

## GENERAL NOTES

- THIS SHIP SHALL BE CONSTRUCTED ACCORDING TO ABS 2001 UNDER 90 METER RULES AS AMENDED AND USCG 1999 CFR. THE SHIP SHALL BE CLASSIFIED ~~NA~~A1(C), ~~NA~~AMS, ~~NA~~ACCU, ~~NA~~DP(S)-1, UNRESTRICTED SERVICE, ICE CLASS CO AND ABS RECORD OF CLASSIFICATION FOR COMPLIANCE WITH ABS GUIDE FOR CERTIFICATION OF CRANES (INCLUDING THE REQUIREMENTS OF API 2C). THE SHIP SHALL BE CONSTRUCTED AND CERTIFICATED IN ACCORDANCE WITH 46 CFR, SUBCHAPTER U.
2. THE PRINCIPAL CHARACTERISTICS OF THIS VESSEL ARE LISTED AS FOLLOWS:  
LENGTH OVERALL: 63.6 M  
LENGTH BP: 58.0 M  
BEAM: 15.0 M  
DRAFT: 5.9 M (CENTERBOARD UP)  
          9.15 M (CENTERBOARD DOWN)  
MOLDED DEPTH: 8.65 M  
ESTIMATED TONNAGE: 2100
3. PIPING SYSTEM SYMBOLS USED ON THIS DIAGRAM CONFORM TO MARITIME ADMINISTRATION STANDARDS.
4. ALL PIPING MATERIALS AND WORKMANSHIP (WELDING PRACTICES) TO BE IN ACCORDANCE WITH ABS & USCG RULES AND REGULATIONS. PIPING TO BE INSTALLED IN ACCORDANCE WITH U.S.P.H. REGULATIONS. 45 DEGREE STUB-ONS, LUGS AND SWEEP TEES SHOULD BE UTILIZED. 90 DEGREE ELBOWS SHALL BE AVOIDED.
5. ALL PIPING TO HAVE SUFFICIENT FLEXIBILITY TO PREVENT OVER STRESSING OF PIPING MATERIALS. LEAKAGE OF JOINTS OR DISTORTION OF CONNECTED EQUIPMENT. PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MAXIMUM NUMBER OF BENDS AND FITTINGS.
6. PIPING SHALL BE ARRANGED SO THAT IT WILL NOT NORMALLY BE SUBJECT TO MECHANICAL BURST DUE TO PRELIMINARY USE FOR OTHER PURPOSES SUCH AS GRABRODS, STEPPING POINTS AND HANDRAILS.
7. PIPING SHALL NOT BE RUN OVER IN THE VICINITY OF ELECTRICAL EQUIPMENT; IF UNAVOIDABLE, FLUID PIPING SHALL BE SHIELDED TO PREVENT FLUID DAMAGE.
8. WHERE REQUIRED, RESILIENT HANGERS SHALL BE INSTALLED BETWEEN RESILIENTLY MOUNTED EQUIPMENT AND THE FIRST RIGID PENETRATION.
9. CLEANOUTS ARE TO BE INSTALLED IN HORIZONTAL DRAIN PIPING AT EACH CHANGE IN DIRECTION GREATER THAN 45° AND NOT MORE THAN 15M APART. CLEANOUTS ARE TO BE AVOIDED IN THE OVERHEAD OF LIVING SPACES, SPACES WHERE FOOD IS STORED OR PREPARED, LABORATORIES, AND THE HOSPITAL.
10. ALL VENTS TO BE HAYWARD/MEMARCO ANTISIPHONIC VENT PART NO. FF1.
11. ROUTE GRAVITY DRAINS WITH A MINIMUM SLOPE OF 20mm/METER.
12. A MINIMUM OF 915mm OF STRAIGHT PIPE IS REQUIRE ON THE DISCHARGE SIDE OF THE EDUCTOR. ALL BENDS ON THE DISCHARGE SIDE OF EDUCTOR SHALL BE 45 DEGREE OR MORE. A MINIMUM RADIUS OF 2 1/2 TIMES THE NOMINAL DIAMETER OF THE PIPE.
13. A SIGN MUST BE PROVIDED AT THE GARBAGE GRINDER THAT READS AS FOLLOWS: DO NOT OPERATE GARBAGE GRINDER DURING ZERO DISCHARGE PERIODS.
14. ONE DECK DRAIN SHALL BE SUPPLIED FOR EVERY 10 M<sup>2</sup> OF DECK DECK AREA FOR THE LABORATORIES.
15. NO MORE THAN TWO TOILET AND SHOWER MODULES SHALL BE CONNECTED TO A SINGLE VACUUM INTERFACE VALVE.
16. ALL BLACK WATER VACUUM LINES SIZES ARE TO BE 50MM.
17. REFORMING POCKETS SHALL BE INSTALLED IN ACCORDANCE WITH EVAC RECOMMENDATIONS.
18. USE GRAVITY DRAIN PIPE SIZE DATA CHART TO DETERMINE GREY WATER HEADER SIZES.
19. A 32mm THREADED PAID COUPLING WITH PLUG & CHAIN SHALL BE INSTALLED IN THE BULKHEAD OF THE CO2 RM & HAZ. MAT/PAINT LKR. AS CLOSE TO THE DECK AS POSSIBLE.
20. INCORPORATED ECP 56, THAW ECP 56 LAYER TO VIEW CHANGES.
21. M279 DEPARTMENT OF PUBLIC HEALTH APPROVAL 5/12/02.

