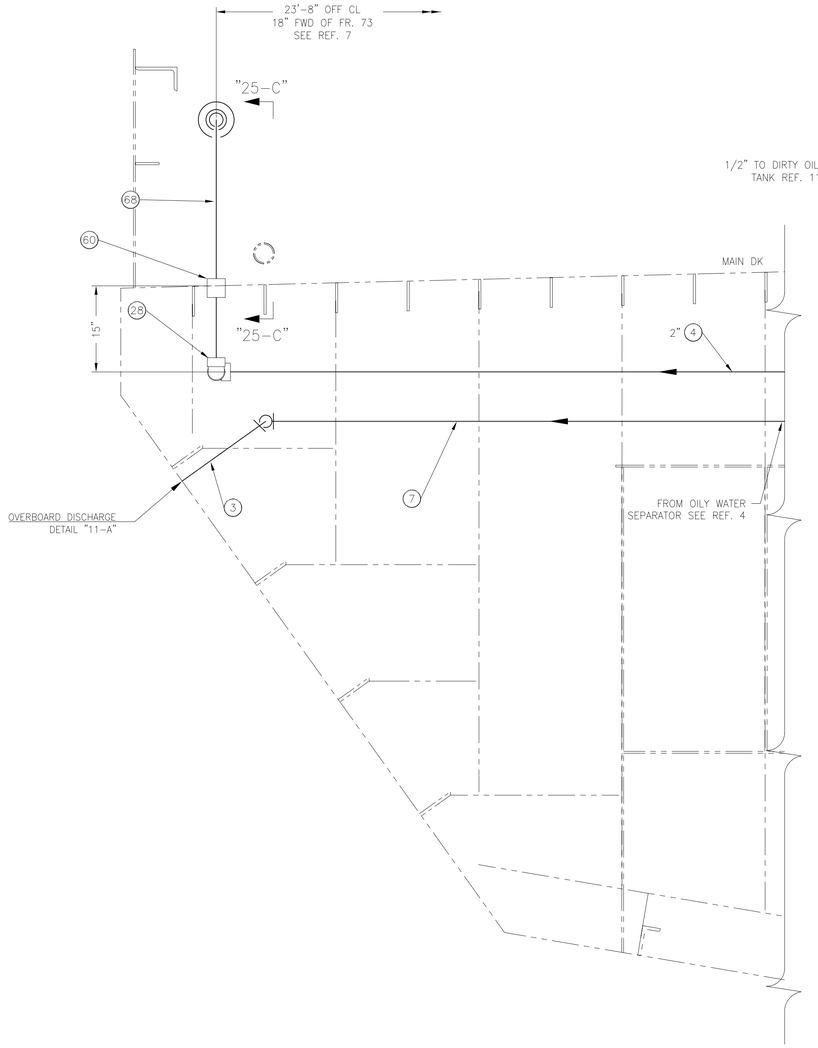
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

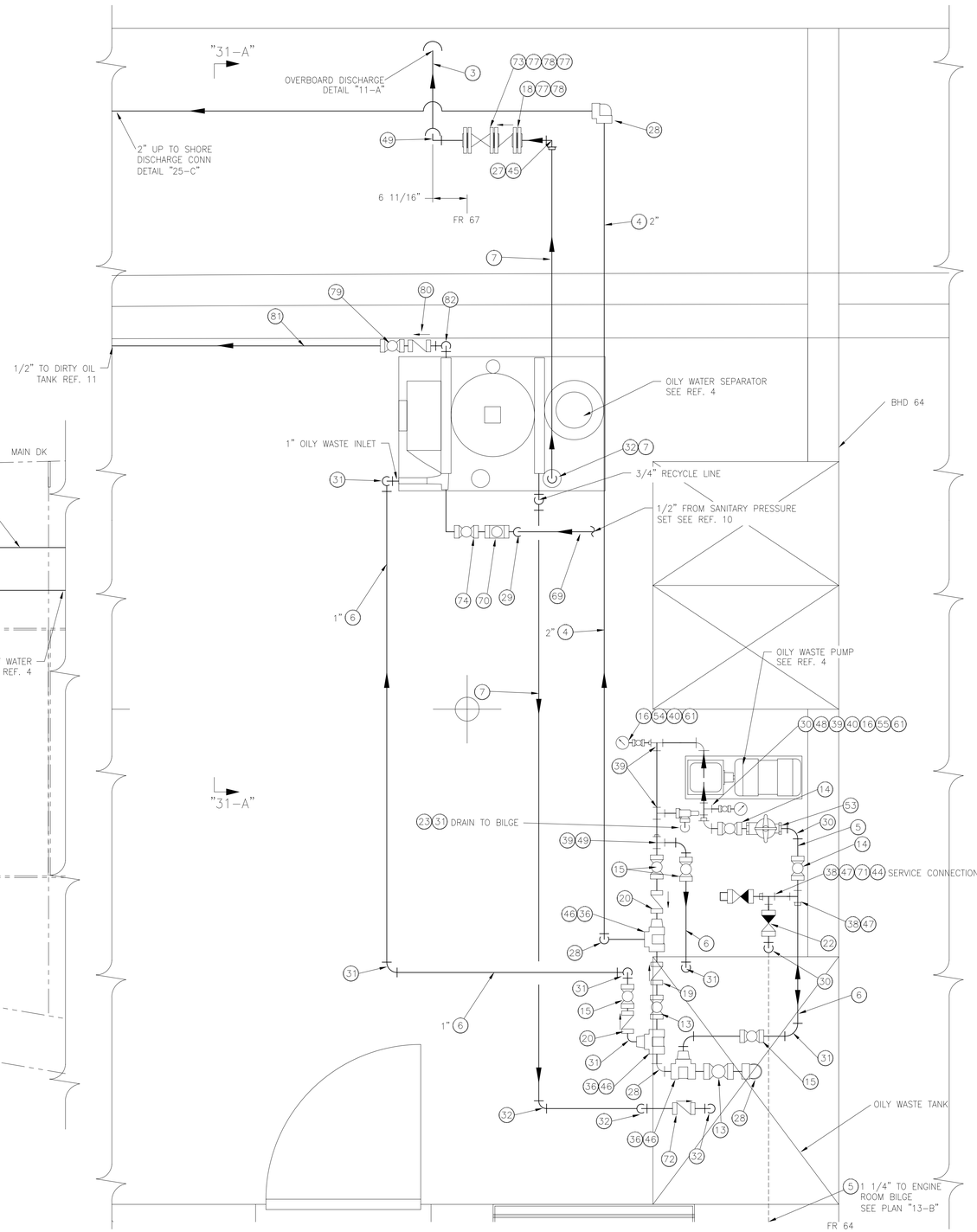
NEW SOUND CLASS FERRY

BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS

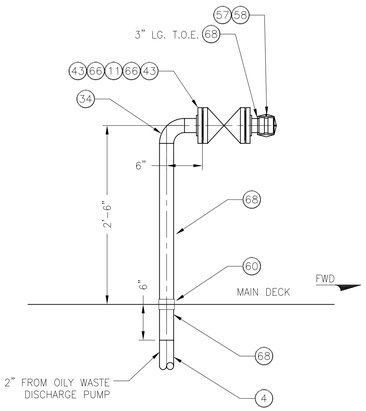
DRAWN BY: JCM	DATE: 5/14/10	DWG NO. 529-02 SHT 3 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 1



SECTION "31-A"
FR 68 LOOKING FWD
SCALE: 1"=1'-0"



PLAN "27-A"
LOWER DECK
SCALE:1"=1'-0"



NOTE:
FOR LOCATION OF OILY WASTE DISCHARGE SEE REF. 7

DETAIL "25-C"
OILY WASTE DISCHARGE
LOOKING OUTBOARD TO PORT
SCALE: 1" = 1'-0"

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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

BILGE & OILY WATER SYSTEM ARRG'T. & DETAILS

DRAWN BY: JCM	DATE: 5/14/10	DWG NO. 529-02 SHT 4 OF 4
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE/TUBING	TAKEDOWN JOINTS	FITTINGS	VALVES	
					BODY	TRIM
POTABLE & SANITARY WATER	2" & BELOW (SEE NOTE 5)	STEEL, GALV SCH 40 ASTM A53, GR B WELDED OR SMLS ANSI B36.10	UNION, GROUND JOINT MAL IRON, GALV THREADED, 150# ASTM A-197 ANSI B16.3	MAL IRON, GALV SCREWED, 150# ASTM A-197 ANSI B16.3	BALL: STAINLESS STEEL FLANGED ASTM A351/A744 CF8M	STAINLESS STEEL BALL AND STEM TEFLON SEATS AND SEALS
	1 1/2" & BELOW (SEE NOTE 5)	COPPER TUBING TYPE 'K' ASTM B-88	UNION, WROUGHT COPPER CRIMP STYLE ANSI B16.22	UNION, WROUGHT COPPER CRIMP STYLE ANSI B16.22	BALL: BRONZE SCREWED, 150# ASTM B-62 MSS-SP-110 △4 △1	BRZ TRIM
SEA CHEST CONNECTION	ALL	STEEL, BLK. SCH 80, SMLS ASTM A53, GR B ANSI B36.10	FLANGED, SLIP-ON FORGED STL, 150# ASTM A105 ANSI B16.5			

REFERENCES

1.	101-02	GENERAL ARRANGEMENTS
2.	101-01	OUTBOARD & INBOARD PROFILE
3.	200-01	MACHINERY ARRANGEMENT
4.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
5.	522-01	SPRINKLER SYSTEM SCHEMATIC
6.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
7.	533-02	POTABLE WATER SYSTEM ARRG'T. & DETAILS
△1 8.	529-01	BILGE & OILY WATER SYSTEM SCHEMATIC
△6 △1 9.	256-01	COOLING PIPING SYSTEM SCHEMATIC

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	22-B 14-D 22-D 14-C 22-C 6-D 15-B 22-B 24-B 17-B 3-D	1. ADDED FRESH WATER SUPPLY FOR THE OILY WATER SEPARATOR TO PLAN "21-B" & ADDED REF. #8. 2. ADDED SHOWER TO WHEEL HOUSE HEAD & RELOCATED WATER HEATER ON NAV BRIDGE DECK & REVISED PIPING AS PER DEVELOPMENT. 3. REMOVED FRESH & SANITARY WATER VERTICAL SUPPLY LINE FROM ELEVATOR SHAFT. 4. CORRECTED BRONZE BALL VALVE SPEC IN THE MATERIAL SCHEDULE. 5. REVISED SIZE OF PRESSURE TANK DRAINS TO MATCH REFERENCE 7. 6. ADDED EXPANSION TANK MAKE-UP LINES FOR ENGINES & ADDED REFERENCE 9 & NOTE 14.	1/20/10 2/19/10 9/8/10	JCM/KHK
2	22-B 17-B 24-B 16-B 9-B	1. ADDED SUCTION FROM SEA CHEST TO SANITARY SYSTEM AND REMOVED EXPANSION TANK MAKE-UP LINE FROM SANITARY SYSTEM PER OWNERS REQUEST. 2. ADDED SUPPLY TO EXPANSION TANK MAKE-UP LINE TO FRESH WATER SYSTEM PER OWNERS REQUEST.	4/26/11	JCM/KK
3	15-B 14-B 11-B 22-B	1. ADDED 3/4" LINE TO SPRINKLER MANIFOLD FROM FRESH WATER SUPPLY LINE. 2. ADDED 3/4" HOSE BIBB FOR MAKE UP WATER FOR CHILL WATER. 3. ADDED SINGLE SINK TO GALLEY/MESS AREA. 4. REMOVED 3/4" LINE TO SPRINKLER MANIFOLD. SYSTEM -ABOVE REVISIONS PER AS BUILT CONDITIONS-	7/23/11	JB/KK

PUMP & EQUIPMENT TABLE

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVER
2	POTABLE WATER PUMP	HORIZONTAL SELF-PRIMING CENTRIFUGAL	JACUZZI 1RM2 1 1/4" X 1"	20 GPM @ 115'	TEFC MOTOR 115V 1Φ 1HP, 3550 RPM
1	POTABLE WATER PRESSURE TANK	BLADDER	F.E. MYER'S MPD 86	86 GALLON	
1	SANITARY WATER PUMP	HORIZONTAL SELF-PRIMING CENTRIFUGAL	JACUZZI 1RM2 1 1/4" X 1"	20 GPM @ 115'	TEFC MOTOR 115V 1Φ 1HP, 3550 RPM
1	SANITARY WATER PRESSURE TANK	BLADDER	F.E. MYER'S MPD 86	86 GALLON	
1	WATER HEATER #1	ELECTRIC	RHEEM 82SV30-2	30 GALLON	6 KW 240 V, 3ø
1	WATER HEATER #2	ELECTRIC	RHEEM 82SV20-2	20 GALLON	6 KW 240 V, 3ø

PIPING SYMBOLS

– – –	HOT WATER		SIMPLEX STRAINER
———	COLD WATER		PENETRATION SLEEVE
—○	PIPE UP		REDUCER
—⊃	PIPE DOWN	P	PRESSURE GAUGE W/SHUT-OFF VALVE
	BALL VALVE	VP	VACUUM PRESSURE GAUGE W/SHUT-OFF VALVE
	SWING CHECK VALVE		CENTRIFUGAL PUMP
	PRESSURE RELIEF VALVE	PS	PRESSURE SWITCH
	FW SPIGOT CONNECTION		FLEXIBLE CONNECTION
	BACKFLOW PREVENTER		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. THE POTABLE & SANITARY WATER PRESSURE TANKS SHALL BE FITTED WITH A 85 PSIG SAFETY RELIEF VALVE. THE WATER HEATER SHALL BE FITTED WITH A TEMPERATURE/PRESSURE RELIEF VALVE.
3. COPPER TUBE SHALL BE ADEQUATELY SUPPORTED BY PIPE HANGERS USING RUBBER OR NYLON GROMMETS BETWEEN HANGER AND PIPE.
4. PIPE WITHIN THE ELEVATOR SHAFT AND ALL COLD AND HOT WATER PIPING WITHIN THE ENGINE ROOM SHALL BE INSULATED WITH 1" PREFORMED HIGH DENSITY FIBERGLASS WITH ALUMINUM FOIL LAGGING.
5. AT CONTRACTOR OPTION, COPPER TUBING WITH CRIMP STYLE FITTINGS MAY BE USED IN FRESH & SANITARY WATER PIPING AFTER THE PRESSURE PUMP AND WATER HEATER IN LIEU OF STEEL PIPE AND FITTINGS.
6. WATER HEATER THERMOSTAT SHALL BE SET FOR 120 DEGREES F.
7. POTABLE PRESSURE PUMP SHALL BE SET TO START AT 60 PSIG AND STOP AT 75 PSIG.
8. AFTER INSTALLATION, THE SYSTEM SHALL BE HYDROSTATICALLY TESTED TO A PRESSURE IN EXCESS OF THE MAXIMUM ATTAINABLE PUMP PRESSURE.
9. AFTER INSTALLATION IS COMPLETE, POTABLE WATER SYSTEM SHALL BE CLEANED, SANITIZED, AND FLUSHED PER USPHS REQUIREMENTS.
10. ALL CONNECTIONS TO NON-POTABLE WATER SYSTEMS SHALL BE FITTED WITH BACKFLOW PREVENTERS TO ELIMINATE CONTAMINATION.
11. WATER HAMMER ARRESTORS SHALL BE INSTALLED IN SUPPLY LINES TO ANY UNIT WHERE SLOW-CLOSING VALVES ARE NOT USED.
12. A 50 FT. COMMERCIAL GRADE WATER HOSE WITH PERMANENTLY ATTACHED BRASS COUPLINGS AND BRASS NOZZLES, AND WITH HOSE REEL SHALL BE INSTALLED AT EACH HOSE BIBB.
13. BULKHEAD OR DECK PENETRATIONS SHALL MAINTAIN THE STRUCTURAL AND FIRE INTEGRITY OF THE BULKHEAD OR DECK PENETRATED.
14. A FRESH WATER LINE SHALL BE INSTALLED FROM THE SANITARY WATER SYSTEM TO EACH ENGINE EXPANSION TANK WITH A 2" MINIMUM AIR GAP.

SYSTEM DESIGN CONDITIONS

PRESSURE	99 PSIG (MAX)
TEMPERATURE	210 F (MAX)

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-533-01

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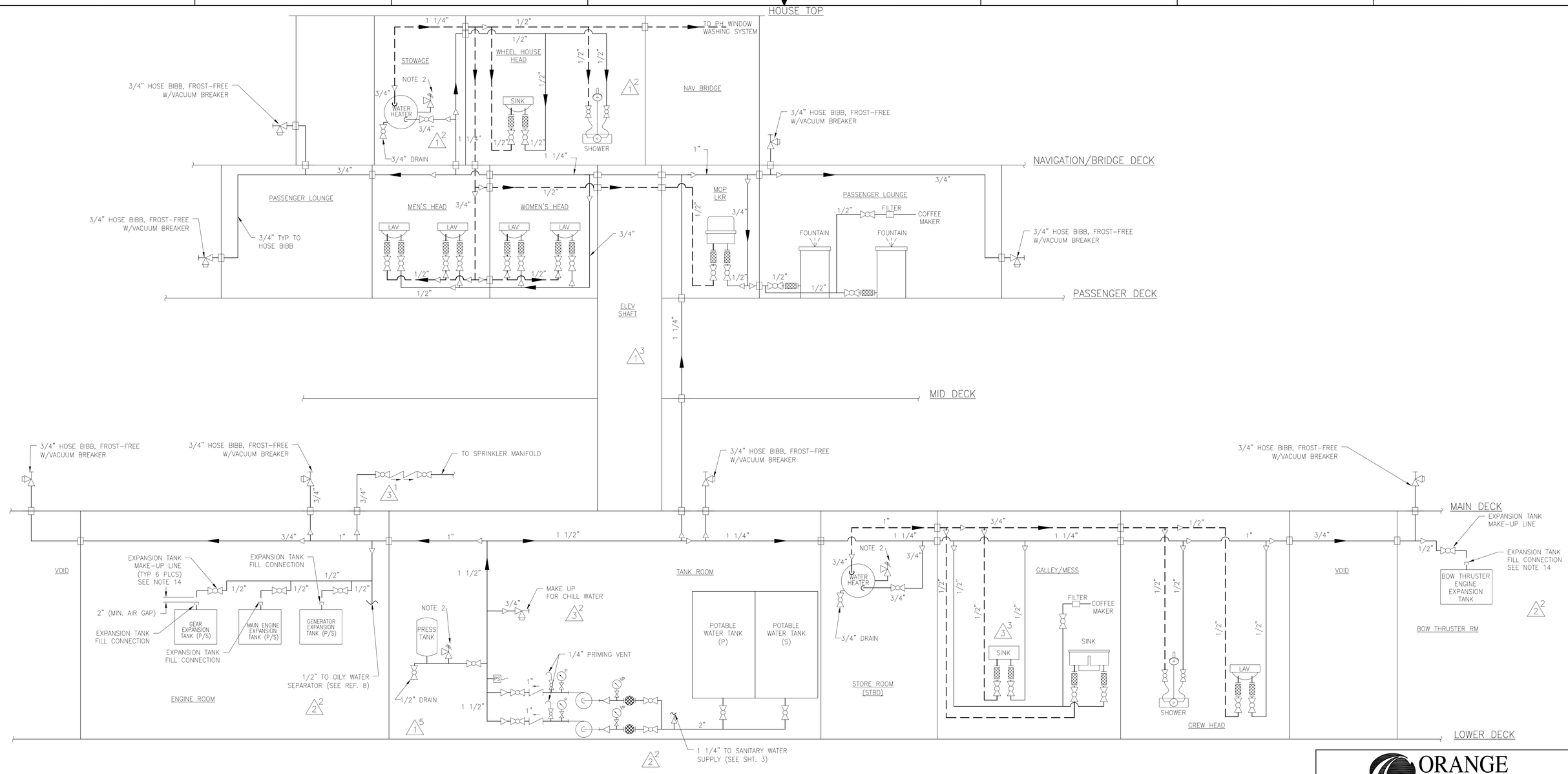
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NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM SCHEMATIC

