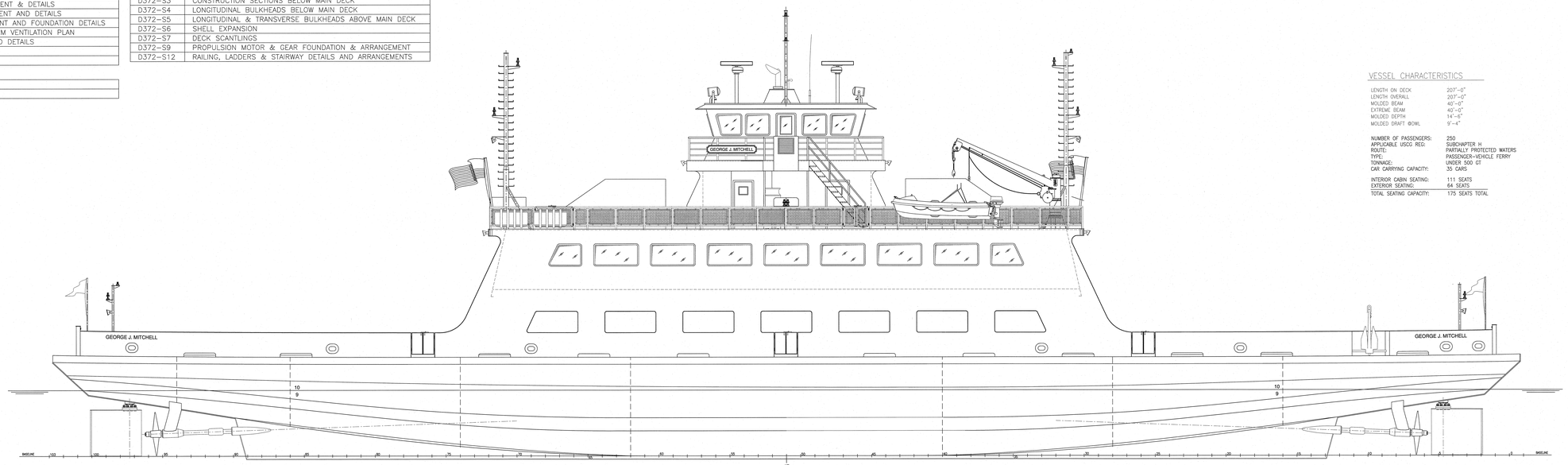
CONTRACT DRAWINGS

DWG. NO.	DESCRIPTION
D372-A1	GENERAL ARRANGEMENTS
D372-A2	INBOARD PROFILE
D372-A3	OUTBOARD PROFILE
D372-A4	EMERGENCY EVACUATION PLAN
D372-A5	REGULATORY TONNAGE PLAN
D372-A7	DOOR, WINDOW, AND HATCH SCHEDULE
D372-A8	COLREGS PLAN
D372-A9	ENGINE ROOM ARRANGEMENT
D372-A11	STRUCTURAL FIRE PROTECTION
D372-A12	MOORING FITTINGS, ANCHOR AND BULWARK DETAILS
D372-A13	HULL MARKINGS
D372-E1	ELECTRICAL ONE-LINE DIAGRAM
D372-E2	ELECTRICAL LOAD ANALYSIS
D372-E3	ELECTRICAL LIGHTING GUIDANCE
D372-M1	PROPELLER SHAFTING ARRANGEMENT & DETAILS
D372-M2	RUDDER & STEERING ARRANGEMENT AND DETAILS
D372-M5	RESCUE BOAT DAVIT ARRANGEMENT AND FOUNDATION DETAILS
D372-M7	AUX ER, ENGINE ROOM, EGEN RM VENTILATION PLAN
D372-M9	HVAC SYSTEM ARRANGEMENT AND DETAILS
D372-M10	KEEL COOLER ARRANGEMENTS
D372-M11	A/C PIPING SYSTEM
D372-T1	LINES PLAN
D372-T3	FLOODABLE LENGTH PLAN

DWG. NO.	DESCRIPTION
D372-P1	EXHAUST ARRANGEMENTS & DETAILS
D372-P3	DECK DRAINS ONE-LINE PIPING SCHEMATIC AND DETAILS
D372-P4	FUEL OIL ONE-LINE PIPING SCHEMATIC & MANIFOLD DETAILS
D372-P5	POTABLE WATER ONE-LINE PIPING SCHEMATIC
D372-P6	DRAIN, WASTE, & FLUSHING ONE-LINE PIPING SCHEMATIC
D372-P7	FIRE MAIN SYSTEM ONE-LINE PIPING SCHEMATIC
D372-P8	SPRINKLER SYSTEM ONE-LINE PIPING SCHEMATIC
D372-P9	BILGE SYSTEM PIPING SCHEMATIC AND SEACHEST DETAILS
D372-P10	COMPRESSED AIR, ONE-LINE PIPING SCHEMATIC
D372-P11	LUBE OIL AND DIRTY OIL ONE-LINE PIPING SCHEMATIC
D372-P12	VENTS, FILLS, & SOUNDS PIPING SCHEMATIC & DETAILS
D372-P14	KEEL COOLING ONE-LINE PIPING SCHEMATIC
D372-P15	HVAC BOILER WATER PIPE SCHEMATIC
D372-S1	STRUCTURAL PROFILE
D372-S2	CONSTRUCTION SECTIONS ABOVE MAIN DECK
D372-S3	CONSTRUCTION SECTIONS BELOW MAIN DECK
D372-S4	LONGITUDINAL BULKHEADS BELOW MAIN DECK
D372-S5	LONGITUDINAL & TRANSVERSE BULKHEADS ABOVE MAIN DECK
D372-S6	SHELL EXPANSION
D372-S7	DECK SCANTLINGS
D372-S9	PROPULSION MOTOR & GEAR FOUNDATION & ARRANGEMENT
D372-S12	RAILING, LADDERS & STAIRWAY DETAILS AND ARRANGEMENTS

State of Maine Department of Transportation
207 Foot LOA Double-Ended Passenger/Vehicle Ferry
Project No. WIN 024605.10
State Ferry Vessel Replacement



VESSEL CHARACTERISTICS

LENGTH ON DECK	207'-0"
LENGTH OVERALL	207'-0"
MOLDED BEAM	40'-0"
EXTREME BEAM	40'-0"
MOLDED DEPTH	14'-6"
MOLDED DRAFT @DWL	9'-4"
NUMBER OF PASSENGERS:	250
APPLICABLE USCG REG:	SUBCHAPTER H
ROUTE:	PARTIALLY PROTECTED WATERS
TYPE:	PASSENGER-VEHICLE FERRY
TONNAGE:	UNDER 500 GT
CAR CARRYING CAPACITY:	35 CARS
INTERIOR CABIN SEATING:	111 SEATS
EXTERIOR SEATING:	64 SEATS
TOTAL SEATING CAPACITY:	175 SEATS TOTAL

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/13/24	KVC

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

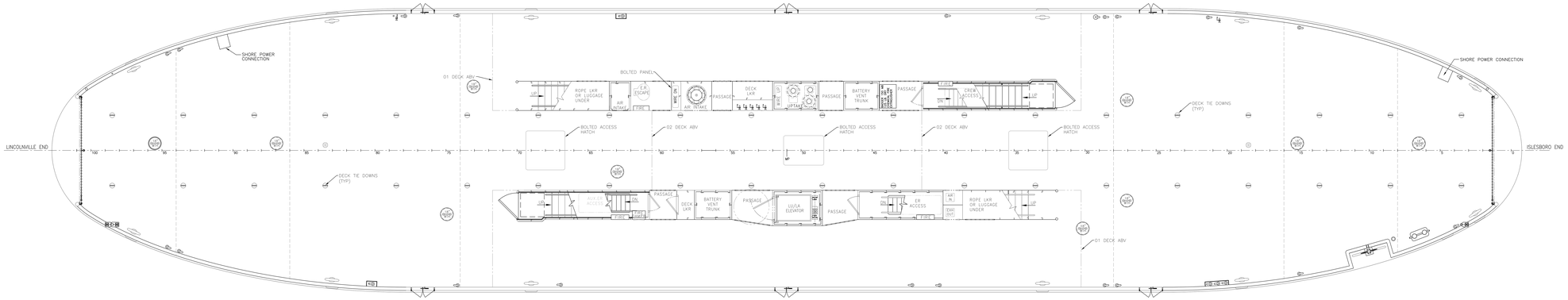
207 FT LOA FERRY VESSEL

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

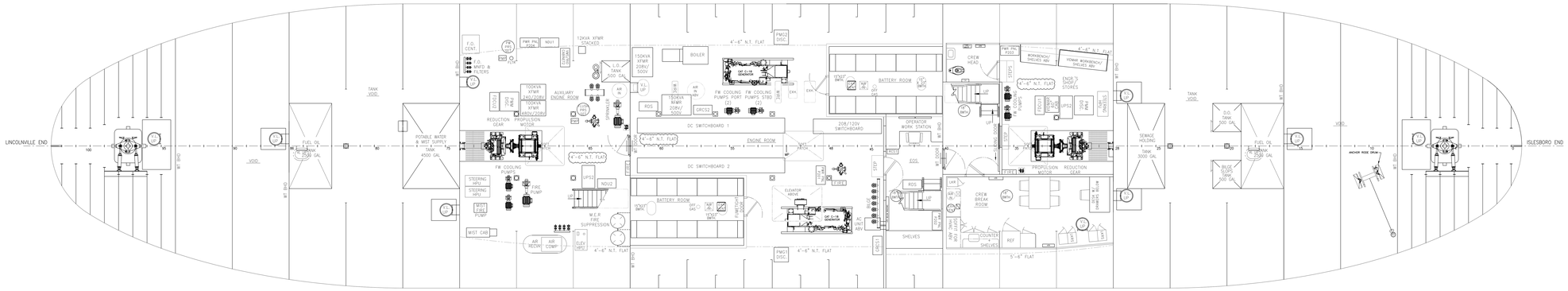
COVER SHEET

APPROVED	DATE
COMMISSIONER:	10-11-24
CHIEF ENGINEER:	10-10-2024

DRAWN BY KVC DATE 09/13/24
CHECKED BY JWG DATE 09/13/24
APPROVED BY John W. Gilbert DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A0 ALT. 0



MAIN DECK



HOLD

0	ISSUED FOR BID	8/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS MARINE ENGINEERS

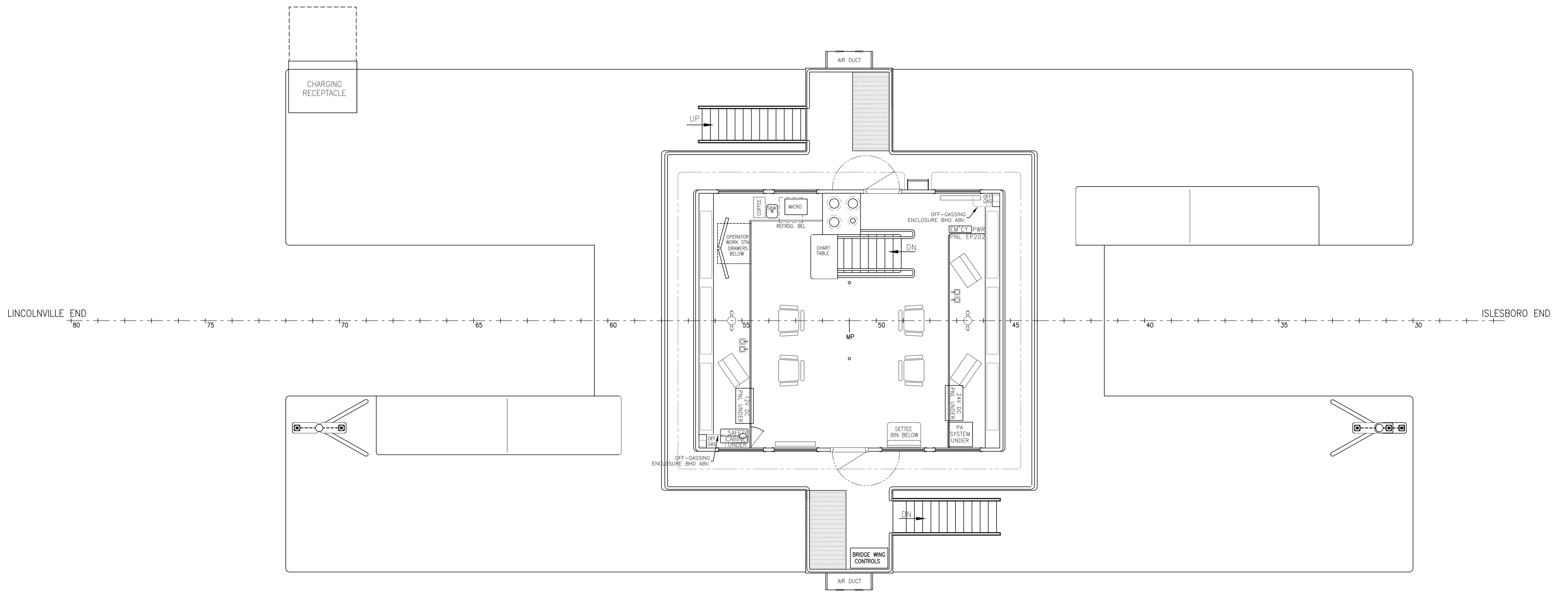
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

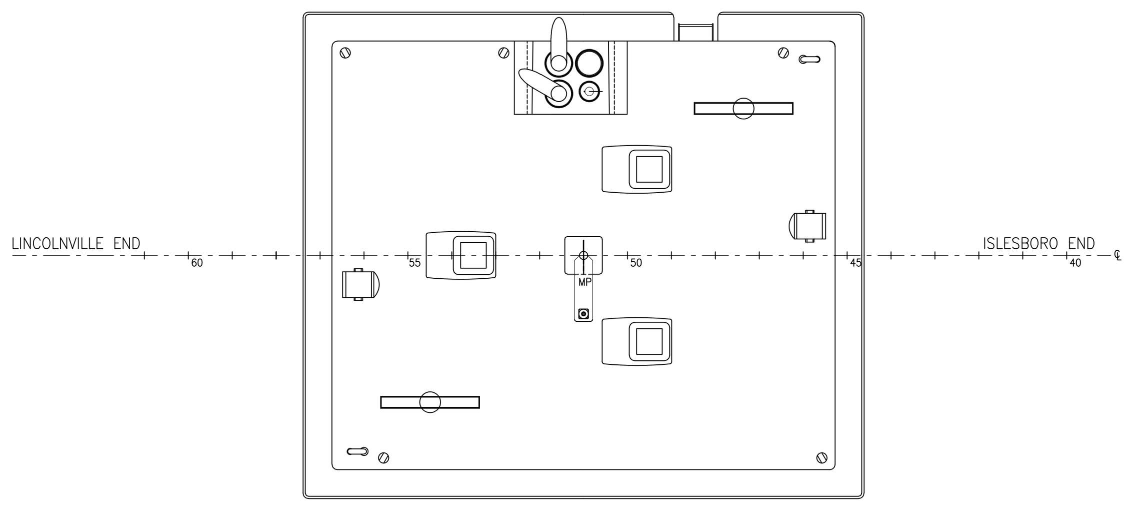
GENERAL ARRANGEMENTS
HOLD AND MAIN DECK

DRAWN BY KVC_JG DATE 12/16/22
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A1-1 ALT. 0

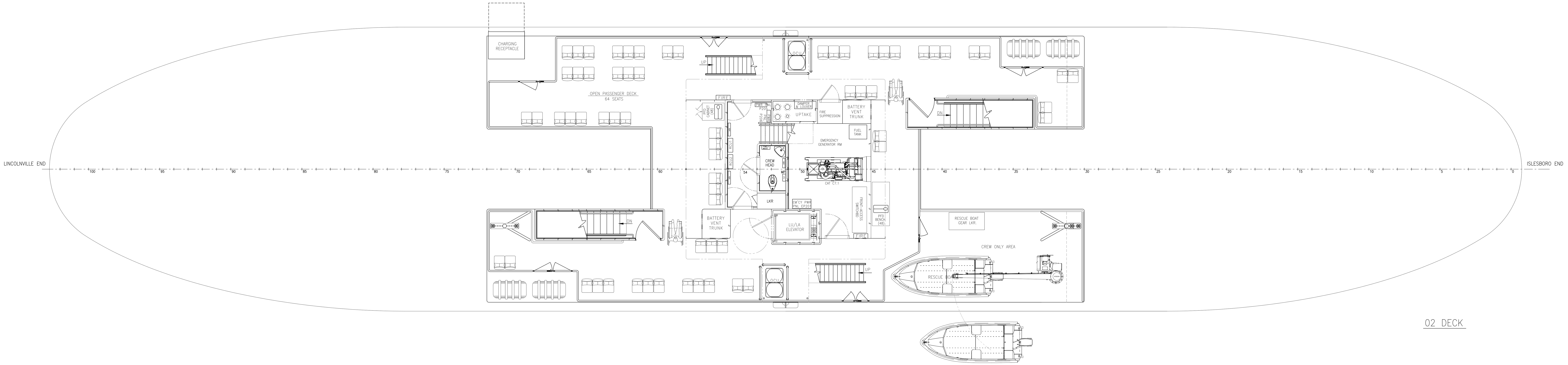
SHEET 1 OF 3



PILOT HOUSE DECK



PILOT HOUSE TOP



02 DECK

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KVC/JG

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

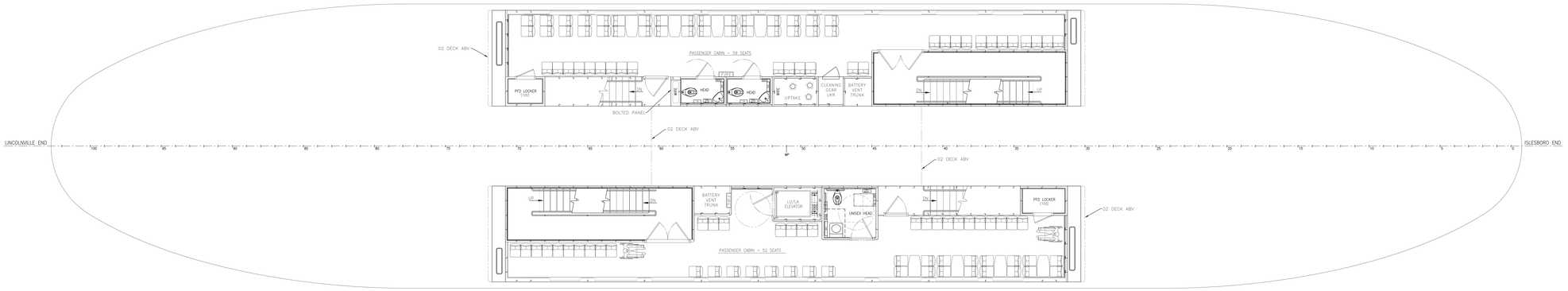
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

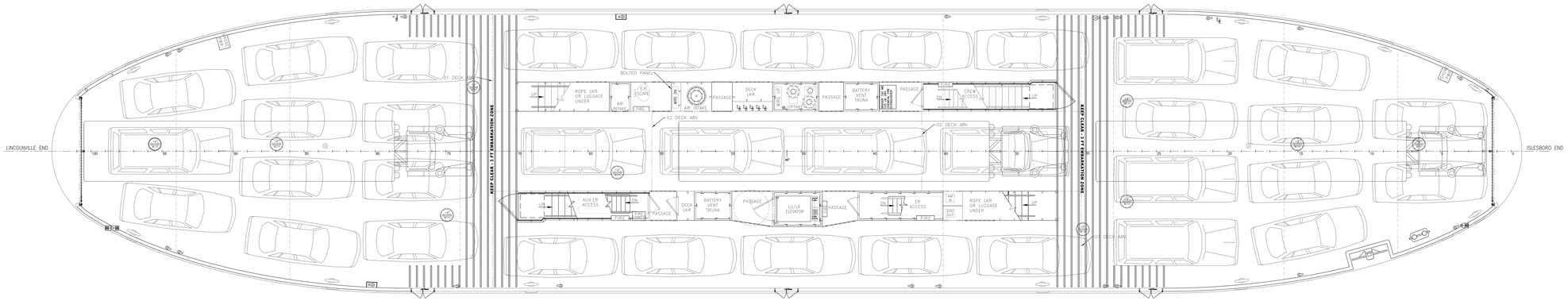
GENERAL ARRANGEMENTS
02 DECK & PILOT HOUSE DECK

DRAWN BY KVC,JG — DATE 12/16/22
CHECKED BY JG — DATE 8/28/24
APPROVED BY — DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A1-3 — ALT. 0

SHEET 3 OF 3



01 DECK



MAIN DECK VEHICLE LOADING

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KVC/JG

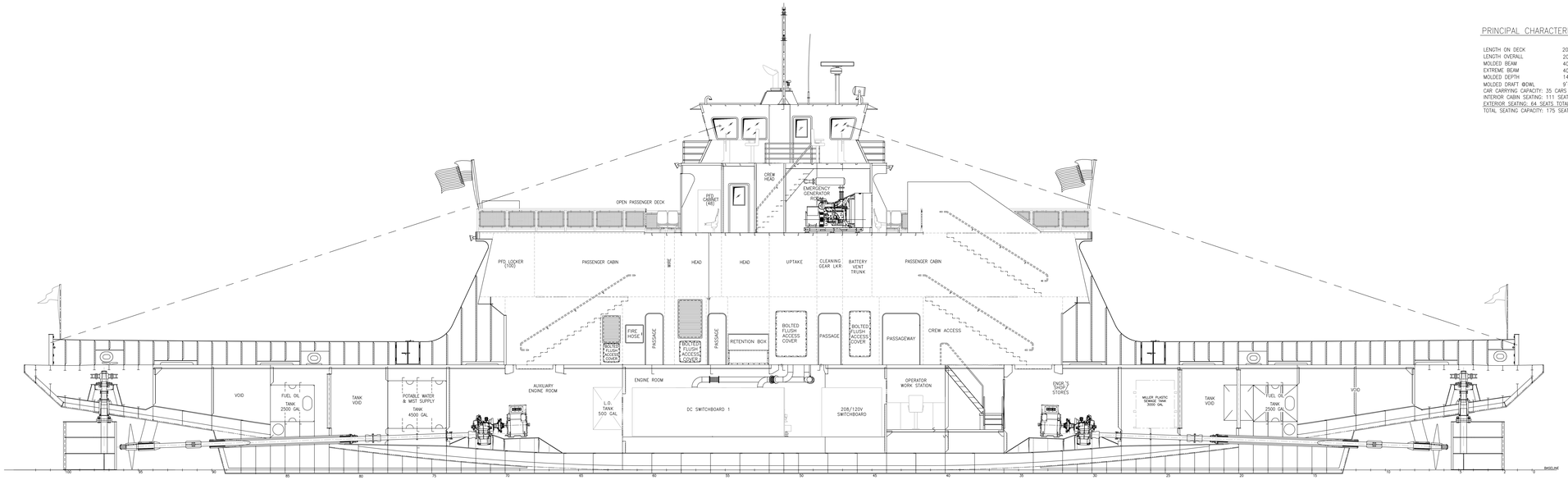
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

GENERAL ARRANGEMENTS
MAIN DECK LOADING & 01 DECK

DRAWN BY KVC,JG DATE 12/16/22
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A1-2 ALT. 0

SHEET 2 OF 3



PRINCIPAL CHARACTERISTICS

LENGTH ON DECK	207'-0"
LENGTH OVERALL	207'-0"
MOLDED BEAM	40'-0"
EXTREME BEAM	40'-0"
MOLDED DEPTH	14'-6"
MOLDED DRAFT @DWL	9'-4"

CAR CARRYING CAPACITY: 35 CARS
INTERIOR CABIN SEATING: 111 SEATS TOTAL
EXTERIOR SEATING: 64 SEATS TOTAL
TOTAL SEATING CAPACITY: 175 SEATS

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	XXX	EC

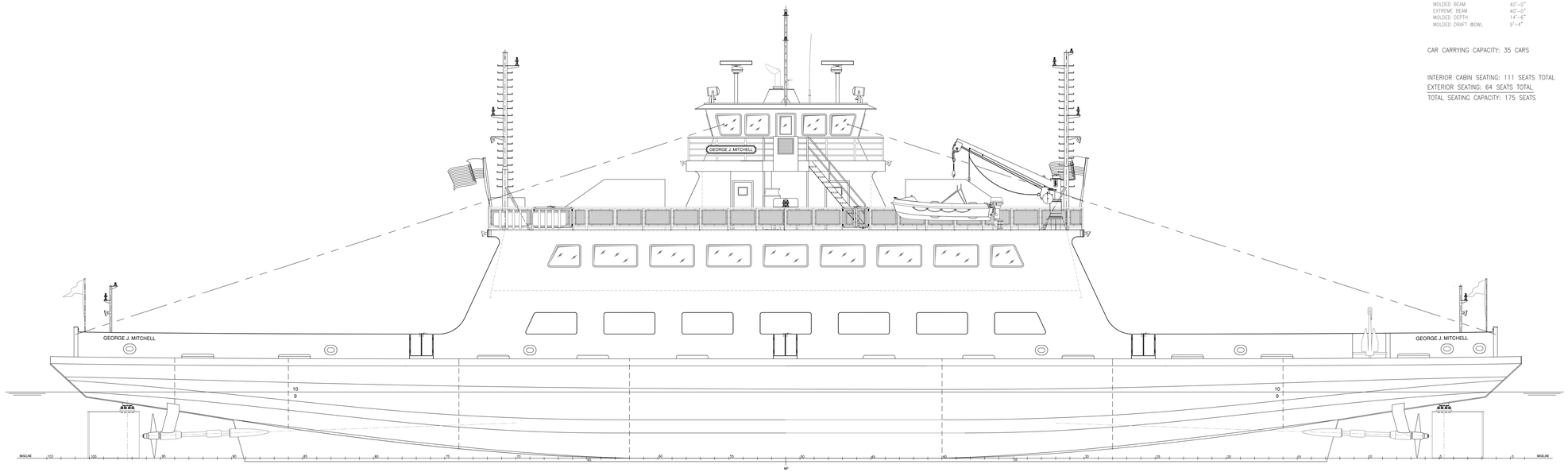
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

INBOARD PROFILE

DRAWN BY KVC,JG,EC DATE 7/24
CHECKED BY JG DATE 9/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A2 ALT. 0

SHEET 1 OF 1



PRINCIPAL CHARACTERISTICS

LENGTH ON DECK	207'-0"
LENGTH OVERALL	207'-0"
MOLDED BEAM	40'-0"
EXTREME BEAM	40'-0"
MOLDED DEPTH	14'-6"
MOLDED DRAFT @OWL	9'-4"

CAR CARRYING CAPACITY: 35 CARS

INTERIOR CABIN SEATING: 111 SEATS TOTAL
EXTERIOR SEATING: 64 SEATS TOTAL
TOTAL SEATING CAPACITY: 175 SEATS

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	GN/KVC

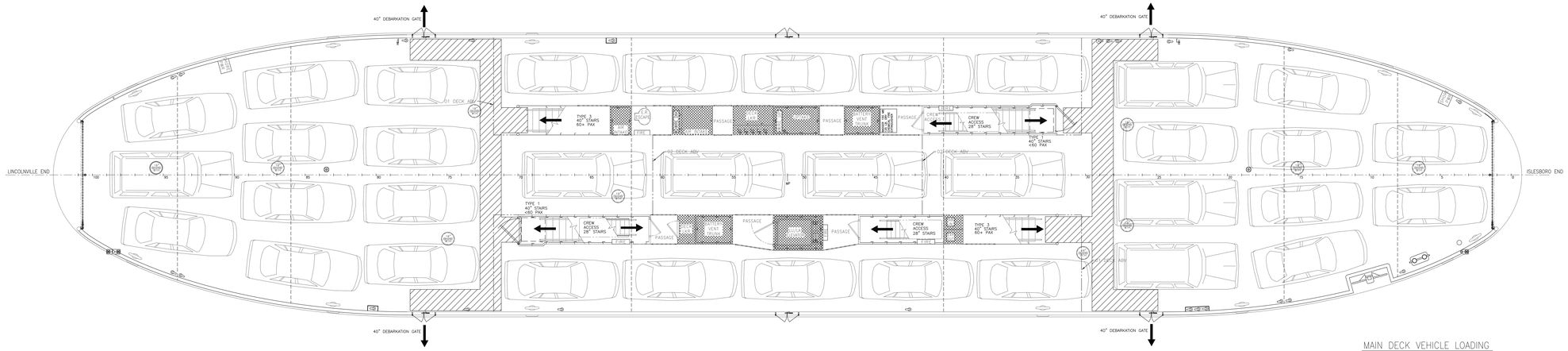
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