### GENERAL NOTES CONTD

22. ROUTE GALLEY AND MESS MISC. DRAINS W/AIR GAP TO NEAREST DECK DRAIN IF POSSIBLE.

## MATERIAL SCHEDULE

PIPING SYSTEM	PIPE		TAKEDOWN JOINTS 4		VALVES 3,1			FITTINGS 2	MAXIMUM WORKING CONDITIONS		
	SIZE	MATERIAL	MATERIAL	BOLTING	TYPE	BODY	TRIM	TYPE & MATERIAL	SYSTEM	PRESSURE	TEMP
SANITARY AND WASTE DRAINS (CLASS 2 PIPING)	50 & BELOW	STAINLESS STEEL, AISI 304, ELECTRICALLY SEAM WELDED PIPE, COLD FIT UNI X C/N1 1810 "STECKDRAIN" OR	UNION, SWLGD OR THD STEEL, ASTM A105 SOCKET WELD ANSI B16.11 3000#	BOLTS AND STUDS STEEL ASTM A307 OR B ANSI B18.2.1	GATE, GLOBE, ANGLE, CHECK, BALL,	SWLGD AND THREADED, 150# STEEL, ASTM A105 OR A216 BRONZE ASTM B61 OR B62	STEEL VALVES STEM, WEDGE/DISC OR SEAT RING CRES, ASTM A 182 GR F6A, HARD FACED SEATS OPTIONAL  IRON OR BRONZE VALVES STEM, WEDGE/DISC OR SEAT RING BRONZE, ASTM B61 OR B62  INTEGRAL SEATS SAME AS BODY MATERIAL	SOCKET SEALING GASKETED STAINLESS STEEL, AISI 304 ELECTRICALLY SEAM WELDED  BTWLD, STEEL, ASTM A234, GR WPB, ANSI B16.9	SANITARY DRAINS  WASTE DRAINS TRANSFER  VACUUM DRAINS	AMBIENT  2.8 bar  -0.96 bar	49°C  49°C  49°C
	65 & ABOVE	CARBON STEEL, ASTM A53, GR B SCHEDULE 40 TYPE S OR E, SCHEDULE 80 TYPE S OR E IN TANKS	FLANGE, SLIP-ON, 150# STEEL, ASTM A105 ANSI B16.5  SOCKET SEALING GASKETED* STAINLESS STEEL, AISI 304, ELECTRICALLY SEAM WELDED  * GASKET SEAL-NITRILE	ANSI B18.2.2  CRES TO BE USED WHEN EXPOSED TO WEATHER OR SALTWATER							

**MATERIAL NOTES:**

1. GAUGE STOP VALVES SHALL BE 2 PIECE BRONZE CATEGORY A.
2. FOR 50 AND BELOW FITTINGS MAY BE ELASTIC STRAIN PRELOAD (ESP) CARBON STEEL 207 BAR RATING, WITH ABS TYPE APPROVAL AND USCG ACCEPTANCE.
3. ALL RESILIENT SEATED VALVES TO BE USCG CATEGORY A.
4. GASKETED, MECHANICALLY ATTACHED FITTING WITH 301 TOOL STEEL ANCHOR RINGS, 316T1 STAINLESS STEEL HOUSING AND LOCKING BAR, 316 ALLEN HEX HEAD BOLTS, "C" SHAPED PRESSURE RESPONSIVE EPODE GASKET, WITH ABS AND USCG APPROVAL.