DRAWN BY:	JM	DATE: 1/14/10	DWG NO. 533-01 SHT 1 OF 3
CK'D BY:	RA/KK	HULL No. 413	
SCALE:	NONE	G&C Job No. 09-060	REV. 3



PLAN "13-B"
FRESH WATER SUPPLY
SCALE: NONE

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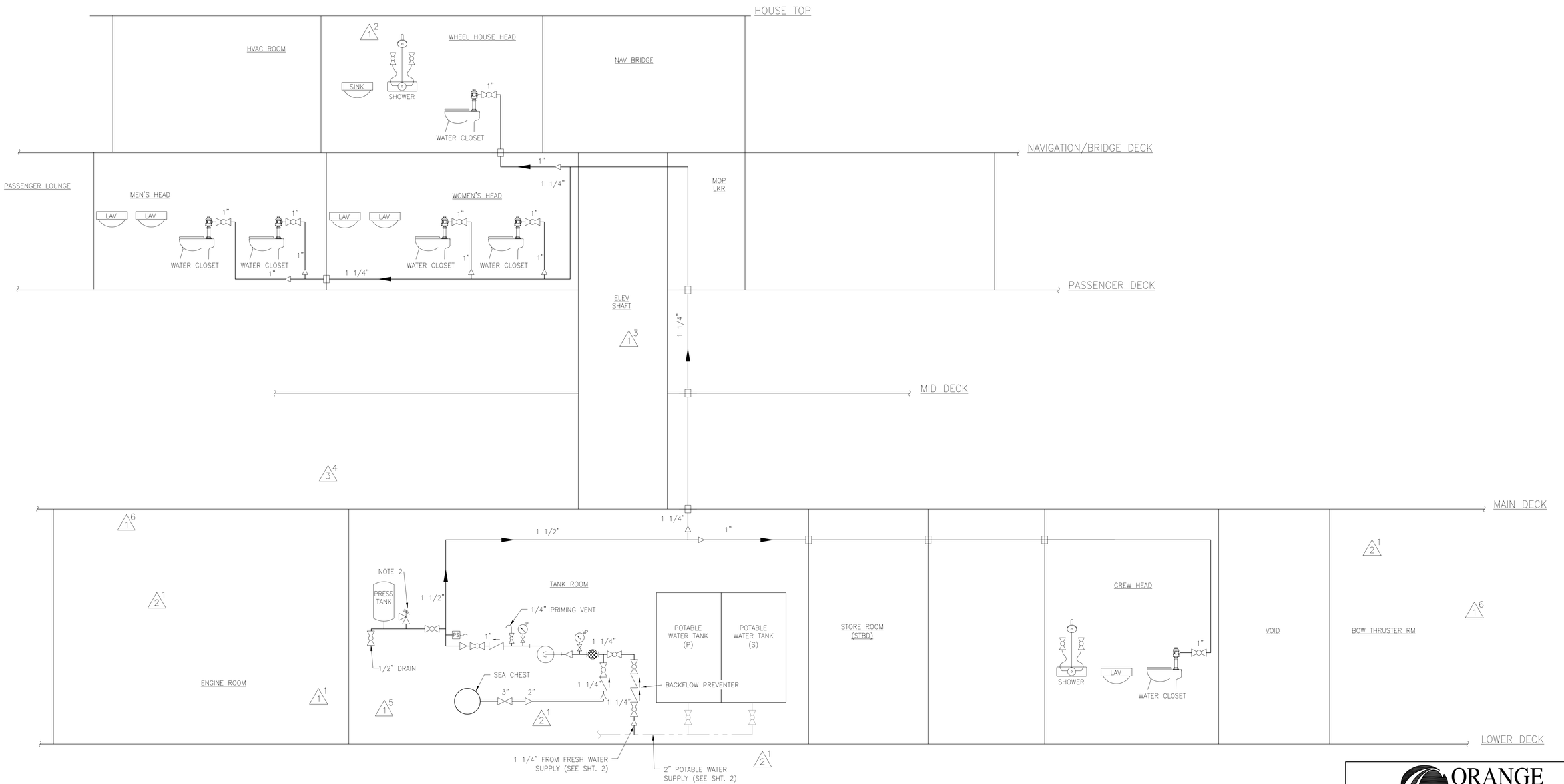
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NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM SCHEMATIC

DRAWN BY: JM	DATE: 1/14/10	DWG NO. 533-01 SHT 2 OF 3
CK'D BY: RA/KK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 3



PLAN "21-B"

SANITARY FLUSHING WATER SUPPLY

SCALE: NONE

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NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM SCHEMATIC

DRAWN BY:	JM	DATE: 1/14/10	DWG NO. 533-01
CK'D BY:	RA/KK	HULL No. 413	SHT 3 OF 3
SCALE:	NONE	G&C Job No. 09-060	REV. 3

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
1	20 LF	PIPE, 2", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
2	80 LF	PIPE, 1 1/2", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
3	80 LF	PIPE, 1 1/4", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
4	50 LF	PIPE, 1", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
5	100 LF	PIPE, 3/4", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
6	1 LF	PIPE, 1/4", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
7	6 LF	PIPE, 3/4", SCH 40, SEAMLESS	STAINLESS STL 316	ASTM A-312, TYPE 316	ANSI B36.19
8	60 LF	TUBING, 1 1/4", TYPE "K"	COPPER	ASTM B-88	
9	30 LF	TUBING, 1", TYPE "K"	COPPER	ASTM B-88	
10	150 LF	TUBING, 3/4", TYPE "K"	COPPER	ASTM B-88	
11	220 LF	TUBING, 1/2", TYPE "K"	COPPER	ASTM B-88	
12	1 LF	TUBING, 1/4", TYPE "K"	COPPER	ASTM B-88	
13	140 LF	PIPE, 1/2", SCH 40, SEAMLESS, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
14	1	BACKFLOW PREVENTER, 1 1/4" FPT, 200#, FEM THD	BRONZE	ASTM B-584	WATTS MOD 719 OR EQ
15	4	BALL VALVE, 2", 150#, FLG'D, FULL PORT, CF8M, SS BALL & STEM, TEFLON SEATS & SEALS	STAINLESS STEEL	ASTM A-351	
16	4	BALL VALVE, 1 1/4" FEM THD, 400#	BRONZE	ASTM B-62	MSS SP-110, FULL PORT
17	3	BALL VALVE, 1" FPT, 400#, FEM THD	BRONZE	ASTM B-62	MSS SP-110, FULL PORT
18	2	BALL VALVE, 3/4" FPT, 400#, FEM THD	BRONZE	ASTM B-62	MSS SP-110, FULL PORT
19	10	BALL VALVE, 1/2" FPT, 400#, FEM THD	BRONZE	ASTM B-62	MSS SP-110, FULL PORT
20	9	BALL VALVE, 1/4" FPT, 400#, FEM THD	BRONZE	ASTM B-62	MSS SP-110, FULL PORT
21	3	SWING CHECK VALVE, 1" FPT, 200#, FEM THD	BRONZE	ASTM B-584	MSS SP-80
22	1	SWING CHECK VALVE, 1/2" FPT, 200#, FEM THD	BRONZE	ASTM B-584	MSS SP-80
23	6	HOSE BIBB VALVE, FROST FREE W/VACUUM BREAKER, 3/4" FPT	BRONZE	COML	
24	1	PRESSURE RELIEF VALVE, 1 1/4" FEM THD, 300#	BRONZE	ASTM B-62	MSS SP-80, SEE NOTE 3
25	4	ELBOW, 90°, 3/4", 3000#, THD	STAINLESS STEEL	ASTM A-182	ANSI B16.11
26	7	ELBOW, 90°, 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
27	9	ELBOW, 90°, 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
28	9	ELBOW, 90°, 2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
29	8	ELBOW, 90°, 1 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
30	4	ELBOW, 90°, 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
31	7	ELBOW, 90°, 1", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
32	20	ELBOW, 90°, 1 1/2", WROUGHT, CRIMP STYLE, C x C	COPPER	ASTM B-75	ANSI B16.22
33	2	ELBOW, 90°, 1 1/4", WROUGHT, CRIMP STYLE, C x C	COPPER	ASTM B-75	ANSI B16.22
34	13	ELBOW, 90°, 1", WROUGHT, CRIMP STYLE, C x C	COPPER	ASTM B-75	ANSI B16.22
35	7	ELBOW, 90°, 3/4", WROUGHT, CRIMP STYLE, C x C	COPPER	ASTM B-75	ANSI B16.22
36	31	ELBOW, 90°, 1/2", WROUGHT, CRIMP STYLE, C x C	COPPER	ASTM B-75	ANSI B16.22
37	3	TEE, 2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
38	8	TEE, 1 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
39	4	TEE, 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
40	7	TEE, 1", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
41	1	TEE, 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
42	3	TEE, 3/4" x 3/4" x 1/2", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
43	3	TEE, 1", WROUGHT, CRIMP STYLE, C x C x C	COPPER	ASTM B-75	ANSI B16.22
44	4	TEE, 3/4", WROUGHT, CRIMP STYLE, C x C x C	COPPER	ASTM B-75	ANSI B16.22
45	1	TEE, 1" x 3/4" x 1", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
46	1	TEE, 3/4" x 1/2" x 3/4", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
47	4	TEE, 1 1/4" x 1 1/4" x 3/4", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
48	2	TEE, 1" x 3/4" x 1/2", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
49	8	TEE, 1" x 1" x 1/2", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
50	4	TEE, 3/4" x 1/2" x 1/2", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
51	2	TEE, 1 1/4", PRESS FIT, C x C x C	COPPER	ASTM B-75	ANSI B16.22
52	13	REDUCER, 1 1/4" x 1", PRESS FIT, C x C	COPPER	ASTM B-75	ANSI B16.22
53	3	REDUCER, 1" x 1/2", PRESS FIT, C x C	COPPER	ASTM B-75	ANSI B16.22
54	6	REDUCER, 1 1/4" x 3/4", PRESS FIT, C x C	COPPER	ASTM B-75	ANSI B16.22
55	3	BUSHING, 1 1/4" x 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
56	3	BUSHING, 1 1/4" x 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
57	4	BUSHING, 1" x 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
58	3	BUSHING, 1 1/2" x 1", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
59	3	BUSHING, 1 1/2" x 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
60	4	BUSHING, 1 1/2" x 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
61	1	BUSHING, 1 1/2" x 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
62	2	BUSHING, 1 1/4" x 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
63	3	BUSHING, 2" x 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3

LIST OF MATERIALS CONT. ON SHEET 2

REFERENCES

1.	101-01	OUTBOARD AND INBOARD PROFILE
2.	101-02	GENERAL ARRANGEMENTS
3.	200-01	MACHINERY ARRANGEMENT
4.	533-01	POTABLE WATER SYSTEM SCHEMATIC
5.	522-01	SPRINKLER SYSTEM SCHEMATIC
6.	506-01	FILLS, VENTS & SOUNDS SCHEMATIC
7.	320-01	ELECTRICAL ONE-LINE DIAGRAM, AC SYSTEM
8.	529-02	BILGE & OILY WATER SYSTEM ARRG'T & DETS
9.	256-01	COOLING PIPING SYSTEM SCHEMATIC
10.	163-01	SEA CHEST

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	19-B 26-C 32-A 15-D 7-D	1. ADDED SUCTION FROM SEA CHEST TO SANITARY SYSTEM AND REMOVED EXPANSION TANK MAKE-UP LINE FROM SANITARY SYSTEM AND ADDED SUPPLY TO EXPANSION TANK MAKE-UP LINE FROM FRESH WATER SYSTEM AND REVISED B.O.M. PER OWNERS REQUEST.	3/16/11	JCM/KK
	3-D	2. ADDED REFERENCE 10.		
	35-B	3. REVISED CO2 LKR ARRGT PER AS-BUILT.	4/26/11	
	42-C	4. RELOCATED DRINKING FOUNTAIN PER AS-BUILT.		
	42-C	5. ADDED LINE TO PASSENGER LOUNGE COFFEE MAKER.		
	44-B	6. DELETED INDICATION OF PASSENGER LOUNGE SEATING.		

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER "H" VESSELS AND AMERICAN BUREAU OF SHIPPING RULES FOR VESSELS UNDER 90 METERS.
2. EQUIPMENT LAYOUT WITHIN A GIVEN AREA IS ONLY APPROXIMATE. PROVISION OF EQUIPMENT SHALL BE AS SHOWN ON THIS DRAWING AND AS DESCRIBED BY CONTRACT SPECIFICATION.
3. THE POTABLE & SANITARY WATER PRESSURE TANKS SHALL BE FITTED WITH A 85 PSIG SAFETY RELIEF VALVE. THE WATER HEATERS SHALL BE FITTED WITH A TEMPERATURE/PRESSURE RELIEF VALVE.
4. COPPER TUBE SHALL BE ADEQUATELY SUPPORTED BY PIPE HANGERS USING RUBBER GROMMETS BETWEEN HANGER AND PIPE.
5. PIPE WITHIN THE ENGINE ROOM AND UNHEATED SPACES SHALL BE INSULATED WITH 1" PREFORMED HIGH DENSITY FIBERGLASS WITH ALUMINUM FOIL LAGGING.
6. AT CONTRACTOR OPTION, TYPE 'K' COPPER TUBING AND FITTINGS MAY BE USED IN FRESH WATER PIPING AFTER THE PRESSURE PUMP AND WATER HEATER.
7. WATER HEATER THERMOSTAT SHALL BE SET FOR 120 DEGREES F.
8. POTABLE PRESSURE PUMP SHALL BE SET TO START AT 60 PSIG AND STOP AT 75 PSIG.
9. AFTER INSTALLATION, THE SYSTEM SHALL BE HYDROSTATICALLY TESTED TO A PRESSURE IN EXCESS OF THE MAXIMUM ATTAINABLE PUMP PRESSURE.
10. AFTER INSTALLATION IS COMPLETE, POTABLE WATER SYSTEM SHALL BE CLEANED, SANITIZED, AND FLUSHED PER USPHS REQUIREMENTS.
11. ALL CONNECTIONS TO NON-POTABLE WATER SYSTEMS SHALL BE FITTED WITH BACKFLOW PREVENTERS TO ELIMINATE CONTAMINATION.
12. WATER HAMMER ARRESTORS SHALL BE PROVIDED AND INSTALLED IN SUPPLY LINES TO ANY UNIT WHERE SLOW-CLOSING VALVES ARE NOT USED.
13. MATERIALS FOR PILOTHOUSE WINDOW WASHING SYSTEM ARE NOT INCLUDED. SEE SECTION 662.4 OF THE CONTRACT SPECIFICATION.
14. A FRESH WATER LINE SHALL BE INSTALLED FROM THE SANITARY WATER SYSTEM TO EACH ENGINE EXPANSION TANK WITH A 2" MINIMUM AIR GAP.

THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-533-2

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ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 9/8/10	DWG NO. 533-02	
CK'D BY: KHK	HULL No. 413	SHT 1 OF 8	
SCALE: NONE	G&C Job No. 09-060	REV. 1	

LIST OF MATERIALS

PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
64	1	BUSHING, 2" x 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
65	4	UNION, 1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
66	5	UNION, 1", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
67	1	UNION, 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
68	3	UNION, 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
69	21	ADAPTER, 3/4", WROUGHT, CRIMP STYLE, C x MPT	COPPER	ASTM B-75	ANSI B16.22
70	5	ADAPTER, 1 1/4", PRESS FIT, C x MPT	COPPER	ASTM B-75	ANSI B16.22
71	23	ADAPTER, 1/2", WROUGHT, CRIMP STYLE, C x MPT	COPPER	ASTM B-75	ANSI B16.22
72	2	ADAPTER, 1 1/2" MPT x 1", PRESS FIT, C x MPT	COPPER	ASTM B-75	ANSI B16.22
73	3	COUPLING, FULL, 1", 3000#, THD	STAINLESS STEEL	ASTM A-182	ANSI B16.11
74	2	PRESSURE RELIEF VALVE, 3/4" FEM THD, 300#	BRONZE	ASTM B-62	MSS SP-80
75	4	FILTER, 1/2", WATTS FH4200CW12 FLOWMATIC CLEAR FILTER HOUSING	PLASTIC		w/CARBON FILTER
76	3	NIPPLE, 1/2", 3000#, CLOSE, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
77	10	NIPPLE, 1/4", 3000#, CLOSE, GALV.	CARBON STEEL	ASTM A-53	ANSI B36.10
78	3	STRAINER, SIMPLEX, 1 1/4", FEM THD	CAST IRON	COML	
79	3	PRESSURE GAUGE, 0-100 PSI, 2 1/2" DIAL, 1/4" MPT BOTTOM CONN	VARIOUS	COML	
80	3	VACUUM PRESSURE GAUGE, 30-0-30, 2 1/2" DIAL, 1/4" MPT BOTTOM CONN	VARIOUS	COML	
81	4	FLANGE, 2", 150#, RAISED FACE, SLIP-ON	CARBON STEEL	ASTM A-105	ANSI B16.5
82	4	GASKET, 2", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
83	16	COUPLING, FULL, 3/4", 3000#, THD	STAINLESS STEEL	ASTM A-182	ANSI B16.11
84	3	COUPLING, FULL, 1 1/4", 3000#, THD	STAINLESS STEEL	ASTM A-182	ANSI B16.11
85	2	PIPE SLEEVE, 2 1/2", DECK/BHD PENETRATION, SCH 10. 3" LG, FOR 2" PIPE	CARBON STEEL	ASTM A-53	ANSI B36.10
86	4	PIPE SLEEVE, 2", DECK/BHD PENETRATION, SCH 10. 3" LG, FOR 1 1/2" PIPE	CARBON STEEL	ASTM A-53	ANSI B36.10
87	5	PIPE SLEEVE, 1 1/2", DECK/BHD PENETRATION, SCH 10. 3" LG, FOR 1 1/4" PIPE	CARBON STEEL	ASTM A-53	ANSI B36.10
88	1	ADAPTER, 1" x 1 1/4", PRESS FIT, C x MPT	COPPER	ASTM B-75	ANSI B16.22
89	2	ADAPTER, 1", WROUGHT, CRIMP STYLE, C x MPT	COPPER	ASTM B-75	ANSI B16.22
90	2	REDUCER, 1"x3/4", PRESS FIT, C x C	COPPER	ASTM B-75	ANSI B16.22
91	1	BUSHING, 3/4" x 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
92	5	TEE, 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
93	2	COUPLING, FULL, 1/2", 3000#, THD	STAINLESS STEEL	ASTM A-182	ANSI B16.11
94	2	BUSHING, 1" x 1/2", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
95	1	BUSHING, 1" x 3/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
96	2	FLANGE, 3", 150#, RAISED FACE, SLIP-ON	CARBON STEEL	ASTM A-105	ANSI B16.5
97	2	GASKET, 3", FULL FACE, 1/8" THICK	ARAMID FIBERS W/ A NITRILE BINDER	ASTM F586	GARLOCK BLUE GUARD 3000
98	1	GATE VALVE, 3", 150# FLANGED, RF, CRES STEM & DISC	CARBON STL	ASTM A216	ANSI B16.34
99	1	REDUCER, CONCENTRIC 3"x2", B.W., SCH 40	CARBON STL	ASTM A234	ANSI B16.9
100	1	REDUCER, 2"x1 1/4", 150#, GALVANIZED, FEM THD	MAL IRON	ASTM A-197	ANSI B16.3
101	1 FT	PIPE, 3", X-STRG., SEAMLESS (1/2" WALL)	CARBON STL	ASTM A53, GR B	ANSI B36.10
102	1	SWING CHECK VALVE, 1 1/4" FPT, 200#, FEM THD	BRONZE	ASTM B-584	MSS SP-80
103	1	ELBOW 90°, 150#, SCH. 40, B.W.	BLK STL	ASTM A-234	ANSI B16.9

71 △1,5 1
73 △1 1
75 △5 1
83 △1 1
93 △1 1

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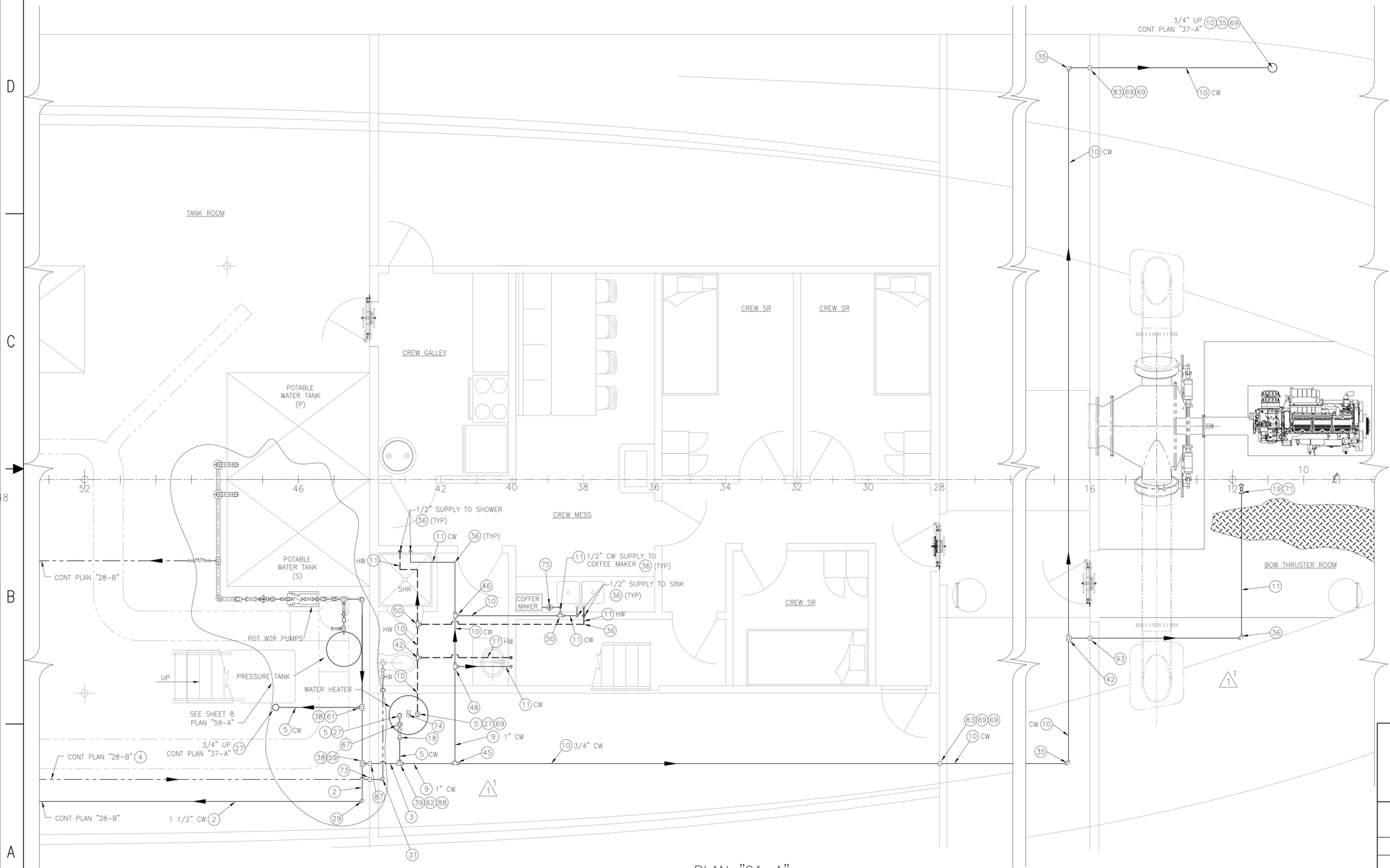
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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM
ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 9/8/10	DWG NO. 533-02 SHT 2 OF 8
CK'D BY: KHK	HULL No. 413	
SCALE: NONE	G&C Job No. 09-060	REV. 1