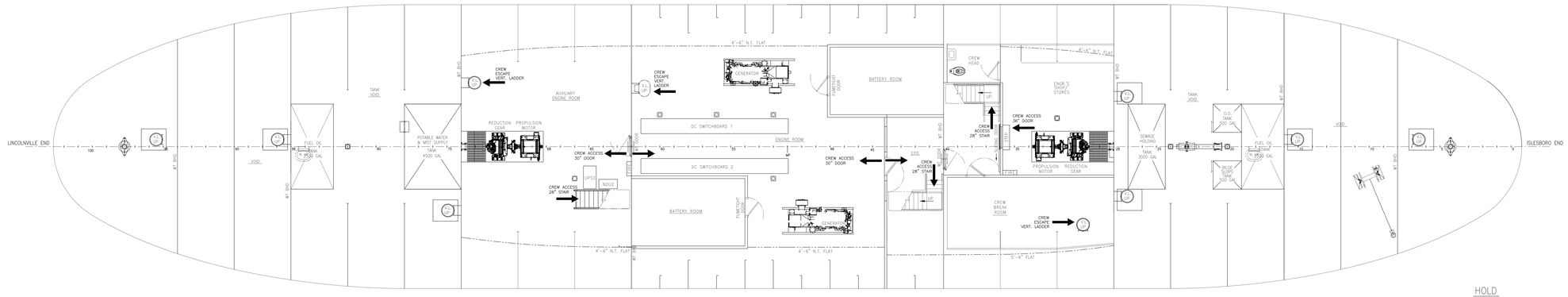
OUTBOARD PROFILE

DRAWN BY KVC,JG DATE 12/16/22
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A3 ALT. 0

SHEET 1 OF 1



MAIN DECK VEHICLE LOADING



HOLD

KEY:

DENOTES AREA NOT AVAILABLE TO PASSENGERS AND CREW FOR EMBARKATION, EVACUATION, OR ASSEMBLY

DENOTES CLEAR PATHWAY TO DEBARKATION GATES

VESSEL CHARACTERISTICS

SUBCHAPTER H
PASSENGER-VEHICLE FERRY
250 PASSENGERS CAPACITY
PARTIALLY PROTECTED WATERS

NOTES:

DOORS = 0.75 * PAX
CABIN CAPACITY = 10 SQ. FT./PAX
LANDING CAPACITY = 1.2 SQ FT./PAX

HATCHED AREAS INDICATE AREAS NOT USED FOR ACCOMMODATION OR REFUGE

In 46 CFR 72.05-20(d) stairways are identified as follows:

Type 1 — Main Vertical Zone enclosed stair towers.
Type 2 — Enclosed stairways other than Type 1.
Type 3 — Interior stairway not enclosed.
Type 4 — Exterior stairways or exterior inclined ladders

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KVC

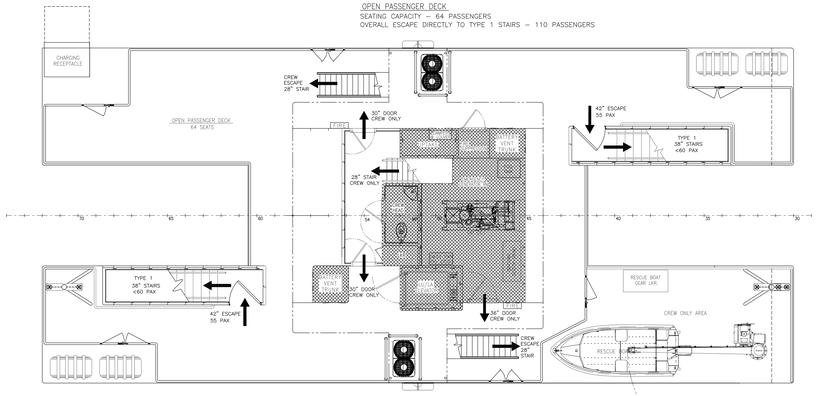
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

EVACUATION PLAN
HOLD AND MAIN DECK

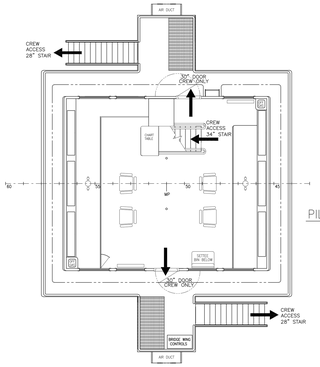
DRAWN BY KVC DATE 01/15/2024
CHECKED BY JWG DATE 10/8/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A4-1 ALT. 0

SHEET 1 OF 2



PASSENGER CABIN
SEATING CAPACITY – 59 PASSENGERS
OVERALL ESCAPE DIRECTLY TO TYPE 1 STAIRS – 96 PAX
ADDITIONAL ESCAPE THROUGH TYPE 3 STAIR – 48 PAX
TOTAL ESCAPE CAPACITY – 144 PASSENGERS

02 DECK



PILOT HOUSE DECK

KEY:

DENOTES AREA NOT AVAILABLE TO PASSENGERS AND CREW FOR EMBARKATION, EVACUATION, OR ASSEMBLY

DENOTES CLEAR PATHWAY TO DEBARKATION GATES

VESSEL CHARACTERISTICS

SUBCHAPTER H
PASSENGER-VEHICLE FERRY
250 PASSENGERS CAPACITY
PARTIALLY PROTECTED WATERS

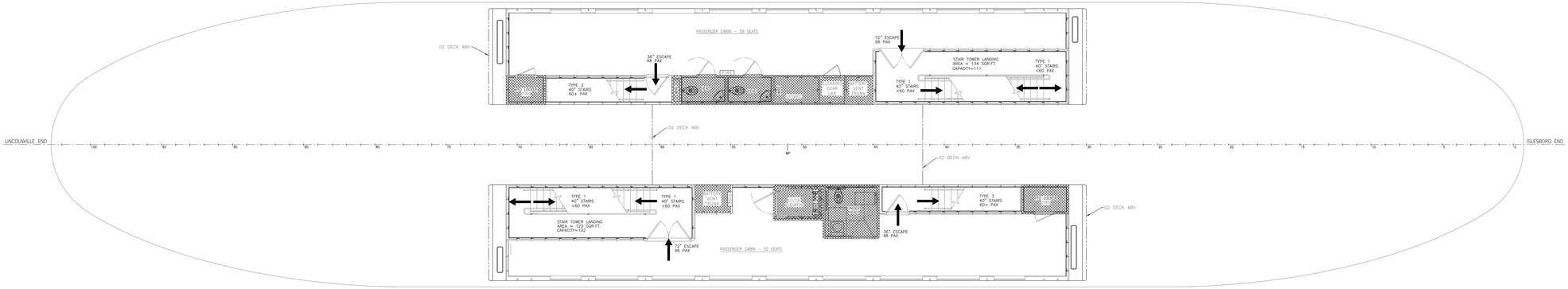
NOTES:

DOORS = 0.75 * PAX
CABIN CAPACITY = 10 SQ. FT./PAX
LANDING CAPACITY = 1.2 SQ FT./PAX

HATCHED AREAS INDICATE AREAS NOT USED FOR ACCOMMODATION OR REFUGE

In 46 CFR 72.05–20(d) stairways are identified as follows:

Type 1 — Main Vertical Zone enclosed stair towers.
Type 2 — Enclosed stairways other than Type 1.
Type 3 — Interior stairway not enclosed.
Type 4 — Exterior stairways or exterior inclined ladders



PASSENGER CABIN
SEATING CAPACITY – 52 PASSENGERS
OVERALL ESCAPE DIRECTLY TO TYPE 1 STAIRS – 96 PAX
ADDITIONAL ESCAPE THROUGH TYPE 3 STAIR – 48 PAX
TOTAL ESCAPE CAPACITY – 144 PASSENGERS

01 DECK

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KVC

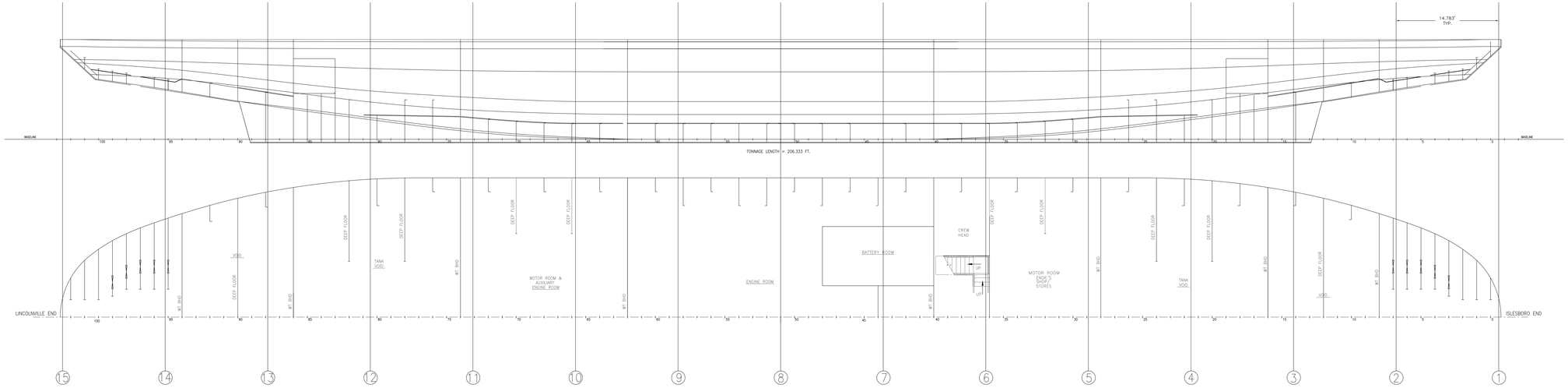
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

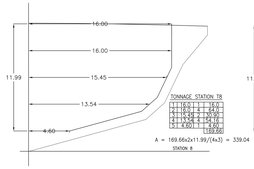
207 FT LOA FERRY VESSEL
MAINE DOT

EVACUATION PLAN
01,02 & PH DECK

DRAWN BY KVC DATE 01/15/2024
CHECKED BY JWG DATE 10/8/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A4-2 ALT. 0

SHEET 2 OF 2



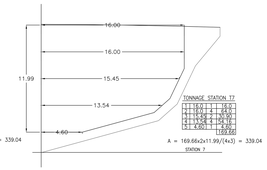


TONNAGE STATION T8

1	16.0	1	16.0
4	16.0	4	64.0
2	15.54	2	30.9
4	15.54	4	62.1
1	4.60	1	4.6
			169.66

A = 169.66x2x11.99/(4x3) = 339.04

STATION 8

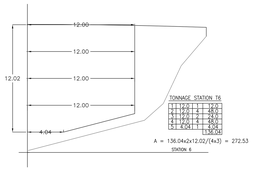


TONNAGE STATION T7

1	16.0	1	16.0
4	16.0	4	64.0
2	15.54	2	30.9
4	15.54	4	62.1
1	4.60	1	4.6
			169.66

A = 169.66x2x11.99/(4x3) = 339.04

STATION 7

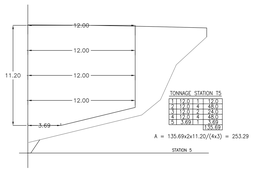


TONNAGE STATION T6

1	12.0	1	12.0
4	12.0	4	48.0
2	12.0	2	24.0
4	12.0	4	48.0
1	4.04	1	4.0
			136.04

A = 136.04x2x12.02/(4x3) = 272.53

STATION 6

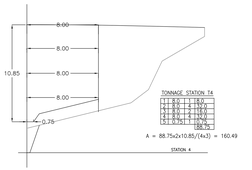


TONNAGE STATION T5

1	12.0	1	12.0
4	12.0	4	48.0
2	12.0	2	24.0
4	12.0	4	48.0
1	3.69	1	3.7
			135.69

A = 135.69x2x11.20/(4x3) = 253.29

STATION 5



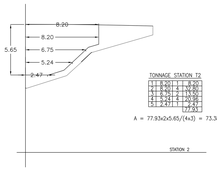
TONNAGE STATION T4

1	8.0	1	8.0
4	8.0	4	32.0
2	8.0	2	16.0
4	8.0	4	32.0
1	0.75	1	0.8
			88.75

A = 88.75x2x10.85/(4x3) = 160.49

STATION 4

STATION 3



TONNAGE STATION T3

1	8.20	1	8.20
4	8.20	4	32.8
2	6.75	2	13.5
4	6.75	4	27.0
2	5.24	2	10.5
4	5.24	4	20.9
1	2.47	1	2.5
			155.3

A = 77.93x2x5.65/(4x3) = 73.38

STATION 2

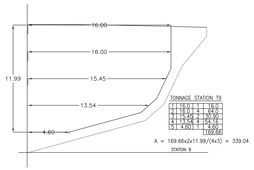
TONNAGE BELOW DECK

1	0.00	1	0.00
2	73.38	4	293.52
3	0.0	2	0.00
4	160.49	4	641.96
5	253.29	2	506.58
6	272.53	4	1090.12
7	339.04	2	678.08
8	339.04	4	1356.16
9	339.04	2	678.08
10	272.53	4	1090.12
11	253.29	2	506.58
12	160.49	4	641.96
13	0.	2	0.00
14	73.38	4	293.52
15	0.00	1	0.00
			7776.68

TONNAGE LENGTH = 206.333 FT

T = 7776.68x206.333/(14x3x100) = 382.04

GROSS TONNAGE BELOW DECK = 382.04 TONS

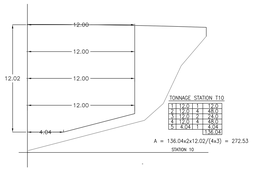


TONNAGE STATION T9

1	16.0	1	16.0
4	16.0	4	64.0
2	15.54	2	30.9
4	15.54	4	62.1
1	4.60	1	4.6
			169.66

A = 169.66x2x11.99/(4x3) = 339.04

STATION 9

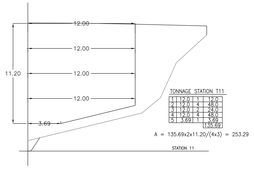


TONNAGE STATION T10

1	12.0	1	12.0
4	12.0	4	48.0
2	12.0	2	24.0
4	12.0	4	48.0
1	4.04	1	4.0
			136.04

A = 136.04x2x12.02/(4x3) = 272.53

STATION 10

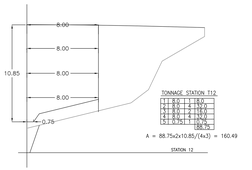


TONNAGE STATION T11

1	12.0	1	12.0
4	12.0	4	48.0
2	12.0	2	24.0
4	12.0	4	48.0
1	3.69	1	3.7
			135.69

A = 135.69x2x11.20/(4x3) = 253.29

STATION 11

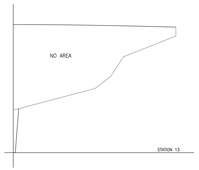


TONNAGE STATION T12

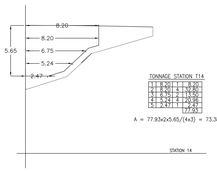
1	8.0	1	8.0
4	8.0	4	32.0
2	8.0	2	16.0
4	8.0	4	32.0
1	0.75	1	0.8
			88.75

A = 88.75x2x10.85/(4x3) = 160.49

STATION 12



STATION 13



TONNAGE STATION T14

1	8.20	1	8.20
4	8.20	4	32.8
2	6.75	2	13.5
4	6.75	4	27.0
2	5.24	2	10.5
4	5.24	4	20.9
1	2.47	1	2.5
			155.3

A = 77.93x2x5.65/(4x3) = 73.38

STATION 14

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	MR

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

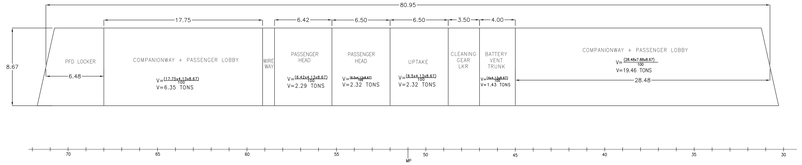
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

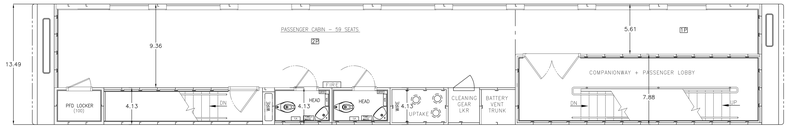
TONNAGE PLAN
BELOW MAIN DECK

DRAWN BY MR DATE 11/29/2023
CHECKED BY GEG DATE 7/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
SHEET 1 OF 3
DWG. NO. D372-A5-1 ALT. 0

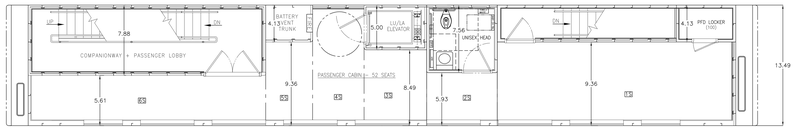
01 DECK

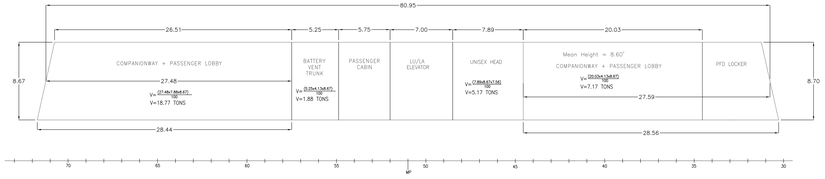


PORT SIDE



01 DECK





STBD SIDE

01 DECK PORT CABIN TONNAGE

Mean Height = 8.67'

$V_{PT} = \frac{(80.95)(8.67)(1.5)}{100}$

V= 94.68 TONS

PORT PASSENGER CABIN EXEMPTION - PASS. SPACE

1P: V=(28.48x5.61x8.67)/100 = 13.85 TONS
2P: V=(52.47x9.36x8.67)/100 = 42.58 TONS
SUM = 56.43 TONS

OTHER EXEMPTIONS

UPTAKE	2.32 TONS
PASS. HEAD #1	2.32 TONS
PASS. HEAD #2	2.29 TONS
COMPANIONWAY/LOBBY 1	19.46 TONS
COMPANIONWAY/LOBBY 2	6.35 TONS
BATTERY VENT TRUCK	1.43 TONS
SUM =	34.17 TONS

TOTAL TO GROSS = 94.68-56.43-34.17 = 4.08 TONS

01 DECK STBD CABIN TONNAGE

Mean Height = 8.67'

$V_{ST} = \frac{(80.95)(8.67)(1.5)}{100}$

V= 94.68 TONS

STBD PASSENGER CABIN EXEMPTION - PASS. SPACE

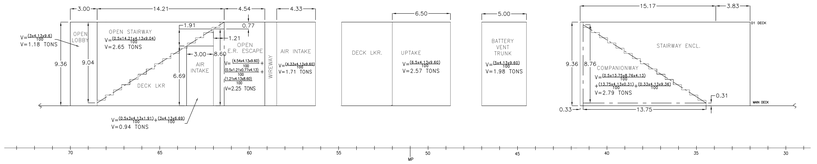
1S:	V=(27.59x9.36x8.67)/100	= 22.38	TONS
2S:	V=(7.89x5.93x8.67)/100	= 4.05	TONS
3S:	V=(7x8.49x8.67)/100	= 5.15	TONS
4S:	V=(5.75x13.49x8.67)/100	= 6.72	TONS
5S:	V=(5.25x9.36x8.67)/100	= 4.25	TONS
6S:	V=(27.48x5.61x8.67)/100	= 13.36	TONS
	SUM =	55.91	TONS

OTHER EXEMPTIONS

COMPANIONWAY/LOBBY 1	7.17 TONS
UNISEX HEAD	5.17 TONS
BATTERY VENT TRUCK	1.88 TONS
COMPANIONWAY/LOBBY 2	18.77 TONS
SUM =	32.99 TONS

TOTAL TO GROSS = 94.68-55.91-32.99 = 5.78 TONS

MAIN DECK



PORT SIDE

MAIN DECK PORT TRUNK TONNAGE

Mean Height = 9.6'

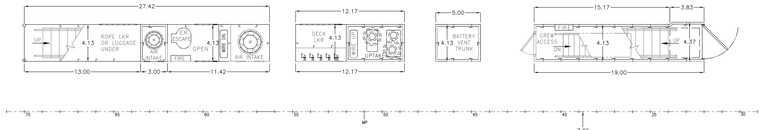
$V_{PT} = \frac{(9.83x4.37x9.60)}{100} + \frac{(15.17x4.13x9.60)}{100} + \frac{(3x4.13x9.60)}{100} + \frac{(12.17x4.13x9.60)}{100} + \frac{(27.42x4.13x9.6)}{100}$

V= 25.29 TONS

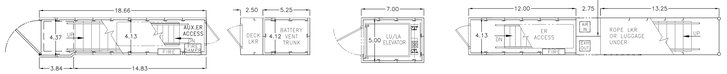
EXEMPTIONS

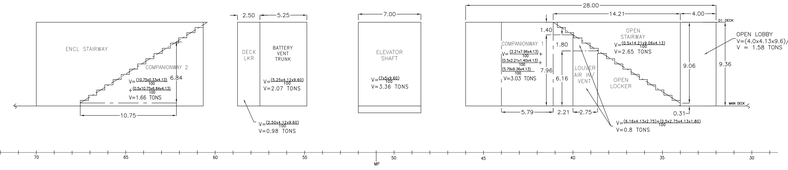
COMPANIONWAY	2.79 TONS
BATTERY VENT TRUNK	1.98 TONS
UPTAKE	2.57 TONS
AIR INTAKE	1.71 TONS
OPEN E.R. ESCAPE	2.25 TONS
AIR INTAKE	0.94 TONS
OPEN STAIRWAY	2.65 TONS
OPEN LOBBY	1.18 TONS
SUM=	16.07 TONS

TOTAL TO GROSS = 25.29-16.07 = 9.22 TONS



MAIN DECK





STBD SIDE

MAIN DECK STBD TOWER TONNAGE

Mean Height = 9.6'

$V_{ST} = \frac{(28x4.13x9.6)}{100} + \frac{(7x4.6)}{100} + \frac{(2.25x4.13x9.6)}{100} + \frac{(2.5x4.13x9.6)}{100} + \frac{(14.83x4.13x9.6)}{100} + \frac{(2.66x4.7)x9.6)}{100}$

V=24.73 TONS

EXEMPTIONS

OPEN LOBBY FWD	1.58 TONS
OPEN STAIRWAY FWD	2.65 TONS
AIR IN/VENT	0.8 TONS
COMPANIONWAY #1	3.03 TONS
BATTERY VENT TRUCK	2.07 TONS
COMPANIONWAY #2	1.66 TONS
SUM =	11.79 TONS

TOTAL TO GROSS = 24.73-11.79 = 12.94 TONS

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	11/29/24	MR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

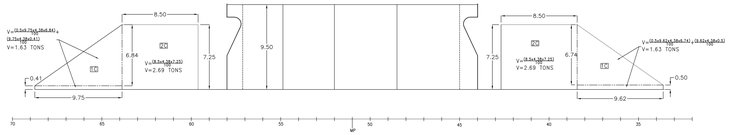
207 FT LOA FERRY VESSEL

TONNAGE PLAN
MAIN DECK & 01 DECK

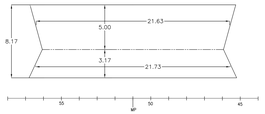
DRAWN BY MR DATE 11/29/2023
CHECKED BY GEG DATE 7/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A5-2 ALT. 0

SHEET 2 OF 3

02 DECK



PILOT HOUSE



PILOT HOUSE ABOVE KNUCKLE
V=(21.63x19.5x5)/100
V=21.08 TONS

PILOT HOUSE BELOW KNUCKLE
V=(21.73x19.3x3.17)/100
V=13.43 TONS

CREW PASSAGEWAY

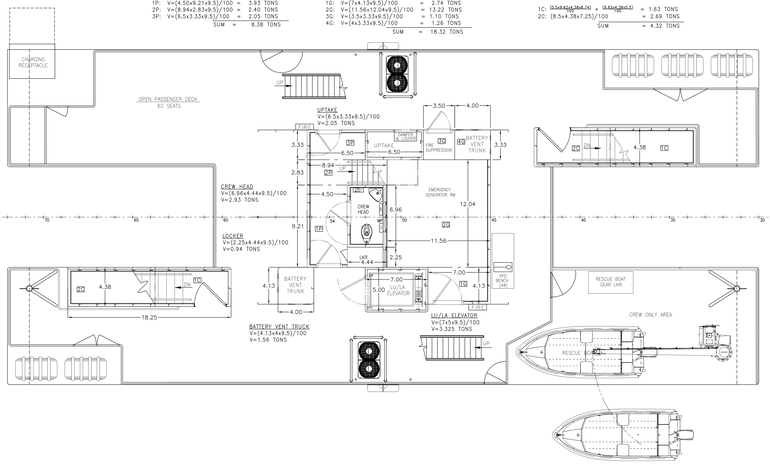
1P: V=(4.50x9.21x9.5)/100 = 3.93 TONS
2P: V=(8.94x2.83x9.5)/100 = 2.40 TONS
3P: V=(6.5x3.33x9.5)/100 = 2.05 TONS
SUM = 8.38 TONS

EMERGENCY GENERATOR ROOM

1G: V=(7x4.13x9.5)/100 = 2.74 TONS
2G: V=(11.56x12.04x9.5)/100 = 13.22 TONS
3G: V=(3.5x3.33x9.5)/100 = 1.10 TONS
4G: V=(4x3.33x9.5)/100 = 1.26 TONS
SUM = 18.32 TONS

COMPANIONWAY / LOBBY #1

1C: (3.5x1.0)x(1.38x1.24) + (3.5x1.0)x(1.38x0.5) = 1.63 TONS
2C: (8.5x4.38x7.25)/100 = 2.69 TONS
SUM = 4.32 TONS



02 DECK

COMPANIONWAY #2

1C: (3.5x1.0)x(1.38x1.24) + (3.5x1.0)x(1.38x0.5) = 1.63 TONS
2C: V=(8.5x4.38x7.25)/100 = 2.69 TONS
SUM = 4.32 TONS

02 DECK TONNAGE

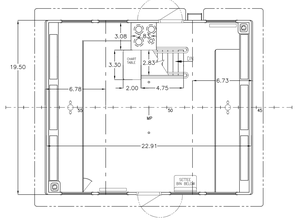
COMPANIONWAY-LOBBY 1	4.32 TONS
EMERG. GEN. RM	18.32 TONS
LU/LA ELEVATOR	3.325 TONS
LOCKER	0.94 TONS
CREW HEAD	2.93 TONS
UPTAKE	2.05 TONS
CREW PASSAGEWAY	8.38 TONS
BATTERY VENT TRUCK	1.56 TONS
COMPANIONWAY #2	4.32 TONS
SUM =	46.14 TONS

EXEMPTIONS

COMPANIONWAY-LOBBY 1	4.32 TONS
EMERG. GEN. RM	18.32 TONS
LU/LA ELEVATOR	3.325 TONS
CREW HEAD	2.93 TONS
UPTAKE	2.05 TONS
BATTERY VENT TRUCK	1.56 TONS
COMPANIONWAY #2	4.32 TONS
SUM =	36.82 TONS

TOTAL TO GROSS = 46.14-36.82 = 9.32 TONS

UPTAKE
V=(2.83x3.08x8.17)/100
V=0.71 TONS



PILOT HOUSE TONNAGE

PILOT HOUSE BELOW KNUCKLE	13.43 TONS
PILOT HOUSE ABOVE KNUCKLE	21.08 TONS
SUM =	34.51 TONS

EXEMPTIONS

UPTAKE	0.71 TONS
CHART TABLE	0.53 TONS
COMPANIONWAY	1.09 TONS
WHEEL HOUSE	21.52 TONS
SUM =	23.86 TONS

TOTAL TO GROSS = 34.51-23.86 =10.65 TONS

GROSS TONNAGE

BELOW DECK	382.04 TONS
MAIN DK STBD TRUNK	12.94 TONS
MAIN DK PORT TRUNK	9.22 TONS
01 DK STBD CABIN	5.78 TONS
01 DK PORT CABIN	4.08 TONS
02 DECK	9.32 TONS
PILOT HOUSE	10.65 TONS
TOTAL GROSS TONNAGE =	434.03 TONS

PRELIMINARY – NOT FOR CONSTRUCTION

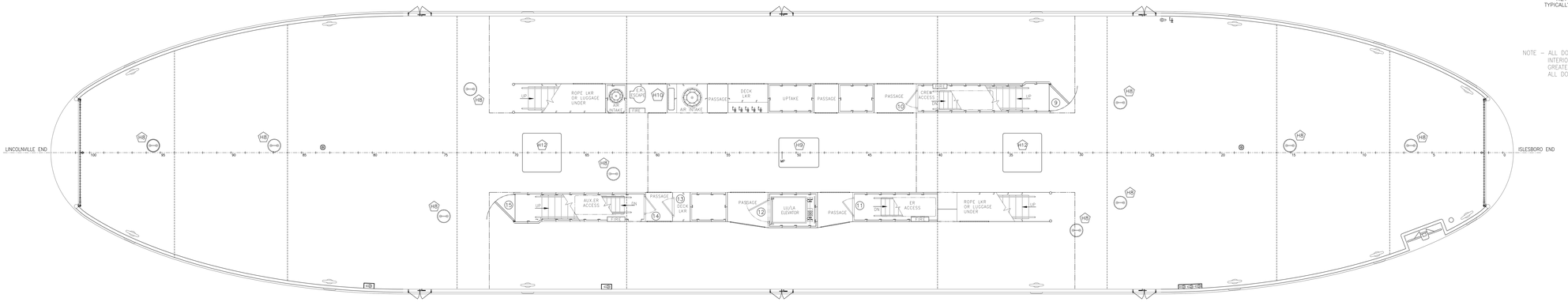
ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	11/29/24	MR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

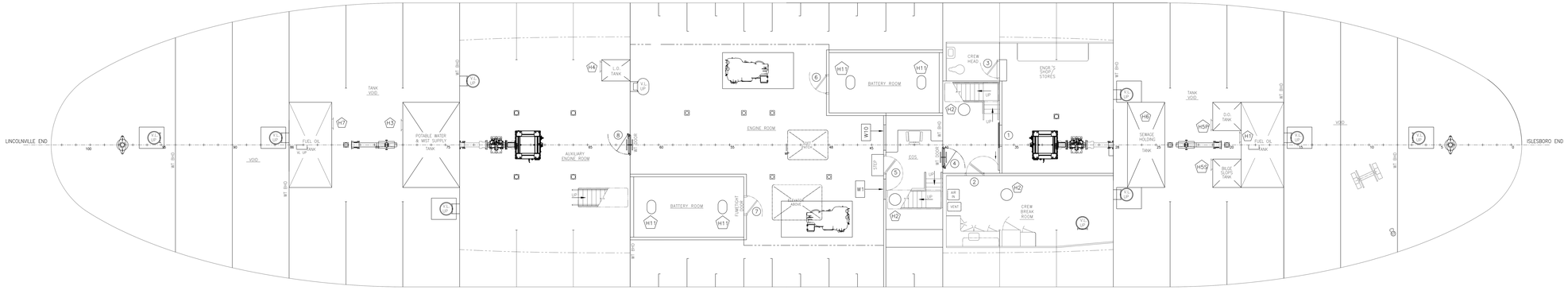
207 FT LOA FERRY VESSEL

TONNAGE PLAN
02 DECK & PILOT HOUSE

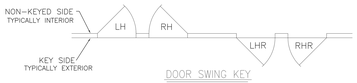
DRAWN BY MR DATE 11/29/2023
CHECKED BY GEG DATE 7/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
SHEET 3 OF 3 DWG. NO. D372-A5-3 ALT. 0



MAIN DECK



HOLD



DOOR SWING KEY

NOTE – ALL DOORS ACCESSIBLE BY PASSENGERS SHALL BE FITTED WITH FINGER GUARD PROTECTORS.
INTERIOR SELF-CLOSING DOORS ACCESSIBLE BY PASSENGERS SHALL HAVE PULL FORCE NO GREATER THAN 5 LBS OR AS REQ'D BY USCG. EXTERIOR SELF-CLOSING DOOR FORCE BY USCG REGS.
ALL DOORS OPENING AGAINST STRUCTURAL OR JOINER BULKHEADS SHALL BE FITTED WITH RUBBER BUMPERS.