GRAVITY DRAIN PIPE SIZE DESIGN DATA				
FIXTURE	NUMBER OF		FIXTURE UNITS	PIPE SIZE (IPS)
	FIXTURES	UNITS		
LAVATORY	1	1	1	32mm
SHOWER	1	2	8	40mm
SINK (GALLEY)	1	8	10	50mm
SINK (SERVICE)	1	1	25	65mm
EYEWASH	1	1	50	75mm
DRINKING FOUNTAIN	1	1	120	90mm
DECK DRAIN	1	1	240	100mm
WASHING MACHINE	1	8	530	125mm
DISHWASHER	1	4	850	150mm

## CONVERSION TABLE

STANDARD ENGLISH NOM. PIPE SIZE UNITS (IN)	METRIC NOM. PIPE SIZE UNITS (MM)
1/2 IN	15 MM
3/4 IN	20 MM
1 IN	25 MM
1 1/4 IN	32 MM
1 1/2 IN	40 MM
2 IN	50 MM
2 1/2 IN	65 MM
3 IN	80 MM
4 IN	100 MM
5 IN	125 MM
6 IN	150 MM
8 IN	200 MM
10 IN	250 MM
12 IN	300 MM
14 IN	350 MM
16 IN	400 MM

## CONVERSION TABLE

STANDARD ENGLISH PRESSURE UNITS (PSI)	METRIC PRESSURE UNITS (BAR)
50 PSI	3.44 BAR
100 PSI	6.89 BAR
150 PSI	10.34 BAR
200 PSI	13.79 BAR
300 PSI	20.68 BAR
400 PSI	29.58 BAR
500 PSI	34.47 BAR
1000 PSI	68.95 BAR
2000 PSI	137.70 BAR
3000 PSI	206.86 BAR

## REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
1		<p>1. REVISED HOSPITAL COMPARTMENT NUMBER "WAS" 02-50-1 "S" 02-50-01</p> <p>2. REVISED EYE/FACE WASH/DELUGE DRAIN IN 02-50-01 TO EYE/FACE WASH ONLY.</p> <p>3. REVISED GALLEY (1-19-1) REFERENCE DETAIL.</p> <p>4. DRAIN FOR HYDROGRAPHIC LAB(1-38-1) &amp; FISH/WET LAB(1-58-0) DELUGE SHOWER TO BE REMOVED FROM THE GREY WATER SYSTEM AND TO BE TREATED AS AN EXTERIOR DECK DRAIN SEE REF 10.</p> <p>5. ADDED A DECK DRAIN TO CG LOCKER (1-47-1).</p> <p>6. LABELED VENDOR SUPPLIED VACUUM GAGES &amp; SWITCHES ON THE DIAGRAM &amp; ADDED CALLOUT TO THE COMPONENT LIST.</p> <p>7. ADDED PRESSURE GAGE 528-PI-01 TO THE COMPONENT LIST.</p> <p>8. REVISED DETAIL 22-A &amp; 22-D.</p> <p><u>ITEMS 1-B PER DRL A034 FP05 SUBMISSION 889 REV 1</u></p> <p>9. REVISED GENERAL NOTE 20.</p> <p>10. ADDED DRAINS FROM GALLEY HOODS TO DRAIN LOCATION LIST.</p> <p>11. REVISED DETAILS 19-C, 19-E, &amp; 20-C.</p> <p>12. REVISED COMPONENT LIST 1-58-0 (WAS) 3 (IS) 2 &amp; DET 17-F.</p> <p>13. ADDED DECK DRAIN AND DELETED LAB SINK DRAIN SCIENTIST'S READY ROOM (1-56-0).</p> <p>14. ADDED REFERENCE 10.</p> <p>15. REVISED OVBD ROV TO MAIN DECK.</p> <p>16. REVISED DET 20-A TO INCLUDE DRY &amp; PRESERVATION ALCOVE SINKS. PER ECP 56</p> <p>17. ADDED CONNECTION FOR WASTE WATER TK FILL.</p> <p><u>ITEMS 9 THRU 17 PER ENGINEERING DEVELOPMENT</u></p>	8/18/04	DMR
2		<p>1. EXTENDED HULL APPLICABILITY TO INCLUDE HULL 1956.</p> <p>2. REVISED DECK DRAINS IN THE CHEM AND PRESERVATION ALCOVE LABS TO BE VALVED TYPE.</p> <p><u>ITEM 2 PER NOA6</u></p>	3/24/05	DMR
3		<p>1. EXTENDED HULL APPLICABILITY TO INCLUDE HULL 1957.</p> <p>2. INCORPORATED ECP 056B.</p>	6/7/06	DMR
4		<p>1. REVISED SEWAGE TREATMENT RM SVCE SINK TO DRAIN INTO WASTE WATER HOLDING TANK.</p> <p><u>ITEM 1 PER AS-BUILT</u></p>	6/29/06	DMR
5		<p>1. THIS REVISION REFLECTS THE AS-BUILT CONDITION FOR HULL 1953.</p>	7/25/06	DMR
6		<p>1. ADDED VACUUM VENT TO MSD PUMP DISCHARGE PIPING. ADDED 528-VL-42.</p> <p><u>ITEM 1 PER M282 AS-BUILT</u></p>	7/2/07	DMR
7		<p>1. REVISED COMPONENTS LIST TO SUIT LAB CHANGES.</p> <p>2. THIS REVISION REFLECTS THE AS-BUILT CONDITION FOR HULL 1956.</p> <p><u>ITEM 1 PER ECP 056C</u></p>		