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

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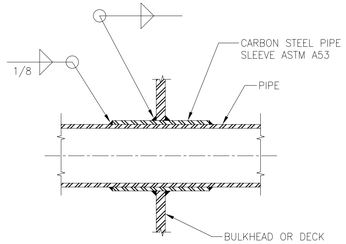
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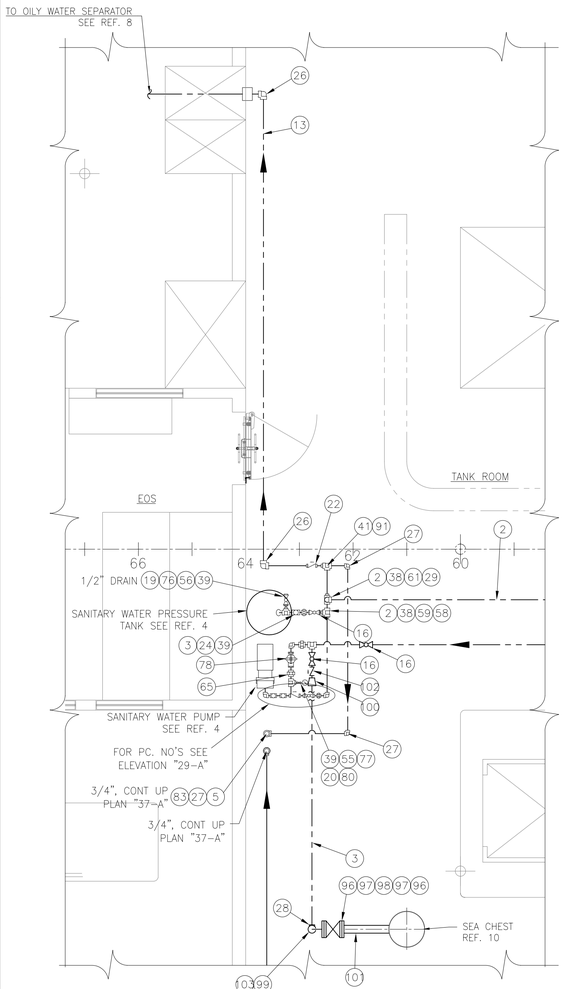
ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM ARRANGEMENT & DETAILS

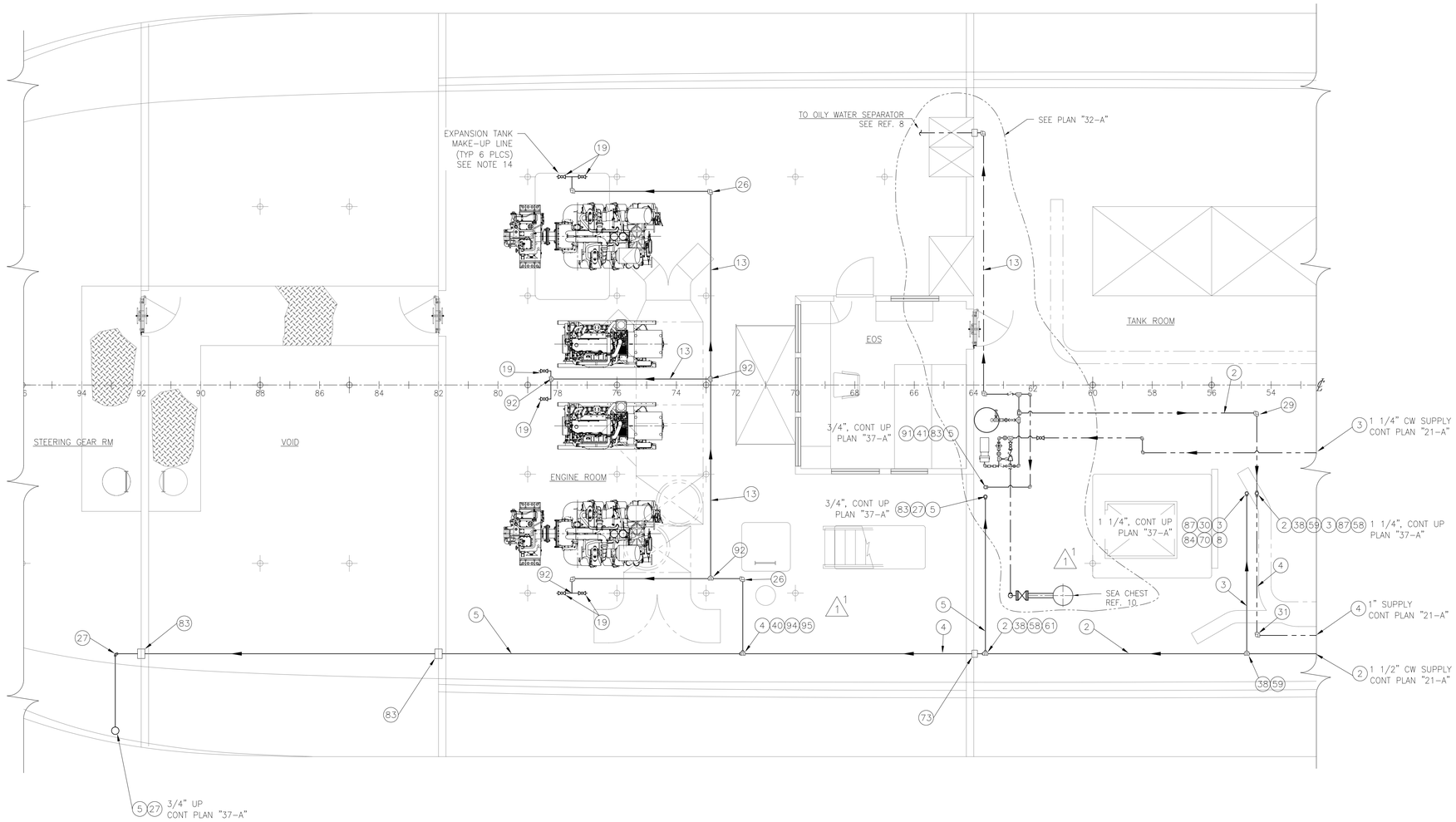
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CK'D BY: KHK	HULL No. 413	
SCALE: 3/8"=1'-0"	G&C Job No. 09-060	REV. 1



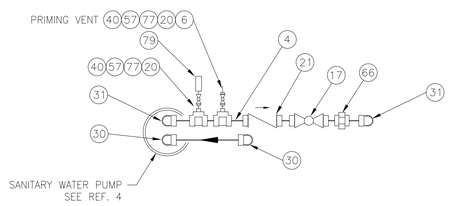
DETAIL "32-C"
TYPICAL DECK/WT BHD PENETRATION
SCALE: NONE



PLAN "32-A"
TANK ROOM SANITARY SYSTEM
SCALE: 3/8"=1'-0"



PLAN "28-B"
LOWER DECK AFT
SCALE: 1/4" = 1'-0"



ELEVATION "29-A"
SANITARY PUMP DISCHARGE PIPING
SCALE: 1"=1'-0"

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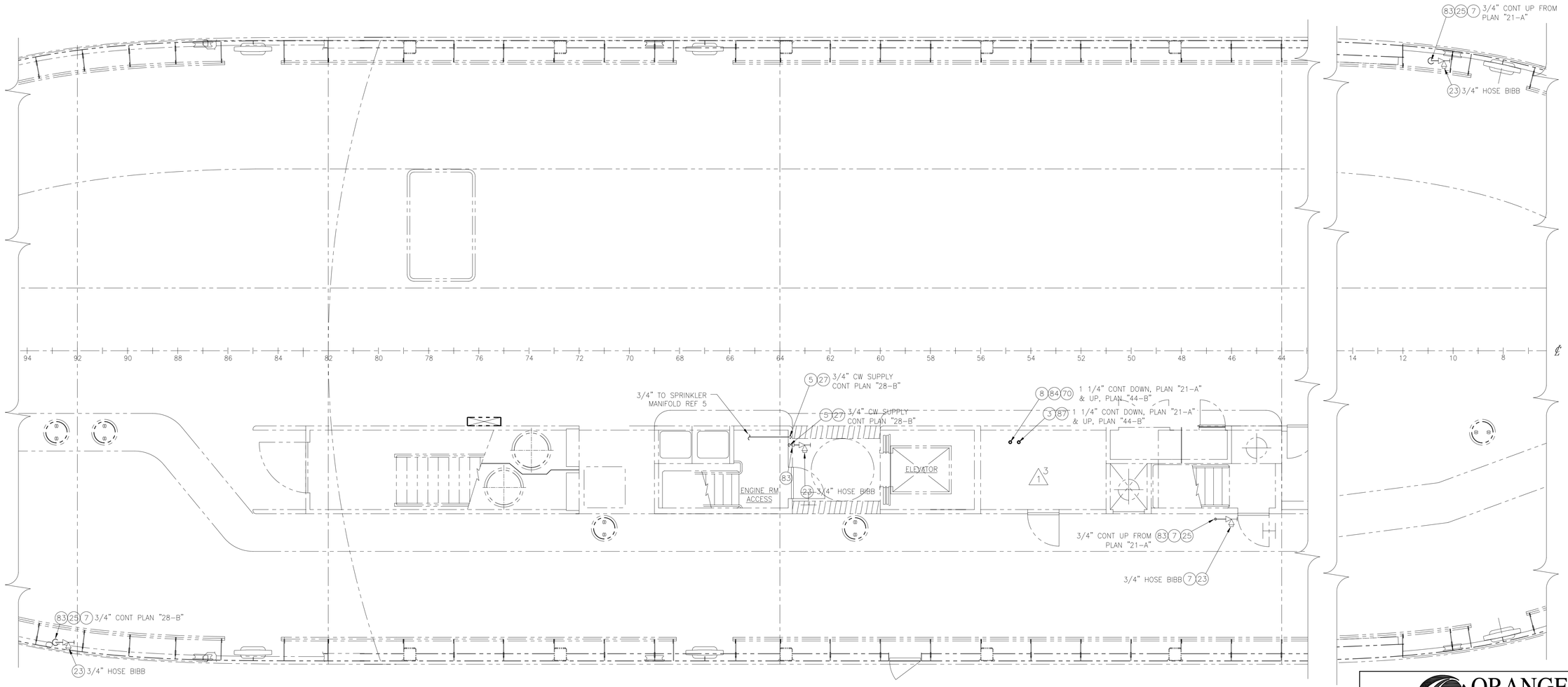
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POTABLE WATER SYSTEM
ARANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 9/8/10	DWG NO.	533-02
CK'D BY: KHK	HULL No. 413	SHT 4 OF 8	
SCALE: NOTED	G&C Job No. 09-060	REV. 1	



PLAN "37-A"

MAIN DECK

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

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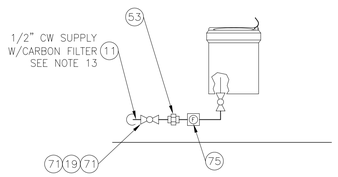
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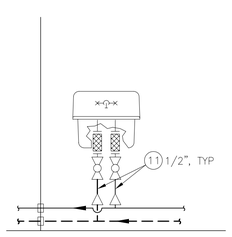
NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM ARRANGEMENT & DETAILS

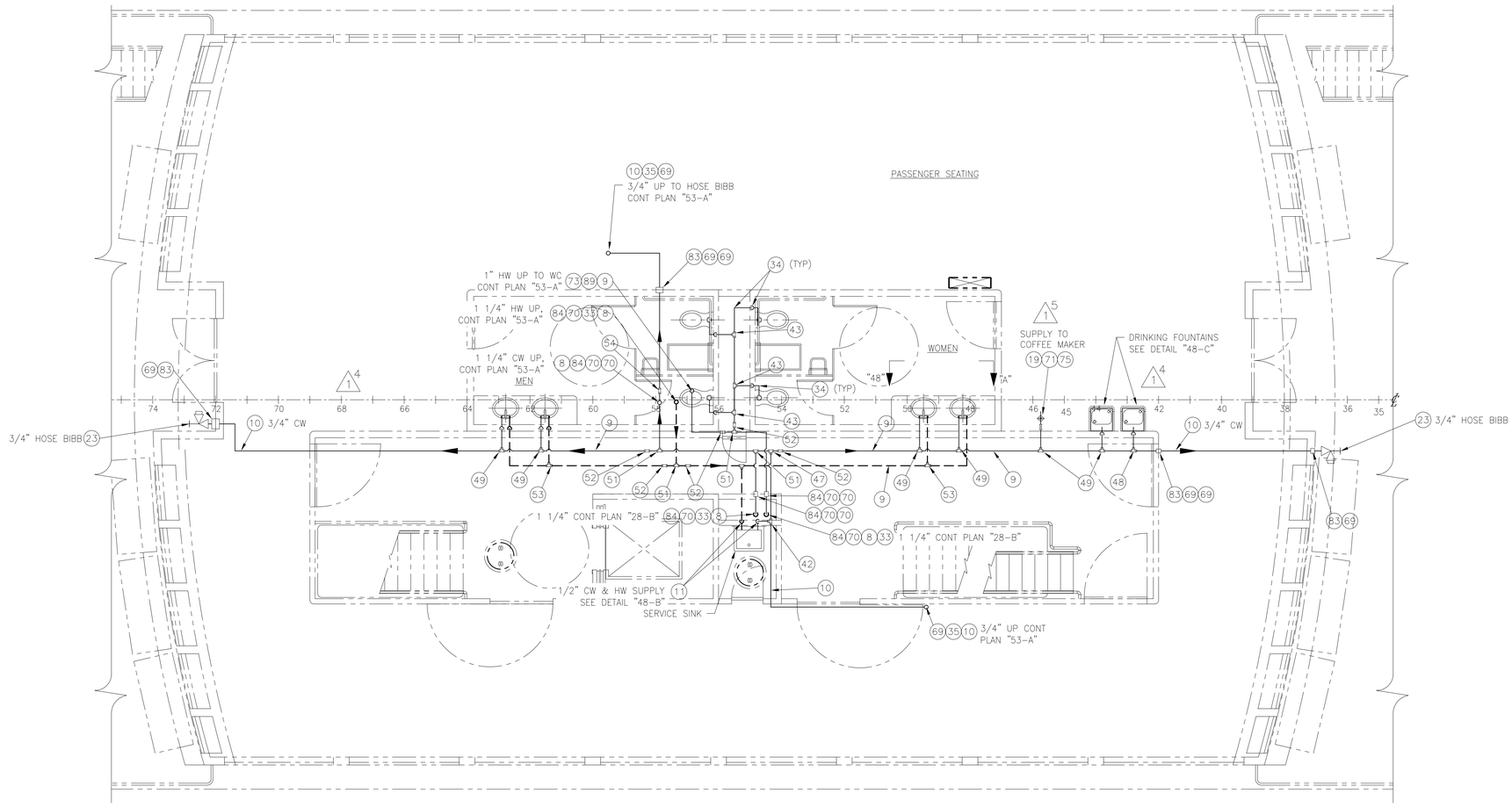
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CK'D BY:	KHK	HULL No. 413	
SCALE:	1/4"=1'-0"	G&C Job No. 09-060	REV. 1



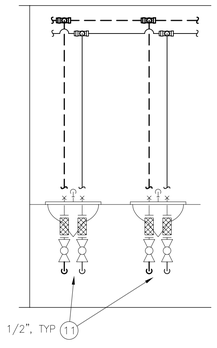
DETAIL "48–C"
DRINKING FOUNTAIN SUPPLY
NOT TO SCALE



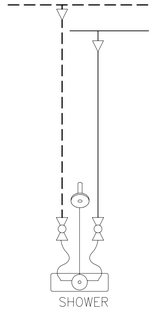
DETAIL "48–B"
SERVICE SINK SUPPLY
NOT TO SCALE



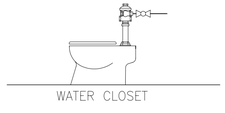
PLAN "44–B"
PASSENGER DECK
SCALE: 1/4" = 1'–0"



DETAIL "48–A"
TYPICAL LAVATORY SUPPLY
NOT TO SCALE



DETAIL "46–A"
TYPICAL SHOWER SUPPLY
NOT TO SCALE



DETAIL "45–A"
TYPICAL WATER CLOSET SUPPLY
NOT TO SCALE

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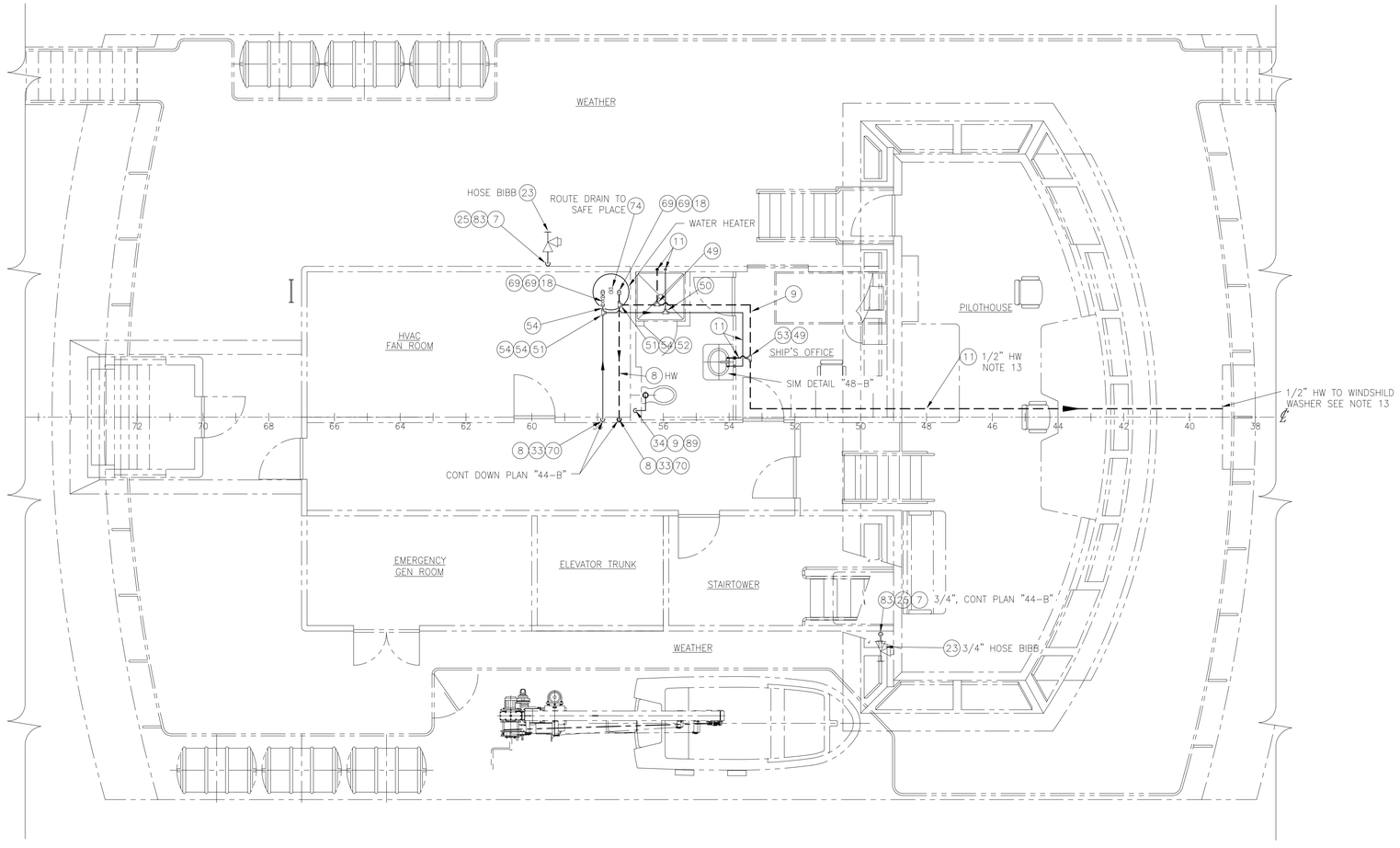
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NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 9/8/10	DWG NO. 533–02 SHT 6 OF 8
CK'D BY: KHK	HULL No. 413	
SCALE: NOTED	G&C Job No. 09–060	REV. 1