0	ISSUED FOR BID	8/14/24	KVC
ALT	DESCRIPTION	DATE	NAME

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND.

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

DOOR AND WINDOW SCHEDULE

DRAWN BY INC, JG DATE 12/14/23
CHECKED BY KVC DATE 8/14/24
APPROVED BY JWG DATE 8/14/24
SCALE 1/4" = 1'-0"
DWG. NO. D372-A7-1 ALT. 0

SHEET 1 OF 2

—MANHOLE AND HATCH SCHEDULE—

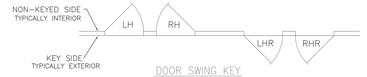
M.H. NUMBER	TYPE	QUANTITY	SIZE	DECK	LOCATION	REMARKS
H1	RAISED	1	15" X 23"	HOLD	FUEL OIL TANK @ FR. 18.5	MOUNTED AFT BHD. O.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 302-MS
H2	FLUSH	3	18" DIA	HOLD	CREW SPACE FLATS	MOUNTED CREW FLATS CEN-TEX DWG. NO. 310-MS
H3	RAISED	1	15" X 23"	HOLD	POTABLE & WIST WATER TANK @ FR. 78	MOUNTED ON TANK BHD. W.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 308-SS STAINLESS STEEL
H4	RAISED	1	15" X 23"	HOLD	L.O. TANK @ FR. 63	MOUNTED AFT BHD. O.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 302-MS
H5P	RAISED	1	15" X 23"	HOLD	D.O. TANK @ FR. 21	MOUNTED AFT BHD. O.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 302-MS
H5S	RAISED	1	15" X 23"	HOLD	BILGE SLOPS TANK @ FR. 21	MOUNTED AFT BHD. O.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 302-MS
H6	RAISED	1	TBD	HOLD	SEWAGE HOLDING TANK @ FR. 24.5	TBD MOUNTED ON A TANK BHD. REFER TO MILLER PLASTIC TANK DETAILS
H7	RAISED	1	15" X 23"	HOLD	FUEL OIL TANK @ FR. 83	MOUNTED FWD. BHD. O.T. HATCH ON RAISED FRAME, CEN-TEX DWG. NO. 302-MS
H8	FLUSH	10	18" DIA	MAIN DECK	DECK HATCH	FIREMAN MARINE EQUIPMENT ROUND LIFT-OUT HATCH S-C, DUCTILE IRON COVER. PART NO. 2481-0107
H9	REF DECK SCANTLINGS	1	REF DECK SCANTLING	MAIN DECK	BOLTED ACCESS HATCH	REFER TO DECK SCANTLINGS 0372-S7
H10	FLUSH	1	15" X 23"	MAIN DECK	DECK HATCH E.R. ESCAPE	MOUNTED ON DECK. QUICK ACTING SPRING LOADED HATCH. CEN-TEX DWG. NO. 223-MS
H11	FLUSH	4	15" X 23"	HOLD	BATTERY ROOM FLATS	MOUNTED ON DECK. CEN-TEX DWG. NO. 303-MS
H12	REF DECK SCANTLINGS	2	REF DECK SCANTLING	MAIN DECK	BOLTED ACCESS HATCH	REFER TO DECK SCANTLINGS 0372-S7

—WINDOW SCHEDULE—

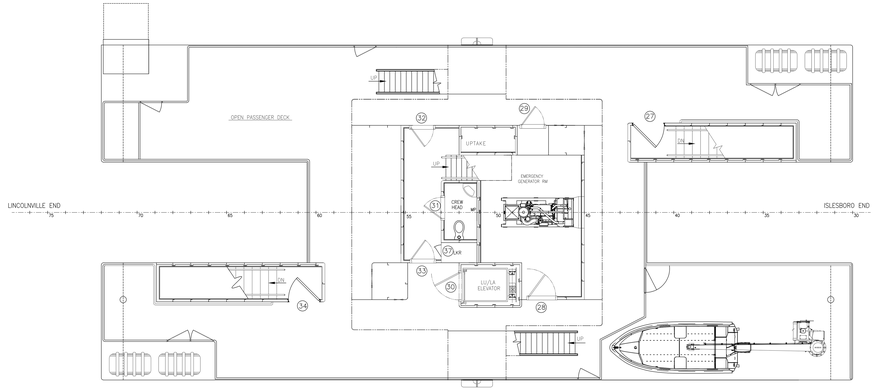
WINDOW NO.	QTY	DECK	GLAZING SIZE * WINDOW DIMENSIONS TAKEN FROM CORNER RADIUS CENTERS TO CORNER RADIUS CENTERS	GLASS TYPE	LOCATION	REMARKS	CORNER RADIUS	STEEL RETAINER CLIPS
W1	2	HOLD	30" H X 30" W	A60 FIRE RATED GLASS	CONTROL BOOTH	DEAN STEAL, SHIP INTERIOR SYSTEMS, OR EQUAL	2"	YES
W2	1	01 DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL, PANE SAFETY GLASS	SUPERSTRUCTURE SIDE PORT	FABTEK OR EQUAL ALUMINUM FIXED TRAPEZOIDAL SHAPED	2"	YES
W3	3	01 DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THRML, PANE SAFETY & FIRE RATED T GLASS	SUPERSTRUCTURE SIDE (P/S) I.W.O. I.B.A'S AND RESCUE BOAT	FABTEK OR EQUAL ALUMINUM FIXED TRAPEZOIDAL SHAPED	2"	YES
W4	3	01 DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THRML, PANE SAFETY & FIRE RATED T GLASS	SUPERSTRUCTURE SIDE (P/S) I.W.O. I.B.A'S AND RESCUE BOAT	FABTEK OR EQUAL ALUMINUM FIXED RECTANGULAR SHAPED	2"	YES
W5	13	01 DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL PANE, SAFETY GLASS	SUPERSTRUCTURE SIDE (P/S) AND FORE AND AFT. TRANS. BHD.	FABTEK OR EQUAL ALUMINUM FIXED RECTANGULAR SHAPED	2"	YES
W6	2	01 DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL PANE, SAFETY GLASS	FORE AND AFT TRANSVERSE BHD.	FABTEK OR EQUAL ALUMINUM FIXED RECTANGULAR SHAPED	2"	YES
W7	6	PILOT HOUSE DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL PANE, SAFETY GLASS, HEATED	PILOT HOUSE FRONT / BACK	FABTEK OR EQUAL ALUMINUM FIXED RECTANGULAR SHAPED	2"	NO
W8	4	PILOT HOUSE DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL PANE, SAFETY GLASS	PILOT HOUSE SIDE (P/S)	FABTEK OR EQUAL ALUMINUM FIXED TRAPEZOIDAL SHAPED	2"	NO
W9	3	PILOT HOUSE DECK	SEE DIMENSIONING DETAILS THIS PAGE	3/8" THERMAL PANE, SAFETY GLASS	PILOT HOUSE SIDE (P/S)	FABTEK OR EQUAL ALUMINUM FIXED RECTANGULAR SHAPED	2"	NO
W10	1	HOLD	30" H X 38" W	A60 FIRE RATED GLASS	CONTROL BOOTH	DEAN STEAL, SHIP INTERIOR SYSTEMS, OR EQUAL	2"	YES

—DOOR SCHEDULE—

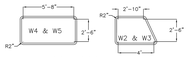
DOOR NO.	FIRE RATING	DECK	ROOM NAME	HANDAGE	CLEAR OPENING WIDTH	CLEAR OPENING HEIGHT	LOCK	LOUVER	SELF CLOSER	WINDOW	SILL	HOLD BACK	REMARKS
1	A-15	HOLD	FORWARD MOTOR ROOM FR.36	SLIDING	36"	78"	NO	NO	NO	–	–	–	ST STEEL JOINER, W. LATCH, FABTEK
2	A-0	HOLD	CREW BREAK ROOM	LHR	36"	78"	NO	NO	YES	–	–	HOOK	ST STEEL JOINER, W. LATCH, FABTEK
3	A-0	HOLD	CREW HEAD	LHR	28"	78"	PRIVACY	YES	YES	–	–	–	ST STEEL JOINER, W. LATCH, FABTEK
4	A-0	HOLD	ENGINE ROOM FWD GAWT DOOR	LHR	30"	66"	NO	NO	NO	–	12"	–	WATERTIGHT, CLASS 1 GAWT, 6-DOG, CEN-TEX 104-SS
5	A-15	HOLD	EOS ROOM	RHR	28	78"	NO	NO	NO	10" X 10" WIRE INSERTED GLASS	–	HOOK	ST STEEL JOINER, W. LATCH, FABTEK
6	IMO A-60	HOLD	PORT BATTERY ROOM	LHR	28"	78"	NO	NO	NO	–	–	HOOK	ST STEEL, FUME TIGHT, W. LATCH, 2 DOG, STACO-A60WE-2
7	IMO A-60	HOLD	STBD. BATTERY ROOM	LHR	28"	78"	NO	NO	NO	–	–	HOOK	ST STEEL, FUME TIGHT, W. LATCH, 2 DOG, STACO-A60WE-2
8	A-0	HOLD	ENGINE ROOM AFT GAWT DOOR	LHR	30"	66"	NO	NO	NO	–	12"	–	WATERTIGHT, CLASS 1 GAWT 6-DOG, CEN-TEX 104-SS
9	A-15	MAIN DECK	PORT PASSENGER STAIRWAY @ FR. 32	RHR	44"	80"	KEY ONLY	NO	YES	10" X 10" WIRE INSERTED GLASS	6	HOOK	SS WEATHERTIGHT, W. LATCH, DEANSTEEL 2G STYLE FRAME
10	A-15	MAIN DECK	CREW QTRS. ACCESS @ FR. 42	LHR	28"	80"	KEY ONLY	NO	NO	–	6	HOOK	SS WEATHERTIGHT, 2 DOG, W. LATCH, FABTEK
11	A-15	MAIN DECK	ER ACCESS @ FR. 46	RHR	28"	80"	KEY ONLY	NO	NO	–	6	HOOK	SS WEATHERTIGHT, 2 DOG, W. LATCH, FABTEK
12	A-15	MAIN DECK	MAIN DECK ELEVATOR @ FR. 52	LHR	36"	80"	INTERLOCK	NO	YES	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, INTERLOCK, GILLESPIE INC.
13	A-0	MAIN DECK	STBD. DECK LOOKER @ FR. 59	RHR	28"	80"	KEY ONLY	NO	NO	–	6	–	SS WEATHERTIGHT, W. LATCH FABTEK
14	A-15	MAIN DECK	AUX ER ACCESS @ FR. 61	RHR	28"	80"	KEY ONLY	NO	NO	–	6	HOOK	SS WEATHERTIGHT, 2 DOG, W. LATCH, FABTEK
15	A-15	MAIN DECK	STBD. PASSENGER STAIRWAY @ FR. 70	RHR	44"	80"	KEY ONLY	NO	YES	10" X 10" WIRE INSERTED GLASS	6	HOOK	SS WEATHERTIGHT, W. LATCH, DEANSTEEL 2G STYLE FRAME
16	A-0	01 DECK	STBD. PAX CABIN PFD LOCKER @ FR. 32 1/2	RHR	30"	80"	NO	YES	NO	–	–	HOOK	SS JOINER, W. LATCH, FABTEK
17	A-0	01 DECK	PORT PASSENGER CABIN STAIRWAY @ FR. 42	LHR + RHR	36" + 36"	80"	NO	NO	YES	10" X 10" WIRE INSERTED GLASS	–	HOOK	SS WEATHER.T. DBL. DOOR W/ LATCH, FLUSH BOLTS TOP & BOTTOM ON THE LAPPING DOOR LEAF, FABTEK
18	A-15	01 DECK	STBD. PASSENGER CABIN STAIRWAY @ FR. 43	RHR	36"	80"	KEY ONLY	NO	YES	10" X 10" WIRE INSERTED GLASS	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
19	A-0	01 DECK	STBD. UNISEX PASSENGER HEAD @ FR. 46	LHR	36"	80"	PRIVACY	YES	YES	–	–	HOOK	SS JOINER, LATCH, FABTEK
20	A-0	01 DECK	CLEANING GEAR LKR @ FR. 48	LHR	28"	80"	KEY ONLY	YES	NO	–	–	HOOK	SS JOINER, LATCH, FABTEK
21	A-15	01 DECK	01 DECK ELEVATOR @ FR. 52	LHR	36"	80"	INTERLOCK	NO	YES	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, INTERLOCK GILLESPIE INC.
22	A-0	01 DECK	PORT PASSENGER HEAD @ FR. 53	RHR	28"	80"	PRIVACY	YES	YES	–	–	HOOK	SS JOINER, W. LATCH, FABTEK
23	A-0	01 DECK	PORT PASSENGER HEAD @ FR 57	RHR	28"	80"	PRIVACY	YES	YES	–	–	HOOK	SS JOINER, W. LATCH, FABTEK
24	A-0	01 DECK	STBD. PASSENGER CABIN STAIRWAY @ FR. 58	LHR + RHR	36" + 36"	80"	NO	NO	YES	10" X 10" WIRE INSERTED GLASS	–	HOOK	SS WEATHER.T. DBL. DOOR W/LATCH, FLUSH BOLTS TOP & BOTTOM ON THE LAPPING DOOR LEAF, FABTEK
25	A-0	01 DECK	PORT PASSENGER CABIN STAIRWAY @ FR. 60	LHR	36"	80"	KEY ONLY	NO	YES	10" X 10" WIRE INSERTED GLASS	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
26	A-0	01 DECK	PORT. PAX CABIN PFD LOCKER @ FR. 69	LHR	30"	80"	NO	YES	NO	–	–	HOOK	SS JOINER, W. LATCH, FABTEK
27	A-0	02 DECK	PORT PASSENGER DECK STAIRWAY @ FR. 40	RH	40-1/2"	80"	NO	NO	YES	10" X 10" WIRE INSERTED GLASS	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
28	A-0	02 DECK	EMERGENCY GENERATOR ROOM	LH	36"	80"	KEY ONLY	NO	NO	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
29	A-0	02 DECK	FIRE SUPPRESSION ROOM @ FR. 47 1/2	LHR	30"	80"	KEY ONLY	NO	NO	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
30	A-0	02 DECK	02 DECK ELEVATOR @ FR. 52	LHR	36"	80"	INTERLOCK	NO	NO	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, INTERLOCK, GILLESPIE INC.
31	A-0	02 DECK	CREW HEAD @ FR. 53	RHR	28"	80"	PRIVACY	YES	YES	–	–	HOOK	SS JOINER, LATCH, FABTEK
32	A-0	02 DECK	PORT CREW QUARTERS	RH	30"	80"	YES	NO	YES	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
33	A-0	02 DECK	STBD. CREW QUARTERS	LH	30"	80"	YES	NO	YES	12" H X 14" W	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
34	A-0	02 DECK	STBD. PASSENGER CABIN STAIRWAY @ FR. 61	LH	40-1/2"	80"	NO	NO	YES	–	–	HOOK	SS WEATHERTIGHT, W. LATCH, FABTEK
35	A-0	PILOT HOUSE DECK	PORT PILOTHOUSE @ FR. 50	LH	28"	80"	YES	NO	NO	29" H X 18" W	–	HOOK	SS WEATHERTIGHT, 2 DOGS, W. LATCH, 5" SILL, FABTEK 2 SETS HOLDBACK HOOKS – OPEN AND 8" OPEN
36	A-0	PILOT HOUSE DECK	STBD. PILOTHOUSE @ FR. 50	RHR	28"	80"	YES	NO	NO	29" H X 18" W	–	HOOK	SS WEATHERTIGHT, 2 DOGS, W. LATCH, 5" SILL, FABTEK 2 SETS HOLDBACK HOOKS – OPEN AND 8" OPEN
37	A-0	02 DECK	LKR. @ STBD. CREW CABIN HALLWAY@ FR. 53	RHR	30"	80"	NO	YES	NO	–	–	HOOK	SS JOINER, W. LATCH, FABTEK



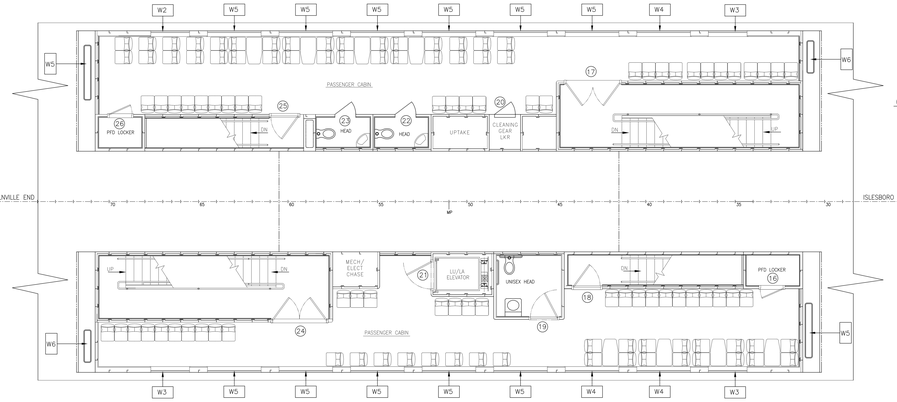
DOOR SWING KEY



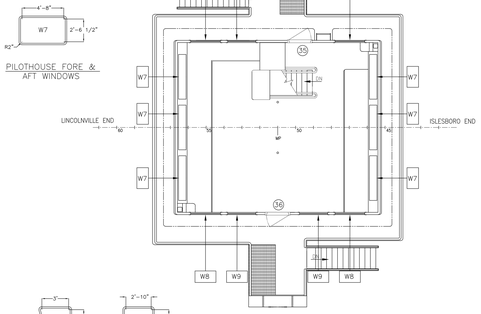
02 DECK



01 DECK SIDE WINDOWS P/S



01 DECK



PILOT HOUSE DECK

PILOTHOUSE FORE & AFT WINDOWS

PILOTHOUSE SIDE WINDOWS

01 DECK PORT FWD. & STBD. AFT WINDOWS

NOTE:
THE FOLLOWING REFERENCES APPLY
THE ISLESBORO END IS REFERRED TO AS BOW
AND THE LINCOLNVILLE END IS REFERRED TO AS STERN

0	ISSUED FOR BID	8/14/24	KVC
ALT	DESCRIPTION	DATE	NAME

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND.

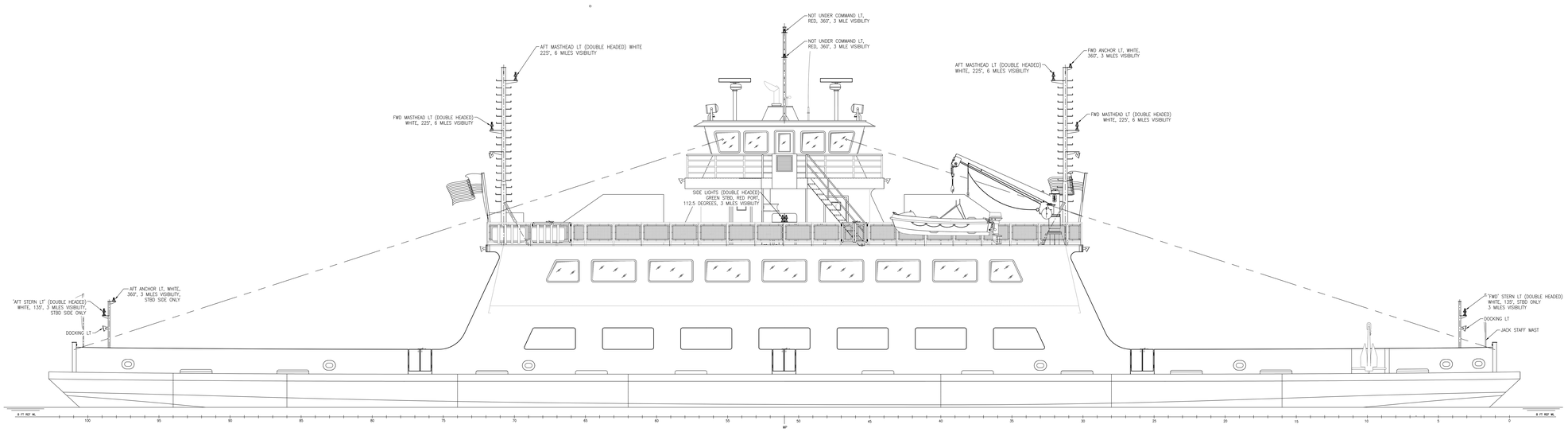
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

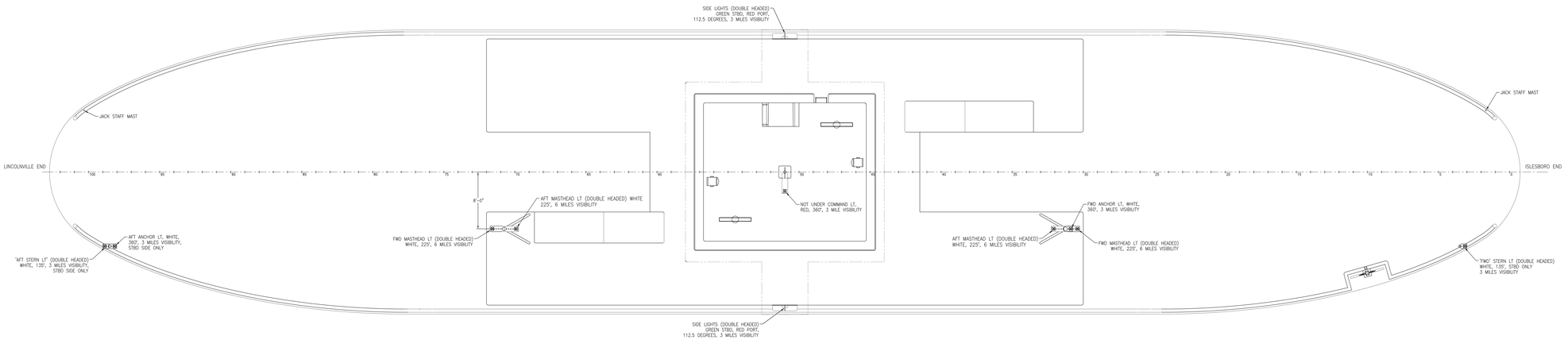
207 FT LOA FERRY VESSEL

DOOR AND WINDOW SCHEDULE

DRAWN BY INC.,JG DATE 12/14/23
CHECKED BY KVC DATE 8/14/24
APPROVED BY JWG DATE 8/14/24
SCALE 1/4" = 1'-0"
DWG. NO. D372-A7-2 ALT. 0

SHEET 2 OF 2





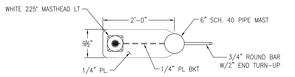
0	ISSUED FOR BID	8/29/24	KM
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

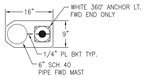
COLREGS PLAN

DRAWN BY KM DATE 5/14/2024
CHECKED BY JG DATE 8/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
SHEET 1 OF 2 DWG. NO. D372-A8-1 ALT. 0



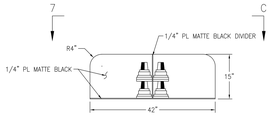
LIGHT MAST PLATFORM VIEW 10-D

AFT MAST, LOOKING DOWN
SCALE 1"=1'-0"



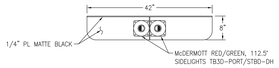
LIGHT MAST PLATFORM VIEW 9-D

FWD MAST, LOOKING DOWN
SCALE 1"=1'-0"



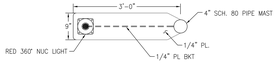
SIDELIGHTS PROFILE VIEW

STBD SIDE, LKG. INBD
PORT SIDE SIMILAR, OPPOSITE HAND
SCALE 1"=1'-0"



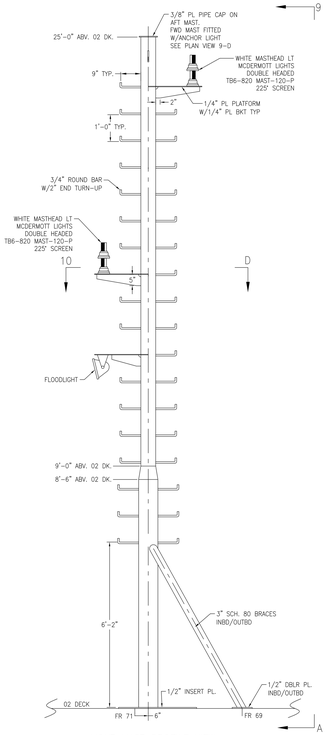
SIDELIGHTS PLAN VIEW 7-C

STBD SHOWN, LKG. DOWN
PORT SIDE SIMILAR, OPPOSITE HAND
SCALE 1"=1'-0"



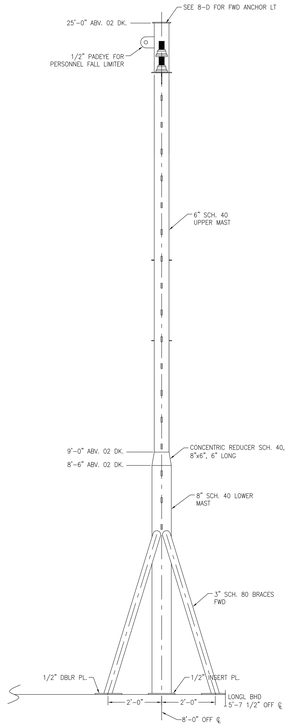
PILOTHOUSE MAST PLATFORM 11-C

LOOKING DOWN
SCALE 1"=1'-0"



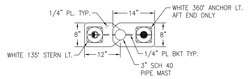
LIGHT MAST PLATFORM VIEW

8'-0" OFF CENTER, LKG. TO PORT
AFT MAST SHOWN, FWD OPPOSITE
SCALE 3/4"=1'-0"



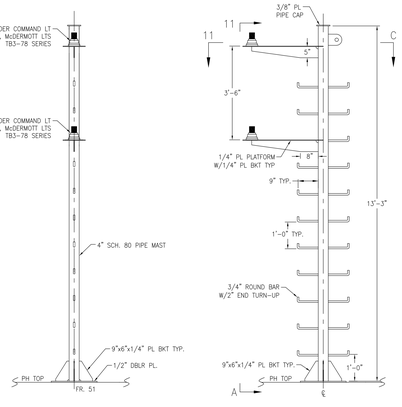
LIGHT MAST SECTION VIEW 9-A

6" FWD FR 71, LKG. AFT
AFT MAST SHOWN, FWD OPPOSITE
SCALE 3/4"=1'-0"



STERN LIGHT MAST PLAN VIEW 8-C

STBD SIDE, AFT END, LOOKING DOWN
PORT SIMILAR – NO NAV. LTS.
FWD OPPOSITE – NO ANCHOR LT.
SCALE 3/4"=1'-0"

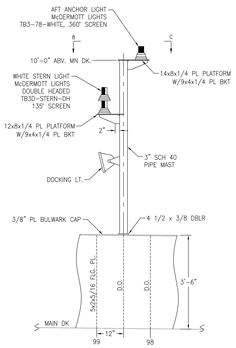


PILOTHOUSE MAST PROFILE VIEW 11-A

ON CENTERLINE,LOOKING TO PORT
SCALE 3/4"=1'-0"