## GREY AND BLACK WATER DRAIN LOCATION LIST

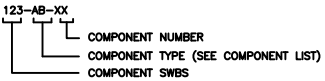
DK	SPACE	SOURCE	QTY	SIZE	TYPE	REMARKS
03.LVL	03-34-0	DECK DRAIN	3	40	G/V	SEE DETAILS 17-CAND 17-E
03.LVL	03-34-0	DR FOUNT	1	40	G/V	SEE DETAIL 23-B
02.LVL	02-35-1	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-35-1	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-35-2	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-35-2	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-35-3	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-35-3	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-38-0	DECK DRAIN	2	50	G/V	SEE DETAILS 17-CAND 17-E
02.LVL	02-38-0	DR FOUNT	1	40	G/V	SEE DETAIL 23-B
02.LVL	02-43-1	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-43-1	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-44-4	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-44-4	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-44-6	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-44-6	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-45-1	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-45-1	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-48-0	SERVICE SINK	1	40	G/V	SEE DETAIL 23-A
02.LVL	02-48-0	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
02.LVL	02-50-0	LAVATORY	1	40	G/V	SEE DETAIL 23-A
02.LVL	02-50-0	TOILET	1	50	B/V	SEE DETAIL 19-B
02.LVL	02-50-0	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
02.LVL	02-50-1	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
02.LVL	02-50-01	BYFACE WASH	1	40	B/V	SEE DETAIL 17-A
02.LVL	02-50-1	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
02.LVL	02-50-1	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
02.LVL	02-53-2	DECK DRAIN	1	50	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-10-0	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-10-1	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-10-2	DECK DRAIN	1	40	G/V	SEE DETAIL 17-D
01.LVL	01-12-1	BHOCOURING	4	25	G/V	SEE DETAILS 19-B
01.LVL	2-15-2	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-19-0	DECK DRAIN	2	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-19-0	DR FOUNT	1	40	G/V	SEE DETAIL 23-B
01.LVL	01-21-2	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
01.LVL	01-21-2	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
01.LVL	01-24-2	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
01.LVL	01-24-2	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
01.LVL	01-27-1	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-27-1	SERVICE SINK	1	40	G/V	SEE DETAIL 23-A
01.LVL	01-30-2	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
01.LVL	01-30-2	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
01.LVL	01-33-2	TOILET & S/O/V/R	1	50	B/V	SEE DETAIL 23-B
01.LVL	01-33-2	TOILET & S/O/V/R	1	50	G/V	SEE DETAIL 23-B
01.LVL	01-37-0	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
01.LVL	01-41-1	BHOCOURING	1	25	G/V	SEE DETAILS 19-B
01.LVL	01-56-0	DECK DRAIN	1	40	G/V	SEE DETAIL 17-F
01.LVL	01-56-0	BYFACE WASH	1	40	G/V	SEE DETAIL 17-A
01.LVL	4-39-0	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
MNDK	1-7-01	DECK DRAIN	1	40	G/V	SEE DETAILS 17-CAND 17-E
MNDK	1-7-0	DECK DRAIN	1	40	G/V	SEE DETAIL 17-D