PLAN "53-A"
NAVIGATION BRIDGE DECK
SCALE: 1/4" = 1'-0"

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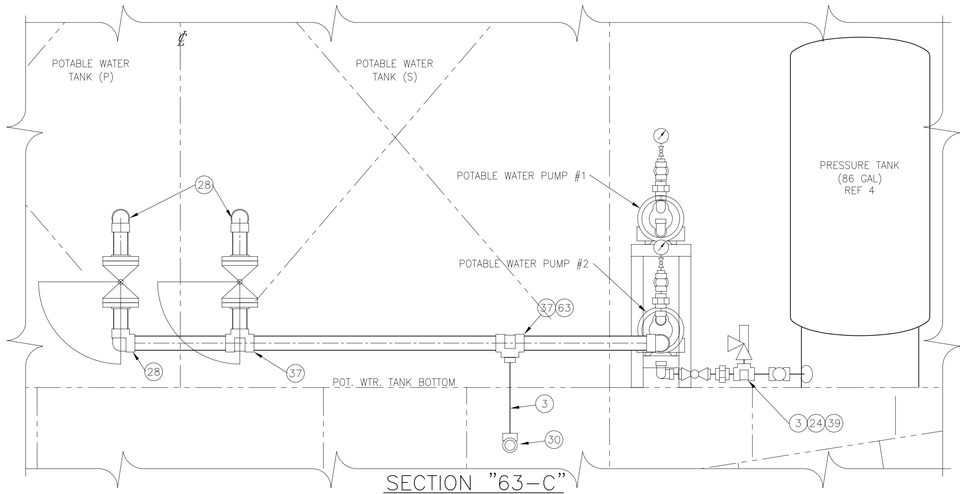
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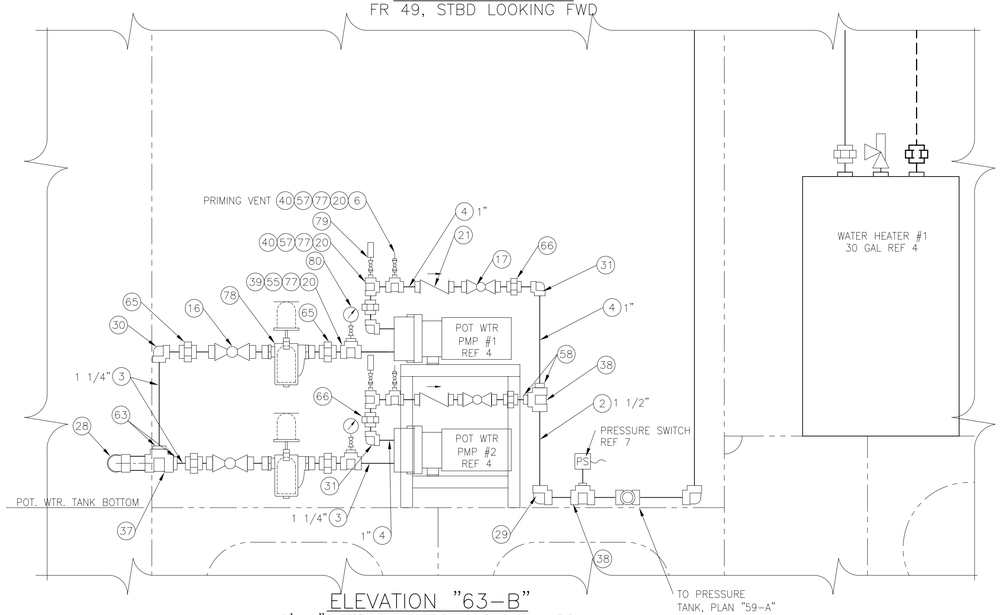
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NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

POTABLE WATER SYSTEM
ARRANGEMENT & DETAILS

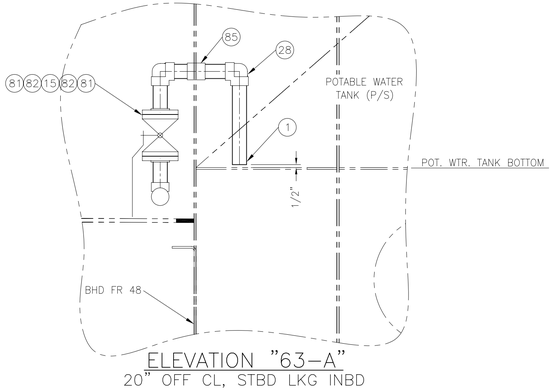
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SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 1



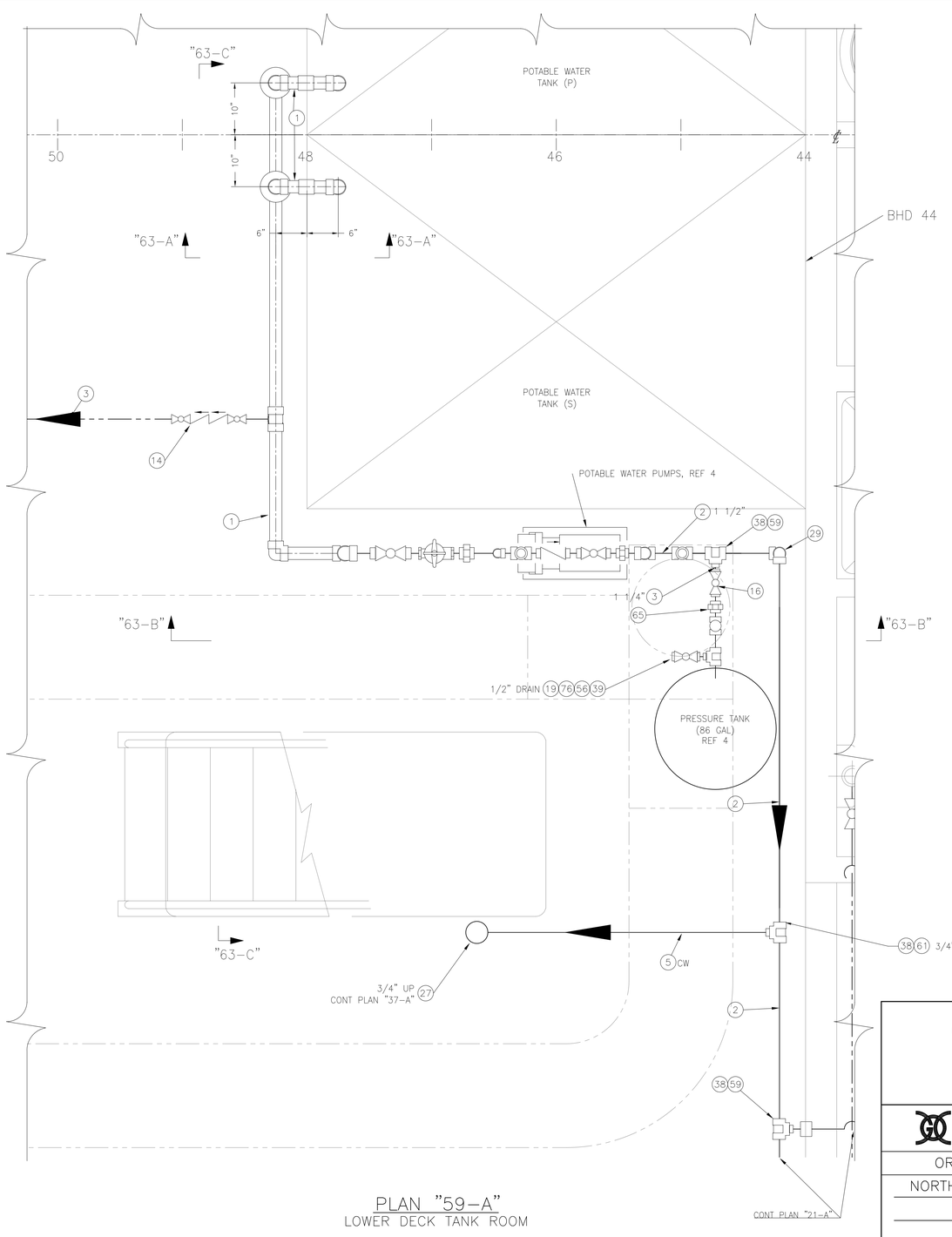
SECTION "63-C"
FR 49, STBD LOOKING FWD



ELEVATION "63-B"
8'-0" OFF CL, STBD LOOKING INBD



ELEVATION "63-A"
20" OFF CL, STBD LKG INBD



PLAN "59-A"
LOWER DECK TANK ROOM

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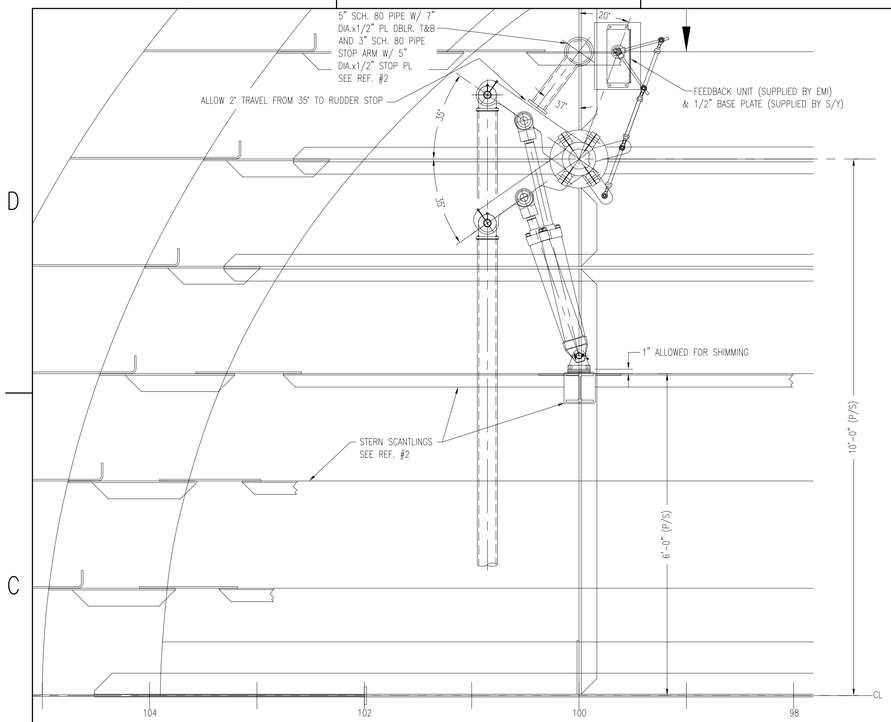
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NEW SOUND CLASS FERRY

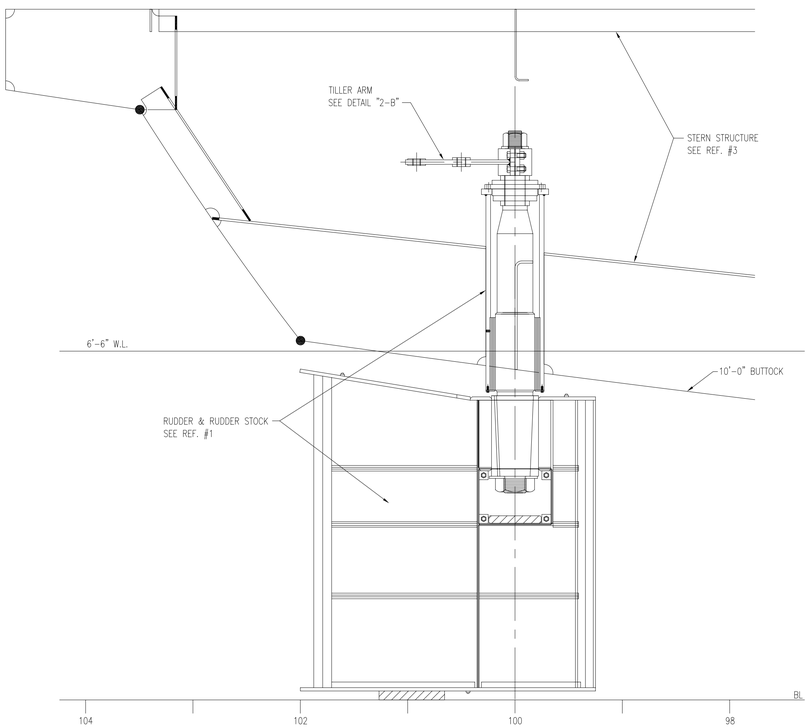
POTABLE WATYER SYSTEM ARRANGEMENT & DETAILS

DRAWN BY: JCM	DATE: 9/8/10	DWG NO. 533-02 SHT 8 OF 8
CK'D BY: KHK	HULL No. 413	
SCALE: 1"=1'-0"	G&C Job No. 09-060	REV. 1

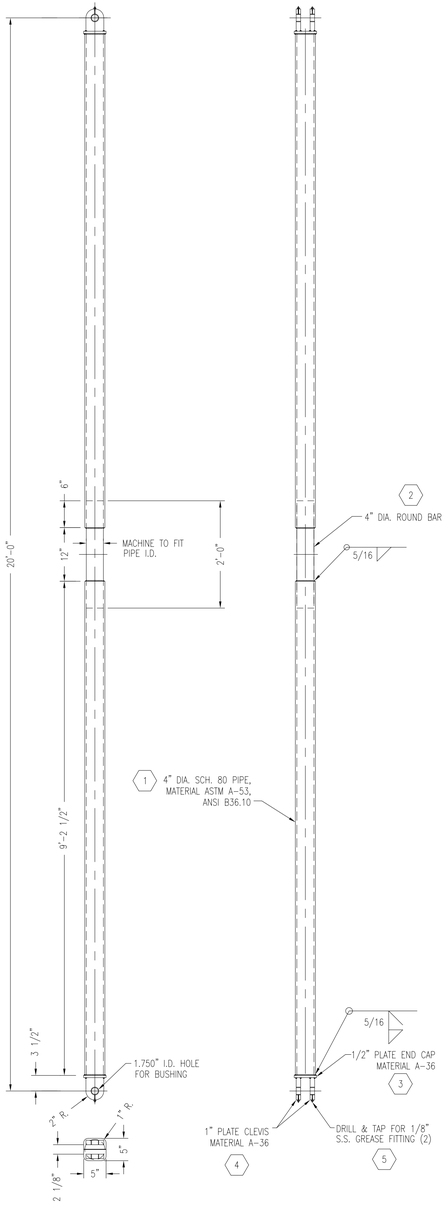
REFERENCES		
1.	562-01	RUDDER ARRANGEMENT
2.	110-03	SCANTLING PLANS 73-STERN
3.	116-03	CONSTRUCTION PROFILE & LONG'L. BHDS. 73-STERN
4.	117-03	FRAMES 73-STERN
5.	561-02	HYDRAULIC STEERING SYSTEM SCHEMATIC

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	BY/APP'D
1	1-B 12-C	1. DELETED "PORT ONLY" NOTE FROM FEEDBACK ARM. 2. REVISED QTY OF ITEM 22 IN BOM.	6/23/10	KHK

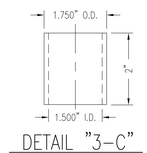




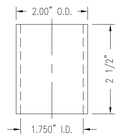
STEERING ARRANGEMENT
PORT RUDDER SHOWN, STBD. SIMILAR
SCALE: 3/4" = 1'-0"



DETAIL "5-A"
JOCKEY BAR ASSEMBLY
SCALE: 3/4" = 1'-0"



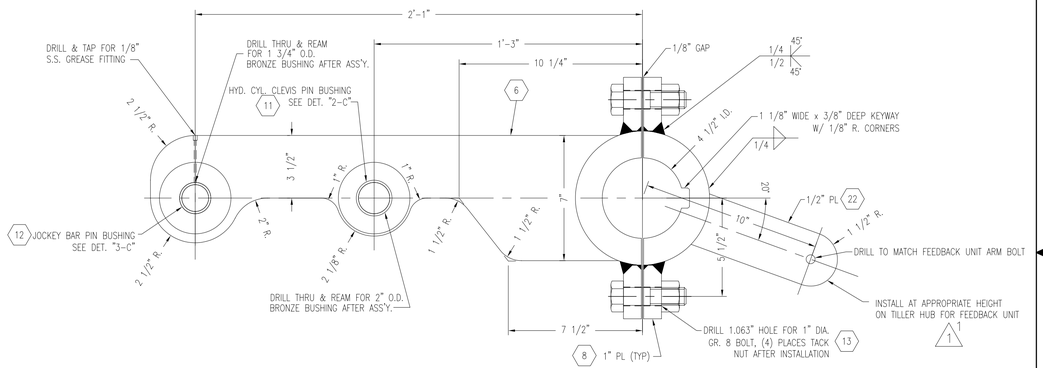
DETAIL "3-C"
JOCKEY BAR PIN BUSHING DETAIL
SCALE: 6" = 1'-0"
12

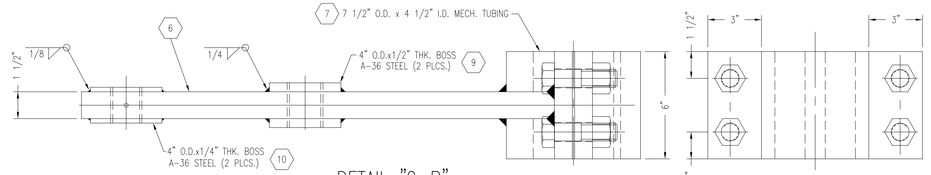


DETAIL "2-C"
HYD. CYLINDER CLEVIS PIN BUSHING DETAIL
SCALE: 6" = 1'-0"
11

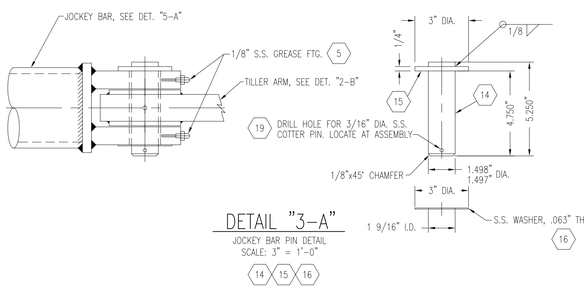
GENERAL NOTES:

1. FOR ELECTRICAL AND HYDRAULIC SYSTEM DETAILS, REFER TO VENDOR INFORMATION FROM EMI.
2. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ABS RULES FOR BUILDING AND CLASSING STEEL VESSELS UNDER 90 METERS IN LENGTH AND USCG REGULATIONS FOR VESSELS INSPECTED UNDER SUBCHAPTER H.