PILOTHOUSE MAST SECTION VIEW

FR. 51 LOOKING AFT
SCALE 3/4"=1'-0"



STERN LIGHT MAST PROFILE VIEW

STBD SIDE, AFT END, LOOKING TO PORT
PORT SIMILAR – NO NAV. LTS.
FWD OPPOSITE – NO ANCHOR LT.
SCALE 3/4"=1'-0"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KM

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

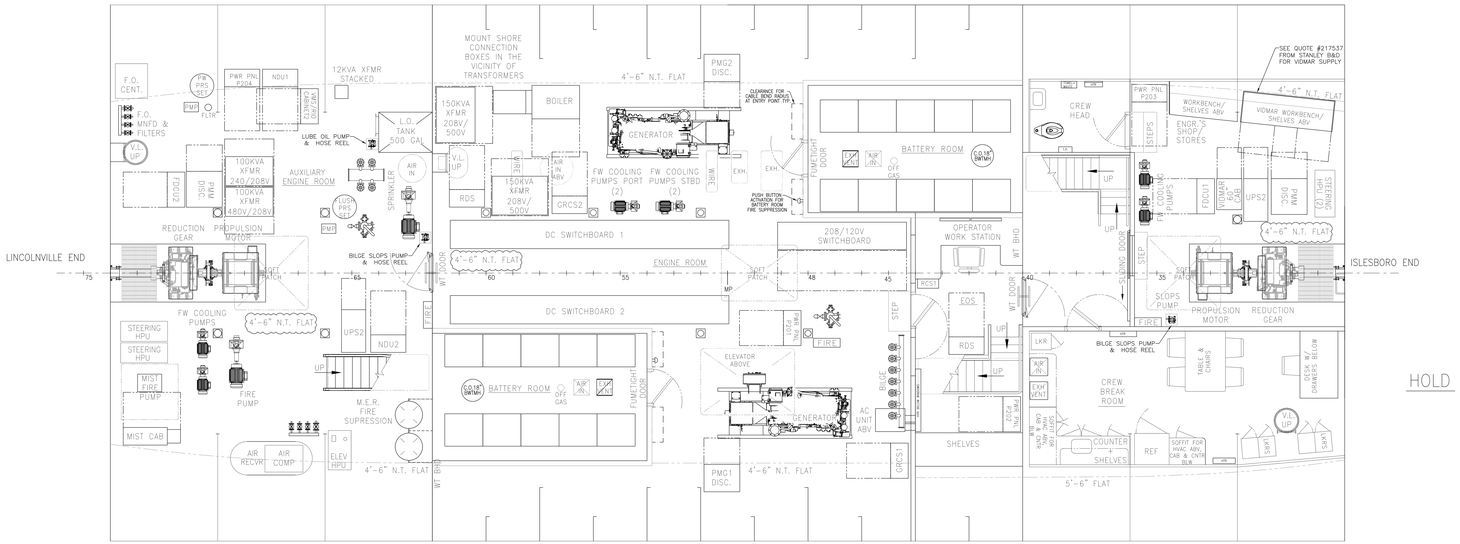
207 FT LOA FERRY VESSEL

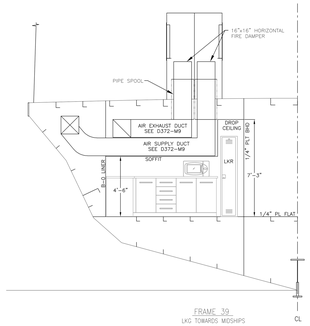
COLREGS PLAN

DRAWN BY KM, GEG DATE 5/14/2024
CHECKED BY JG DATE 8/24
APPROVED BY DATE
SCALE 3/4"=1'-0" OR AS NOTED
DWG. NO. D372-A8-2 ALT. 0

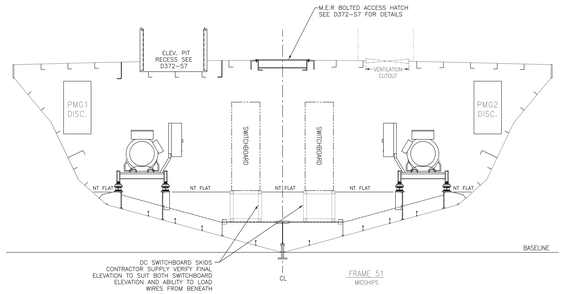
SHEET 2 OF 2

NOTE: EQUIPMENT CLEARANCES SHOWN WITH PHANTOM LINES. CONFIRM CLEARANCES WITH VENDORS PRIOR TO INSTALLATION.

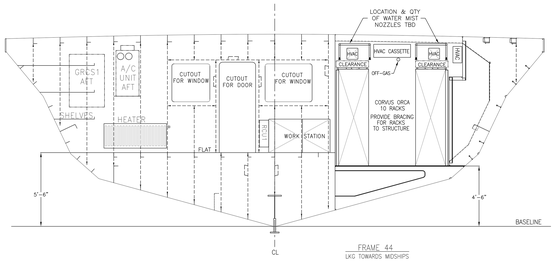




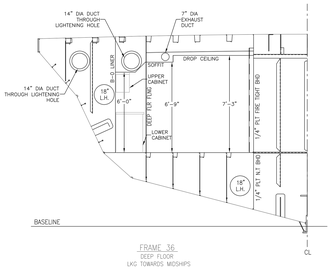
FRAME 39
LKG TOWARDS MIDSHIPS



FRAME 51
MIDSHIPS



FRAME 44
LKG TOWARDS MIDSHIPS



FRAME 36
DEEP FLOOR
LKG TOWARDS MIDSHIPS

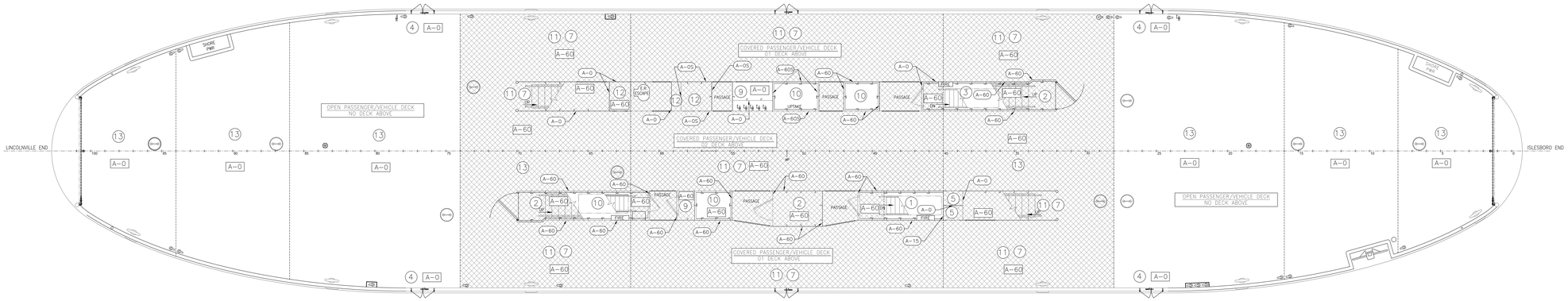
ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

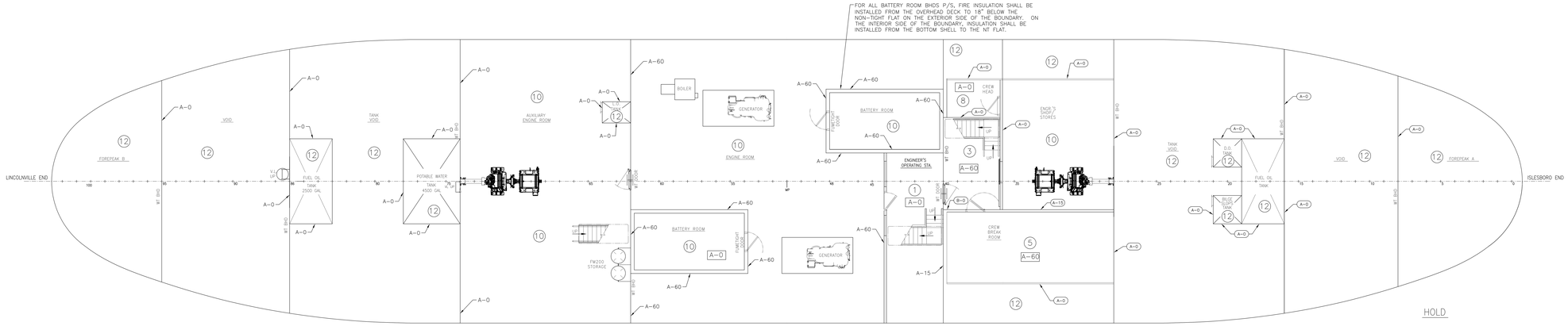
207 FT LOA FERRY VESSEL
MAINE DOT

ENGINE RM, AUX ER, ENG WKSHP ARRENGEMENTS

DRAWN BY KVC, JG DATE 12/16/22
CHECKED BY JG DATE
APPROVED BY DATE
SCALE 3/8" = 1'-0"
SHEET 1 OF 1 DWG. NO. D372-A9 ALT. 0



MAIN DECK



FOR ALL BATTERY ROOM BHDS P/S, FIRE INSULATION SHALL BE INSTALLED FROM THE OVERHEAD DECK TO 18" BELOW THE NON-TIGHT FLAT ON THE EXTERIOR SIDE OF THE BOUNDARY. ON THE INTERIOR SIDE OF THE BOUNDARY, INSULATION SHALL BE INSTALLED FROM THE BOTTOM SHELL TO THE NT FLAT.

HOLD

U.S. COAST GUARD SPACE DESIGNATORS

46 CFR 72.05-10

1. CONTROL STATIONS
2. STAIRWAY AND ELEVATOR ENCLOSURES
3. CORRIDORS
4. LIFEBOAT EMBARKATION STATIONS
5. STATEROOMS WITH INCOMBUSTIBLE VENEERS AND FIRE RESISTANT FURNISHINGS
6. STATEROOMS AND PUBLIC SPACES OF 500 SQUARE FEET OR LESS WITH COMBUSTIBLE FURNISHINGS AND ISOLATED STOREROOMS
7. PUBLIC SPACES OVER 500 SQUARE FEET WITH COMBUSTIBLE FURNISHINGS
8. WASHROOMS,TOILET SPACES,AND ISOLATED PANTRIES WITH INCOMBUSTIBLE FURNISHINGS
9. GALLEY, MAIN PANTRIES, STOREROOMS, AND WORKSHOPS.
10. MACHINERY SPACES
11. DRY CARGO SPACES
12. FUEL AND WATER TANKS AND VOIDS.
13. OPEN DECKS AND ENCLOSED PROMENADES (NOT SAFETY AREAS)

SYMBOL KEY

- — USCG SPACE TYPE DESIGNATION
- — DECK FIRE RATING
- — A-0 DECK INSULATION
- — A-15 DECK INSULATION
- — A-30 DECK INSULATION
- — A-60 DECK INSULATION
- "S" — SOUND INSULATION IN ADDITION TO FIRE INSULATION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWINGS D372-A11-2 AND D372-A11-3

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/29/24	MR

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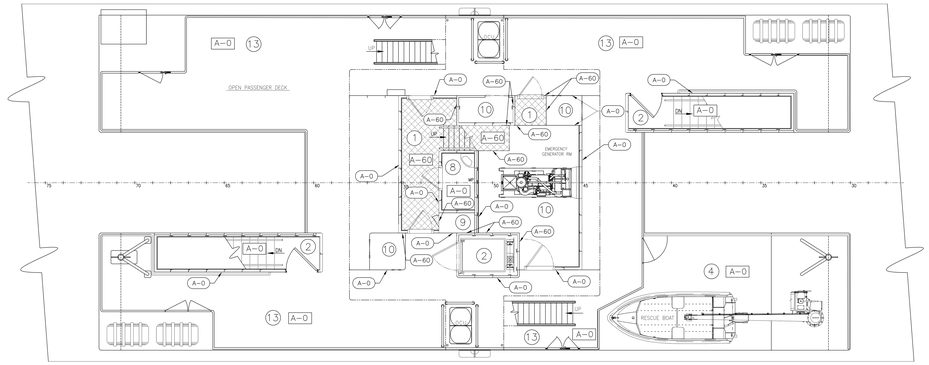
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

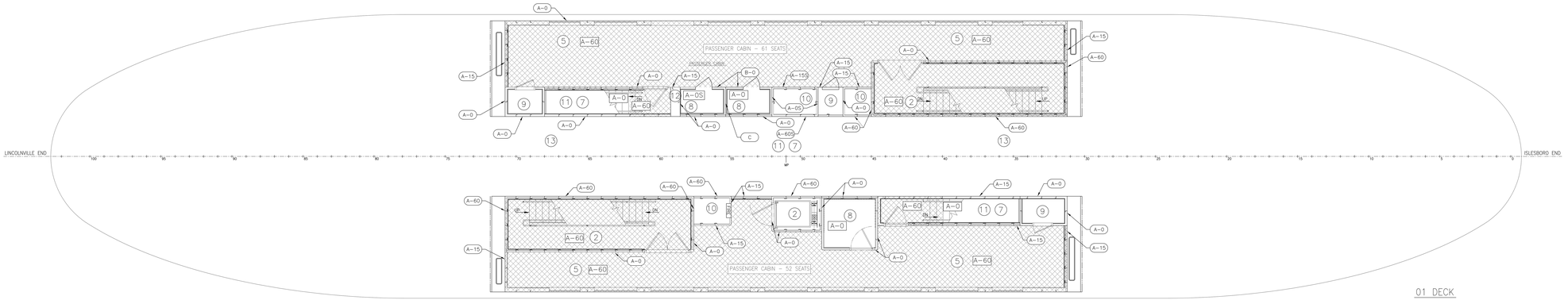
STRUCTURAL FIRE PROTECTION
HOLD AND MAIN DECK

DRAWN BY KM — DATE 08/11/2023
CHECKED BY KC — DATE 09/27/23
APPROVED BY — DATE
SCALE 1/4" = 1'-0"

SHEET 1 OF 3
DWG. NO. D372-A11-1 — ALT. 0



02 DECK



01 DECK

U.S. COAST GUARD SPACE DESIGNATORS

46 CFR 72.05–10

1. CONTROL STATIONS
2. STAIRWAY AND ELEVATOR ENCLOSURES
3. CORRIDORS
4. LIFEBOAT EMBARKATION STATIONS
5. STATEROOMS WITH INCOMBUSTIBLE VENEERS AND FIRE RESISTANT FURNISHINGS
6. STATEROOMS AND PUBLIC SPACES OF 500 SQUARE FEET OR LESS WITH COMBUSTIBLE FURNISHINGS AND ISOLATED STOREROOMS
7. PUBLIC SPACES OVER 500 SQUARE FEET WITH COMBUSTIBLE FURNISHINGS
8. WASHROOMS,TOILET SPACES,AND ISOLATED PANTRIES WITH INCOMBUSTIBLE FURNISHINGS
9. GALLEY, MAIN PANTRIES, STOREROOMS, AND WORKSHOPS.
10. MACHINERY SPACES
11. DRY CARGO SPACES
12. FUEL AND WATER TANKS AND VOIDS.
13. OPEN DECKS AND ENCLOSED PROMENADES (NOT SAFETY AREAS)

SYMBOL KEY

- — USCG SPACE TYPE DESIGNATION
- — DECK FIRE RATING
- — A–0 DECK INSULATION
- — A–15 DECK INSULATION
- — A–30 DECK INSULATION
- — A–60 DECK INSULATION
- "S" — SOUND INSULATION IN ADDITION TO FIRE INSULATION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWINGS D372–A11–1 AND D372–A11–3

SHEET 2 OF 3

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	MR

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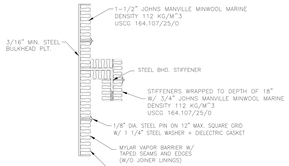
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

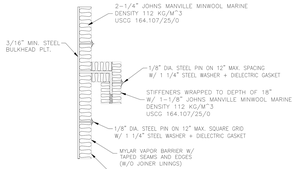
STRUCTURAL FIRE PROTECTION
01 DECK & 02 DECK

DRAWN BY KM — DATE 08/11/2023
CHECKED BY KC — DATE 09/27/23
APPROVED BY — DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372–A11–2 — ALT. 0



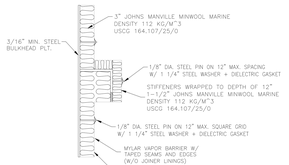
A-15 BULKHEAD INSULATION

NOT TO SCALE



A-30 BULKHEAD INSULATION

NOT TO SCALE



A-60 BULKHEAD INSULATION

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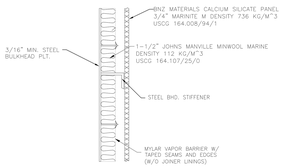
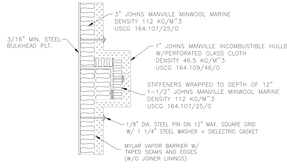


A-60 BULKHEAD INSULATION

FOR AREAS WITH RESTRICTED SPACE

NOT TO SCALE



A-60 SOUND BULKHEAD INSULATION

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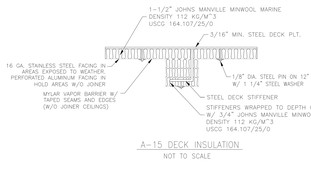
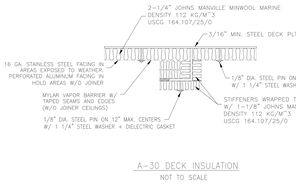


A-15 DECK INSULATION

NOT TO SCALE



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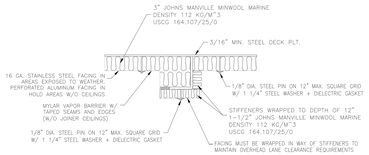

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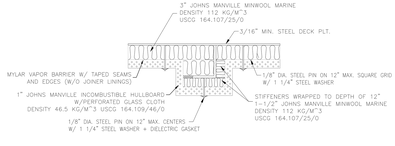

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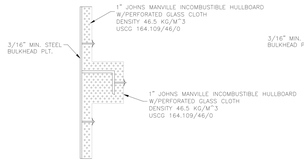
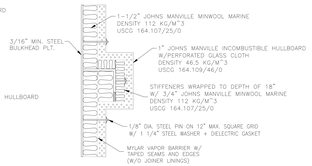
NOT TO SCALE



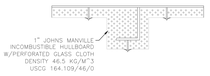
A-0 SOUND BULKHEAD INSULATION

NOT TO SCALE



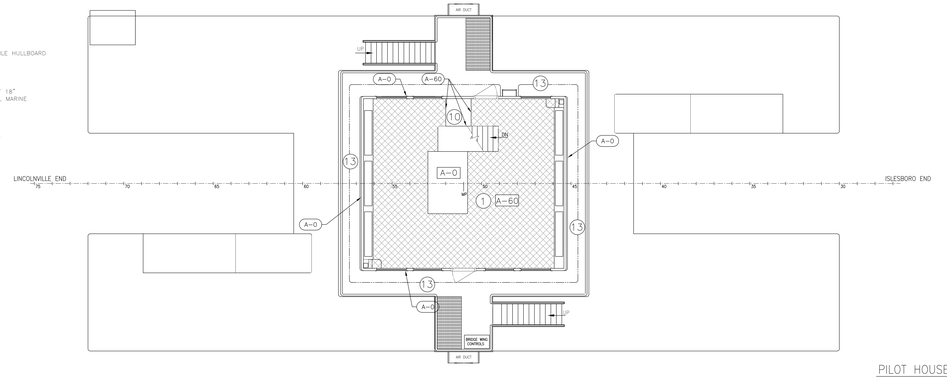
A-15 SOUND BULKHEAD INSULATION

NOT TO SCALE



A-0 SOUND DECK INSULATION

NOT TO SCALE



PILOT HOUSE DECK

NOTES:

1. CONSTRUCTION AND ARRANGEMENT OF THE STRUCTURAL FIRE PROTECTION SYSTEM SHALL BE IN ACCORDANCE WITH ALL OF THE U.S. COAST GUARD 46 CFR SUBCHAPTER H REQUIREMENTS.

2. U.S. COAST GUARD PUBLICATION NAVIC 9–97 CH–1, "GUIDE TO STRUCTURAL FIRE PROTECTION", SHALL BE USED AS A GUIDANCE FOR INSTALLATION AND ARRANGEMENT.

3. ALL MATERIALS USED IN THE FIRE PROTECTION SYSTEM ARE TO BE U.S. COAST GUARD APPROVED AND BE PROVIDED WITH CERTIFICATES SHOWING COAST GUARD APPROVED NUMBERS.

4. ALL METHODS OF INSTALLATION ARE TO BE U.S. COAST GUARD APPROVED.

5. COMBUSTIBLE MATERIALS IN CONCEALED COMPARTMENTS MUST BE KEPT TO AN ABSOLUTE MINIMUM.

6. PENETRATIONS IN A– AND B–CLASS FIRE CONTROL BOUNDARIES FOR ELECTRICAL CABLES, PIPES TRUNKS, DUCTS, ETC. SHALL BE DONE IN ACCORDANCE WITH 46 CFR PART 116.415 (ii) AND (iv).

7. CABLE PENETRATIONS OF A– AND B– CLASS BULKHEADS ARE TO BE SUPPORTED BY MEANS OTHER THAN THE FIRE STOP. SUPPORT FOR CABLES SHALL BE SUITABLY STIFFENED, MADE OF NONCOMBUSTIBLE MATERIAL, AND SHALL NOT BE HEAT SENSITIVE TO ENSURE CABLE SUPPORT DURING FIRE EXPOSURE. THE MATERIAL USED TO SEAL THE PENETRATION SHALL BE NONCOMBUSTIBLE. ALL WIRING SHALL BE ACCORDING TO 46 CFR 111.60.

8. NOTICE SHOULD BE TAKEN TO NAVIC 9–97 CH–1,SECTION 2.3 AND 3.14, FOR PIPING PENETRATIONS. STEEL PIPE PENETRATIONS THROUGH A–CLASS BULKHEADS SHALL BE WELDED CONTINUOUSLY ON ONE SIDE. B–CLASS PENETRATIONS SHALL BE CLOSE FITTING.

9. PENETRATIONS OF FIRE BOUNDARIES BY DUCTING SHALL BE ACCORDING TO 46 CFR 72.05–50 AND 46 CFR 116.600. PENETRATIONS OF A–CLASS BOUNDARIES SHOULD BE TIGHT FITTING BY WELDING, BOLTING OR FITTING A SLEEVE SEALED WITH AN APPROVED FIRE STOP. FOR B–CLASS PENETRATIONS THE PENETRATION IS TO BE CLOSE FITTING WITH A SEALED CUT OUT, BY USING STEEL SLEEVES, OR USING ANY OF THE METHODS DESCRIBED FOR A–CLASS BOUNDARIES.

10. DOORS IN A–CLASS BULKHEADS ARE TO HAVE A SINGLE THICKNESS OF 3mm STEEL OR A DOUBLE THICKNESS OF 1.5mm STEEL. THE GLASS USED IN DOORS SHALL HAVE A MAXIMUM AREA OF 0.06M^2 AND BE AT LEAST 6.5mm THICK, WIRE INSERTED OR EQUIVALENT GLASS. NO VENT GRILLES OR OTHER VENTILATION OPENINGS ARE PERMITTED. INSULATION IS TO BE USCG APPROVED.

11. DOORS IN B–CLASS BULKHEADS ARE TO HAVE A MINIMUM THICKNESS OF 1.5mm STEEL PLATE. GLASS IS TO BE AT LEAST 6.5mm THICK, WIRE INSERTED OR EQUIVALENT.

12. DOORS IN STAIRWAYS AND MVZ ARE TO MEET REQUIREMENTS FOR A–CLASS BULKHEADS. IN ADDITION THOSE DOORS ARE TO BE SELF CLOSING. DOORS NORMALLY KEPT OPEN SHALL BE EQUIPPED WITH LOCAL RELEASE AND REMOTE RELEASE FROM THE CONTROL STATION.

13. DRAFT STOPS SHALL BE FITTED BETWEEN THE JOINER BULKHEADS AND THE SHELL OF THE VESSEL, AND BETWEEN JOINER CEILINGS AND THE DECK ABOVE. DRAFT STOPS SHALL BE FITTED AT A MINIMUM OF 14 METERS IN THE LONGITUDINAL AND TRANSVERSE DIRECTION. DRAFT STOPS SHALL BE FORMED OF A RIGID MATERIAL SUCH AS 0.73mm STEEL OR AN EQUIVALENT NONCOMBUSTIBLE MATERIAL.

14. SELF–CLOSING A–CLASS FIRE DOORS SHALL BE INSTALLED AT EACH LEVEL OF THE ELEVATOR AS REQUIRED BY 46 CFR 72.05 AND NVIC 9–97.

15. STRUCTURAL FIRE INSULATION REQUIREMENTS FOR BATTERY ROOMS AND VENT TRUNKS SHALL BE IN ACCORDANCE WITH ASTM F3353–19 AND LATEST USCG REQUIREMENTS. INSULATION RATINGS SHOWN ARE A MINIMUM.

16. CONTRACTOR SHALL FOLLOW ALL INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS PROVIDED BY THE MANUFACTURER OF THE JOINER AND INSULATION SYSTEM MATERIALS. ALL EXTERIOR INSULATION OF DECKS OR BULKHEADS THAT ARE INSULATED ARE TO BE FINISHED WITH HEAVY DUTY SEALED MYLAR COVERING, FASTENED WITH SEAMS AND EDGES TAPED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. INSULATED SPACE ON THE MAIN DECK EXPOSED TO WEATHER OR SPRINKLER WILL BE SHEATHED IN A STAINLESS STEEL SHEET METAL TO PROTECT FIRE INSULATION FROM DAMAGE AND WEATHER. INSULATED SPACE IN THE HOLD WILL BE SHEATHED IN A PERFORATED ALUMINUM FOIL TO PROTECT FIRE INSULATION FROM DAMAGE. ADDITIONAL MOUNTING STRUCTURE IN OVERHEAD MAY BE REQUIRED TO SUPPORT SHEET METAL OVER INSULATION.

17. DETAILS ON THIS DRAWING ARE PROVIDED FOR GUIDANCE ONLY. FINAL DETAILED DRAWINGS SHOWING THE INSTALLED MATERIALS SHALL BE REVIEWED WITH THE VESSEL OWNER TO ENSURE SATISFACTORY FINAL FIT AND FINISH.

18. OVERHEAD CLEARANCE OF 16'–0" ABOVE THE MAIN DECK IS TO BE MAINTAINED ALONG THE CENTER VEHICLE LANE. OVERHEAD CLEARANCE OF 8'–0" ABOVE THE MAIN DECK IS TO BE MAINTAINED IN THE OUTBOARD VEHICLE LANES.