GREY AND BLACK WATER DRAIN LOCATION LIST (CONTD)					
SPACE	SOURCE	QTY	SIZE	TYPE	REMARKS

NO	SPACE	DESCRIPTION	QTY	SIZE	TYPE	REMARKS
MN DK	1-4.1	DECK DRAIN	1	40	GW	SEE DETAIL 17-C AND 17-E
MN DK	1-4.1	SERVICE SINK	1	40	GW	SEE DETAIL 23-A
MN DK	1-5-0	LAB SINK	1	40	GW	SEE DETAIL 23-A
MN DK	1-5-0	DECK DRAIN	2	40	GW	SEE DETAIL 17-D & 22-A
MN DK	1-5-1	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 22-A
MN DK	1-5-1	K&E MAKER	1	40	GW	SEE DETAIL 23-B
MN DK	1-5-1	LAB SINK	2	40	GW	SEE DETAIL 22-A
MN DK	1-5-1	EYE WASH/DELUGE	1	40	GW	SEE DETAIL 17-A
MN DK	1-6-0	DECK DRAIN	1	40	GW	SEE DETAIL 17-D & 22-A
MN DK	1-6-2	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
MN DK	1-6-2	LAVATORY	1	40	GW	SEE DETAIL 23-A
MN DK	1-6-2	TOILET	1	50	BW	SEE DETAIL 19-B
MN DK	1-6-2	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
MN DK	1-7-0	DECK DRAIN	1	40	GW	SEE DETAIL 17-D
MN DK	1-7-2	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
MN DK	1-7-2	BWD COUPLING	2	GW	23	SEE DETAILS 18-B
MN DK	1-7-3	BWD COUPLING	1	25	GW	SEE DETAILS 18-B
MN DK	3-6-0	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
2ND DK	2-11-1	WASHER	1	50	GW	SEE DETAIL 22-D
2ND DK	2-11-1	SERVICE SINK	1	50	GW	SEE DETAIL 22-D
2ND DK	2-11-1	DECK DRAIN	1	50	GW	SEE DETAIL 22-D
2ND DK	2-19-0	DR FOUNT	1	40	GW	SEE DETAIL 20-B
2ND DK	2-19-1	DECK DRAIN	1	40	GW	SEE DETAIL 17-C AND 17-E
2ND DK	2-19-1	LAVATORY	1	40	GW	SEE DETAIL 23-A
2ND DK	2-19-1	SHOWER	1	40	GW	SEE DETAILS 17-C AND 17-E
2ND DK	2-19-1	TOILET	1	50	BW	SEE DETAIL 19-B
2ND DK	2-21-2	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
2ND DK	2-21-2	SERVICE SINK	1	40	GW	SEE DETAIL 23-A
2ND DK	2-26-1	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-26-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-26-2	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-26-2	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-29-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-29-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-29-2	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-29-2	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-31-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-31-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-36-2	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-36-2	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-39-01	DECK DRAIN	1	40	GW	SEE DETAILS 17-C AND 17-E
2ND DK	2-39-01	DR FOUNT	1	40	GW	SEE DETAIL 20-B
2ND DK	2-39-2	TOILET & SHOWER	1	40	BW	SEE DETAIL 23-B
2ND DK	2-39-2	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-39-3	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-39-3	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-46-1	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-46-1	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-46-2	TOILET & SHOWER	1	50	BW	SEE DETAIL 23-B
2ND DK	2-46-2	TOILET & SHOWER	1	50	GW	SEE DETAIL 23-B
2ND DK	2-63-0	DR FOUNT	1	40	GW	SEE DETAIL 20-B
2ND DK	4-4-0	EYE WASH/DELUGE	1	40	GW	SEE DETAIL 17-A
TK TOP	3-29-0	SERVICE SINK	1	40	GW	SEE DETAIL 23-D

10	SCUPPERS & DRAINS DIAGRAM	M279--528A--FP10
9	GAUGE, THERMOMETER & MISC INSTRUMENT LIST	M282--500--FLO3
8	REACH ROD SCHEDULE	M282--500--FLO8
7	COMPRESSED AIR SYSTEM DIAGRAM	M282--551--FP07
6	FRESH & POTABLE WATER SYSTEM DIAGRAM	M282--533--FP03
5	PIPING STANDARD DETAILS	M282--505--FP25
4	AUXILIARY SEAWATER SYSTEM DIAGRAM	M282--524--FP23
3	MACHINERY ARRANGEMENT	M282--201--FA03
2	BLGE AND BALLAST SYSTEM DIAGRAM	M282--529--FP01
1	VENTS & SOUNDS SYSTEM	M282--506--FP02