DETAIL "2-B"
TILLER ARM DETAIL
MATERIAL: A-36 STEEL PLATE
SCALE" 3" = 1'-0"



DETAIL "3-A"
JOCKEY BAR PIN DETAIL
SCALE: 3" = 1'-0"
14 15 16

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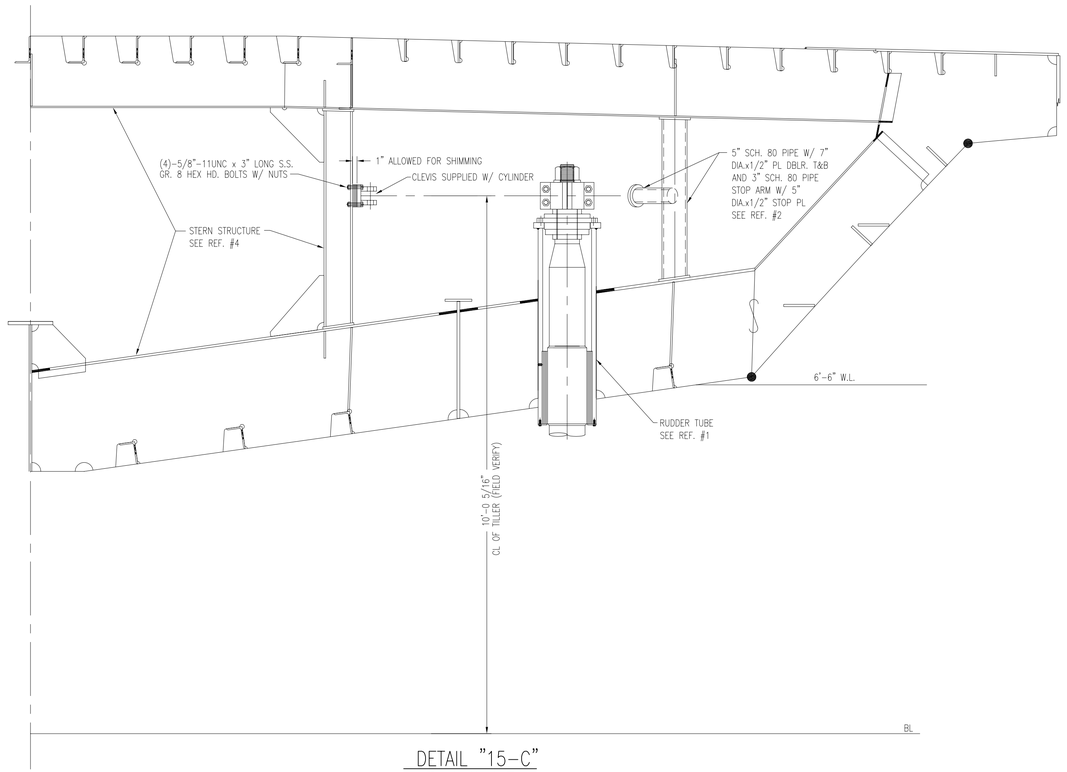
ORANGE Shipbuilding Co., Inc.
A CONRAD INDUSTRIES CO.
710 MARKET STREET-ORANGE, TEXAS 77630
PHONE 409-883-6666 FAX 409-882-0609

GUARINO & COX, LLC
19399 HELENBIRG RD. SUITE 203
COVINGTON LA. 70433

ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

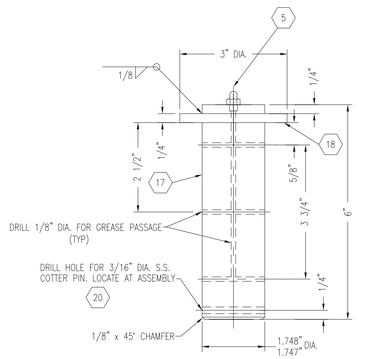
STEERING ARRANGEMENT

DRAWN BY: J. BEACH	DATE: 5/12/10	DWG NO.	561-01
CK'D BY: K.H.K.	HULL No. 413	SHT 1 OF 2	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 1	



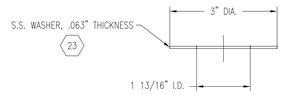
DETAIL "15-C"

FR. 100, LOOKING AFT
HYD. CYL. CLEVIS MOUNT LOCATION
3/4"=1'-0"

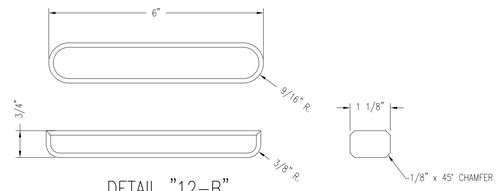


DETAIL "12-C"

HYDRAULIC CYLINDER CLEVIS PIN DETAIL (17) (18)
SCALE: 6"=1'-0"



BILL OF MATERIAL							
ITEM NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC NO.	PART NO.	REMARKS
1	2	4" SCH. 80	JOCKEY BAR PIPE x 9'-2 1/2" LONG	BLACK STL.	ASTM A53, GR. B		SEE DET 5-A
2	1	4" DIA.	JOCKEY BAR ADJUSTMENT BAR x 24" LONG	STEEL	AISI 1018		SEE DET 5-A
3	2	1/2" PL	JOCKEY BAR END PLATE	STL	ASTM A36		SEE DET 5-A
4	4	1" PL	JOCKEY BAR CLEVIS PLATE	STL	ASTM A36		SEE DET 5-A
5	8	1/8" THREADED	GREASE FITTING	STN STL	TYPE 316		
6	2	1 1/2" PL	TILLER ARM PLATE	STL	ASTM A36		SEE DET 2-B
7	2	7 1/2" OD x 4 1/2" ID	TILLER HUB	STL	ASTM A519		SEE DET 2-B
8	8	1" PL	TILLER HUB CLAMP BOLT PLATES	STL	ASTM A36		SEE DET 2-B
9	4	1/2" PL	CLEVIS PIN BOSS PLATE	STL	ASTM A36		SEE DET 2-B
10	4	1/4" PLATE	JOCKEY BAR PIN BOSS PLATE	STL	ASTM A36		SEE DET 2-B
11	2	2" OD x 1.75" ID	HYDRAULIC CYLINDER PIN BUSHING	BRONZE	ASTM B505		SAE 660, UNS C93200, OR EQ., SEE DET 2-C
12	2	1.75" OD x 1.50" ID	JOCKEY BAR PIN BUSHING	BRONZE	ASTM B505		SAE 660, UNS C93200, OR EQ., SEE DET 3-C
13	8	1"-8UNC 3 1/2" LONG	TILLER HUB CLAMP BOLTS W/ NUTS	STL	SAE GRADE 8		
14	2	1 1/2" DIA.	JOCKEY BAR PIN	STN STL	TYPE 316 ASTM A276		SEE DET 3-A
15	2	3" OD x 1/4" THK	JOCKEY BAR PIN CAP PLATE	STN STL	TYPE 316		SEE DET 3-A
16	2	3" OD x .063" THK	JOCKEY BAR PIN WASHER	STN STL	TYPE 316		SEE DET 3-A
17	2	1.75" DIA.	HYD. CYLINDER CLEVIS PIN	STN STL	TYPE 316 ASTM A276		SEE DET 12-C
18	2	3" OD x 1/4" THK	HYD. CYL. CLEVIS PIN CAP	STN STL	TYPE 316		SEE DET 12-C
19	2	3/16" DIA. x 2 1/2" LONG	COTTER PIN (JOCKEY BAR PIN)	STN STL	TYPE 316		
20	2	3/16" DIA. x 2 3/4" LONG	COTTER PIN (HYD. CYL. CLEVIS PIN)	STN STL	TYPE 316		
21	2	1 1/8" x 3/4" x6" LONG	TILLER HUB KEY	STEEL	AISI 1040		SEE DET 12-B
22	2	1/2" PL	FEEDBACK UNIT ARM	STEEL	ASTM A36		SEE DET 2-B
23	2	3" OD x .063" THK	HYD. CYLINDER CLEVIS PIN WASHER	STN STL	TYPE 316		SEE DET 12-C



DETAIL "12-B"

TILLER HUB KEY
SCALE: 6"=1'-0"
(21)

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NEW SOUND CLASS FERRY

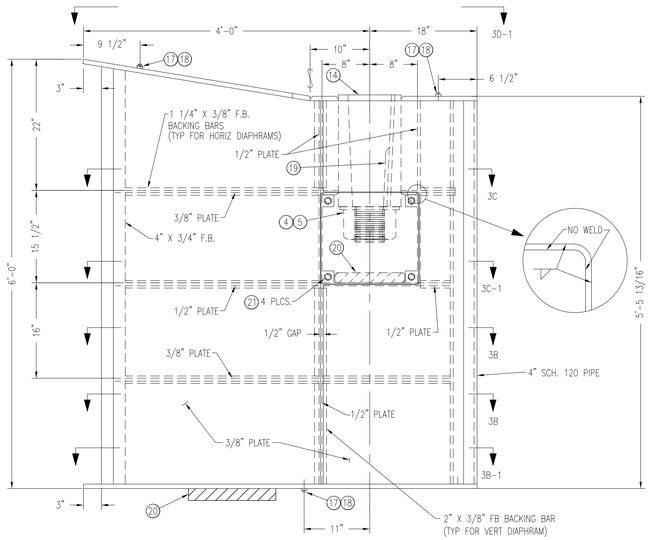
STEERING ARRANGEMENT

DRAWN BY: J. BEACH	DATE: 5/12/10	DWG NO. 561-01 SHT 2 OF 2
CK'D BY: K.H.K.	HULL No. 413	
SCALE: 3/4"=1'-0"	G&C Job No. 09-060	REV. 1

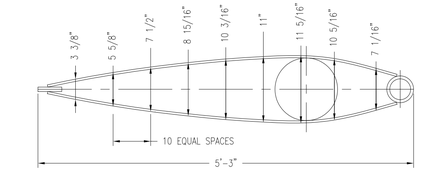
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LIST OF MATERIALS (QTY. FOR 2 RUDDERS)

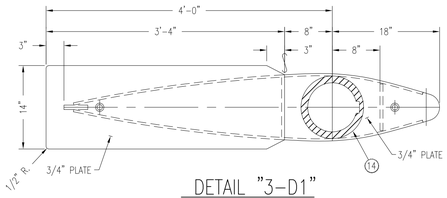
PIECE No.	QUANTITY	DESCRIPTION	MATERIAL OR MANUFACTURER	SPEC, GRADE OR MODEL	REMARKS
1	2	RUDDER STOCK	STAINLESS STEEL	AQUAMET 22	7.25" DIA. X 6'-11 1/4" LONG
2	2	RUDDER TUBE	STEEL	ASTM A-519	13" O.D. x 9 1/2" I.D. x 3'-7 3/4" LONG MECHANICAL TUBING
3	2	SHRINK-ON LINER	BRONZE	ASTM B505	8" O.D. x 7.224" I.D. x 17" LG., SAE B660, UNS C93200 OR EQ. SEE GENERAL NOTES #2 & 3.
4	2	RUDDER NUT, 5" DIA. x 4 T.P.I.	BRONZE		PURCHASED ITEM
5	2	RUDDER NUT WASHER	STEEL	ASTM A-36	1/2" PL x 10" O.D. x 5 1/8" I.D.
6	2	RUDDER CARRIER NUT	STEEL	ASTM A-194	3" DIA. x 4 T.P.I.
7	2	CARRIER NUT WASHER	STEEL	ASTM A-36	6" O.D. X 3 1/4" I.D. X 1/2" THICK
8	6	RUDDER NECK BEARING SET SCREWS, CUP POINT	STAINLESS STEEL	316 S.S.	1/2"-13 UNC x 1 1/2" LONG
9	1	RUDDER NECK BEARING, DURAMAX "490", PART NO. 812100203	HARD RUBBER	–	CODE DX800, CUT IN HALF TO MAKE (2) BEARINGS
10	2	RUDDER NECK BEARING RETAINER PLATE	STAINLESS STEEL	316 S.S.	13" O.D. x 8 3/8" I.D." x 1/4" THICK
11	16	RUDDER NECK BEARING RETAINER PLATE BOLTS	STAINLESS STEEL	316 S.S.	3/8"-16 UNC x 1" LONG
12	2	CARRIER BEARING SUPPORT PLATE	STEEL	ASTM A-36	15" O.D. x 10 5/16" I.D." x 1 1/4" THICK
13	2	RUDDER NUT KEEPER PL	STAINLESS STEEL	316 S.S.	2" WIDE x 3/8" THICK x 7" LONG F.B.
14	2	RUDDER STOCK TAPER HOUSING	STEEL	ASTM A-519	10 1/2" O.D. x 5 1/2" I.D. x 1'-6" LONG MECHANICAL TUBING
15	2	FLANGED CARRIER BEARING FOR 4 1/2" DIA. SHAFT	–	–	DODGE TYPE "E" FLANGED BEARING, PART #023146
16	12	CARRIER BEARING BOLTS	STAINLESS STEEL	316 S.S.	3/4"-10 UNC x 2" LONG
17	6	1" PIPE PLUG, SQUARE HEAD	BRONZE	ASTM B505	–
18	6	1" HALF COUPLING	STAINLESS STEEL	316 S.S.	–
19	2	LOWER RUDDER STOCK KEY	STEEL	AISI 1040	1 1/2" WIDE x 1 1/8" DEEP x 10" LONG
20	4	ZINC ANODE	ZINC	–	5 LB.
21	8	RUDDER NUT ACCESS COVER BOLTS & NUTS	STAINLESS STEEL	316 S.S.	3/4"-10 UNC x 2" LONG
22	2	RUDDER STOP SPACER	BRONZE	ASTM B505	10 1/2" O.D. X 7 9/16" I.D. X 3/4" THICK
23	2	CARRIER BEARING SPACER	STEEL	ASTM A-36	5 1/2" O.D. x 4 7/16" I.D." x 1/2" THICK



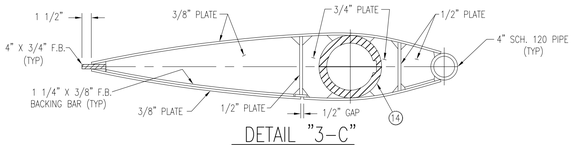
DETAIL "5-D"
RUDDER STRUCTURAL PROFILE
SCALE: 1" = 1'-0"



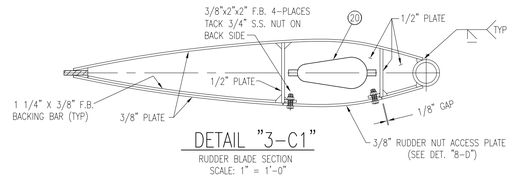
DETAIL "3-D"
RUDDER BLADE LINES PLAN
SCALE: 1" = 1'-0"



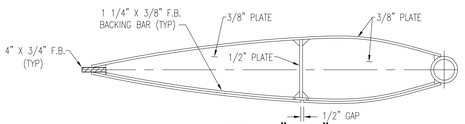
DETAIL "3-D1"
RUDDER BLADE TOP PLATE
SCALE: 1" = 1'-0"



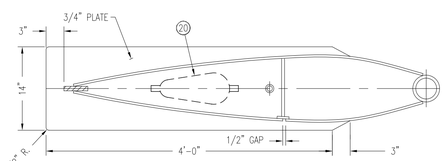
DETAIL "3-C"
RUDDER BLADE SECTION
SCALE: 1" = 1'-0"



DETAIL "3-C1"
RUDDER BLADE SECTION
SCALE: 1" = 1'-0"



DETAIL "3-B"
RUDDER BLADE SECTION
SCALE: 1" = 1'-0"

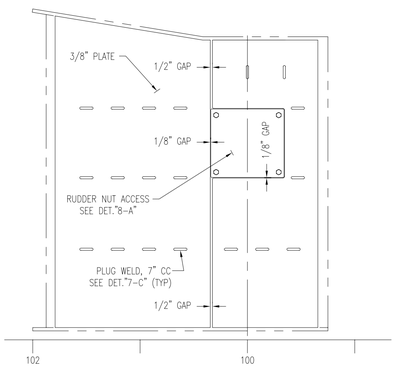


DETAIL "3-B1"
RUDDER BLADE BOTTOM PLATE
SCALE: 1" = 1'-0"

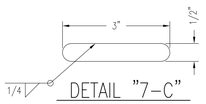
GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ABS RULES FOR BUILDING AND CLASSING STEEL VESSELS UNDER 90 METERS IN LENGTH AND USCG REGULATIONS FOR VESSELS INSPECTED UNDER SUBCHAPTER H.
2. LINER OUTSIDE DIAMETERS SHALL BE MACHINED AFTER THE LINERS ARE INSTALLED ON THE STOCKS.
3. OUTSIDE DIAMETERS OF STOCKS SHALL BE VERIFIED PRIOR TO MACHINING INSIDE DIAMETERS OF LINERS FOR INTERFERENCE FIT. (CLASS FN 2)
4. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
5. RUDDER NECK BEARINGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
6. RUDDER AND RUDDER STOCK SHALL BE "BLUE FIT" IN ACCORDANCE WITH ABS REQUIREMENTS.

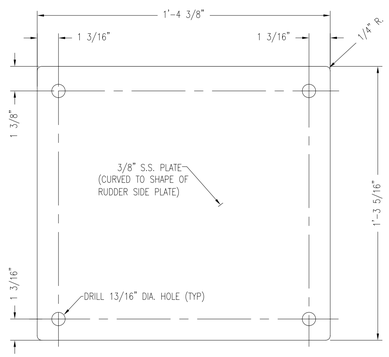
THIS DRAWING CONTAINS INFORMATION BASED ON EBDG CONTRACT DESIGN DRAWING 07069-001-562-1



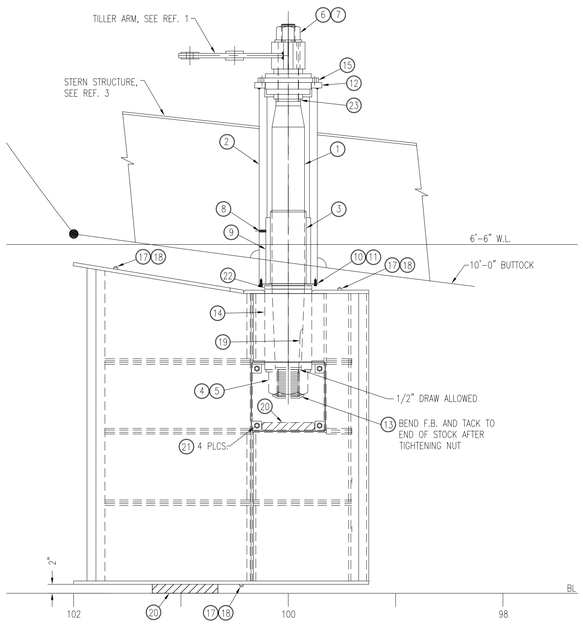
CLOSING PLATE LAYOUT
SCALE: 3/4"=1'-0"



DETAIL "7-C"
SCALE: 6"=1'-0"



DETAIL "8-A"
RUDDER NUT ACCESS PLATE
SCALE: 3" = 1'-0"



RUDDER ARRANGEMENT
PORT RUDDER SHOWN, STBD. SIMILAR
SCALE: 3/4" = 1'-0"

REFERENCES

1.	561-01	STEERING ARRANGEMENT
2.	110-03	SCANTLING PLANS 73-STERN
3.	116-03	CONSTRUCTION PROFILE & LONG'L. BHDS. 73-STERN
4.	117-03	FRAMES 73-STERN
5.	561-02	HYDRAULIC STEERING SYSTEM SCHEMATIC

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REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD

ORANGE Shipbuilding Co., Inc.
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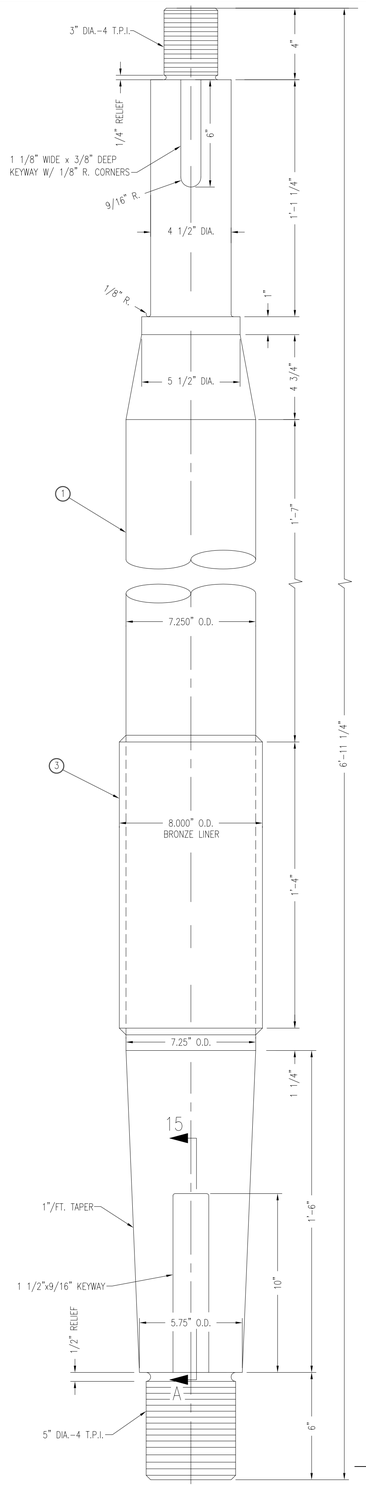
ORANGE SHIPBUILDING CO. INC.