U.S. COAST GUARD SPACE DESIGNATORS

46 CFR 72.05–10

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2. STAIRWAY AND ELEVATOR ENCLOSURES
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- "S" — SOUND INSULATION IN ADDITION TO FIRE INSULATION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWINGS D372–A11–1 AND D372–A11–2

SHEET 3 OF 3

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/29/24	MR

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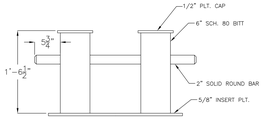
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

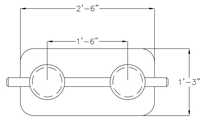
STRUCTURAL FIRE PROTECTION
PILOT HOUSE

DRAWN BY KM	DATE 08/11/2023	
CHECKED BY KC	DATE 09/27/2023	
APPROVED BY	DATE	
SCALE 1/4" = 1'-0"		
DWG. NO. D372-A11-3	ALT. 0	



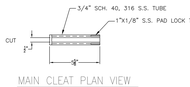
PROFILE VIEW OF ANCHOR RODE BITTS

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



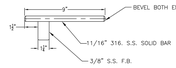
PLAN VIEW OF ANCHOR RODE BITTS

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



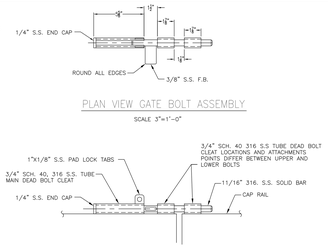
MAIN CLEAT PLAN VIEW

SCALE 3"=1'-0"



DEAD BOLT DETAILS

SCALE 3"=1'-0"



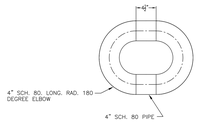
PLAN VIEW GATE BOLT ASSEMBLY

SCALE 3"=1'-0"

PROFILE VIEW GATE BOLT ASSEMBLY

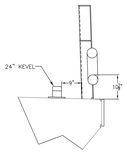
UPPER BOLT SHOWN LOWER SIMILAR

SCALE 3"=1'-0"



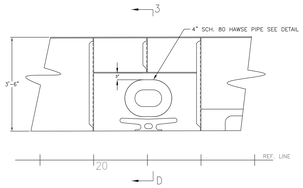
HAWSE PIPE DETAIL

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



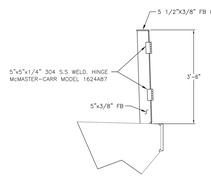
SECTION 3-D

SCALE 3/4" = 1'-0"



PROFILE VIEW OF HAWSE PIPE AND BULWARK

SCALE 3/4" = 1'-0"



SECTION 2-D2

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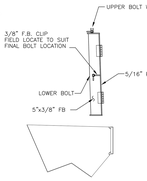

SECTION 2-D1

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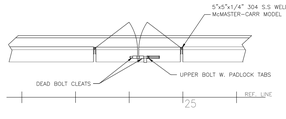
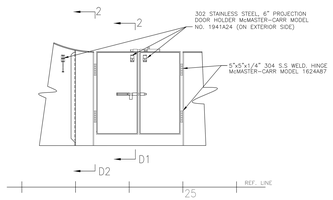


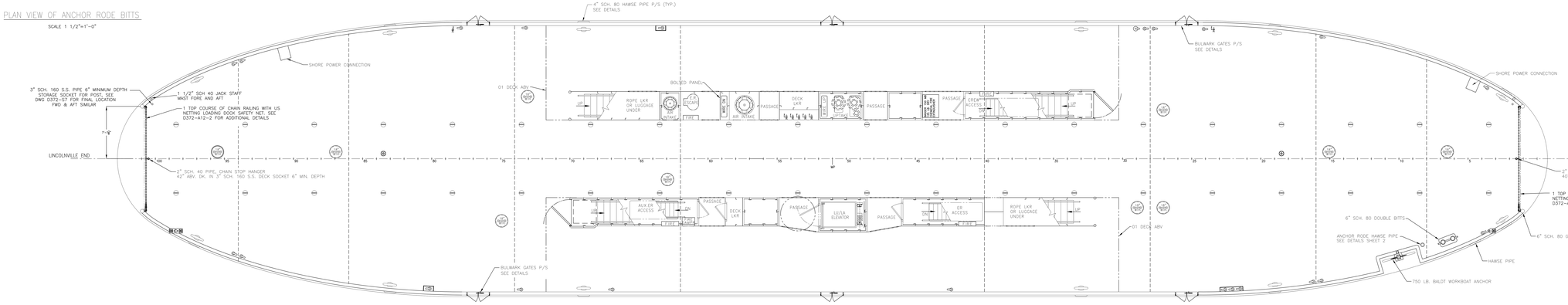
PLAN VIEW OF BULWARK GATE

SCALE 3/4" = 1'-0"



PROFILE VIEW OF BULWARK GATE

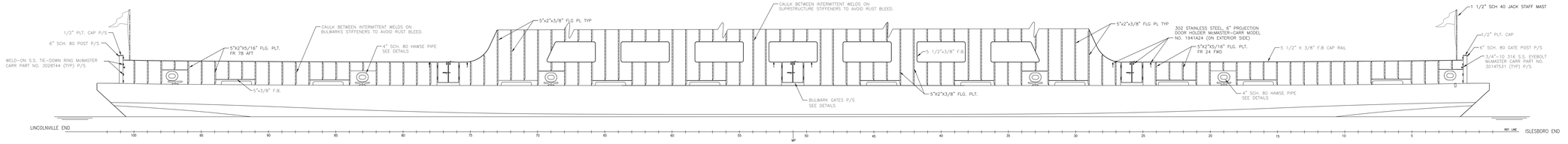
SCALE 3/4" = 1'-0"



PLAN VIEW OF MOORING FITTINGS AND GATE LOCATIONS

SCALE 1/4" = 1'-0"

MAIN DECK



PLAN VIEW OF MOORING FITTINGS AND GATE LOCATIONS

SCALE 1/4" = 1'-0"

0	ISSUED FOR BID	8/14/24	EC
ALT	DESCRIPTION	DATE	NAME

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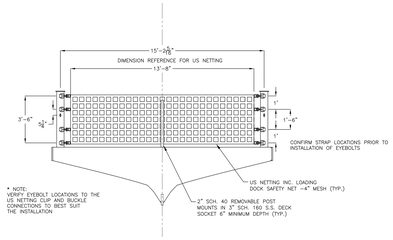
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

MOORING AND BULWARK ARRANGEMENTS AND DETAILS

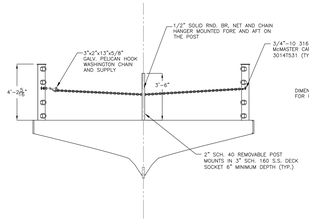
DRAWN BY JGEC DATE 7/24
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 1/4" = 1'-0" OR AS NOTED
DWG. NO. D372-A12-1 ALT. 0

SHEET 1 OF 2



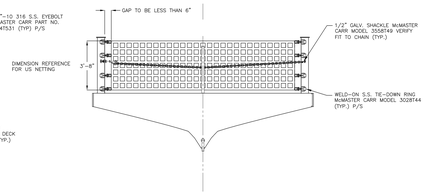
SECTION VIEW OF FWD. US NETTING ONLY

AFT SIDE LKG FWD.
AFT END SIMILAR



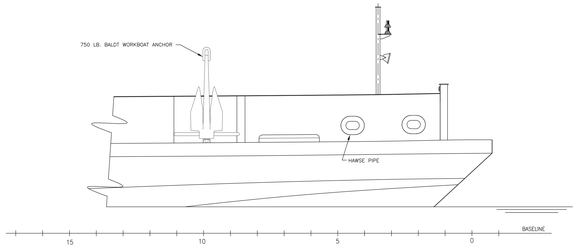
SECTION VIEW OF FWD. CHAIN RAIL ONLY

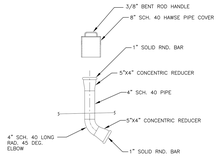
AFT SIDE LKG FWD.
AFT END SIMILAR



SECTION VIEW OF FWD. CHAIN AND NET RAIL

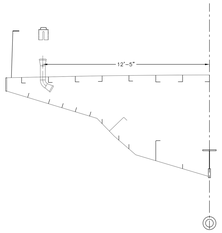
AFT SIDE LKG FWD.
AFT END SIMILAR





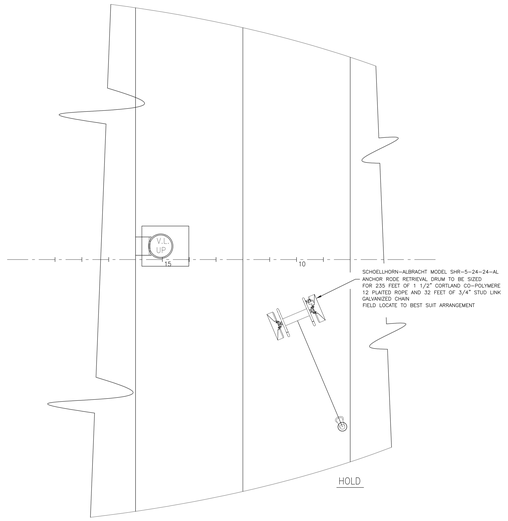
DETAIL OF DECK HAWSE PIPE

SCALE 3/4" = 1'-0"

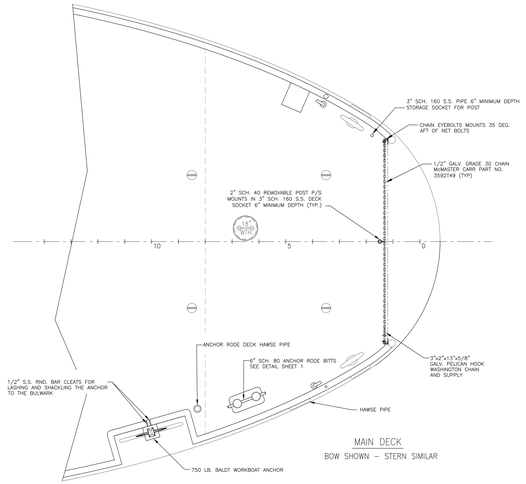


SECTION VIEW IN WAY OF DECK HAWSE PIPE

FWD. SIDE LKG TOWARDS MIDSHIP



HOLD



MAIN DECK

BOW SHOWN – STERN SIMILAR

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/14/24	EC

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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

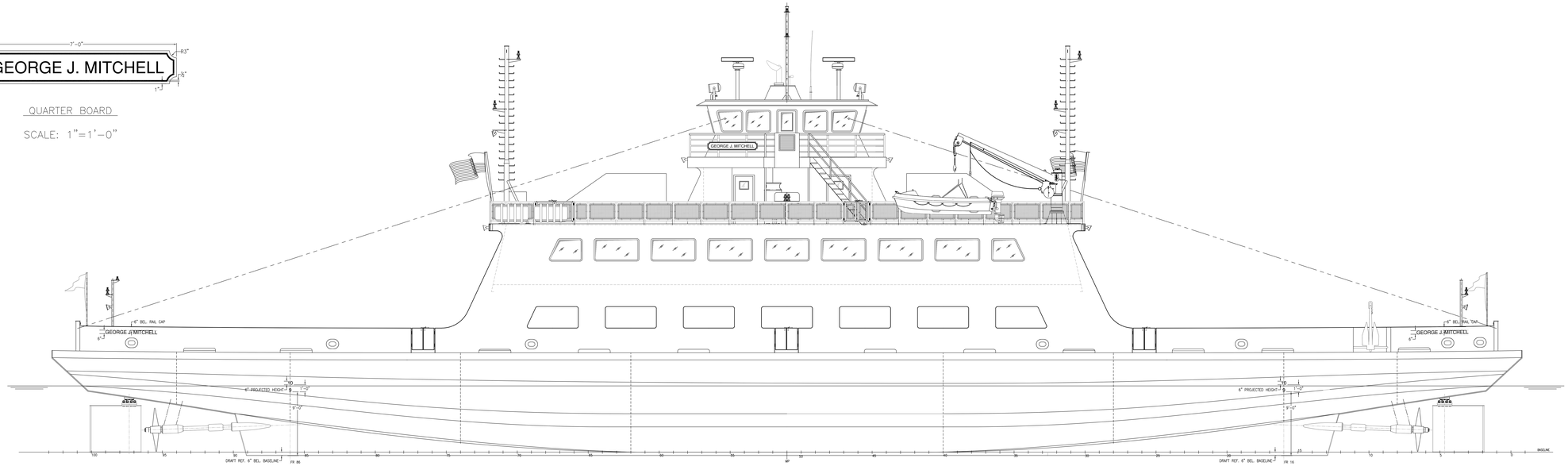
BOW / STERN CHAIN-NET RAIL ARRANGEMENTS & DETAILS

DRAWN BY JGLEC DATE 7/24
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 3/8" = 1'-0" OR AS NOTED
DWG. NO. D372-A12-2 ALT: 0

SHEET 2 OF 2

QUARTER BOARD

SCALE: 1"=1'-0"



*NOTE – NAME SUBJECT TO FINAL APPROVAL OF MAINE DEPT OF TRANSPORTATION
VESSEL NAME IS CONFIDENTIAL UNTIL DIRECTED OTHERWISE BY OREP

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	EC

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

HULL MARKINGS PLAN

DRAWN BY EC DATE 7/24
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-A13 ALT. 0

SHEET 1 OF 1

GENERAL NOTES:

1. THE PURPOSE OF THIS DRAWING IS TO PROVIDE DESIGN GUIDANCE FOR THENEW 207 FT MAINE DOT FERRY.

2. ALL MATERIALS, COMPONENTS, AND WORKMANSHIP SHALL BE ABS, UL, IEC EQUIVALENT STANDARD, AND/OR U.S.C.G. APPROVED AS REQUIRED.

3. SHIPYARD IS TO PROVIDE ALL EQUIPMENT AND CABLING, AS SPECIFIED, AND ACCORDING TO THE CONSTRUCTION CONTRACT.

4. POWER DISTRIBUTION CABLES SHALL MEET THE REQUIREMENTS OF IEC 60092-352. ALL CABLE SHOWN IN HYBRID SYSTEM LAYOUT (SHEET 2) SHALL BE TRICAB DV SERIES CABLE. SINGLE CONDUCTOR CABLES SHALL BE SEPARATED FROM EACH OTHER BY MORE THAN ONE WIRE DIAMETER. ALL POWER CABLE FROM SWITCHBOARD TO LOADS SHALL BE TRICAB BV SERIES.

5. SHORE POWER CONNECTION BOX SHALL BE CUSTOM MADE BY THE SWITCHBOARD MANUFACTURER OR APPROPRIATE VENDOR TO FIT THE AVAILABLE SPACE. THE ENCLOSURE SHALL BE NEMA 4X AND HEAVILY CONSTRUCTED TO BEAR THE WEIGHT AND TORSIONAL STRESS OF THE 200 AMP CORD AND CONNECTORS. A WHITE LED POWER AVAILABLE INDICATOR LIGHT SHALL BE PROVIDED.

6. THE INSTALLATION OF ALL ELECTRICAL SYSTEMS SHALL CONFORM TO THE REQUIREMENTS OF THE 46 CFR PARTS 70-89 (SUBCHAPTER H), APPLICABLE PARTS OF 46 CFR PARTS 110-113 (SUBCHAPTER J), AS WELL AS IEC STANDARD.

7. LOAD REQUIREMENT OF EACH CIRCUIT SHALL BE VERIFIED AFTER FINAL SELECTION OF THE EQUIPMENT; AND CIRCUIT BREAKERS AND CABLE SIZES ADJUSTED ACCORDINGLY.

8. THE SHIPYARD SHALL BALANCE ALL SINGLE PHASE LOADS IN PANELS AT INSTALLATION.

9. THE VENTILATION FANS SHALL BE CAPABLE OF BEING SHUT DOWN AT THE ENTRANCE TO EACH SPACE SERVED AND REMOTELY FROM THE PILOT HOUSE. ENGINES SHALL BE CAPABLE OF BEING SHUT DOWN AT THE ENTRANCE TO THE ENGINE ROOM, VIA FIXED FIREFIGHTING SYSTEM RELEASE, AND MAIN ENGINES STARTED/STOPPED AT PILOTHOUSE CONSOLE AND LOCALLY IN ENGINE ROOM. ENGINE ROOM AND BATTERY ROOM VENTILATION FANS SHALL BE EQUIPPED WITH AUTOMATIC SHUTDOWN UPON RELEASE OF FIXED FIREFIGHTING SYSTEM.

10. THE LOCATION OF ALL FIXTURES AND WIRE RUNS SHALL BE DETERMINED ON BOARD TO BEST SUIT INSTALLATION AS WELL AS TO COMPLETE THE ELECTRICAL SYSTEMS. SPECIAL CONSIDERATION SUCH AS MINIMUM CABLE LENGTH IS REQUIRED FOR CABLE RUNING BETWEEN DC SWITCHBOARD AND ESS.

11. ALL CABLES IN MAIN CABLEWAYS SHALL BE SINGLE BANKED. LOCAL RUNS MAY BE DOUBLE BANKED TO SUIT THE INSTALLATION. SEE NOTE 4 FOR ABB CABLE REQUIREMENTS.

12. THE BUS-TIE BREAKER SHALL BE NORMALY OPEN TO AVOID PARALLELING OF CONVERTERS UNDER NORMAL OPERATION. SHIP SERVICE SWITCHBOARD SOURCES SHALL BE INTERLOCKED SUCH THAT ONLY ONE SOURCE CAN BE CONNECTED WHEN THE BUS TIE BREAKER IS CLOSED, AND ONLY ONE SOURCE PER BUS CAN BE CONNECTED WHEN THE BUS TIE BREAKER IS OPEN. LONG TIME PARALLEL OPERATION WITH CLOSE BUS SHALL BE PERMITTED ONLY WHEN THE 480V SHORE POWER SOURCE IS CONNECTED WITH THE PURPOSE OF BACKFEEDING THE DC SITCHBOARDS TO CHARGE THE ESS BATTERIES.

GENERAL NOTES CONT'D

13. THE NUMBER AND LOCATION OF EMERGENCY LIGHTS AND EXIT LIGHTS, AS WELL AS THE POSITION AND INTENSITY OF THE NAVIGATION LIGHTS, AND ALL APPLICABLE DETAILS SHALL BE TO THE SATISFACTION OF THE U.S. COAST GUARD O.C.M.I.

14. THE INSTALLATION, WORKMANSHIP AND TESTING SHALL BE TO THE SATISFACTION OF THE U.S. COAST GUARD, OFFICER IN CHARGE MARINE INSPECTION (O.C.M.I.).

15. THE POSITION AND INTENSITY OF THE NAVIGATION LIGHTS SHALL BE IAW THE INLAND NAVIGATION RULES (SEE COMDINST M16672.2D) AND ALL APPLICABLE INSTALLATION DETAILS SHALL BE TO THE TO THE SATISFACTION OF THE U.S. COAST GUARD O.C.M.I.

16. ALL SWITCHES SHALL COMPLY WITH ARTICLE 404 OF NFPA NEC 2002. EACH SWITCH LOCATED IN WEATHER SHALL BE IN ENCLOSED WATERTIGHT ENCLOSURE AND BE EXTERNALLY OPERABLE.

17. FUSES SHALL COMPLY WITH 46 CFR 120.380(I). ALL FUSES TO COMPLY WITH ARTICLE 240 OF NFPA NEC 2002 OR IEC 60092-202. ALL FUSES TO BE OF CARTRIDGE TYPE AND BE UL-LISTED.

18. ALL CIRCUIT BREAKERS AND FUSED DISCONNECT SWITCHES SHALL BE UL 489 LISTED OR IEC 61439.

19. STEERING GEAR CIRCUIT BREAKERS SHALL COMPLY WITH 46 CFR 58.25-55. BREAKERS SHALL BE INSTANTANEOUS ONLY, SET TO AT LEAST 175% BUT NO MORE THAN 200% OF THE MOTOR'S LOCKER ROTOR CURRENT (257A @ 208V).

20. INDIVIDUAL STARTER PANELS EQUIPPED WITH LOW VOLTAGE RELEASE (LVR) SHALL BE EQUIPPED WITH AN ADJUSTABLE TIME DELAY TO STAGE HOW LOADS ARE RESTORED AFTER A BLACKOUT.

AC SWITCHBOARD DETAILS

SWITCHBOARD WILL BE CONSTRUCTED TO CONFORM WITH THE REQUIREMENTS OF DEAD-FRONT LOW-VOLTAGE SWITCHBOARDS CONTAINED IN 46 CFR-120.330, AND IN ANSI/IEEE STANDARD 45-2002, RECOMMENDED PRACTICE FOR ELECTRICAL INSTALLATIONS ON SHIPBOARD. THE FOLLOWING ITEMS ARE PRESENTED AS SUPPLEMENTAL QUALIFICATIONS SPECIFIC TO THE APPLICATION ABOARD THE MAINE DOT FERRY.

1. THE SWITCHBOARD ENCLOSURE WILL BE IP22 RATED, DRIPSHIELD PROTECTED, WHICH SHALL BE OF SUFFICIENT LENGTH TO PROTECT DEVICES MOUNTED ON THE DOORS FROM DRIPPING LIQUIDS.

2. THE SWITCHBOARD'S ELECTRICAL SYSTEM FEATURES WILL BE BASED ON THE ONE-LINE DIAGRAM OF THIS SHEET. THE OVERALL APPLICATION IS FOR A 4 WIRE 208/120 VOLT GROUNDED SYSTEM, IAW CFR46-120.378 THROUGH 120.390. GALVANIC ISOLATORS SHALL BE CONNECTED TO GROUND PER SHEET 12 OF THIS DRAWING.

3. THE SWITCHBOARD WILL BE FURNISHED WITH CIRCUIT BREAKERS THAT ARE UL LISTED AND RATED FOR THE DUTY. FUSES WHERE REQUIRED SHALL ALSO BE UL LISTED. THE CIRCUIT BREAKERS DESIGNATED FOR SWITCHBOARD FEEDER APPLICATIONS SHALL HAVE THERMAL AND MAGNETIC ELEMENTS. THE MAIN FEEDER BREAKERS SHALL HAVE LSI ELECTRONIC TRIP UNITS, WITH ADJUSTABLE LONG TIME, SHORT TIME, AND INSTANTANEOUS. THE SHORE POWER CIRCUIT BREAKERS SP1 & SP2 SHALL HAVE AN LSI ELECTRONIC TRIP UNIT, WITH ADJUSTABLE LONG TIME, SHORT TIME, AND INSTANTANEOUS SETTINGS. MAIN FEEDER BREAKERS AND SHORE POWER BREAKERS SHALL BE ELECTRICALLY INTERLOCKED SUCH THAT SHORE POWER WILL BE LOCKED OUT IF EITHER OF THE MAIN GENERATORS ARE RUNNING. NORMAL UNDERWAY OPERATION TO BE ARRANGED FOR NON PARALLELING CONNECTION BETWEEN THE TWO MAIN GENERATORS. BACKFEED FROM SP1 TO ESS BATTERIES SHOULD INCLUDE A REVERSE POWER RELAY ON SP1 TO PREVENT FEEDING TO SHORE IN CASE OF SHORE SIDE BLACKOUT.

4. THE EMERGENCY SWITCHBOARD SHALL BE DESIGNED TO AUTOMATICALLY START AND BRING ON LINE THE EMERGENCY GENERATOR WITHIN 30 SECONDS AFTER FAILURE OF THE SHIP SERVICE POWER SOURCE, OR FAILURE OF SHORE POWER. THE BUS-TIE BREAKER AT THE EMERGENCY SWITCHBOARD SHALL OPEN AUTOMATICALLY UPON LOSS OF SHIP SERVICE POWER. TRANSFER BACK TO SHIP SERVICE POWER OR SHORE POWER SHALL BE DONE MANUALLY.

5. AUTOMATIC VOLTAGE REGULATION OF THE VESSEL'S POWER SHALL BE ACCOMPLISHED THROUGH THE ABB AUXILIARY PROPULSION CONTROL SYSTEM. VOLTAGE REGULATION ON THE LOW VOLTAGE AC SIDE IS PROVIDED BY DC/AC OFFGRID CONVERTERS. DC VOLTAGE FLOATS WITH ESS VOLTAGE.

6. THE SWITCHBOARDS WILL BE OUTFITTED WITH GROUND DETECTION MONITORS THAT PROVIDES CONTINUOUS INDICATION OF CIRCUIT STATUS TO GROUND WITH A PROVISION TO MOMENTARILY REMOVE THE INDICATING DEVICE FROM THE REFERENCE GROUND.

7. THE SWITCHBOARD WILL BE OUTFITTED WITH AN INSULATION RESISTANCE MONITOR.

8. LABEL-PLATES WILL BE PROVIDED FOR ALL THE CIRCUIT BREAKERS DETALING THEIR PROTECTIVE FUNCTIONS, THEIR THERMAL TRIP RATING AND ASSOCIATED CIRCUIT NUMBER. LABEL-PLATES WILL BE PROVIDED TO ALL OTHER SWITCHBOARD DEVICES DETAILING THEIR FUNCTIONS ONLY.

9. ALL SWITCHBOARD CIRCUIT BREAKERS SHALL BE EQUIPPED WITH PLUG-IN TYPE BASES AND SHALL BE HARD BUSSED, WITH THE EXCEPTION OF SOURCE AND LOAD CABLE CONNECTIONS WHICH SHALL ACCEPT BOLT-ON, CRIMPED TERMINAL LUGS. WHERE MULTIPLE CABLES MUST BE ACCOMMODATED, SUFFICIENT CONNECTIONS SHOULD BE AVAILABLE TO PRECLUDE MORE THAN TWO TERMINAL LUGS PER BOLT. CIRCUIT BREAKERS SHALL BE UL 489 LISTED OR IEC 61439.

AC SWITCHBOARD DETAILS CONT'D

10. PREFERRED CABLE ENTRY INTO THE SWITCHBOARD WILL BE UP THROUGH THE BOTTOM. THE SECTIONS WILL BE OUTFITTED WITH SUFFICIENT BRACING TO SUPPORT THE CABLE, AND BRACE ALL BUSWORK FOR A MAXIMUM OF SYMMETRICAL SHORT CIRCUIT CURRENT AS REQUIRED BY NEC AND IEEE-45. BOTTOM CABLE ENTRY NEED TO BE SEALED.

11. SWITCHBOARD METERS SHOWN ON THIS SHEET FOR INCLUSION MAY HAVE ANALOG OR DIGITAL PRESENTATION, AND BE DESIGNED FOR ACCURACY OF + OR - 1%, OR LESS.

12. A 120V, 60HZ, 1ø LED, 4 FOOT TUBE TYPE LIGHT FIXTURE SHALL BE FURNISHED MOUNTED UNDER THE FRONT DRIP SHIELD OF THE SWITCHBOARD TO PROVIDE METER PANEL ILLUMINATION.

13. INTERNAL SWITCHBOARD CONTROL WIRING TO BE TYPE SIS RATED FOR 110 DEGREES CELSIUS OVER AMBIENT (AWG 14 MINIMUM) TESTED AND MARKED UL VW-1. INSTRUMENT WIRE MAY BE 18 AWG AND NO LESS. THE WIRING SHALL BE GRAY COLORED AND ALL CONDUCTORS SHALL RECEIVE A WHITE SHRINK SLEEVE, MARKED WITH MACHINE APPLIED INDELIBLE HEAT-SET INK, WITH IDENTIFICATION PER THE SWITCHBOARD SCHEMATIC WIRING DIAGRAM. A COPY OF THE WIRING DIAGRAM SHALL BE PROVIDED IN A STEEL POCKET MOUNTED BEHIND ONE OF THE SWITCHBOARD DOORS. COMMUNICATION WIRE SUCH AS FOR ETHERNET, CANBUS OR MODBUS MAY BE IAW CONNECTED EQUIPMENT MANUFACTURER'S RECOMMENDATION.

14. THE SWITCHBOARD WILL BE PAINTED THROUGHOUT IN STANDARD GRAY, RAL 7035.

15. THE SWITCHBOARD VENDOR SHALL SUBMIT DRAWINGS AND OTHER APPLICABLE TECHNICAL INFORMATION RELATING TO THE OPERATION AND MAINTENANCE OF THE UNIT. THE DRAWINGS SHOULD FEATURE DIMENSIONED VIEWS OF THE ASSEMBLY AND ELECTRICAL ONE-LINES SCHEMATICS. TECHNICAL INFORMATION PROVIDED VIA TECHNICAL MANUAL FORMAT SHOULD PROVIDE BILL-OF-MATERIAL INFO, THEORY OF OPERATION, AND MAINTENANCE PROCEDURES RELATED TO THE VARIOUS SWITCHBOARD DEVICES. THREE PAPER AND ELECTRONIC COPIES OF ALL DRAWINGS AND TECHNICAL MANUALS SHALL BE PROVIDED.

MISCELLANEOUS SWITCHBOARD DEVICE SETTINGS

IN ORDER FOR THE SWITCHBOARD TO PERFORM ITS FUNCTIONS PROPERLY A NUMBER OF ITS DEVICES WILL REQUIRE A SETTING TO BE PERFORMED ON THEM FOR THIS PURPOSE. THE FOLLOWING IS A LISTING OF THE DEVICES AND THE SETTINGS THAT SHOULD BE APPLIED TO THEM:

PORT / STBD MAIN SYSTEM BREAKERS:
LONG-TIME DELAY ELEMENT PICKUP SET TO
??? AMPS, SHORT TIME DELAY AND INSTANTANEOUS MAGNETIC ELEMENT PICKUP SET PER COORDINATION STUDY.

SHORE POWER CIRCUIT BREAKER SP1:
LONG-TIME DELAY ELEMENT PICKUP SET TO
??? AMPS, SHORT TIME DELAY AND INSTANTANEOUS MAGNETIC ELEMENT PICKUP SET PER COORDINATION STUDY.

EMERGENCY GENERATOR CIRCUIT BREAKER:
LONG-TIME DELAY ELEMENT PICKUP SET TO
??? AMPS, SHORT TIME DELAY AND INSTANTANEOUS MAGNETIC ELEMENT PICKUP SET PER COORDINATION STUDY.