							7	6	7	REV
10	9	8	7	6	5	4	3	2	1	SHT
REVISION STATUS										

[illegible]

COMPONENT NO. IDENTIFICATION

DOCUMENT DISTRIBUTION RECORD												
ISSUE DATE	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
REV #	0	1	2	3	4	5	6	7				
NOAA	1	1										
PROG MGR	1	1										
PROJ ENG	1											
HMP PC	12	12	12	1	1	1	1	1				
NOISE CNTRL	1											
CHAND LLC	1	1										
JOINER	1											
HVAC	0											
PROP SSV	0											
TRAWL SSV	0											
HPG PC		1	1	1	1	1	1	1				
PRODUCTION DESIGN		(1)	1	1	1	1	1	1				
ISSUED BY	DRDRDRDRDRDRDR											

**AS-BUILT**

### APPLICABILITY BLOCK

JOB: M282	HULL: 1953
JOB: M283	HULL: 1956
JOB: M284	HULL: 1957

<b>VT Halter Marine, Inc.</b>  <b>Vision Technologies</b> Systems	<b>VESSEL</b> <b>FRV40</b>
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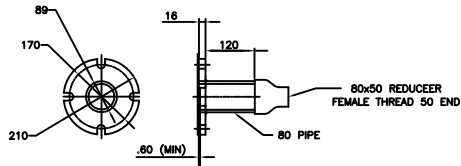
TRAIN BY BC 8/18/03	ABS APPV	TITLE GE
CHECKED BY	USCG APPV	

RGH 8/26/03	
APPROVED BY K.S. 9/17/03	OWNER APPV

## GREY AND BLACK WATER SYSTEM DIAGRAM

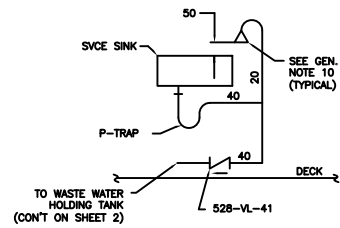
HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
APPLICABILITY	3BJ86	F	M282	528	FP05	001	07
ESTIMATE NO	SCALE	FILE FP-005-01				SHEET 1 OF 3	
00-104	NONE						



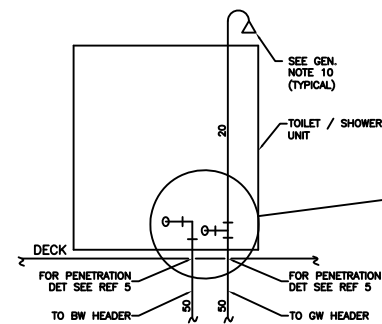


OUTSIDE DIAMETER.....210  
 INSIDE DIAMETER.....89  
 BOLT CIRCLE DIAMETER.....170  
 BOLT HOLES.....4, EACH OF 16 DIA. EQUALLY SPACED SLOTTED TO THE FLANGE PERIPHERY. SLOT WIDTH TO BE 18.  
 FLANGE THICKNESS.....16  
 FLANGE SURFACE.....FLAT FACE  
 FLANGE MATERIAL.....STEEL  
 BOLTS.....4, EACH OF 16 DIA. & OF SUITABLE LENGTH  
 NUT.....4, EACH TO FIT BOLTS, SST  
 WASHER.....8, EACH TO FIT BOLTS, SST  
 GASKET.....OILPROOF, AND SUITED TO 5.88 BAR SERVICE

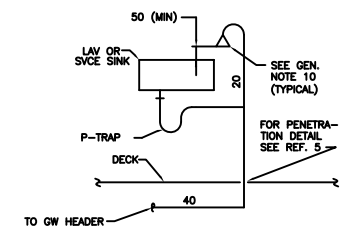
**DETAIL 24-E**  
SEWAGE DISCH CONN



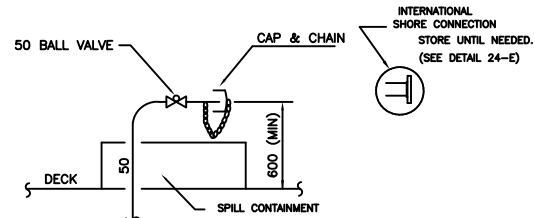
**DETAIL 23-D**  
SERVICE SINK  
SEWAGE TREATMENT ROOM