NORTH CAROLINA DOT FERRY DIVISION

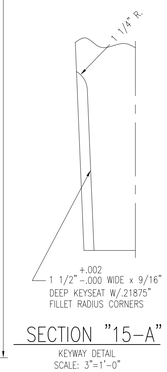
NEW SOUND CLASS FERRY

RUDDER ARRANGEMENT

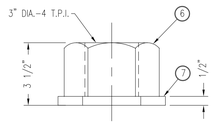
DRAWN BY:	J. BEACH	DATE: 5/12/10	DWG NO. 562-01 SHT 1 OF 2
CK'D BY:	K.H.K.	HULL No. 413	
SCALE:	AS NOTED	G&C Job No. 09-060	REV. 0



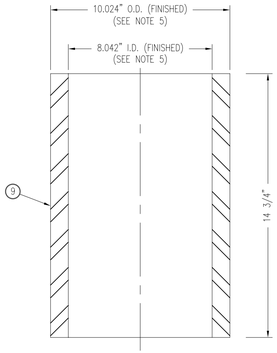
DETAIL "16-A"
RUDDER STOCK DETAIL
SCALE: 3"=1'-0"



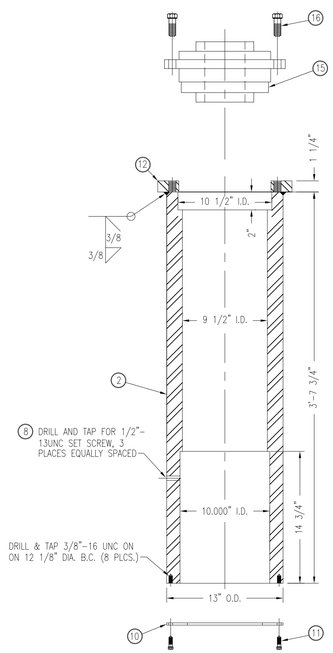
SECTION "15-A"
KEYWAY DETAIL
SCALE: 3"=1'-0"



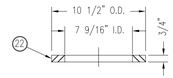
DETAIL "14-D"
RUDDER CARRIER NUT & WASHER
SCALE: 3"=1'-0"



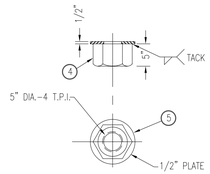
DETAIL "14-C"
RUDDER NECK BEARING
SCALE: 3" = 1'-0"



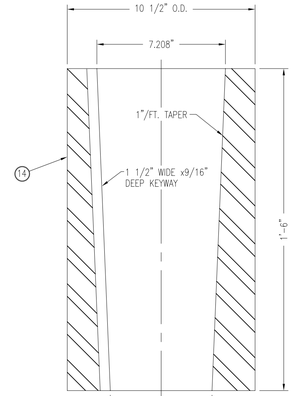
DETAIL "14-A"
RUDDER TUBE DETAIL
SCALE: 1 1/2"=1'-0"



DETAIL "12-D"
RUDDER STOP SPACER
SCALE: 1 1/2" = 1'-0"

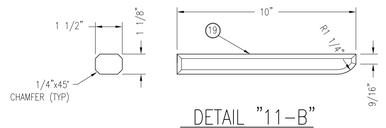


DETAIL "12-C"
RUDDER NUT & KEEPER PLATE
SCALE: 3/4"=1'-0"

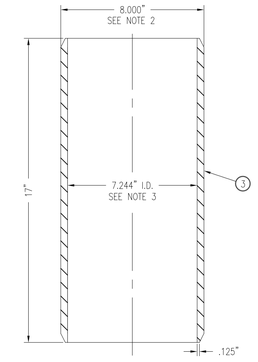


DETAIL "11-C"
RUDDER STOCK TAPER HOUSING
SCALE: 3" = 1'-0"

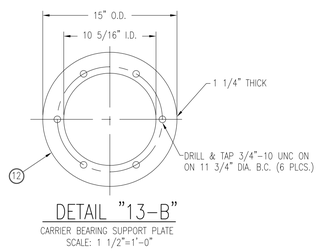
NOTE:
1/2" DRAW ALLOWED



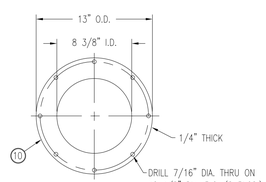
DETAIL "11-B"
LOWER RUDDER STOCK KEY
SCALE: 3"=1'-0"



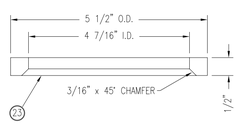
DETAIL "9-D"
RUDDER STOCK LINER
SCALE: 3" = 1'-0"



DETAIL "13-B"
CARRIER BEARING SUPPORT PLATE
SCALE: 1 1/2"=1'-0"



DETAIL "13-A"
RUDDER NECK BEARING RETAINER PLATE
SCALE: 1 1/2"=1'-0"



DETAIL "11-A"
BEARING SPACER
SCALE: 6"=1'-0"

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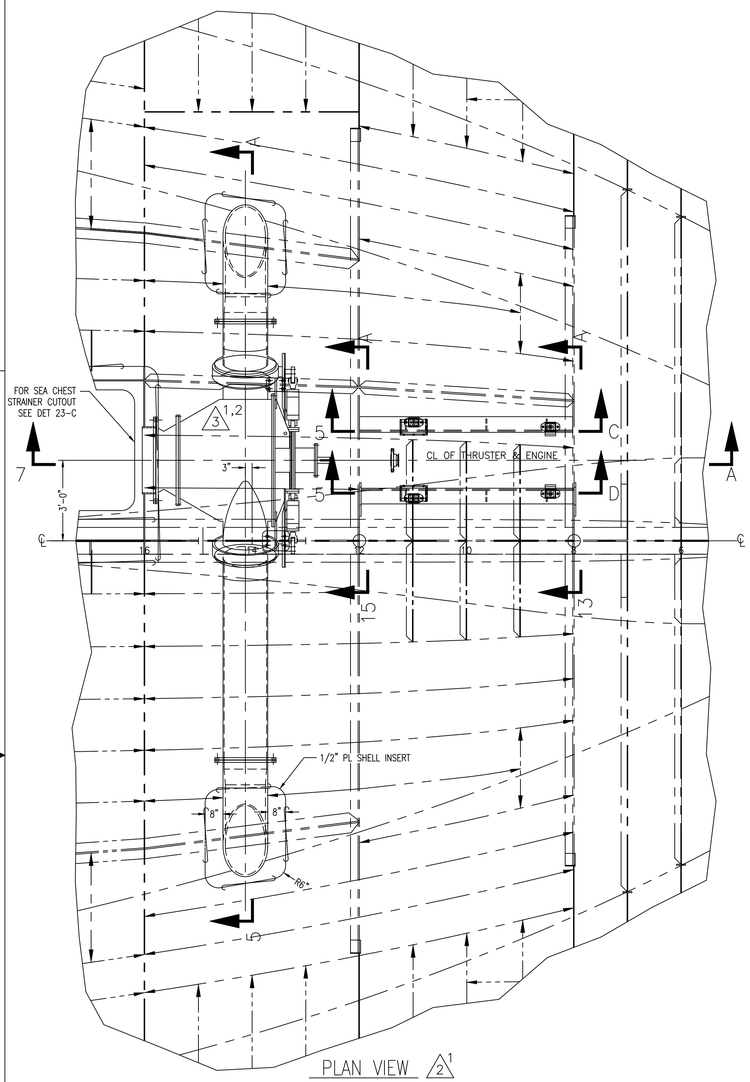
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19399 HELENBIRG RD. SUITE 203
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ORANGE SHIPBUILDING CO. INC.
NORTH CAROLINA DOT FERRY DIVISION
NEW SOUND CLASS FERRY

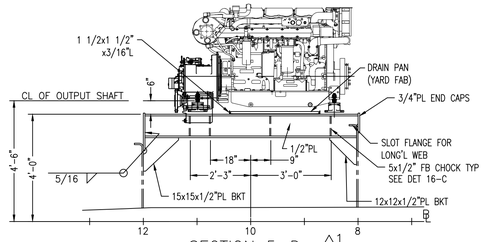
RUDDER ARRANGEMENT

DRAWN BY: J. BEACH	DATE: 5/12/10	DWG NO.	562-01
CK'D BY: K.H.K.	HULL No. 413	SHT 2 OF 2	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 0	

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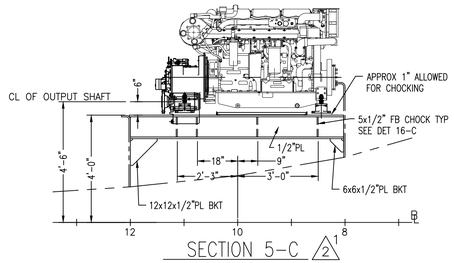


PLAN VIEW 2/1



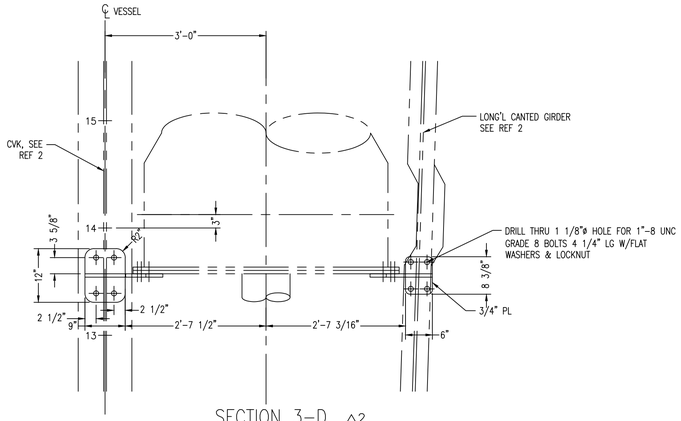
SECTION 5-D 2/1

INBD ENGINE SKID
13" INBD CL OF ENGINE
PORT ONLY LOOKING OUTBD



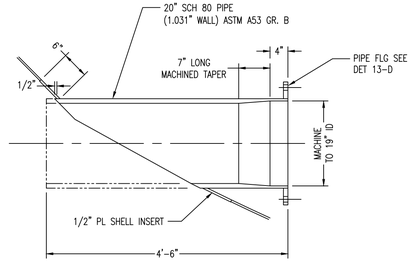
SECTION 5-C 2/1

OUTBD ENGINE SKID
13" OUTBD CL OF ENGINE
PORT ONLY LOOKING OUTBD



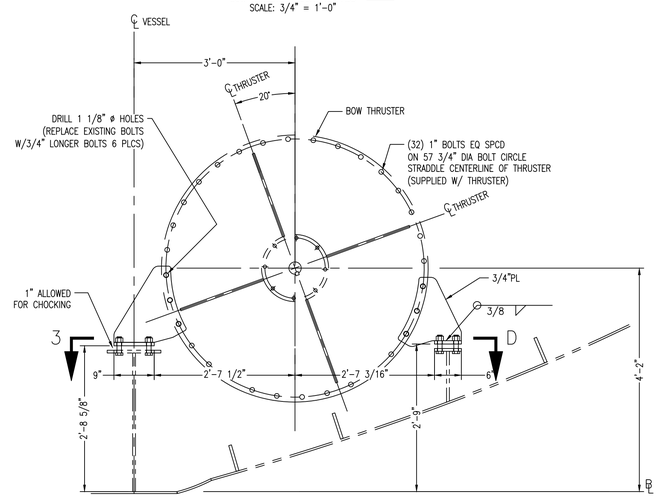
SECTION 3-D 3/2

BOW THRUSTER MOUNTING PADS
SCALE: 3/4" = 1'-0"



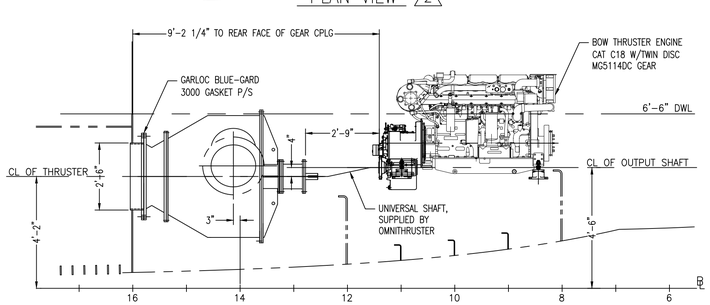
DETAIL 5-B

BOW THRUSTER TUBE NOZZLE
SCALE: 3/4" = 1'-0"



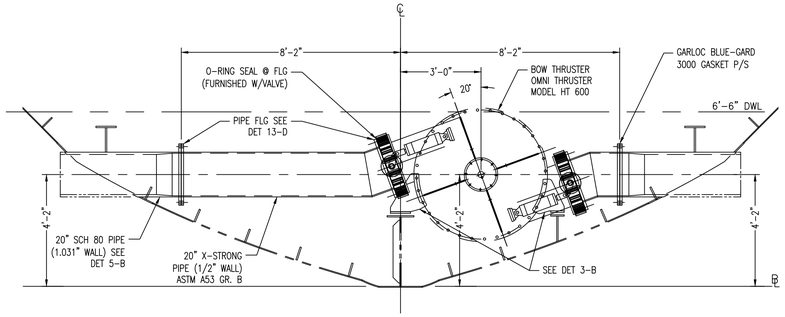
DETAIL 3-B 3/2

BOW THRUSTER MOUNTING BKTS
SCALE: 3/4" = 1'-0"



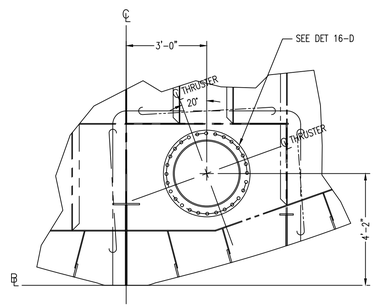
SECTION 7-A 2/1

ELEVATION AT 3'-0" OFF CL
THRU CL OF BOW THRUSTER & ENGINE
PORT ONLY LOOKING OUTBD



SECTION 5-A 3/2

TRANSV SECTION 3" AFT FR 14
AT CL OF THRUSTER DISCHARGE TUNNELS
LOOKING AFT



DETAIL 3-A 1/1

THRUSTER MOUNTING SPOOL AT FRAME 16
LOOKING AFT

GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE USED TO DIRECTLY SCALE NC PARTS OR PREPARE 3D MODELING.
2. ALL MATERIAL SHALL BE ABS GR. A OR EQUIVALENT EXCEPT AS NOTED.
3. CHOCKING FOR BOW THRUSTER AND BOW THRUSTER ENGINE TO BE ACCOMPLISHED BY THE USE OF PHILADELPHIA RESIN CHOCKFAST ORANGE. CHOCKING TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALTERNATIVELY, AT SHIPYARD'S OPTION, STEEL CHOCKING MAY BE USED. 2/1
4. BOW THRUSTER TO BE OMNITHRUSTER MODEL HT600 – BOW THRUSTER ENGINE TO BE CAT C18 WITH TWIN DISC MG5114DC GEAR. 2/1

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD
1	3-A	1. REVISED BHD 16 (DET 3-A) TO REV FRAMING AROUND THRUSTER MOUNTING RING	02/03/10	CF / KK
2	VAR	1. GENERALLY REVISED ENGINE & GEAR FOUNDATIONS PER CHANGE IN ENGINE MANUFACTURER.	04/30/10	CF / KK
3	8-C 3-B,D 5-A	1. REVISED GIRDER @ 6'-0" OCL PORT PER REF# 2. 2. REVISED MOUNTING BKTS PER B/T MFR BOLT PATTERN CHANGE. – ABOVE REVISIONS PER AS-BUILT –	04/29/11 07/24/11	MH KK

NO.	REFERENCES	DWG NO.
3	FRAMES, BOW-FR. 35	117-01
2	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR. 35	116-01
1	SCANTLING PLANS, BOW-FR. 35	110-01

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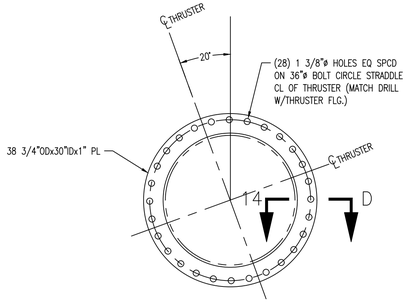
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

BOW THRUSTER INSTALLATION

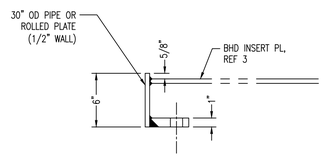
DRAWN BY: C FIELDS	DATE: 01-29-10	DWG NO. 568-01 SHT 1 OF 3	
CK'D BY: KHK	HULL No. 413		
SCALE: 3/8" & AS NOTED	G&C Job No. 09-060	REV. 3	

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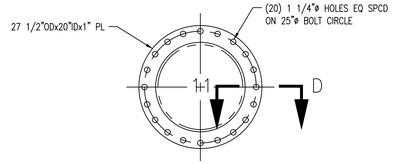
DETAIL 16-D

SEA CHEST MOUNTING FLG
SCALE: 3/4" = 1'-0"



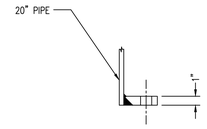
SECTION 14-D

SEA CHEST SPOOL
SCALE: 1 1/2" = 1'-0"



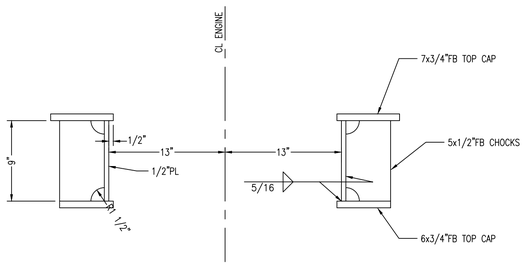
DETAIL 13-D

BOW THRUSTER TUBE FLG
6 REQ'D (3 PORT & 3 STBD)
SCALE: 3/4" = 1'-0"



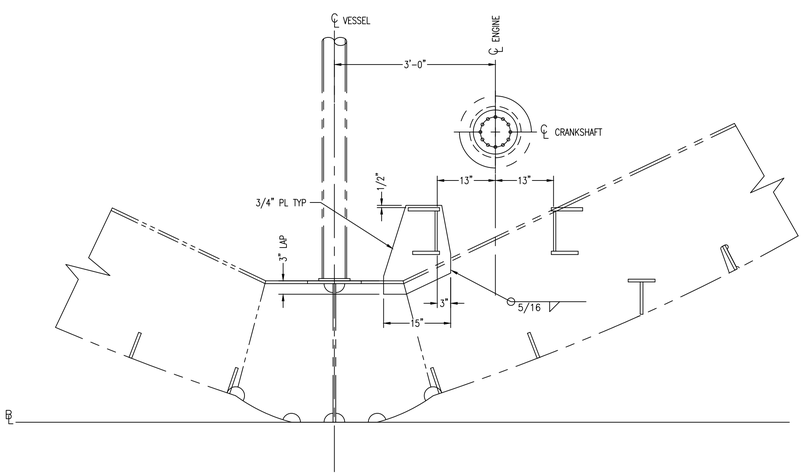
SECTION 11-D

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



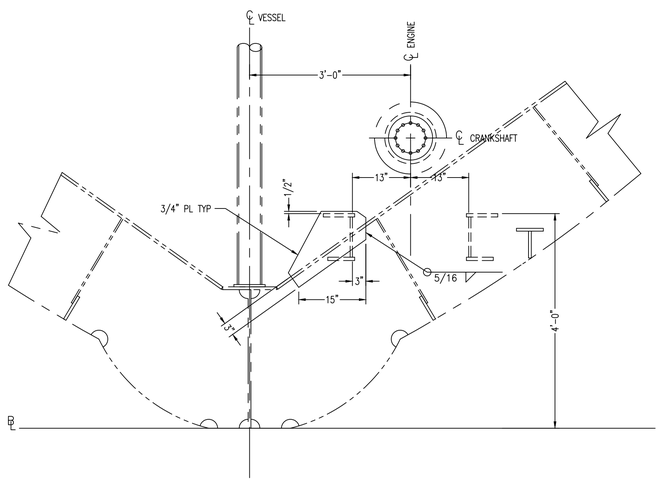
DETAIL 16-C △2/1

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



SECTION 15-A △2/1

FRAME 12
LOOKING AFT
SCALE: 3/4" = 1'-0"



SECTION 13-A △2/1

FRAME 8
LOOKING AFT
SCALE: 3/4" = 1'-0"

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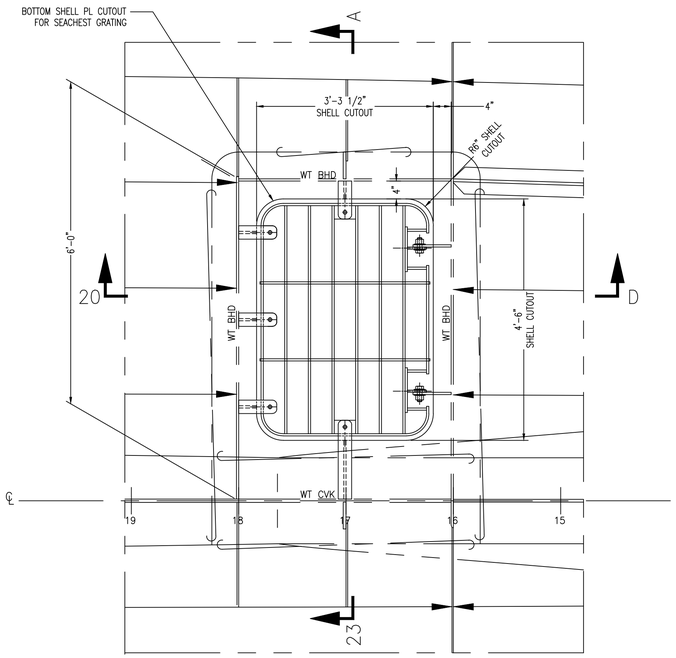
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NEW SOUND CLASS FERRY

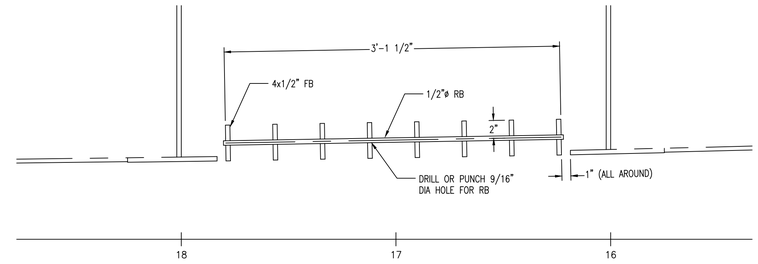
BOW THRUSTER INSTALLATION

DRAWN BY: C FIELDS	DATE: 01-29-10	DWG NO. 568-01 SHT 2 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 3