SYMBOL LIST

	GENERATOR
hp	ELECTRIC MOTOR, HORSEPOWER INDICATED
X/Y UV	CIRCUIT BREAKER X – NUMBER OF POLES Y – BREAKER TRIP SETTING UV – UNDER VOLTAGE TRIP
R 1 FVNR S LVP	COMBINATION STARTER FVNR – FULL VOLTAGE NON-REVERSING FVR – FULL VOLTAGE REVERSING LVP – LOW VOLTAGE PROTECTION LVR – LOW VOLTAGE RELEASE R – REMOTE CONTROL S – START/STOP 1 – NEMA SIZE
XX	CONTROL DEVICE W/ FUNCTION S/S – START STOP PB PS – PRESSURE SWITCH LS – LEVEL SWITCH FR – FIRE SHUTDOWN RELAY PRX – PROXIMITY SWITCH
S/S H	START STOP PB STATION W/ RUNNING INDICATION LIGHT

SYMBOL LIST (CONTINUATION)

C	OEM CONTROLLER FURNISHED W/ EQUIPMENT
MS	MANUAL STARTER FRACTIONAL OR INTEGRAL
kw	EQUIPMENT WATTAGE INDICATION
	TRANSFORMER
DS	NON-FUSED DISCONNECT SWITCH
V	SWITCHBOARD INSTRUMENT V – VOLTMETER A – AMMETER W – WATTMETER HZ – FREQUENCY METER L – GROUND LIGHT
VR	VOLTAGE REGULATOR
	INDICATOR LIGHT COLOR INDICATED

SYMBOL LIST (CONTINUATION)

	LIGHTING
	RECEPTACLE DUPLEX
	SHORE POWER RECEPTACLE
	TRANSFER SWITCH MANUAL
STARTER SOL	ENGINE ELECTRICAL STARTER
	TIME-DELAY FUSE W/ FUSE HOLDER
31M	12VDC BATTERY
32R	REVERSE POWER RELAY

CABLE DESIGNATIONS

SHEETS 3 TO 12	
S – #	STNIU
D – #	DTNIU
T – #	TTNIU
F – #	FTNIU

NOTE: # DESIGNATES CONDUCTOR AREA IN 1000 C/M

15	A/C PIPING AND CONDENSATE DRAIN SYS INSTL	D372-M11
14	HVAC SYSTEM INSTALLATION	D372-M9
13	HVAC BOILER PIPING SCHEMATIC	D372-P15
12	LUBE OIL, DIRTY OIL, ONE-LINE PIPING SCHEMATIC	D372-P11
11	COMPRESSED AIR ONE-LINE PIPING SCHEMATIC	D372-P10
10	BILGE ONE-LINE PIPING SCHEMATIC & MANIFOLD DETAILS	D372-P9
9	POTABLE WATER ONE-LINE PIPING SCHEMATIC	D358A-P5
8	FIRE MAIN ONE-LINE PIPING SCHEMATIC & MANIFOLD DETAILS	D372-P7
7	FUEL OIL ONE-LINE PIPING SCHEMATIC & MANIFOLD DETAILS	D372-P4
6	DRAIN, WASTE & VENT ONE-LINE PIPING SCHEMATIC	D372-P6
5	HOLD VENTILATION PLAN	D372-M7
4	RUDDER & STEERING ARRGT & CONSTRUCTION DETAILS	D372-M2
3	COURSES PLANS AND NAVIGATION LIGHT MAST DETAIL	D372-A8
2	LIGHTING LAYOUT	D372-E3
1	ELECTRICAL LOAD ANALYSIS	D372-E2
	REFERENCES	

SHEET 1 OF 12

PREPARED	D. CIRLESCU	12/2023
CHECKED	M. SHORTSLEEVES	12/2023
ENGINEER	D. CIRLESCU	12/2023
APPROVED	E. JOHNSON	12/2023

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BOSTON, MA 02210-2138
PHONE: (617) 542-3345
FAX: (617) 542-2461
WWW.MSCORP.NET

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	DGC

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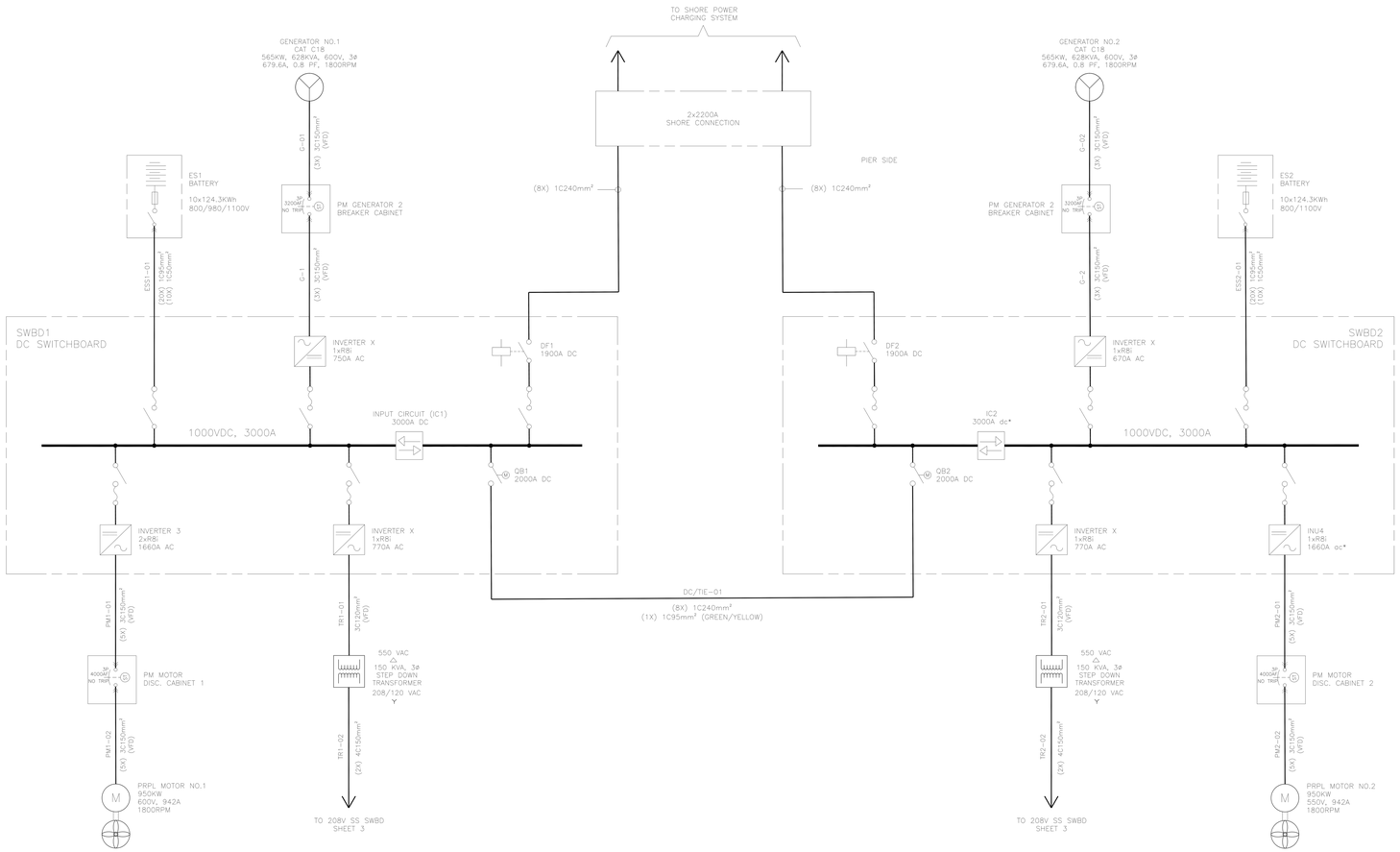
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

DRAWN BY	DGC	DATE	10/18/23
CHECKED BY	MSCORP	DATE	
APPROVED BY		DATE	
SCALE	NOT TO SCALE		
DWG. NO.	D372-E1	ALT.	0



SPECIFIC NOTE 1.

ALL CABLES SHOWN ON THIS SHEET ARE TRICAB DV SERIES OR TRICAB DF SERIES FOR VFD CABLES.

SYSTEM LAYOUT

ALT	DESCRIPTION	DATE	NAME
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207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

PREPARED	D. ORLESCU	11/2023
CHECKED	M. SHORTSLEEVES	12/2023
ENGINEER	D. ORLESCU	12/2023
APPROVED	E. JOHNSON	12/2023

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DRAWN BY DGC DATE 10/18/23
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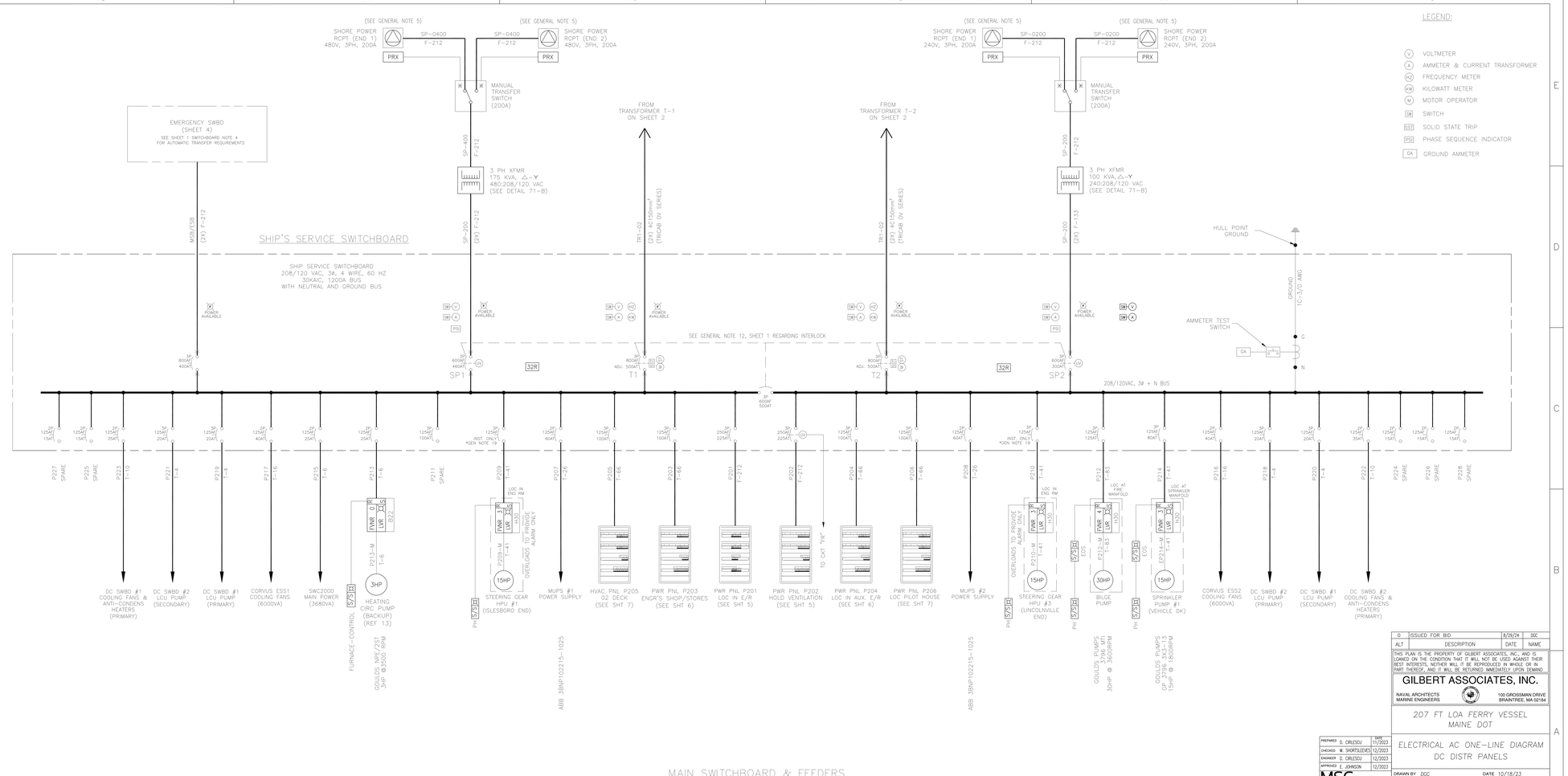
SCALE NOT TO SCALE
DWG. NO. D372-E1 ALT. 0



MAIN SWITCHBOARD & FEEDERS

ALT	DESCRIPTION	DATE	NAME
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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

		DATE
PREPARED	D. ORLESCU	11/2023
CHECKED	M. SHORTSLEEVES	12/2023
ENGINEER	D. ORLESCU	12/2023
APPROVED	E. JOHNSON	12/2023

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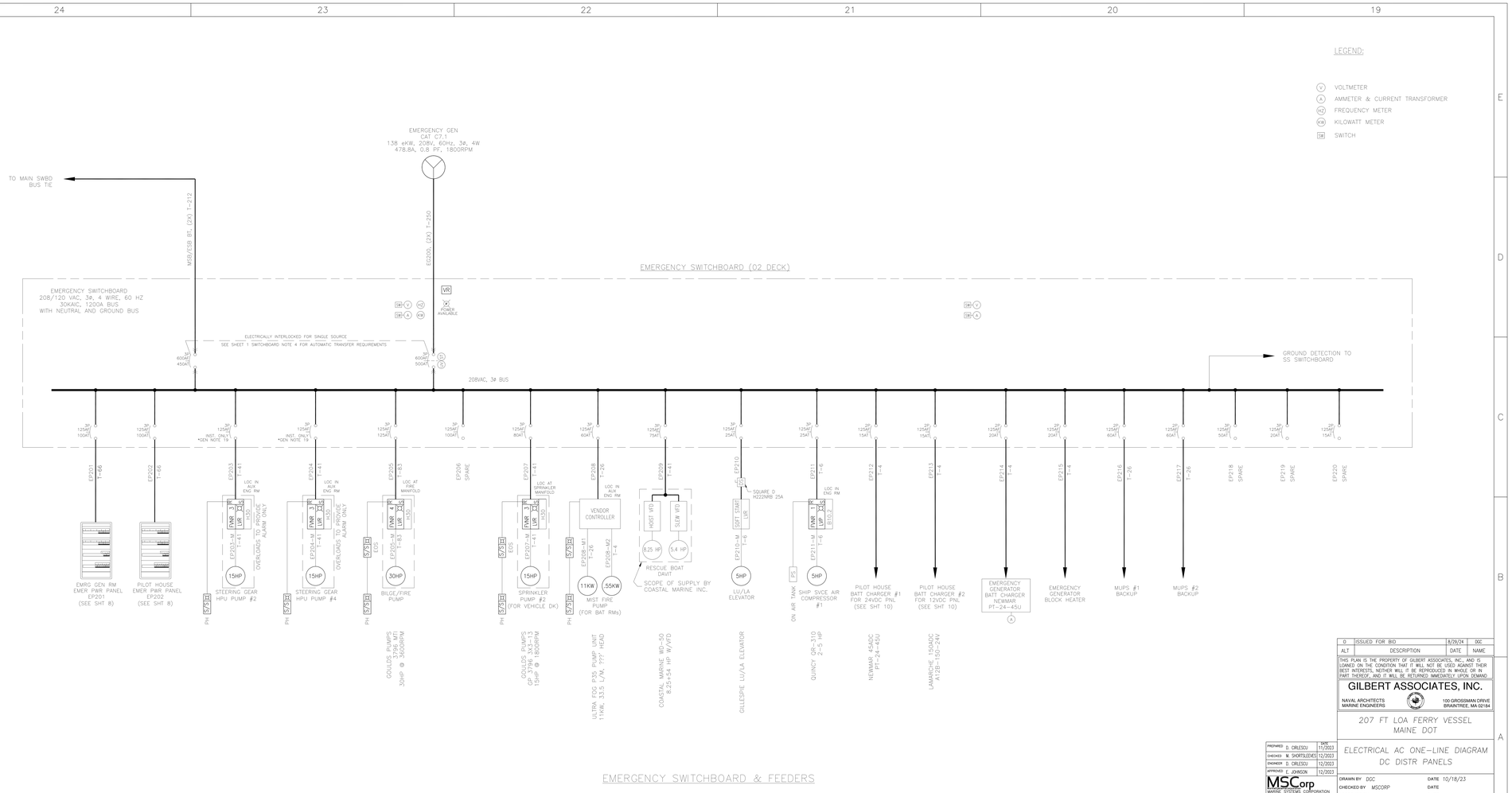
DRAWN BY DGC DATE 10/18/23
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE NOT TO SCALE
DWG. NO. D372-E1 ALT. 0



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MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

		DATE
PREPARED	D. ORLESCU	11/2023
CHECKED	M. SHORTSLEEVES	12/2023
ENGINEER	D. ORLESCU	12/2023
APPROVED	E. JOHNSON	12/2023

MSCorp
MARINE SYSTEMS CORPORATION
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PHONE: (617) 542-3345
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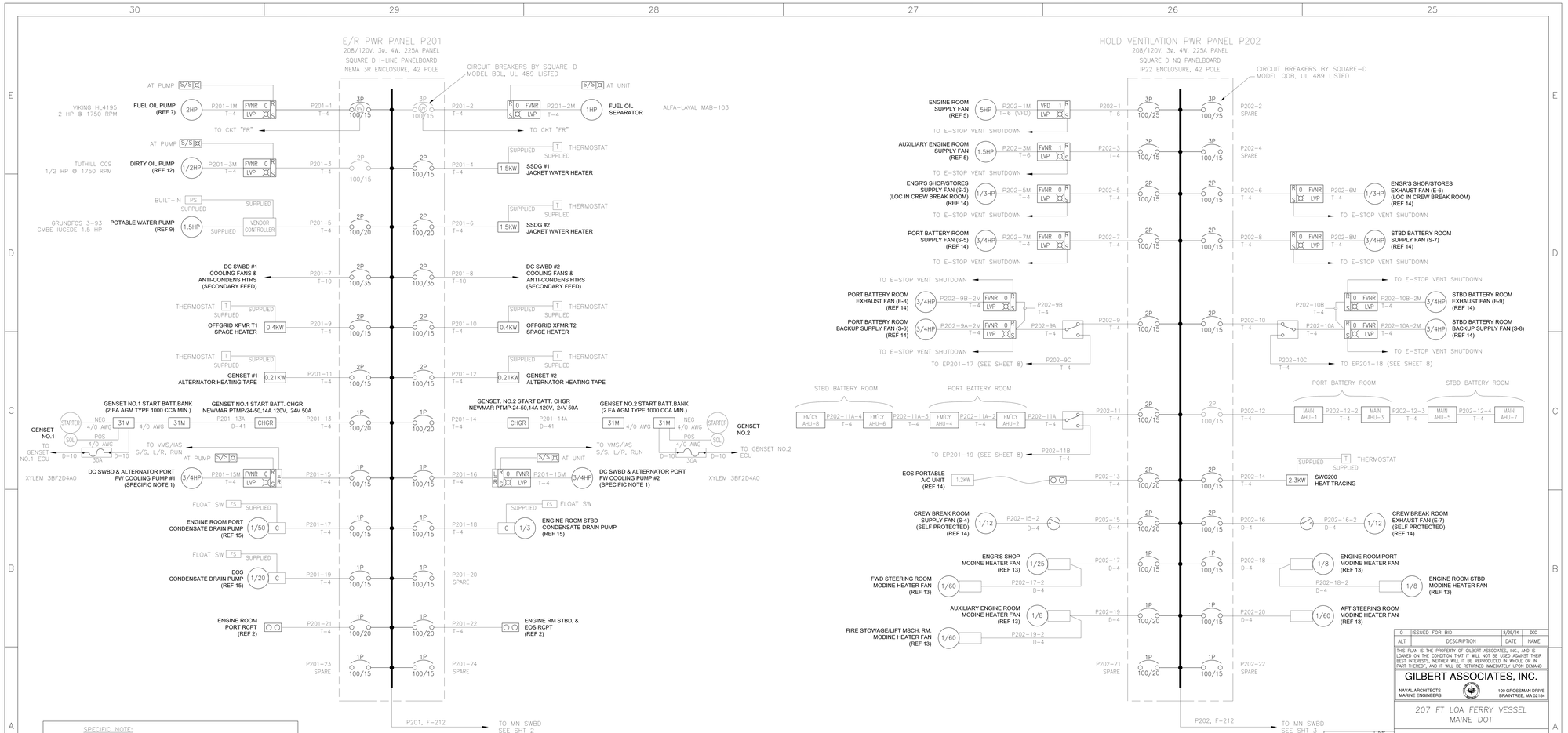
E/R PWR PANEL P201
208/120V, 3ø, 4W, 225A PANEL
SQUARE D I-LINE PANELBOARD
NEMA 3R ENCLOSURE, 42 POLE
CIRCUIT BREAKERS BY SQUARE-D
MODEL BDL, UL 489 LISTED
VIKING HL4195
2 HP @ 1750 RPM
FUEL OIL PUMP
(REF 7)
TUTHILL CC9
1/2 HP @ 1750 RPM
DIRTY OIL PUMP
(REF 12)
GRUNDFOS 3-93
CMBE 1UCEDE 1.5 HP
POTABLE WATER PUMP
(REF 9)
FUEL OIL
SEPARATOR
ALFA-LAVAL MAB-103
SSDG #1
JACKET WATER HEATER
SSDG #2
JACKET WATER HEATER
DC SWBD #1
COOLING FANS &
ANTI-CONDENS HTRS
(SECONDARY FEED)
DC SWBD #2
COOLING FANS &
ANTI-CONDENS HTRS
(SECONDARY FEED)
OFFGRID XFMR T1
SPACE HEATER
OFFGRID XFMR T2
SPACE HEATER
GENSET #1
ALTERNATOR HEATING TAPE
GENSET #2
ALTERNATOR HEATING TAPE
GENSET NO.1 START BATT.BANK
(2 EA AGM TYPE 1000 CCA MIN.)
GENSET NO.1 START BATT. CHGR
NEWMAR PTMP-24-50,14A 120V, 24V 50A
GENSET. NO.2 START BATT. CHGR
NEWMAR PTMP-24-50,14A 120V, 24V 50A
GENSET NO.2 START BATT.BANK
(2 EA AGM TYPE 1000 CCA MIN.)
GENSET
NO.1
GENSET
NO.2
DC SWBD & ALTERNATOR PORT
FW COOLING PUMP #1
(SPECIFIC NOTE 1)
DC SWBD & ALTERNATOR PORT
FW COOLING PUMP #2
(SPECIFIC NOTE 1)
ENGINE ROOM PORT
CONDENSATE DRAIN PUMP
(REF 15)
ENGINE ROOM STBD
CONDENSATE DRAIN PUMP
(REF 15)
EOS
CONDENSATE DRAIN PUMP
(REF 15)
ENGINE ROOM
PORT RCPT
(REF 2)
ENGINE RM STBD, &
EOS RCPT
(REF 2)
TO MN SWBD
SEE SHT 2
HOLD VENTILATION PWR PANEL P202
208/120V, 3ø, 4W, 225A PANEL
SQUARE D NQ PANELBOARD
IP22 ENCLOSURE, 42 POLE
CIRCUIT BREAKERS BY SQUARE-D
MODEL QOB, UL 489 LISTED
ENGINE ROOM
SUPPLY FAN
(REF 5)
AUXILIARY ENGINE ROOM
SUPPLY FAN
(REF 5)
ENGR'S SHOP/STORES
SUPPLY FAN (S-3)
(LOC IN CREW BREAK ROOM)
(REF 14)
PORT BATTERY ROOM
SUPPLY FAN (S-5)
(REF 14)
ENGR'S SHOP/STORES
EXHAUST FAN (E-6)
(LOC IN CREW BREAK ROOM)
(REF 14)
STBD BATTERY ROOM
SUPPLY FAN (S-7)
(REF 14)
PORT BATTERY ROOM
EXHAUST FAN (E-8)
(REF 14)
PORT BATTERY ROOM
BACKUP SUPPLY FAN (S-6)
(REF 14)
STBD BATTERY ROOM
EXHAUST FAN (E-9)
(REF 14)
STBD BATTERY ROOM
BACKUP SUPPLY FAN (S-8)
(REF 14)
TO EP201-17 (SEE SHEET 8)
TO EP201-18 (SEE SHEET 8)
TO EP201-19 (SEE SHEET 8)
STBD BATTERY ROOM
PORT BATTERY ROOM
EOS PORTABLE
A/C UNIT
(REF 14)
SWC200
HEAT TRACING
CREW BREAK ROOM
SUPPLY FAN (S-4)
(SELF PROTECTED)
(REF 14)
CREW BREAK ROOM
EXHAUST FAN (E-7)
(SELF PROTECTED)
(REF 14)
ENGR'S SHOP
MODINE HEATER FAN
(REF 13)
ENGINE ROOM PORT
MODINE HEATER FAN
(REF 13)
FWD STEERING ROOM
MODINE HEATER FAN
(REF 13)
ENGINE ROOM STBD
MODINE HEATER FAN
(REF 13)
AUXILIARY ENGINE ROOM
MODINE HEATER FAN
(REF 13)
AFT STEERING ROOM
MODINE HEATER FAN
(REF 13)
FIRE STOWAGE/LIFT MSCH. RM.
MODINE HEATER FAN
(REF 13)
TO MN SWBD
SEE SHT 3
P201, F-212
P202, F-212
ENGINE ROOM POWER & VENTILATION PANELS
CREW BREAK ROOM
SUPPLY FAN
(SELF PROTECTED)
SPECIFIC NOTE:
1. EACH FW COOLING PUMP CONTROLER SHALL BE PROVIDED WITH THE FOLOWING FEATURES: REMOTE/LOCAL SWITCH AND STATUS, RUN/STOP COMMAND, RUNNING STATUS
2. NO FAN SHALL BE ALLOWED TO START WITH THE FIRE DAMPER IN CLOSED POSITION. EACH FAN SHALL BE INTERLOCKED WITH THE FIRE DAMPER IN THE COMPARTMENT WHERE THE FAN SERVES.
0 ISSUED FOR BID 8/29/24 DGC
ALT DESCRIPTION DATE NAME
THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTEREST, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184
207 FT LOA FERRY VESSEL
MAINE DOT
ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS
PREPARED D. ORLESCU 11/2023
CHECKED M. SHORTSLEEVES 12/2023
ENGINEER D. ORLESCU 12/2023
APPROVED E. JOHNSON 12/2023
MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2138
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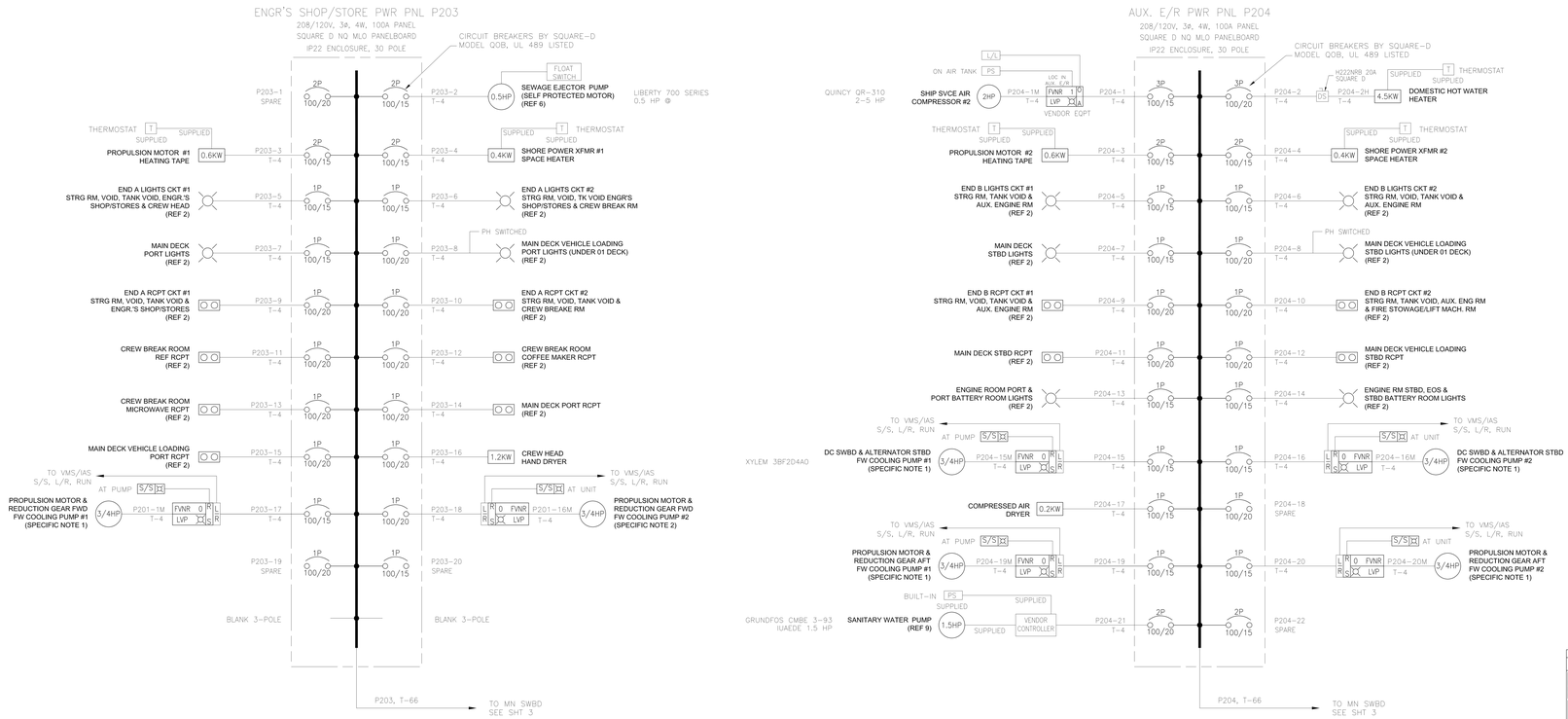
SHEET 5 OF 12



SPECIFIC NOTE:

1. EACH FW COOLING PUMP CONTROLER SHALL BE PROVIDED WITH THE FOLOWING FEATURES: REMOTE/LOCAL SWITCH AND STATUS, RUN/STOP COMMAND, RUNNING STATUS

ENGR'S SHOP/STORES & AUX. ENG ROOM POWER PANELS

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NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