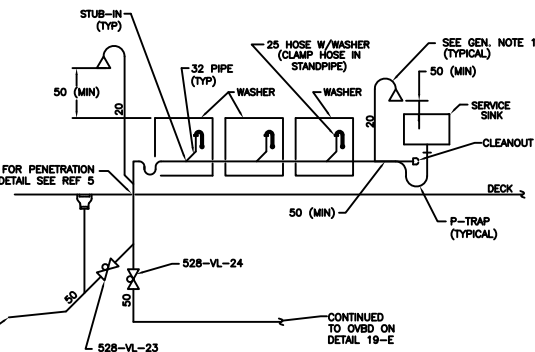
**DETAIL 23-B**  
TOILET / SHOWER UNITS



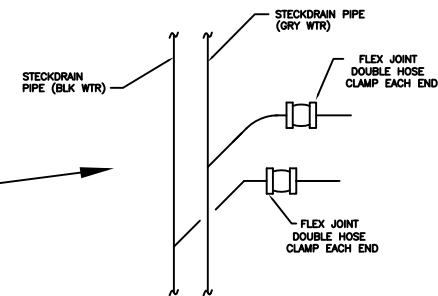
**DETAIL 23-A**  
TYP LAV OR SINK DRAIN



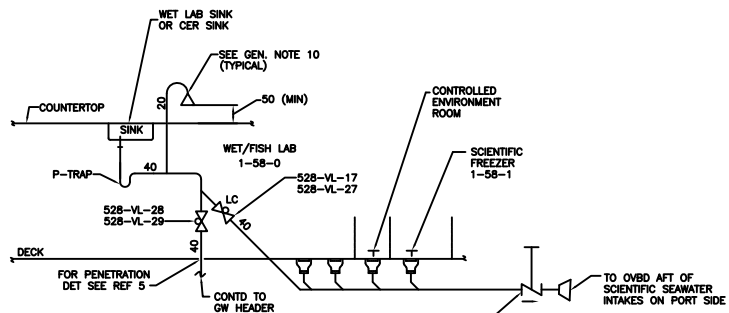
**DETAIL 22-E**  
TYP SEWAGE DISCH STA



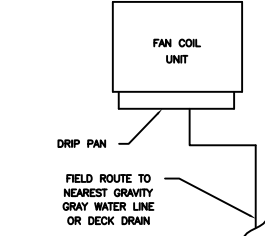
**DETAIL 22-D**  
WASHER DRAIN CONN



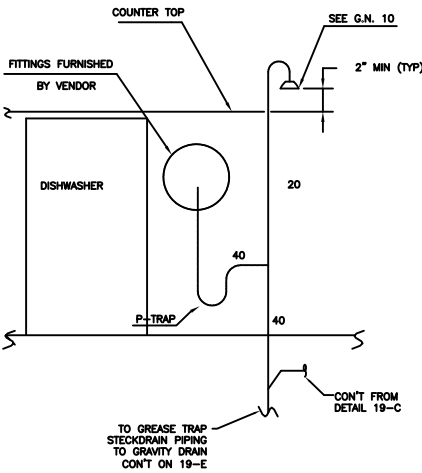
**DETAIL 22-B**  
T&S MODULES  
TYPICAL BLACK & GREY WATER CONNS  
TYPICAL DETAIL



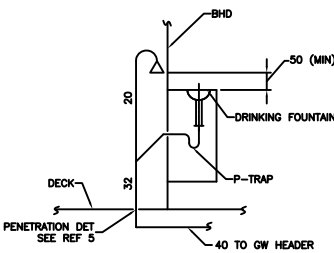
**DETAIL 22-A**  
WET/FISH LAB & SCIENTIFIC FREEZER  
OVERBOARD HEADER  
SEE GEN. NOTE 14