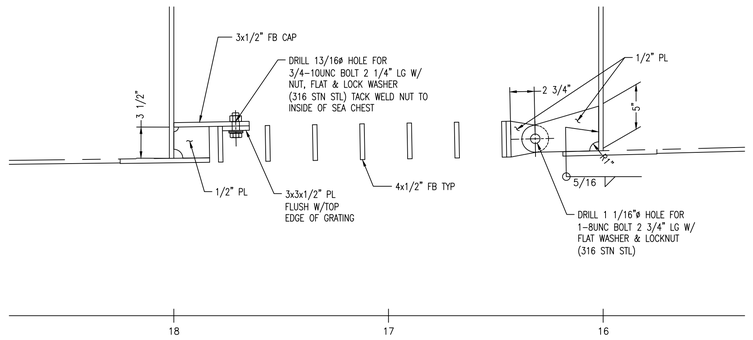
DETAIL 23-C

PLAN VIEW OF BOW THRUSTER SEA CHEST GRATING
SCALE: 3/4" = 1'-0"



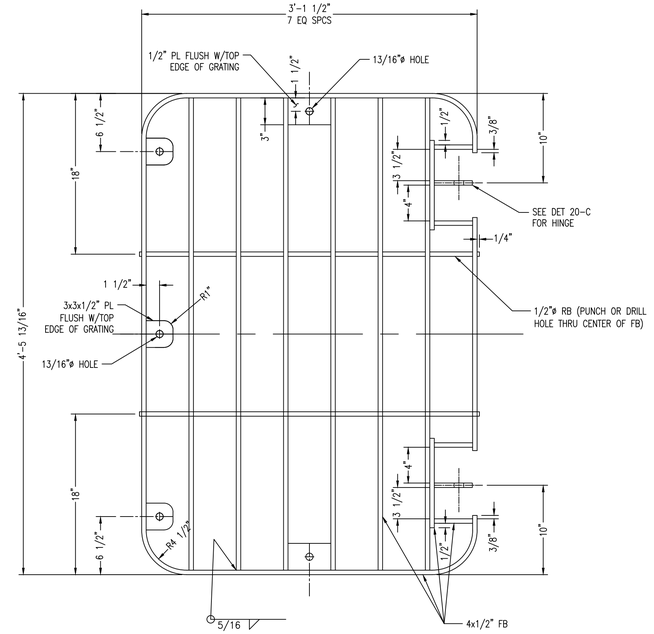
SECTION 20-D

LONG'L SECT. THRU GRATING
SCALE: 1 1/2" = 1'-0"



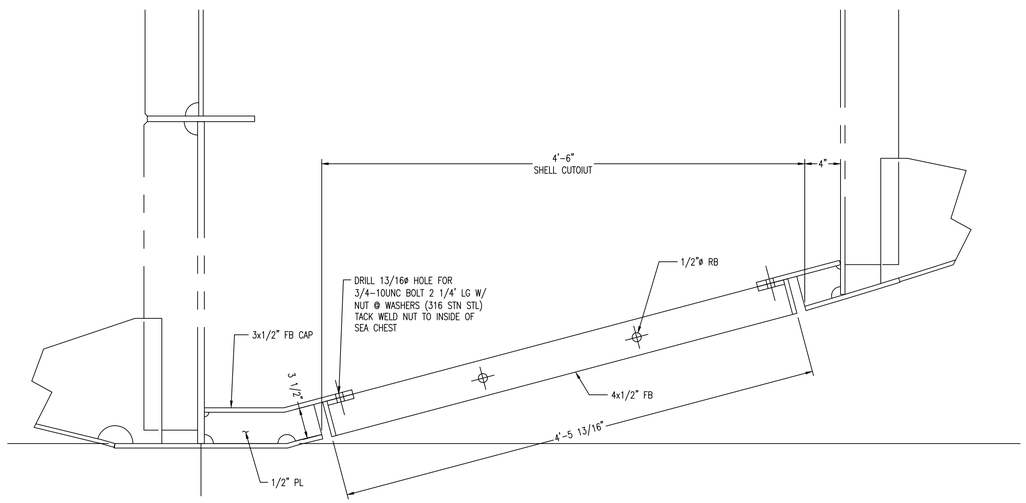
DETAIL 20-C

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



DETAIL 18-C

SEA CHEST GRATING (EXPANDED)
SCALE: 1 1/2" = 1'-0"



SECTION 23-A

TRANSV SECT @ FR 17
SCALE: 1 1/2" = 1'-0"

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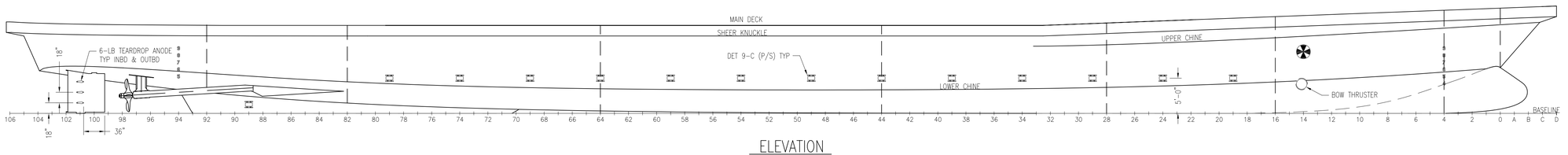
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

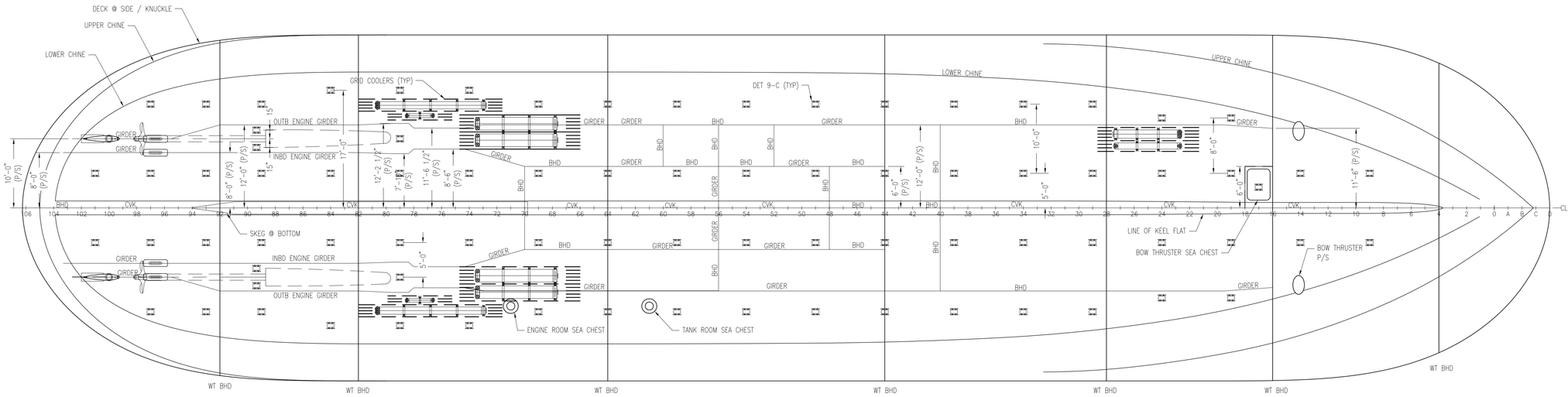
BOW THRUSTER INSTALLATION

DRAWN BY: C FIELDS	DATE: 01-29-10	DWG NO. 568-01 SHT 3 OF 3
CK'D BY: KHK	HULL No. 413	
SCALE: AS NOTED	G&C Job No. 09-060	REV. 3

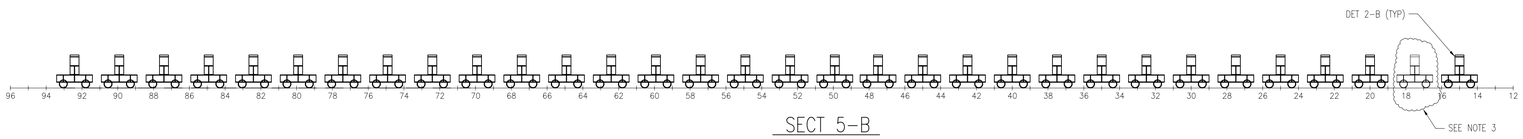
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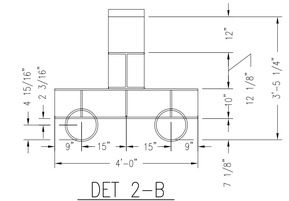
ELEVATION



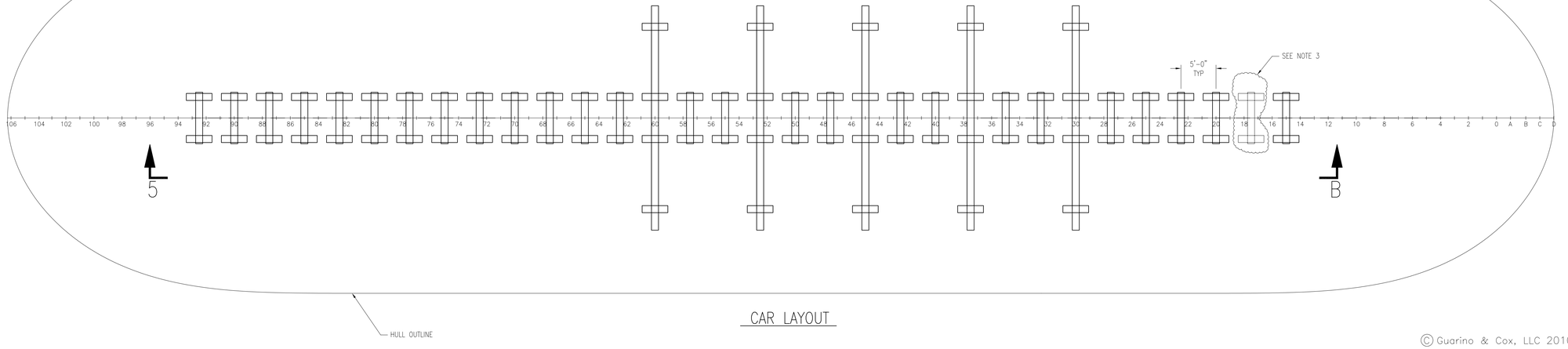
PLAN VIEW



SECT 5-B



DET 2-B
CAR DETAIL
SCALE 1/2"=1'-0"



CAR LAYOUT

GENERAL NOTES

1. HULL ANODES ARE TO BE 23# OR 24# ZINC ANODES, ZHS-23 OR EQUAL. APPROXIMATE DIMENSIONS ARE 6"x12"x1-1/4". (QTY REQ'D = 109)
2. RUDDER ANODES ARE TO BE 6# TEARDROP SHAPED ZINC ANODES. APPROXIMATE DIMENSIONS ARE 3"x9"x1-1/4". (QTY REQ'D = 12)
3. THE SECOND DOCKING CAR FROM THE BOW (@ FR 17 1/2) SHALL BE OMITTED OR THE BLOCKING ON IT SHALL BE REMOVED PRIOR TO DOCKING TO PREVENT INTERFERENCE WITH THE BOWTHRUSTER SEACHEST.

REVISIONS

REV	ZONE	DESCRIPTION	DATE	BY/APPVD

REFERENCE

DWG NO.	TITLE
110-01	SCANTLING PLAN BOW-FR 35
110-02	SCANTLING PLAN FR 36-FR 72
110-03	SCANTLING PLAN FR 73-STERN
114-01	SKEG DETAILS
114-02	STRUT DETAILS
116-01	CONSTRUCTION PROFILE & LONG'L BHDS, BOW-FR 35
116-02	CONSTRUCTION PROFILE, FR 35-FR 72
116-03	CONSTRUCTION PROFILE & LONG'L BHDS, FR 73-STERN
117-01	FRAMES, BOW-FR 35
117-02	FRAMES, FR 35-FR 72
117-03	FRAMES, FR 73-STERN
163-01	SEA CHEST
182-01	MAIN ENGINE FOUNDATION
243-01	SHAFT ARRANGEMENT
256-02	COOLER PIPING SYSTEM ARRANGEMENT & DETAILS
562-01	RUDDER ARRANGEMENT
568-01	BOW THRUSTER INSTALLATION
839-01	LINES PLAN

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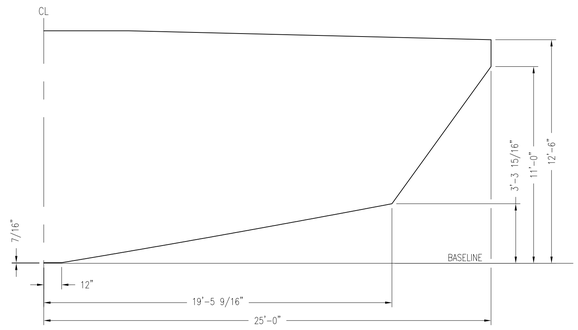
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

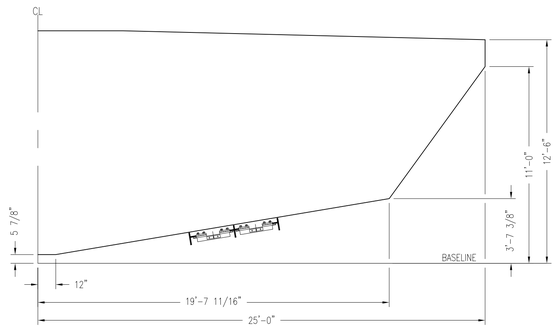
DOCKING & ANODE PLAN

DRAWN BY: BMB	DATE: 12/9/10	DWG NO. 997-01 SHT 1 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/8"=1'-0"	G&C Job No. 09-060	REV. 0

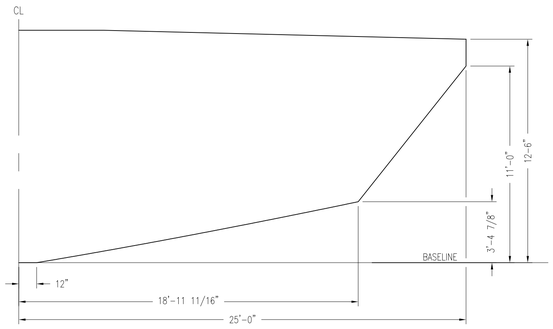
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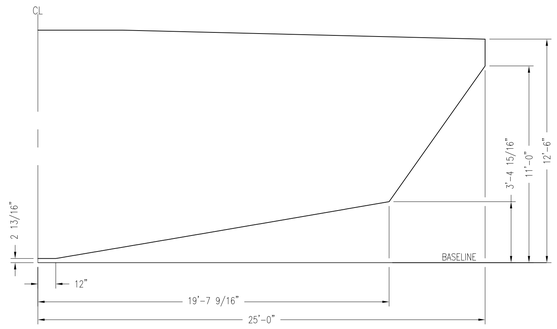
FR 46



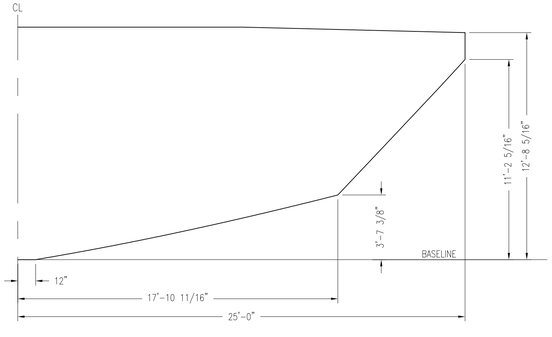
FR 68



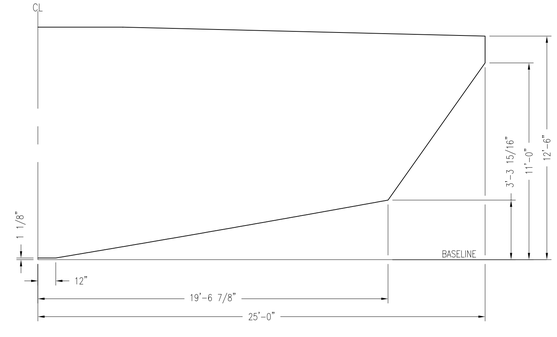
FR 38



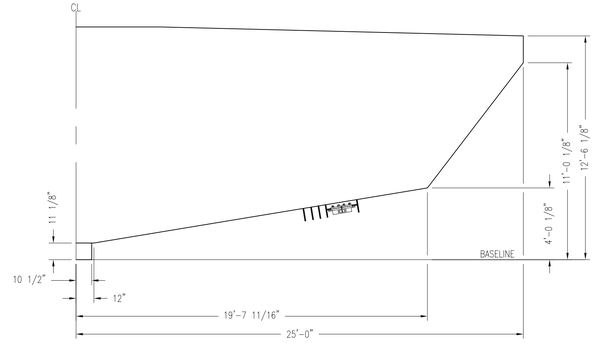
FR 60



FR 30

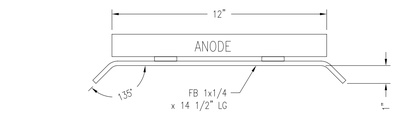


FR 52



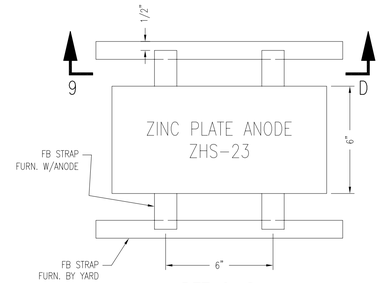
FR 76

NOTE: DIMENSIONS SHOWN ARE MOLDED



SECT 9-D

ANODE ATTACHMENT STRAP
SCALE 3"=1'-0"



DET 9-C

TYPICAL ZINC ANODE INSTALLATION DETAIL
SCALE 3"=1'-0"

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ORANGE
Shipbuilding Co., Inc.
A CONRAD INDUSTRIES CO.
710 MARKET STREET-ORANGE, TEXAS 77630
PHONE 409-883-6666 FAX 409-882-0609

GUARINO & COX, LLC
19399 HELENBIRG RD. SUITE 203
COVINGTON LA. 70433

ORANGE SHIPBUILDING CO. INC.