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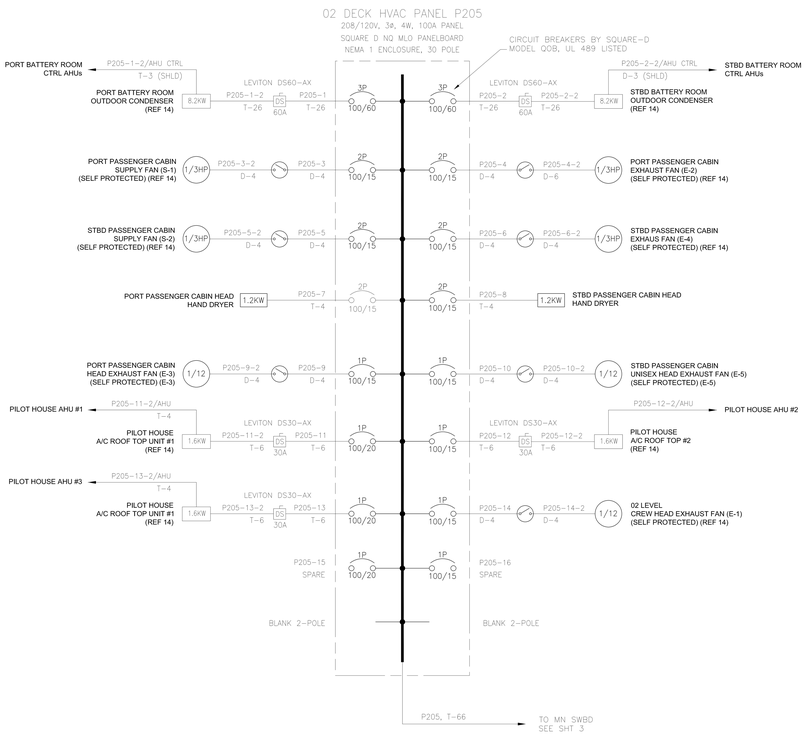

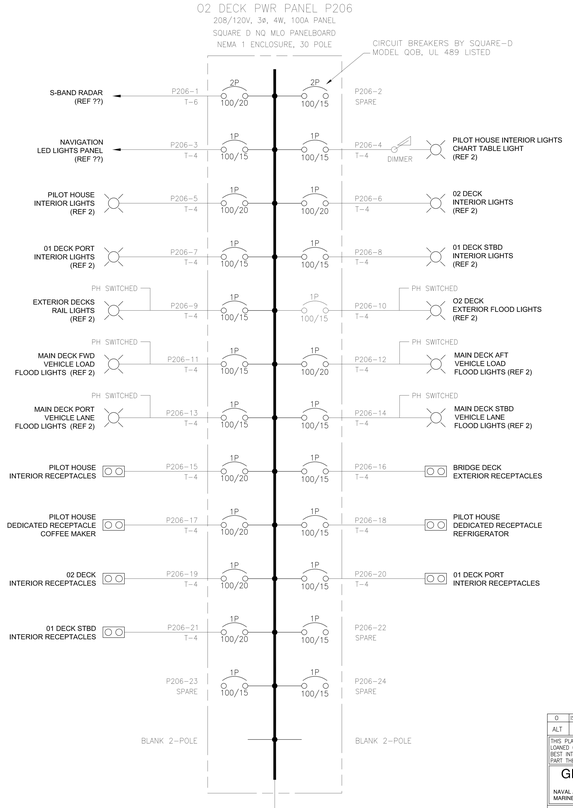

02 DECK HVAC & POWER PANELS

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NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

PREPARED	D. ORLESCU	11/2023
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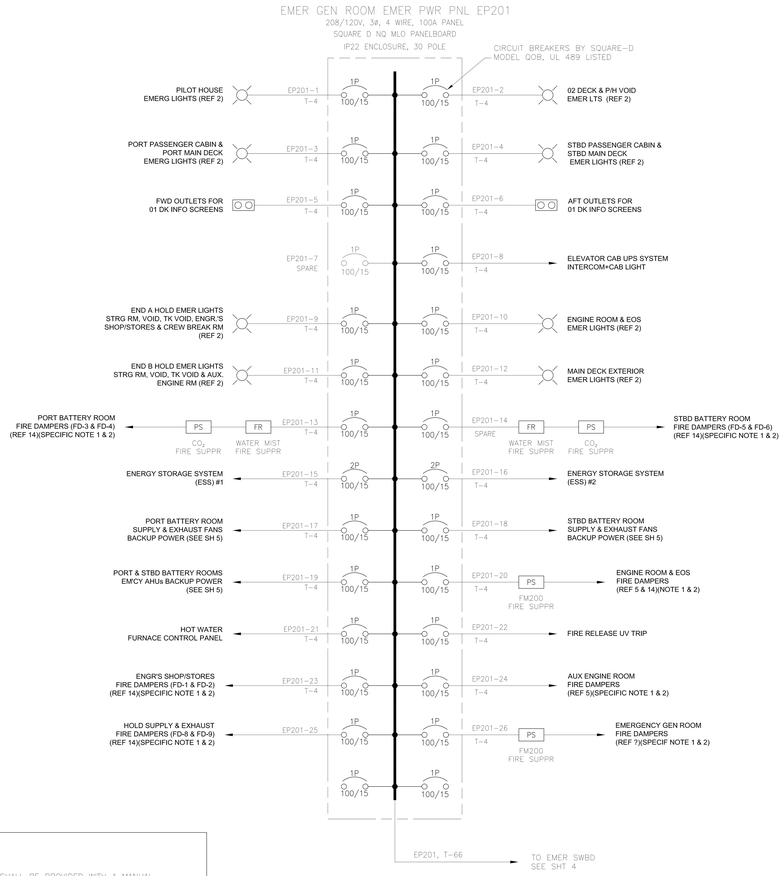

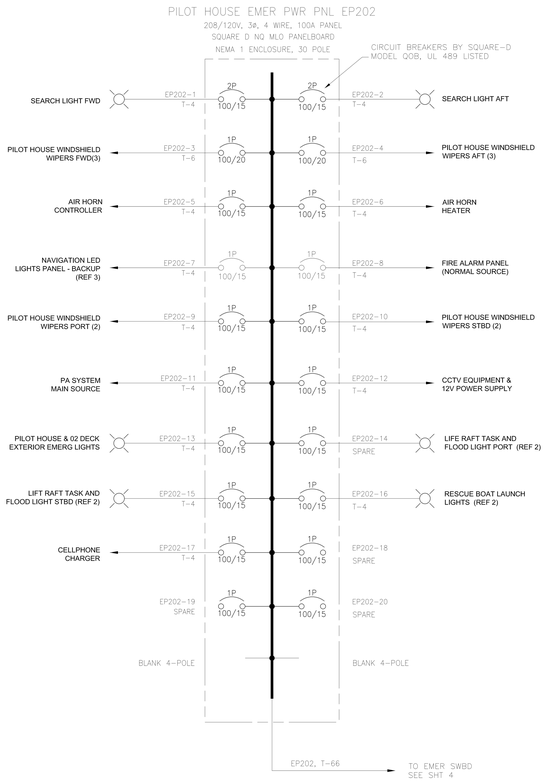

SPECIFIC NOTE:

1. EACH FIRE DAMPER SHALL BE PROVIDED WITH A MANUAL OVERIDE & VISIBLE INDICATOR, HALTON MARINE FD-CON-2.
2. EACH FIRE DAMPER SHALL BE PROVIDED WITH AN EXTERNAL SET OF AUXILIARY CONTACTS FOR THE INTERLOCK WITH THE FAN CONTROLLER.

EDG ROOM & PILOT HOUSE EMERGENCY POWER PANELS

ALT	DESCRIPTION	DATE	NAME
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DC DISTR PANELS

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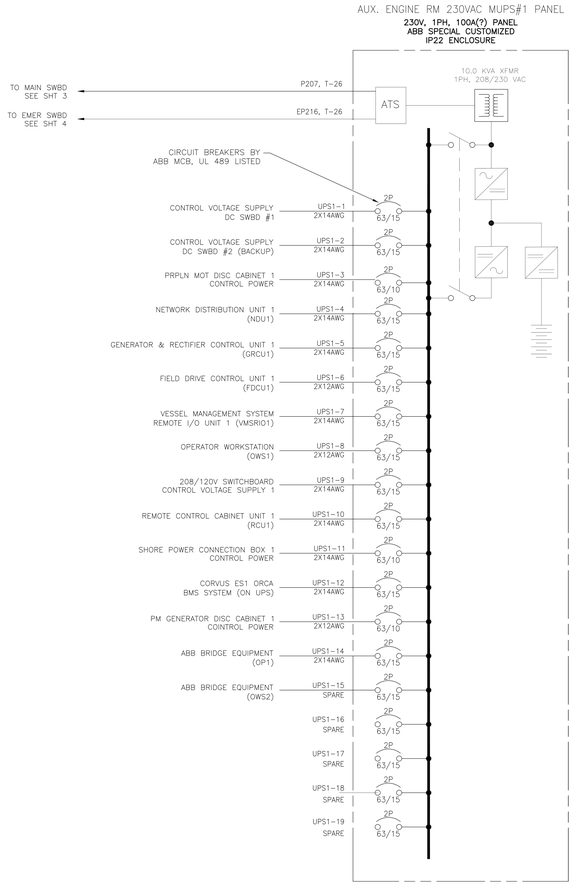

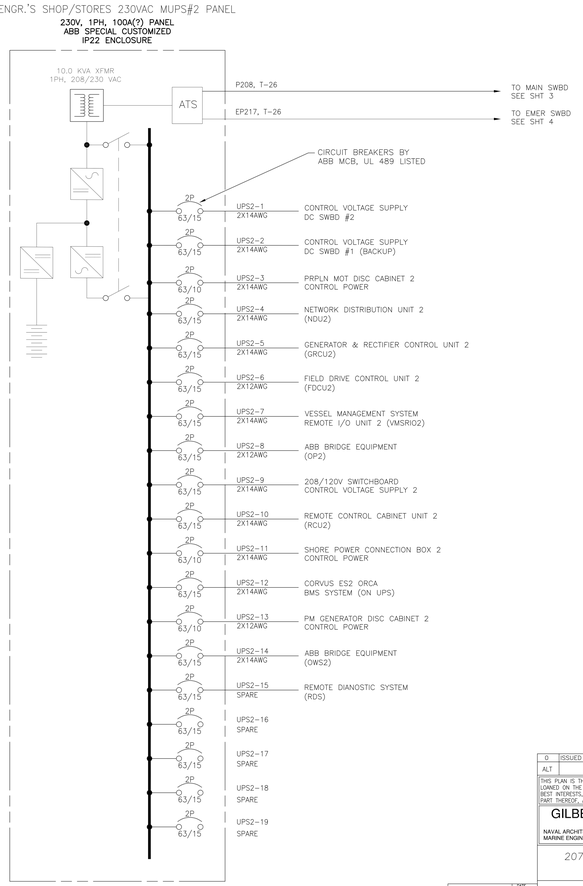

UPS#1 & UPS#2 PANELS

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MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

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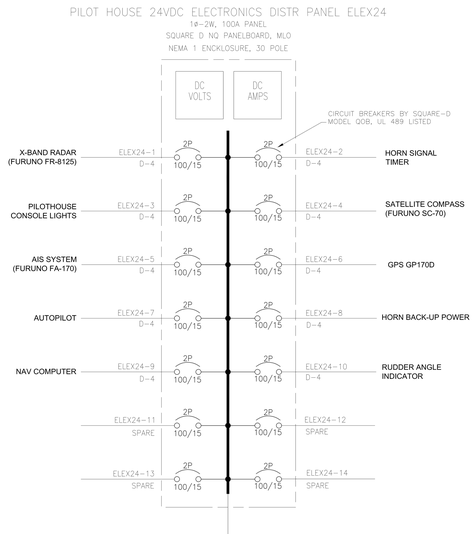

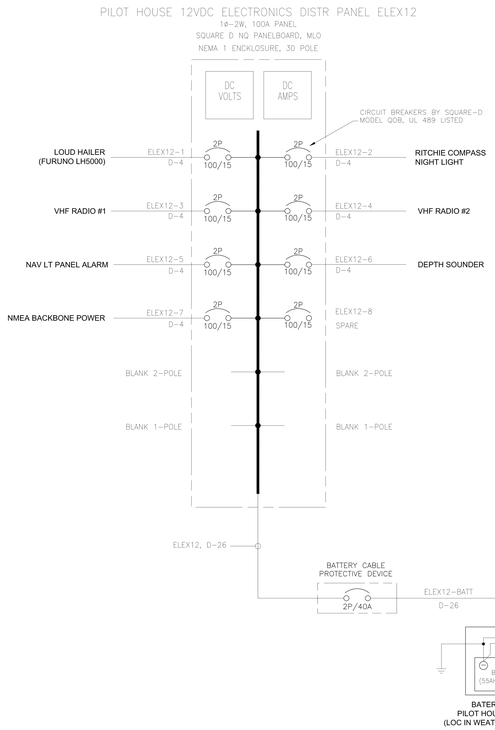

SPECIFIC NOTE:

THE BATTERY SERVES AS A TEMPORARY SOURCE OF EMERGENCY POWER TO PILOT HOUSE PANEL P24. THE NORMAL POWER SOURCE IS THE BATTERY CHARGER WHICH IS SUPPLIED FROM THE EMERGENCY SWITCHBOARD. THE BATTERY CHARGER RATED AT 25ADC IS SUFFICIENT TO SUPPLY THE PANEL'S ESTIMATED MAX CONTINUOUS CURRENT OF 14.5A PER LOAD ANALYSIS AND TO FLOAT CHARGE THE BATTERY.

SPECIFIC NOTE:

THE BATTERY SERVES AS A TEMPORARY SOURCE OF EMERGENCY POWER TO PILOT HOUSE PANEL ELEX12. THE NORMAL POWER SOURCE IS THE BATTERY CHARGER WHICH IS SUPPLIED FROM THE EMERGENCY SWITCHBOARD. THE BATTERY CHARGER RATED AT 20ADC IS SUFFICIENT TO SUPPLY THE PANEL'S ESTIMATED MAX CONTINUOUS CURRENT OF 11.8A PER LOAD ANALYSIS AND TO FLOAT CHARGE THE BATTERY.

DC DISTRIBUTION PANELS

ALT	DESCRIPTION	DATE	NAME
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BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

		DATE
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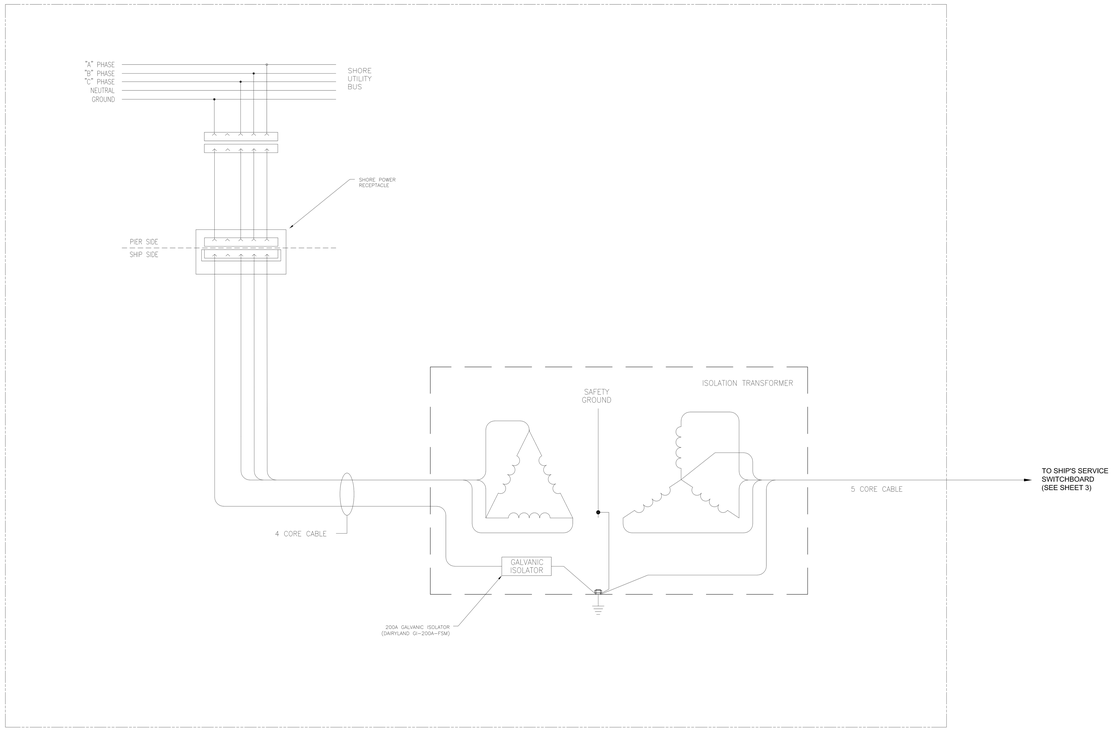

DETAIL 71-B

SHORE POWER RECEPTACLE &
ISOLATION TRANSFORMER
TYPICAL WIRING DIAGRAM
(SEE SPECIFIC NOTE 2 ON SHEET 2)

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207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
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BILL OF MATERIALS

EQUIPMENT	QTY	FIND NO	DESCRIPTION	MFG	PART NO.
SHIP'S SERVICE SWITCHBOARD	1	1	208/120V SWITCHBOARD, 208/120V, 3ϕ, 4W, 60Hz, TWO BUSES, 1200A, 30KAIC, IP 22 ENCLOSURE	ABB (AUSTEVOLL ELEKTRO AS*)	DOC# TS_LVSPMMDCOPP203650425
EMERGENCY SWITCHBOARD	1	2	208/120V SWITCHBOARD, 208/120V, 3ϕ, 4W, 60Hz, SINGLE BUS 1200A, 30KAIC, IP 22 ENCLOSURE	ABB (AUSTEVOLL ELEKTRO AS*)	DOC# TS_LVSPMMDCOPP203650425
SHIP SERVICE GENERATOR ENGINE	2	3	CAT C-18, 600 BHP @ 1800 RPM	MILTON CATERPILLAR	–
SHIP SERVICE PERMANENT MAGNET GENERATOR	2	4	550KW @ 1800RPM	RAMME ELEC MACHINES GmbH	–
EMERGENCY GENERATOR	1	5	CAT C7.1, 125 KW @ 1800 RPM	MILTON CATERPILLAR	–
ENERGY STORAGE SYSTEM (ESS)	2	6	AIR COOLED ESS, 1243 KWH, 1100 VDC MAX	CORVUS ENERGY	10 X E2150V1
PROPULSION ELECTRIC MOTOR	2	7	950KW, 600VAC, 3PH, 1800RPM	RAMME ELEC MACHINES GmbH	UW_m_950_1800_600
STEERING CONTROL	?	8	WHEEL FULL FOLLOW-UP (FFU) AND JOG LEVER NON-FOLLOW UP (NFU) CAPABILITY	JAMSTRAM BC	–
PRIMARY PROPULSION CONTROL SYSTEM	2	9	–	ABB	–
SECONDARY PROPULSION CONTROL SYSTEM	2	10	–	ABB	–
PROPULSION MOTOR REDUCTION GEAR	2	–	REINTJES REDUCTION GEAR, RATIO 5:1, GEAR RATING 0.63KW/N	REINTJES	LF570
–	–	12	–	–	–
–	–	13	–	–	–
ENGINE ROOM POWER PANEL P201	1	14	208/120V, 3ø, 4 WIRE, 42 POLE, 225A PANEL, IP22, I-LINE	SQUARE D	I-LINE PANEL
HOLD VENTILATION POWER PANEL P202	1	15	208/120V, 3ø, 4 WIRE, 42 POLE, 225A PANEL, IP22, NQ SERIES	SQUARE D	NQ442XXX
ENGR'S SHOP/STORE POWER PANEL P203	1	16	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, IP22, NQ SERIES	SQUARE D	NQ430XXX
AUX. ENGINE ROOM POWER PANEL P204	1	17	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, IP22, NQ SERIES	SQUARE D	NQ430XXX
02 DECK HVAC PANEL P205	1	18	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, NEMA1, NQ SERIES	SQUARE D	NQ430XXX
02 DECK POWER PANEL P206	1	19	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, NEMA1, NQ SERIES	SQUARE D	NQ430XXX
EMER GEN ROOM EMER POWER PANEL EP201	1	20	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, IP22, NQ SERIES	SQUARE D	NQ430XXX
PILOT HOUSE EMER POWER PANEL EP202	1	21	208/120V, 3ø, 4 WIRE, 30 POLE, 100A PANEL, NEMA1, NQ SERIES	SQUARE D	NQ430XXX
–	1	22	–	–	–
–	1	23	–	–	–
–	2	24	–	–	–
–	2	25	–	–	–
HOT WATER FURNACE CONTROL PANEL	1	26	OEM	WEIL-MCLAIN	MODEL 680
12VDC ELECTRONICS DISTRIBUTION PANEL ELEX12	1	27	24V, 1ø, 2 WIRE, 30 POLE, 100A PANEL, NEMA1 FLUSH MOUNT	SQUARE D	NQ30XXXX
24VDC ELECTRONICS DISTRIBUTION PANEL ELEX24	1	28	24V, 1ø, 2 WIRE, 30 POLE, 100A PANEL, NEMA1 FLUSH MOUNT	SQUARE D	NQ30XXXX
120VAC NAVIGATION LIGHT PANEL	1	29	120VAC, 14 CIRCUIT, USCG, W/DIMMER+AUTO TRANSFER		
LU/LA ELEVATOR MOTOR SOFT STARTER	1	33	LU/LA ELEVATOR MOTOR SOFT STARTER		
STEP DOWN, OFFGRID POWER TRANSFORMER	2	34	480V:208/120VAC, 3PH, 60HZ, 150KVA	ABB (AQ TRAFOTEK)	–
SHORE POWER TRANSFORMER ISLESBORO END	1	35	240:208/120VAC, 3PH, 60HZ, 85KVA	ABB (AQ TRAFOTEK)	–
SHORE POWER TRANSFORMER LINCOLNVILLE END	1	36	480:208/120VAC, 3PH, 60HZ, 75KVA	ABB (AQ TRAFOTEK)	–
SHORE POWER RECEPTACLE	4	37	200A RECEPTACLE (CONFIGURATION REQUIRED)	MELTRIC	DS200
GALVANIC ISOLATOR	2	39	200 AMP GALVANIC ISOLATOR	DAIRYLAND, INC.	GI-200A-FSM
12VDC MARINE BATTERY	3	40	AGM BATTERY, 55AH @ 20HR, RESERVE CAPACITY 120MIN @ 25A	OPTIMA	D34M
CABLE PROTECTIVE DEVICE FOR BATTERY/ELEX24 PNL FEEDER	1	41	MINIATURE CIRCUIT BREAKER, 48VDC/ 50A/ 2-POLE/ 10KA	EATON	FAZ-B50-2-NA
CABLE PROTECTIVE DEVICE FOR BATTERY/ELEX12 PNL FEEDER	1	42	MINIATURE CIRCUIT BREAKER, 48VDC/ 40A/ 2-POLE/ 10KA	EATON	FAZ-B40-2-NA
VENDOR CONTROLLER		44	OEM	–	–
MOTOR CONTROLLER		45	OEM	SQUARE D	–

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	DGC

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTEREST, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

ELECTRICAL AC ONE-LINE DIAGRAM
DC DISTR PANELS

		DATE
PREPARED	D. ORLESCU	11/2023
CHECKED	M. SHORTSLEEVES	12/2023
ENGINEER	D. ORLESCU	12/2023
APPROVED	E. JOHNSON	12/2023

MSCorp
MARINE SYSTEMS CORPORATION
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BOSTON, MA 02210-2738
PHONE: (617) 542-3345
FAX: (617) 542-2461
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DRAWN BY DGC DATE 10/18/23
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE NOT TO SCALE
DWG. NO. D372-E1 ALT. 0

GENERAL NOTES

1. THE PURPOSE OF THIS ANALYSIS IS TO DEMONSTRATE THE ADEQUACY OF THE 207 FT LOA PASSENGER VEHICLE FERRY ELECTRICAL POWER GENERATING EQUIPMENT TO SUPPLY THE ELECTRICAL POWER DEMANDS OF THE VESSEL UNDER TYPICAL VESSEL OPERATION MODES AND UNDER EMERGENCY CONDITIONS.

2. 207FT LOA PASSENGER VEHICLE IS A DIESEL–ELECTRIC HYBRID FERRY WHICH COMBINES PM GENERATORS WITH ELECTRIC BATTERY POWER.

3. 207FT LOA PASSENGER VEHICLE FERRY ELECTRICAL POWER SOURCES:
   PM GENERATOR NO.1 (ELECTRIC START), 565 KW, 600 V, 3 PHASE, 60 HZ, 1.0 PF
   PM GENERATOR NO.2 (ELECTRIC START), 565 KW, 600 V, 3 PHASE, 60 HZ, 1.0 PF
   2x BATTERY BANKS, EACH 10x 124.3 KWh, 800/1100 VDC
   EMERGENCY GENERATOR (ELECTRICAL START), 138 eKW, 208 V, 3 PH, 60 HZ, 0.8 PF

4. INCOMING ELECTRICAL POWER SOURCES FOR SHIP SERVICE SWITCHBOARD ARE:
   TRANSFORMER NO.1 150 KVA, 480/208–120 V, 3 PHASE, 60 HZ
   TRANSFORMER NO.2 150 KVA, 480/208–120 V, 3 PHASE, 60 HZ
   EMERGENCY GENERATOR (ELECTRICAL START), 138 eKW, 208 V, 3 PH, 60 HZ, 0.8 PF

3. THE ELECTRICAL LOAD ANALYSIS CONDUCTED HEREON CONFORMS TO THE GUIDELINES ESTABLISHED FOR THESE DOCUMENTS UNDER U.S. COAST GUARD PUBLICATIONS, REFERENCES 1 AND 2. TWO TYPES OF ELECTRICAL LOADS ARE GENERALLY LISTED IN THE ANALYSIS: "CONNECTED" LOAD AND "COMPUTED" LOAD. THE CONNECTED LOAD IS THE AMOUNT OF KW THE SPECIFIED EQUIPMENT DRAWS WHEN ENERGIZED TO FULL CAPACITY. THE "COMPUTED" LOAD IS A PERCENTAGE OF THE EQUIPMENT'S CONNECTED LOAD THAT IS TYPICALLY DRAWN BY THE EQUIPMENT. THE PERCENTAGE IS GIVEN AS A "LOAD (DEMAND) FACTOR" (DF) AND IS GENERALLY IN CONFORMANCE WITH THOSE LISTED IN REFERENCE 1, TABLES 1 AND 2 OF APPENDIX 2.