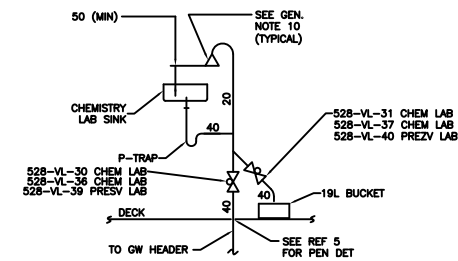
**DETAIL 20-E**  
DRIP PAN DRAIN



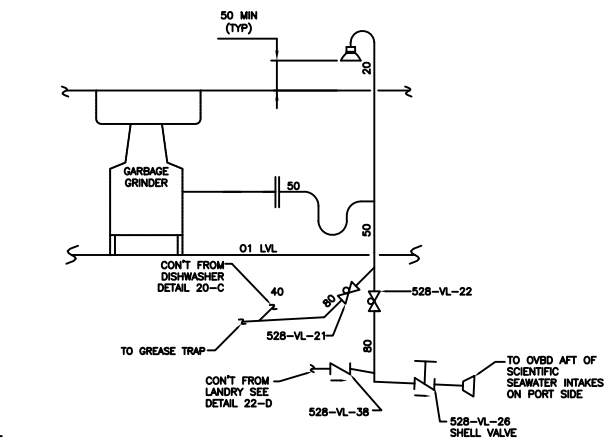
**DETAIL 20-C**  
DISHWASHER DRAIN



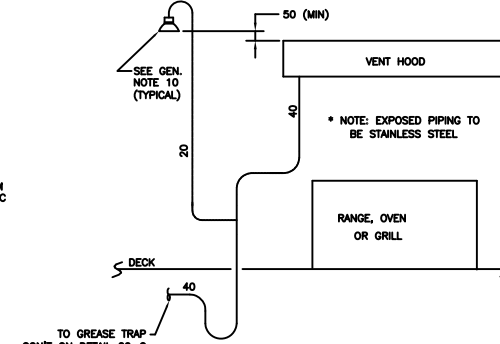
**DETAIL 20-B**  
TYP DRINKING FOUNTAIN



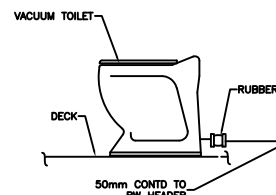
**DETAIL 20-A**  
CHEM, DRY & PRESV LAB SINKS  
SEE GEN. NOTE 14



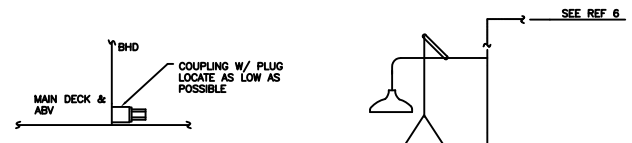
**DETAIL 19-E**  
GARBAGE GRINDER SINK  
SEE GEN. NOTE 13



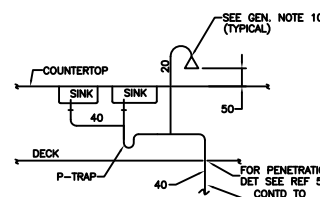
**DETAIL 19-C**  
TYP VENT HOOD DRAIN  
(3 PLACES)



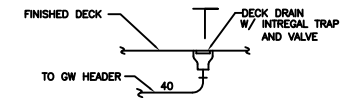
**DETAIL 19-B**  
TYP STICK BUILT TOILET



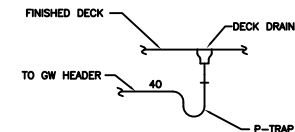
**DETAIL 18-B**  
COMPT BHD DRAIN



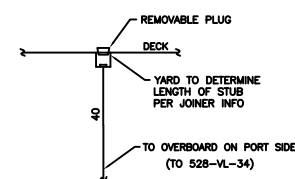
**DETAIL 19-A**  
TYP MULTIPLE SINK CONN



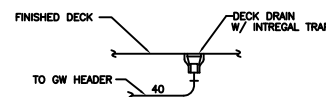
**DETAIL 17-F**  
DECK DRAIN WITH  
INTEGRAL TRAP & VALVE CONFIGURATION



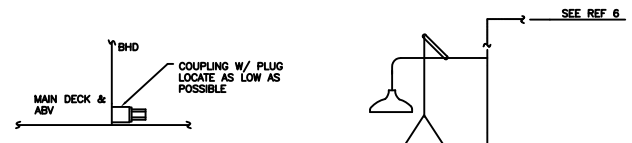
**DETAIL 17-E**  
P-TRAP CONFIGURATION



**DETAIL 17-D**  
REEPER AND FREEZER DRAINS



**DETAIL 17-C**  
DECK DRAIN WITH  
INTEGRAL TRAP CONFIGURATION



**DETAIL 17-A**  
DELUGE SHOWER/EYEWASH DRAIN

PLN NO	1953	CAGE CODE	36J86	SIZE	F	JOB NO.	M282	ITEM	528	DELIVERABLE	FP05	SHEET	003	REV	07
ESTIMATE NO	00-104	SCALE	NONE	FILE	FP05-003-0							SHEET	3	OF	3

DWG NO. M282-593-FP05 (Rev 3)