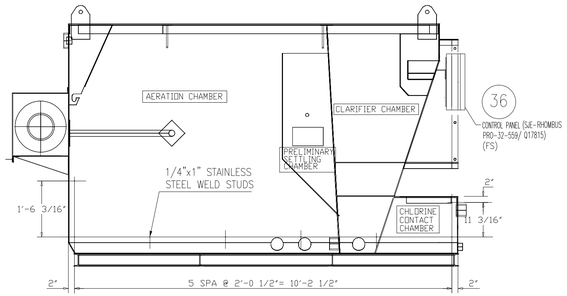
NORTH CAROLINA DOT FERRY DIVISION

NEW SOUND CLASS FERRY

DOCKING & ANODE PLAN

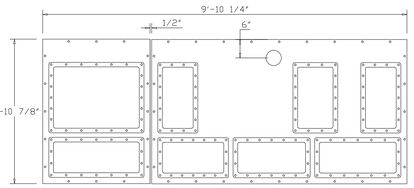
DRAWN BY: BMB	DATE: 12/9/10	DWG NO. 997-01 SHT 2 OF 2
CK'D BY: KHK	HULL No. 413	
SCALE: 1/4"=1'-0"	G&C Job No. 09-060	REV. 0

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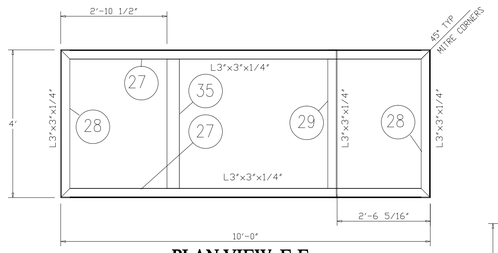
RIGHT SIDE ELEVATION

STUD LAYOUT FOR WIRING TIES



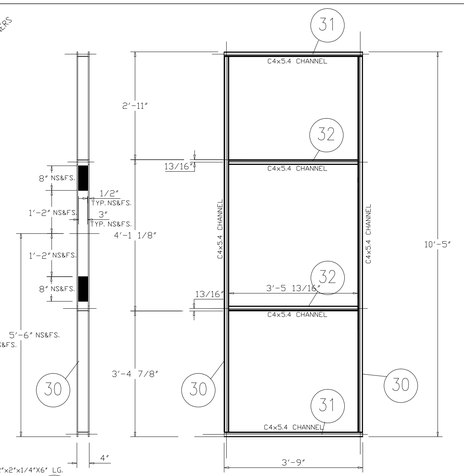
PLAN VIEW A-A

(WATER TIGHT COVER PL. & ACCESS PANELS)

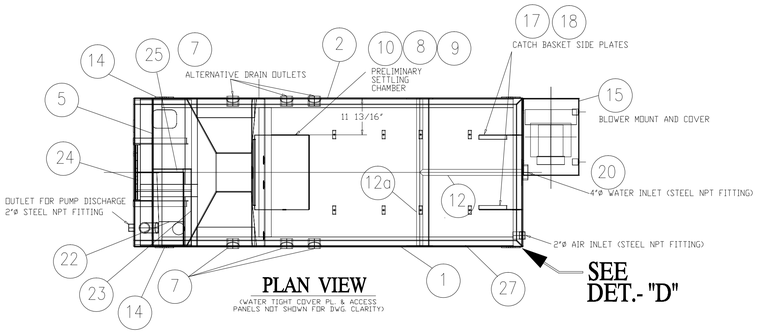


PLAN VIEW E-E

(COVER SUPPORT FRAME)

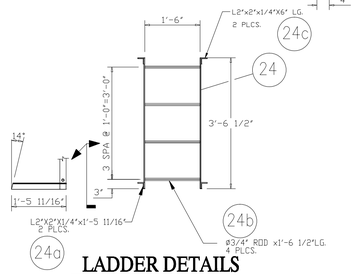


SKID DETAILS

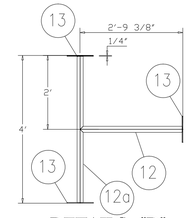


PLAN VIEW

(WATER TIGHT COVER PL. & ACCESS PANELS NOT SHOWN FOR DWG. CLARITY)

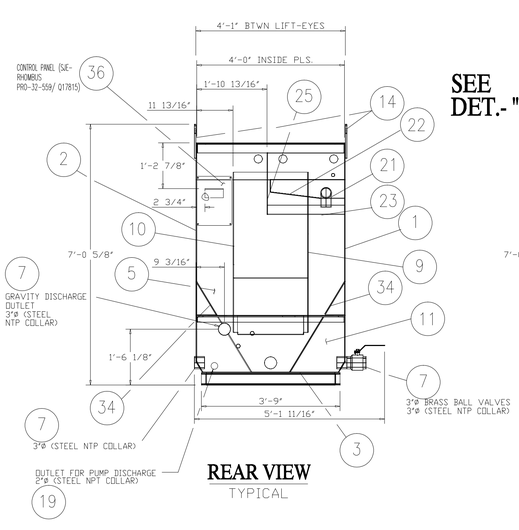


LADDER DETAILS



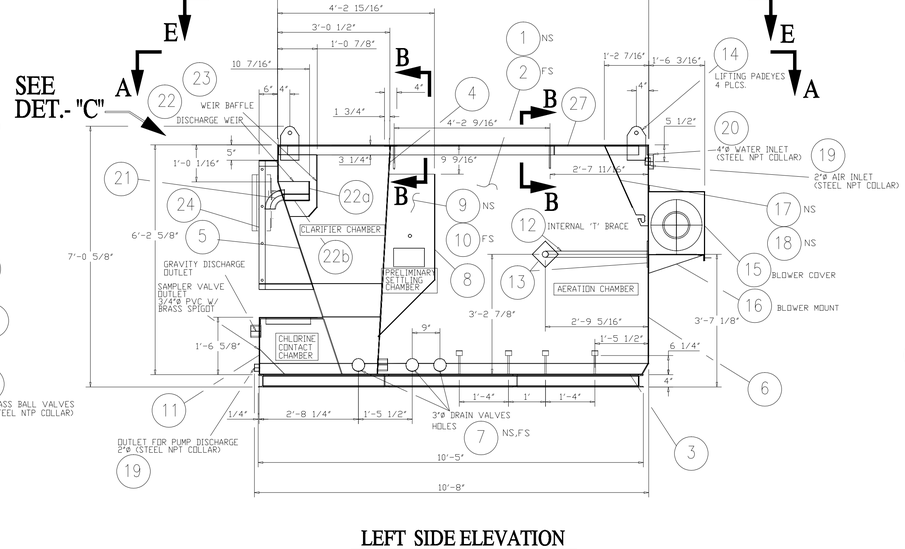
DETAILS - "D"

INTERNAL 'T' BRACE

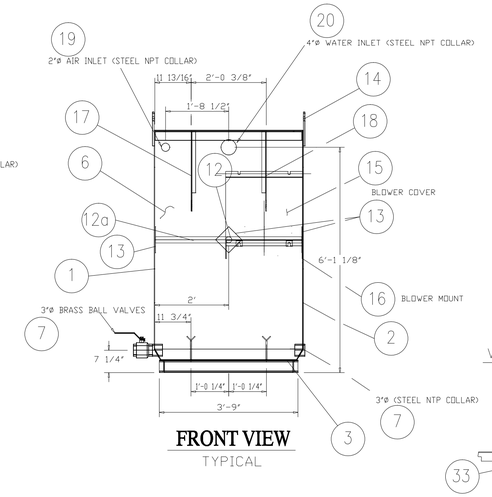


REAR VIEW

TYPICAL

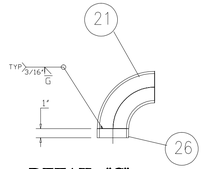


LEFT SIDE ELEVATION



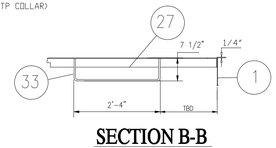
FRONT VIEW

TYPICAL



DETAIL -"C"

WEIR DISCHARGE TUBE



SECTION B-B

TUBE HANGER DETAILS

(TYPICAL)

BILL OF MATERIALS

REF#	QTY.	PART#	DESCRIPTION
1	1	1125-01	LEFT SIDE PL.
2	1	1125-02	RIGHT SIDE PL.
3	1	1125-07	BOTTOM PL.
4	1	1125-04	SLANTED PARTITION PL.
5	1	1125-05	HOPPER FRONT PL.
6	1	1125-03	INFLUENT END PL.
7	7		DRAINS ø3" STD. SCH. 40 PIPE COLLAR
8	1	1125-33A	RECIRC. CHAM. BACKING PL.
9	1	1125-33B	RECIRC. CHAM. RIGHT SIDE PL.
10	1	1125-33C	RECIRC. CHAM. LEFT SIDE PL.
11	1	1125-11	CHLORINATOR FRONT PL.
12	1		2" DIA. SCH.40 PIPE X 2'-10"
12a	1		2" DIA. SCH.40 PIPE X 3'-11 1/2"
13	3	OFSH-97	AERATOR DOUBLER PL'S.
14	4		PAD EYES PL. 1/2"X6X11 1/2"
15	1	1125-34	BLOWER COVER
16	1	1125-35	BLOWER MOUNT
17	1	OFSH-98	CATCH BASKET RIGHT SIDE PL.
18	1	OFSH-98	CATCH BASKET LEFT SIDE PL.
19	2		ø2" AIR INLET (STL NPT COLLAR)
20	1		ø4" STD. SCH. 40 PIPE COLLAR-INLET
21	1		ø3" STD. SCH. 40 PIPE EL. 90°
22	1	1125-27	WEIR SIDE PL.
22a	1	1125-25	WEIR BACK PL.
22b	1	1125-26	WEIR BOTTOM PL.
23	2	1125-29	CLARIFIER BACK PL.
24	2		FLAT BAR 2"x2"x1/4"x 3'-6 1/2" w/ø3/4" HOLES, 4 PLCS.
24a	2		L2"X2"X1/4"x1'-5 11/16"
24b	4		ø3/4" ROD x1'-6 1/2"LG.
24c	2		L2"x2"x1/4"X6" LG.
25	1	1125-28	CLARIFIER SIDE PL.
26	1		ø3" STD. SCH. 40 PIPEx 1"LG.
27	2		3x3x1/4" ANGLE x10'-0" CLIP ENDS 45° AS SHOWN
28	2		3x3x1/4" ANGLE x3'-11 3/4" CLIP ENDS 45° AS SHOWN
29	1		3x3x1/4" ANGLE x3'-11 1/8" COPE ENDS AS SHOWN
30	2		C4x5.4 CHANNEL x10'-5"
31	2		C4x5.4 CHANNEL x3'-9"
32	2		C4x5.4 CHANNEL 3'-5 13/16"
33	2		ø1/2"ROD x 3'-6"LG. BENT
34	2	1125-06	HOPPER SIDE PL.
35	1	1125-24	SLANTED PARTITION TOP PL.1/4"x4"x3'-6"LG.
36	1	1125-24	CONTROL PANEL SUP'T. PL.3/16"x11 1/2"x1'-4"LG.
37	8		ø1/2"ROD x 6"LG.
38	8		L2"x2"x1/4"X1 1/2" LG.

NOTES:
1. FORM, PUNCH, STREIGHTEN, FIT OR BEND PER COMMERCIAL STD. PRACTICE.
2. PART MARK PER COMMERCIAL STD. PRACTICE.
3. ALL MATERIAL SHOWN ON THIS DWG. TO BE 1/4" PLATE, ASTM A36 STEEL UNLESS OTHERWISE NOTED.
4. ALL PIPE & FITTINGS TO BE SCH80 "CPVC" PER 33-CFR-159 (USCG. APPROVED) UNLESS OTHERWISE NOTED.
5. FOLLOW MFGR'S INSTRUCTIONS FOR INSTALLATION OF BLOWER, PUMP AND CONTROL PANEL. (SEE OW-STD-300AB)
6. ALL STEEL PIPE TO BE STD. SCH40 ASTM-A36.

1125TRNSFRJHR 08-30-08

REV. NO.	DESCRIPTION	DATE
△	ADDED LIFT POINTS FOR SKID	7-12-10
△		
△		
△		
△		
△		
△		

STRUCTURAL GENERAL ARRG'T & ASSY
ELEVATIONS & PLAN

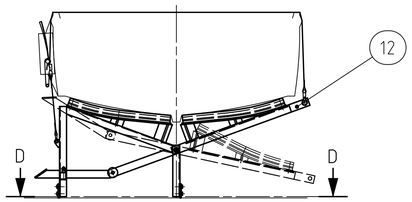
OWENS KLEEN TANK™ FIGHTING POLLUTION "THE BEST"

OWENS MFG. AND SPECIALTY COMPANY, INC.
P.O. BOX 62245
LAFAYETTE, LA. 70596
PHONE (337) 991-9580
FAX (337) 991-9566

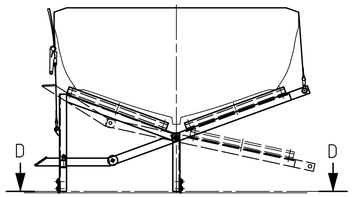
CUSTOMER:

JOB#:	SERIAL#:	
MODEL: OW-1125	DRN BY: J.H.ROGERS	
DATE: DEC.16,09	SCALE: NTS	SHEET: 1 OF
DRAWING: OW-1125-100		A

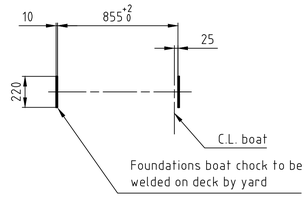
Section B-B



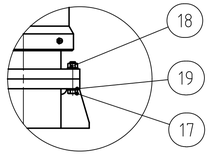
Section C-C



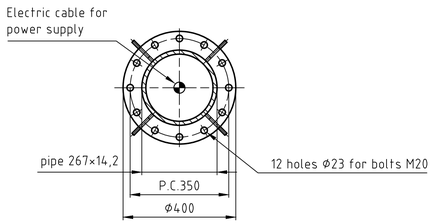
Boat chock foundation plan D-D

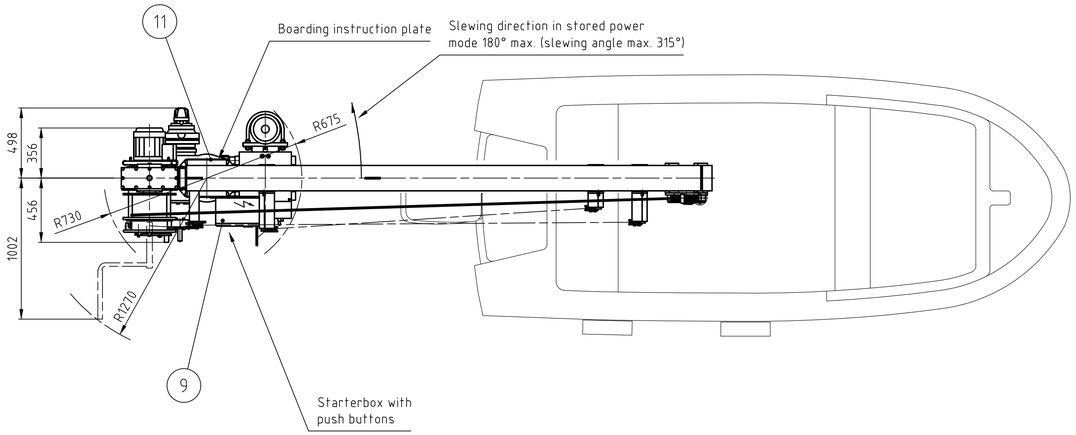


Detail X (1:10)

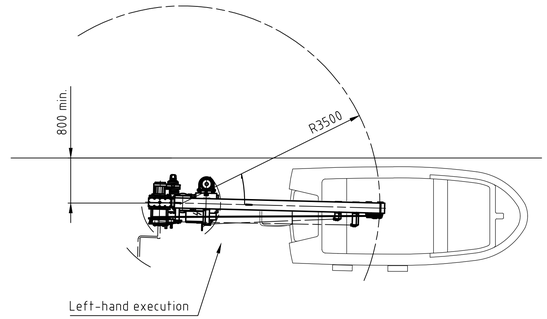


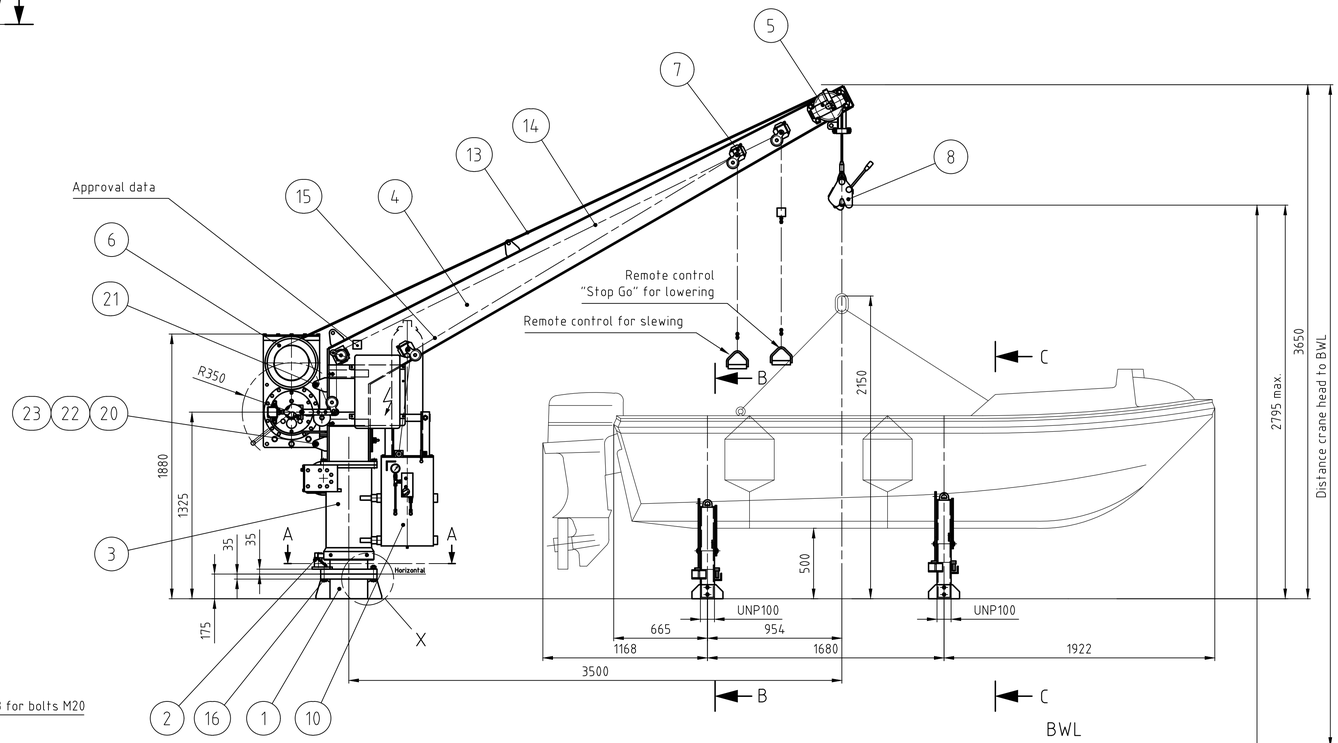
Section A-A (1:10)





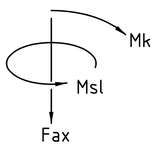
Actual deck situation
scale 1:50





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

Mk = 55 kNm
Msl = 18 kNm
Fax = 25 kN



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

Tensioning torque recommendations [Nm]				
	Oil lubricated		MoS2 lubricated	
	(8.8)	(10.9)	(8.8)	(10.9)
M16	210	295	170	240
M20	410	580	330	465
M24	710	1000	570	800
M27	1050	1500	840	1200
All connection parts must be galvanized				

ITEM	QUANT	DESCRIPTION	MATERIAL	REMARKS	MASS P	MASS S
					437	1047
23	6	Washer A21	St.	DIN 125		
22	2	Hex nut M20	8	DIN 934		
21	2	Hex screw M20×30	8.8	DIN 933		
20	2	Hex screw M20×55	8.8	DIN 933		
19	23	Washer 21	C45	DIN 6916		
18	12	Hex nut M20	10	DIN 6915	1	
17	9	Hex bolt M20×100	10.9	DIN 6914	3	
16	3	Hex bolt M20×120	10.9	DIN 6914	1	
15	1	Wire rope 4mm, L=5,5m	Stainl.st.			
14	1	Wire rope 4mm, L=26m	Stainl.st.		4	
13	1	Wire rope 10mm, L=25m	1960 N/mm²	P17SRS	11	
12	1	Arr. boat chocks, Fassmer RR4,2	2-1637	R.H. exec	13	98
11	1	Boarding instruction plate rescue boat stored power	2-0048	English		
10	1	Hydraulic assembly	ZBM0300	comp.of11600	280	
9	1	Electric assembly	99N01-T01		30	
8	1	Rescue boat hook HR.15	2-0022		1	5
7	1	Arr. remote control H-SG, C05/W02	2-0263		2	16
6	1	Arrangement winch 02E.01.21	3-1766	see D-base	47	313
5	1	Assembly components arm A05	2-0341		1	18
4	1	Davit arm 180×12/8×8 R = 3,5	1-0328			309
3	1	Arrangement column C05H.04.01	2-0447	see D-base	43	247
2	1	Slewing angle limiter 05	3-0090			4
1	1	Pedestal 05/175/gusset	4-0346			37

TEST LOADS (WORKSHOP):

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

TEST LOADS (ON BOARD):

DYNAMIC TEST (LOWERING ONLY):	1,1×11 = 12,1 kN
ALL STORES HANDLING FUNCTIONS:	n.a.

DAVIT MAIN DATA:

S.W.L. LIFERAFT:	n.a.
S.W.L. RESCUE BOAT:	11 kN
OUTREACH:	3,5 m
S.W.L. STORE HANDLING:	n.a.
OUTREACH:	- m
SLEWING SPEED - direct power:	n.a.
- stored power:	1 rpm
TOTAL MASS OF SYSTEM:	1400 kg

LIFE SAVING WINCH DATA:

WINCH TYPE:	02E.01
HOISTING SPEED:	21,5 m/min
GRAVITY LOWERING SPEED:	40 m/min
WIRE ROPE SIZE:	10 mm
MINIMUM REQUIRED BREAKING LOAD:	65,4 kN
TYPE OF WINCH:	spur gear winch
OIL QUANTITY:	1 l
POWER CONSUMPTION:	6,5 kW
NOMINAL CURRENT:	28 A
STARTING CURRENT:	160 A

STORES WINCH DATA

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

ELECTRIC MAIN DATA:

VOLTAGE:	208 V
FREQUENCY:	60 Hz
MAX. RATED POWER:	8,3 kW
PROTECTION - on deck:	IP56
- underdeck:	n.a.
INSULATION CLASS:	F
CONTROLS - boat winch:	on starter box
- store winch:	n.a.

HYDRAULIC MAIN DATA:

WORKING PRESSURE:	300 bar
OIL FLOW:	3,0 l/min
TANK CAPACITY:	90 l
ACCUMULATOR VOLUME:	35 l
PRECHARGE PRESSURE:	100 bar
POWER CONSUMPTION:	1,8 kW
NOMINAL CURRENT:	6 A
STARTING CURRENT:	30 A

CRAFT MAIN DATA:

BOAT TYPE:	Fassmer / RR 4,2
DIMENSIONS:	4,23×1,75×0,82 m
MASS OF BOAT WITH EQUIPMENT:	550 kg
ACTUAL BOAT CAPACITY:	6 persons
LOWERING MASS:	1000 kg
RECOVERY MASS:	1000 kg
LIFERAFT CAPACITY:	n.a.
LOWERING MASS:	- kg

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Survival- & Deck Equipment
Global Davit GmbH

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

PROJECTION

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

1-2035
06-133

H G F E D C BB A — name — description — date