4. ABBREVIATIONS USED HEREON GENERALLY CONFORM TO THOSE OF ASME STANDARD Y14.38.

DRAWING SHEET INDEX

SH 1	TITLE, GENERAL NOTES, REFERENCES & SHEET INDEX
SH 2	AC LOADS SUMMARY – MAIN SWITCH BOARD
SH 3	AC LOADS ANALYSIS – POWER PANELS P201 & P202
SH 4	AC LOADS ANALYSIS – POWER PANELS P203, & P204
SH 5	AC LOADS ANALYSIS – POWER PANELS P205 & P206
SH 6	AC LOADS ANALYSIS – EMERGENCY SWITCHBOARD
SH 7	AC LOADS ANALYSIS – EMERG POWER PANELS EP201 & EP202
SH 8	AC LOADS ANALYSIS – UPS#1 PANEL & UPS#2 PANEL
SH 9	PILOT HOUSE 24VDC ELECTRONICS DISTR PANEL ELEX24
SH 10	PILOT HOUSE 12VDC ELECTRONICS DISTR PANEL ELEX12
SH 11	GENERATOR STARTING BATTERY CALCULATION

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	6/29/24	DGC

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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

3	ELECTRICAL AC ONE–LINE DIAGRAM & DC DISTR PANELS	D372–E1
2	MSC GUIDLINES FOR REVIEW OF ELEC PLANT LOAD ANALY	E–26
1	U.S. COAST GUARD GUIDE FOR ELECTRICAL INSTALLATIONS...	NVIC 2–89
	REFERENCES	

		DATE
PREPARED	D. GRUESCU	1/2024
CHECKED	M. SHORTSLEEVES	–
ENGINEER	D. GRUESCU	1/2024
APPROVED	E. JOHNSON	–

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ELECTRICAL LOAD ANALYSIS
GEN NOTES, REFERS & SHT INDEX

DRAWN BY	DGC	DATE	10/18/23
CHECKED BY	MSCORP	DATE	
APPROVED BY		DATE	
SCALE	NONE		SHT 1 OF 11
DWG. NO.	D372–E2	ALT.	0

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	MAIN SWITCHBOARD																							
	EMER SWBD BUS TIE	208/3		1			128.57		7.77		8.39		7.61		8.24		115.25		115.25		5.89		6.52	
P201	ENG ROOM POWER PANEL P201	208/3		1			28.28		4.30		4.69		3.46		3.85		0.00		0.00		2.63		3.02	
P203	ENGR'S SHOP/STORES POWER PANEL P203	208/3		1			10.03		3.56		3.81		3.56		3.81		0.00		0.00		1.77		2.01	
P205	02 DECK HVAC POWER PANEL P205	208/3		1			25.19		11.25		11.25		11.25		11.25		0.00		0.00		10.77		1.67	
P207	MUPS #1 PANEL MAIN SUPPLY	208/1		1			9.76		7.91		7.91		7.91		7.91		0.00		0.00		7.16		7.16	Fed from emergency swbd in emergency cond
P209	STEERING GEAR HPU PUMP #1	240/3		1	15.00	12.110	12.11	0.50	6.06	0.50	6.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P211	SPARE																							
P213	HEATING CIRC PUMP (BACKUP)	208/1		1	3.00	2.501	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P215	SWC200 MAIN POWER	208/1		1		3.500	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.75	0.50	1.75	
P217	CORVUS ESS1 COOLING FANS	208/1		1		6.000	6.00	1.00	6.00	1.00	6.00	1.00	6.00	1.00	6.00	0.00	0.00	0.00	0.00	1.00	6.00	1.00	6.00	
P219	DC SWBD #1 LCU PRIMARY PUMP	208/3		1		4.800	4.80	1.00	4.80	1.00	4.80	1.00	4.80	1.00	4.80	0.00	0.00	0.00	0.00	1.00	4.80	1.00	4.80	Via 208/480 xfmr loc in DC Switchboard
P221	DC SWBD #2 LCU SECONDARY PUMP	208/3		1		4.800	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Via 208/480 xfmr loc in DC Switchboard (Stand-by)
P223	DC SWBD #1 CLG FANS & ANTI-CONDENS HTRs	208/1		1		5.01	5.01	1.00	5.01	1.00	5.01	1.00	5.01	1.00	5.01	0.00	0.00	0.00	0.00	0.50	2.50	0.50	2.50	
P225	SPARE																							
P227	SPARE																							
P202	HOLD VENTILATION POWER PANEL P202	208/3		1			14.15		8.43		9.09		8.43		9.09		0.00		0.00		6.23		6.89	
P204	AUX. ENG ROOM POWER PANEL P204	208/3		1			10.06		4.87		5.12		3.97		4.22		0.00		0.00		2.01		2.25	
P206	02 DECK POWER PANEL P206	208/3		1			10.92		4.36		4.36		3.43		3.43		0.00		0.00		2.36		2.36	
P208	MUPS #2 PANEL MAIN SUPPLY	208/1		1			9.76		7.91		7.91		7.91		7.91		0.00		0.00		7.16		7.16	Fed from emergency swbd in emergency cond
P210	STEERING GEAR HPU PUMP #3	240/3		1	15.00	12.110	12.11	0.50	6.06	0.50	6.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P212	BILGE PUMP	208/3		1	30.00	22.400	22.40	0.20	4.48	0.20	4.48	0.10	2.24	0.10	2.24	0.00	0.00	0.00	0.00	0.10	2.24	0.10	2.24	
P214	SPRINKLER PUMP #1	208/3		1	15.00	11.200	11.20	0.10	1.12	0.10	1.12	0.10	1.12	0.10	1.12	0.00	0.00	0.00	0.00	0.10	1.12	0.10	1.12	
P216	CORVUS ESS2 COOLING FANS	208/1		1		6.000	6.00	1.00	6.00	1.00	6.00	1.00	6.00	1.00	6.00	0.00	0.00	0.00	0.00	1.00	6.00	1.00	6.00	
P218	DC SWBD #1 LCU PRIMARY PUMP	208/3		1		4.800	4.80	1.00	4.80	1.00	4.80	1.00	4.80	1.00	4.80	0.00	0.00	0.00	0.00	1.00	4.80	1.00	4.80	Via 208/480 xfmr loc in DC Switchboard
P220	DC SWBD #2 LCU SECONDARY PUMP	208/3		1		4.800	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Via 208/480 xfmr loc in DC Switchboard (Stand-by)
P222	DC SWBD #1 CLG FANS & ANTI-CONDENS HTRs	208/1		1		5.01	5.01	1.00	5.01	1.00	5.01	1.00	5.01	1.00	5.01	0.00	0.00	0.00	0.00	0.50	2.50	0.50	2.50	
P224	SPARE																							
P226	SPARE																							
P228	SPARE																							
	TOTAL ELECTRICAL LOAD (KW)						351.47		109.70		111.86		92.52		94.68		115.25		115.25		77.70		70.76	
SHIP SERVICE POWER TRANSFORMER - DEMAND KVA									137.13		139.83		115.65		118.35									Assumed PF=0.8
SHORE POWER TRANSFORMER - DEMAND KVA																					97.13		88.45	Assumed PF=0.8

REQUIRED SHIP SERVICE POWER TRANSFORMER CAPACITY WITH 10% GROWTH MARGIN = 150 KVA

REQUIRED SHORE POWER TRANSFORMER CAPACITY WITH 10% GROWTH MARGIN = 100 KVA

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
				QTY	INPUT HP	INPUT KW	TOTAL KW	OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
								D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	ENGINE ROOM POWER PANEL 201																							
P201-1	FO PUMP	208/3	7.50	1	2.0	1.725	1.72	0.30	0.52	0.30	0.52	0.30	0.52	0.30	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	VIKING SERIES 4195
P201-2	FUEL OIL SEPARATOR	208/3	4.60	1	1.0	0.873	0.87	0.70	0.61	0.70	0.61	0.40	0.35	0.40	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ALPHA LAVAL MAB-103
P201-3	DIRTY OIL PUMP	208/1	2.20	1	0.5	0.477	0.48	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.00	0.00	0.00	0.00	0.10	0.05	0.10	0.05	TUTHILL CC9
P201-4	SSDG #1 JACKET WATER HEATER	208/1	7.21	1		1.500	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.45	0.30	0.45	
P201-5	POTABLE WATER PUMP	208/1	6.60	1	1.5	1.294	1.29	0.30	0.39	0.30	0.39	0.30	0.39	0.30	0.39	0.00	0.00	0.00	0.00	0.10	0.13	0.10	0.13	GRUNDFOS 3-93 CMBE IUCEDE
P201-6	SSDG #2 JACKET WATER HEATER	208/1	7.21	1		1.500	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.45	0.30	0.45	
P201-7	DC SWBD #1 CLG FANS & ANTI-CONDENS HTRs	208/1		1		5.01	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SECONDARY FEED
P201-8	DC SWBD #2 CLG FANS & ANTI-CONDENS HTRs	208/1		1		5.01	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SECONDARY FEED
P201-9	OFFGRID XFMR T1 SPACE HEATER	208/1		1		0.300	0.30	0.10	0.03	0.40	0.12	0.10	0.03	0.40	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.09	
P201-10	OFFGRID XFMR T2 SPACE HEATER	208/1		1		0.300	0.30	0.10	0.03	0.40	0.12	0.10	0.03	0.40	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.09	
P201-11	GENSET #1 ENGINE HEATING TAPE	208/1		1		0.510	0.51	0.10	0.05	0.40	0.20	0.10	0.05	0.40	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.15	
P201-12	GENSET #2 ENGINE HEATING TAPE	208/1		1		0.510	0.51	0.10	0.05	0.40	0.20	0.10	0.05	0.40	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.15	
P201-13	GENSET #1 START BATT CHARGER	120	14.00	1		2.898	2.90	0.30	0.87	0.30	0.87	0.20	0.58	0.20	0.58	0.00	0.00	0.00	0.00	0.20	0.58	0.20	0.58	
P201-14	GENSET #2 START BATT CHARGER	120	14.00	1		2.898	2.90	0.30	0.87	0.30	0.87	0.20	0.58	0.20	0.58	0.00	0.00	0.00	0.00	0.20	0.58	0.20	0.58	
P201-15	DC SWBD & ALTERNATOR PORT FW CLG PUMP 1	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	
P201-16	DC SWBD & ALTERNATOR PORT FW CLG PUMP 2	120	6.40	1	0.75	0.687	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	STANDBY
P201-17	ENGINE ROOM PORT CONDENSATE DRAIN PUMP	120	1.00	1	0.02	0.060	0.06	0.20	0.01	0.00	0.00	0.20	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.01	0.00	0.00	
P201-18	ENGINE ROOM STBD CONDENSATE DRAIN PUMP	120		1	0.33	0.373	0.37	0.20	0.07	0.00	0.00	0.20	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.07	0.00	0.00	
P201-19	EOS CONDENSATE DRAIN PUMP	120		1	0.05	0.057	0.06	0.20	0.01	0.00	0.00	0.20	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.01	0.00	0.00	
P201-20	SPARE																							
P201-21	ENG RM PORT RCPT	120	6.00	4		0.180	0.72	0.20	0.14	0.20	0.14	0.20	0.14	0.20	0.14	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07	180W /RCPT PER NEC 220.14 (I)
P201-22	ENG RM & EOS RCPT	120	7.50	5		0.180	0.90	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.00	0.00	0.00	0.00	0.10	0.09	0.10	0.09	180W /RCPT PER NEC 220.14 (I)
P201-23	SPARE																							
P210-24	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						28.28		4.30		4.69		3.46		3.85		0.00		0.00		2.63		3.02	
	HOLD VENTILATION PANEL P202																							
P202-1	ENGINE ROOM SUPPLY FAN	208/3		1	5.0	4.168	4.17	0.90	3.75	0.90	3.75	0.90	3.75	0.90	3.75	0.00	0.00	0.00	0.00	0.50	2.08	0.50	2.08	
P202-2	SPARE																							
P202-3	AUX. ENGINE ROOM SUPPLY FAN	208/3		1	1.5	1.332	1.33	0.90	1.20	0.90	1.20	0.90	1.20	0.90	1.20	0.00	0.00	0.00	0.00	0.50	0.67	0.50	0.67	
P202-4	SPARE																							
P202-5	ENGR'S SHOP/STORE SUPPLY FAN	208/1		1	0.33	0.35	0.35	0.90	0.32	0.90	0.32	0.90	0.32	0.90	0.32	0.00	0.00	0.00	0.00	0.90	0.32	0.90	0.32	
P202-6	ENGR'S SHOP/STORE SUPPLY FAN	208/1		1	0.33	0.35	0.35	0.90	0.32	0.90	0.32	0.90	0.32	0.90	0.32	0.00	0.00	0.00	0.00	0.90	0.32	0.90	0.32	
P202-7	PORT BATTERY ROOM SUPPLY FAN (S-5)	208/1		1	0.33	0.31	0.31	0.90	0.28	0.90	0.28	0.90	0.28	0.90	0.28	0.00	0.00	0.00	0.00	0.90	0.28	0.90	0.28	
P202-8	STBD BATTERY ROOM SUPPLY FAN (S-7)	208/1		1	0.33	0.31	0.31	0.90	0.28	0.90	0.28	0.90	0.28	0.90	0.28	0.00	0.00	0.00	0.00	0.90	0.28	0.90	0.28	
P202-9	PORT BATTERY ROOM EXHAUST FAN (E-8)	208/1		1	0.75	0.72	0.72	0.90	0.64	0.90	0.64	0.90	0.64	0.90	0.64	0.00	0.00	0.00	0.00	0.90	0.64	0.90	0.64	
	PORT BATTERY ROOM BACKUP SUPPLY FAN (S-6)	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	BACKUP SUPPLY FAN; PRIMARY FEED
P202-10	STBD BATTERY ROOM EXHAUST FAN (E-9)	208/1		1	0.75	0.72	0.72	0.90	0.64	0.90	0.64	0.90	0.64	0.90	0.64	0.00	0.00	0.00	0.00	0.90	0.64	0.90	0.64	
	STBD BATTERY ROOM BACKUP SUPPLY FAN (S-8)	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	BACKUP SUPPLY FAN; PRIMARY FEED
P202-11	PORT & STBD BATTERY ROOM EMERGENCY AHUs	208/1		1		0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	BACKUP AHUs
P202-12	PORT & STBD BATTERY ROOM MAIN AHUs	208/1		1		0.28	0.28	0.70	0.20	0.00	0.00	0.70	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.20	0.00	0.00	PRIMARY AHUs
P202-13	EOS CONDENSER & AHU	208/1		1		0.900	0.90	0.70	0.63	0.40	0.36	0.70	0.63	0.40	0.36	0.00	0.00	0.00	0.00	0.70	0.63	0.40	0.36	
P202-14	SWC200 HEAT TRACING	208/1	11.63	1		2.30	2.30	0.00	0.00	0.40	0.92	0.00	0.00	0.40	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.92	
P202-15	CREW BREAK ROOM SUPPY FAN (S-4)	120/1		1	0.08	0.09	0.09	0.90	0.08	0.90	0.08	0.90	0.08	0.90	0.08	0.00	0.00	0.00	0.00	0.90	0.08	0.90	0.08	
P202-16	CREW BREAK ROOM EXHAUST FAN (E-7)	120/1		1	0.08	0.09	0.09	0.90	0.08	0.90	0.08	0.90	0.08	0.90	0.08	0.00	0.00	0.00	0.00	0.90	0.08	0.90	0.08	
P202-17	ENGR'S SHOP MODINE HEATER FAN &	120		1	0.04	0.04	0.04	0.00	0.00	0.40	0.02	0.00	0.00	0.40	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.02	
	FWD STEERING ROOM MODINE HEATER FAN	120		1	0.02	0.018	0.02	0.00	0.00	0.40	0.01	0.00	0.00	0.40	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.01	
P202-18	ENG ROOM PORT MODINE HEATER FAN &	120		1	0.13	0.138	0.14	0.00	0.00	0.40	0.06	0.00	0.00	0.40	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.06	
	ENG ROOM STBD MODINE HEATER FAN	120		1	0.13	0.138	0.14	0.00	0.00	0.40	0.06	0.00	0.00	0.40	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.06	
P202-19	AUX. ENG RM MODINE HEATER FAN &	120		1	0.13	0.138	0.14	0.00	0.00	0.40	0.06	0.00	0.00	0.40	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.06	
	FIRE STOWAGE/LIFT MACH. RM MODINE HTR FAN	120		1	0.02	0.018	0.02	0.00	0.00	0.40	0.01	0.00	0.00	0.40	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.01	
P202-20	AFT STEERING RM MODINE HEATER FAN	120		1	0.02	0.018	0.02	0.00	0.00	0.40	0.01	0.00	0.00	0.40	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.01	
P202-21	SPARE																							
P202-22	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						14.15		8.43		9.09		8.43		9.09		0.00		0.00		6.23		6.89	

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	ENGR'S SHOP/STORE POWER PANEL P203																							
P203-1	SPARE																							
P203-2	SEWAGE JECTOR PUMP	208/1	2.20	1	0.5	0.477	0.48	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.00	0.00	0.00	0.00	0.10	0.05	0.10	0.05	LIBERTY 700 SERIES
P203-3	PROPULSION MOTOR #1 HEATING TAPE	208/1		1		0.510	0.51	0.10	0.05	0.40	0.20	0.10	0.05	0.40	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.15	
P203-4	SHORE POWER XFMR #1 SPACE HEATER	208/1		1		0.300	0.30	0.10	0.03	0.40	0.12	0.10	0.03	0.40	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.09	
P203-5	END A LIGHTS CKT #1: STEERING GEAR RM, VOID, TANK VOID, ENGR'S SHOP/STORES & CREW HEAD	120	1.67			0.200	0.20	0.90	0.18	0.90	0.18	0.90	0.18	0.90	0.18	0.00	0.00	0.00	0.00	0.90	0.18	0.90	0.18	7 x 26.3W, 1 x 15W
P203-6	END A LIGHTS CKT #2: STEERING GEAR RM, TANK VOID, ENGR'S SHOP/STORES & CREW BREAK RM	120	1.10	5		0.026	0.13	0.90	0.12	0.90	0.12	0.90	0.12	0.90	0.12	0.00	0.00	0.00	0.00	0.90	0.12	0.90	0.12	5 x 26.3W
P203-7	MAIN DECK PORT INTERIOR LIGHTS	120	0.33	3		0.013	0.04	0.90	0.04	0.90	0.04	0.90	0.04	0.90	0.04	0.00	0.00	0.00	0.00	0.90	0.04	0.90	0.04	3 x 13W
P203-8	MAIN DECK PORT EXTERIOR LIGHTS (UNDER O1 DK)	120	5.19	8		0.078	0.62	0.90	0.56	0.90	0.56	0.90	0.56	0.90	0.56	0.00	0.00	0.00	0.00	0.50	0.31	0.50	0.31	8 x 77.88W
P203-9	END A RECEPTACLES CKT #1: STEERING GEAR RM, VOID, TANK VOID, ENGR.'S SHOP/STORES	120	6.00	4		0.180	0.72	0.20	0.14	0.20	0.14	0.20	0.14	0.20	0.14	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07	180W /RCPT PER NEC 220.14 (I)
P203-10	END A RECEPTACLES CKT #2: STEERING GEAR ROOM, VOID, TANK VOID & CREW BREAK ROOM	120	6.00	4		0.180	0.72	0.20	0.14	0.20	0.14	0.20	0.14	0.20	0.14	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07	180W /RCPT PER NEC 220.14 (I)
P203-11	CREW BREAK ROOM REFREEGERATOR RCPT	120	6.67	1		0.800	0.80	0.30	0.24	0.30	0.24	0.30	0.24	0.30	0.24	0.00	0.00	0.00	0.00	0.30	0.24	0.30	0.24	
P203-12	CREW BREAK ROOM COFFEE MAKER RCPT	120	10.00	1		1.200	1.20	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.00	0.00	0.00	0.00	0.10	0.12	0.10	0.12	
P203-13	CREW BREAK ROOM MICROWAVE RCPT	120	10.00	1		1.200	1.20	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.00	0.00	0.00	0.00	0.10	0.12	0.10	0.12	
P203-14	MAIN DECK PORT RECEPTACLES	120	3.00	2		0.180	0.36	0.20	0.07	0.20	0.07	0.20	0.07	0.20	0.07	0.00	0.00	0.00	0.00	0.10	0.04	0.10	0.04	180W /RCPT PER NEC 220.14 (I)
P203-15	MAIN DECK PORT EXTERIOR RECEPTACLES	120	1.50	1		0.180	0.18	0.20	0.04	0.20	0.04	0.20	0.04	0.20	0.04	0.00	0.00	0.00	0.00	0.10	0.02	0.10	0.02	180W /RCPT PER NEC 220.14 (I)
P203-16	CREW HEAD HAND DRYER	120	10.00	1		1.200	1.20	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.00	0.00	0.00	0.00	0.10	0.12	0.10	0.12	
P203-17	PRPLN MOTOR & REDUCTION GEAR FWD FW CLG PUMP #1	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	
P203-18	PRPLN MOTOR & REDUCTION GEAR FWD FW CLG PUMP #2	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	STANDBY
P203-19	SPARE																							
P203-20	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						10.03		3.56		3.81		3.56		3.81		0.00		0.00		1.77		2.01	
	AUX. ENGINE ROOM POWER PANEL 204																							
P204-1	SHIP SERVICE AIR COMPRESSOR #2				2.0	1.725	0.00	0.30	0.00	0.30	0.00	0.30	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.00	QUINCY QR-310
P204-2	DOMESTIC HOT WATER HEATER	208/1	12.50	1		3.000	3.00	0.50	1.50	0.50	1.50	0.20	0.60	0.20	0.60	0.00	0.00	0.00	0.00	0.10	0.30	0.10	0.30	RHEEM 40 gal.
P204-3	PROPULSION MOTOR #2 HEATING TAPE	208/1		1		0.510	0.51	0.10	0.05	0.40	0.20	0.10	0.05	0.40	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.15	
P204-4	SHORE POWER XFMR #2 SPACE HEATER	208/1		1		0.300	0.30	0.10	0.03	0.40	0.12	0.10	0.03	0.40	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.09	
P204-5	END B LIGHTS CKT #1: STRG RM, TANK VOID & AUX. ENGINE RM	120	1.54	7		0.185	0.19	0.90	0.17	0.90	0.17	0.90	0.17	0.90	0.17	0.00	0.00	0.00	0.00	0.90	0.17	0.90	0.17	7 x 26.3W
P204-6	END B LIGHTS CKT #2: STRG RM, VOID, TANK VOID, AUX. ENGINE RM & FIRE STOWAGE/LIFT MACH RM	120	1.32	6		0.026	0.16	0.90	0.14	0.90	0.14	0.90	0.14	0.90	0.14	0.00	0.00	0.00	0.00	0.90	0.14	0.90	0.14	5 x 26.3W
P204-7	MAIN DECK STBD INTERIOR LIGHTS	120	0.33	3		0.013	0.04	0.90	0.04	0.90	0.04	0.90	0.04	0.90	0.04	0.00	0.00	0.00	0.00	0.90	0.04	0.90	0.04	3 x 13W
P204-8	MAIN DECK STBD EXTERIOR LIGHTS (UNDER O1 DK)	120	5.19	8		0.078	0.62	0.90	0.56	0.90	0.56	0.90	0.56	0.90	0.56	0.00	0.00	0.00	0.00	0.50	0.31	0.50	0.31	8 x 77.88W
P204-9	END B RECEPTACLE CKT #1: STRG RM, VOID, TANK VOID & AUX. ENGINE RM	120	6.00	4		0.180	0.72	0.20	0.14	0.20	0.14	0.20	0.14	0.20	0.14	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07	180W /RCPT PER NEC 220.14 (I)
P204-10	END B RECEPTACLE CKT #2: STRG RM, TANK VOID, AUX. ENG RM & STOWAGE FIRE/LIFT MACH. RM	120	6.00	4		0.180	0.72	0.20	0.14	0.20	0.14	0.20	0.14	0.20	0.14	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07	180W /RCPT PER NEC 220.14 (I)
P204-11	MAIN DECK STBD RECEPTACLES	120	3.00	2		0.180	0.36	0.20	0.07	0.20	0.07	0.20	0.07	0.20	0.07	0.00	0.00	0.00	0.00	0.10	0.04	0.10	0.04	180W /RCPT PER NEC 220.14 (I)
P204-12	MAIN DECK STBD EXTERIOR RECEPTACLES	120	1.50	1		0.180	0.18	0.20	0.04	0.20	0.04	0.20	0.04	0.20	0.04	0.00	0.00	0.00	0.00	0.10	0.02	0.10	0.02	180W /RCPT PER NEC 220.14 (I)
P204-13	ENG RM PORT & PORT BAT RM LIGHTS	120	1.32	6		0.026	0.16	0.90	0.14	0.90	0.14	0.90	0.14	0.90	0.14	0.00	0.00	0.00	0.00	0.90	0.14	0.90	0.14	5 x 26.3W
P204-14	ENG RM STBD, EOS & STBD BAT RM LIGHTS	120	1.32	6		0.026	0.16	0.90	0.14	0.90	0.14	0.90	0.14	0.90	0.14	0.00	0.00	0.00	0.00	0.90	0.14	0.90	0.14	5 x 26.3W
P204-15	DC SWBD & ALTERNATOR STBD FW CLG PUMP 1	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	
P204-16	DC SWBD & ALTERNATOR STBD FW CLG PUMP 2	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	STANDBY
P204-17	COMPRESSED AIR DRYER	120	1.67	1		0.200	0.20	0.30	0.06	0.30	0.06	0.30	0.06	0.30	0.06	0.00	0.00	0.00	0.00	0.10	0.02	0.10	0.02	
P204-18	SPARE																							
P204-19	PRPLN MOTOR & REDUCTION GEAR AFT FW CLG PUMP #1	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	
P204-20	PRPLN MOTOR & REDUCTION GEAR AFT FW CLG PUMP #2	120	6.40	1	0.75	0.687	0.69	0.60	0.41	0.60	0.41	0.60	0.41	0.60	0.41	0.00	0.00	0.00	0.00	0.20	0.14	0.20	0.14	STANDBY
P204-21	SANITARY WATER PUMP	208/1	10.00	1	1.5	1.294	1.29	0.30	0.39	0.30	0.39	0.30	0.39	0.30	0.39	0.00	0.00	0.00	0.00	0.10	0.13	0.10	0.13	GRUNDFOS 3-93 CMBE IUCEDE
P204-22	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						10.06		4.87		5.12		3.97		4.22		0.00		0.00		2.01		2.25	

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	02 DECK HVAC PANEL P205																							
P205-1	PORT BATTERY ROOM OUTDOOR CONDENSER	208/3		1		8.200	8.20	0.70	5.74	0.70	5.74	0.70	5.74	0.70	5.74	0.00	0.00	0.00	0.00	0.70	5.74	0.00	0.00	COOLING ONLY
P205-2	STBD BATTERY ROOM OUTDOOR CONDENSER	208/3		1		8.200	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	BACKUP UNIT
P205-3	PORT PASSENGER CABIN SUPPLY FAN (S-1)	208/1		1	0.33	0.34	0.34	0.90	0.30	0.90	0.30	0.90	0.30	0.90	0.30	0.00	0.00	0.00	0.00	0.90	0.30	0.90	0.30	
P205-4	PORT PASSENGER CABIN EXHAUST FAN (E-2)	208/1		1	0.33	0.34	0.34	0.90	0.30	0.90	0.30	0.90	0.30	0.90	0.30	0.00	0.00	0.00	0.00	0.90	0.30	0.90	0.30	
P205-5	STBD PASSENGER CABIN SUPPLY FAN (S-2)	208/1		1	0.33	0.34	0.34	0.90	0.30	0.90	0.30	0.90	0.30	0.90	0.30	0.00	0.00	0.00	0.00	0.90	0.30	0.90	0.30	
P205-6	STBD PASSENGER CABIN EXHAUST FAN (E-4)	208/1		1	0.33	0.34	0.34	0.90	0.30	0.90	0.30	0.90	0.30	0.90	0.30	0.00	0.00	0.00	0.00	0.90	0.30	0.90	0.30	
P205-7	PORT PASSENGER CABIN HEAD HAND DRYER	208/1		1		1.200	1.20	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.00	0.00	0.00	0.00	0.10	0.12	0.10	0.12	
P205-8	STBD PASSENGER CABIN HEAD HAND DRYER	208/1		1		1.200	1.20	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.00	0.00	0.00	0.00	0.10	0.12	0.10	0.12	
P205-9	PORT PASSENGER CABIN HEAD EXHAUST FAN (E-3)	120/1		1	0.08	0.08	0.08	0.90	0.07	0.90	0.07	0.90	0.07	0.90	0.07	0.00	0.00	0.00	0.00	0.90	0.07	0.90	0.07	
P205-10	STBD PASSENGER CABIN HEAD EXHAUST FAN (E-5)	120/1		1	0.08	0.08	0.08	0.90	0.07	0.90	0.07	0.90	0.07	0.90	0.07	0.00	0.00	0.00	0.00	0.90	0.07	0.90	0.07	
P205-11	PILOT HOUSE A/C ROOF TOP UNIT #1	120/1		1		1.60	1.60	0.70	1.12	0.70	1.12	0.70	1.12	0.70	1.12	0.00	0.00	0.00	0.00	0.70	1.12	0.00	0.00	COOLING ONLY
P205-12	PILOT HOUSE A/C ROOF TOP UNIT #2	120/1		1		1.60	1.60	0.70	1.12	0.70	1.12	0.70	1.12	0.70	1.12	0.00	0.00	0.00	0.00	0.70	1.12	0.00	0.00	COOLING ONLY
P205-13	PILOT HOUSE A/C ROOF TOP UNIT #3	120/1		1		1.60	1.60	0.70	1.12	0.70	1.12	0.70	1.12	0.70	1.12	0.00	0.00	0.00	0.00	0.70	1.12	0.00	0.00	COOLING ONLY
P205-14	02 LEVEL CREW HEAD EXHAUST FAN (E-1)	120/1		1	0.08	0.08	0.08	0.90	0.07	0.90	0.07	0.90	0.07	0.90	0.07	0.00	0.00	0.00	0.00	0.90	0.07	0.90	0.07	
P205-15	SPARE																							
P205-16	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						25.19		11.25		11.25		11.25		11.25		0.00		0.00		10.77		1.67	
	02 DECK POWER PANEL P206																							
P206-1	S-BAND RADAR	208/1		1		0.500	0.50	0.50	0.25	0.50	0.25	0.20	0.10	0.20	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P206-2	SPARE																							
P206-3	NAVIGATION LED LIGHTS PANEL	120	3.75	1		0.450	0.45	0.60	0.27	0.60	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	JBOX NLFM9DUG120ADP
P206-4	PILOT HOUSE INTERIOR LIGHTS CHART TABLE L	120	0.58	5		0.014	0.07	0.60	0.04	0.60	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1 x 14W
P206-5	PILOT HOUSE INTERIOR LIGHTS	120	4.90	3		0.196	0.59	0.60	0.35	0.60	0.35	0.60	0.35	0.60	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14 x 14W
P206-6	02 DECK INTERIOR LIGHTS	120	0.90			0.108	0.11	0.60	0.06	0.60	0.06	0.60	0.06	0.60	0.06	0.00	0.00	0.00	0.00	0.60	0.06	0.60	0.06	2 x 26.3W, 2 x 14W, 1 x 15W, 1 x 13W
P206-7	01 DECK PORT INTERIOR LIGHTS	120	1.96			0.235	0.24	0.60	0.14	0.60	0.14	0.60	0.14	0.60	0.14	0.00	0.00	0.00	0.00	0.60	0.14	0.60	0.14	1 x 26.3W, 13 x 14W, 2 x 13w
P206-8	01 DECK STBD INTERIOR LIGHTS	120	1.96			0.235	0.24	0.60	0.14	0.60	0.14	0.60	0.14	0.60	0.14	0.00	0.00	0.00	0.00	0.60	0.14	0.60	0.14	1 x 26.3W, 13 x 14W, 2 x 13w
P206-9	EXTERIOR DECKS RAIL & BULKHEAD LIGHTS	120	1.98	14		0.017	0.24	0.60	0.14	0.60	0.14	0.60	0.14	0.60	0.14	0.00	0.00	0.00	0.00	0.60	0.14	0.60	0.14	14 x 17W
P206-10	02 DECK FLOOD LIGHTS	120	7.13	8		0.107	0.86	0.60	0.51	0.60	0.51	0.60	0.51	0.60	0.51	0.00	0.00	0.00	0.00	0.60	0.51	0.60	0.51	8 x 107.0W
P206-11	MAIN DECK VEHICLE LOADING FLOOD LIGHTS CKT1	120	3.57	4		0.107	0.43	0.60	0.26	0.60	0.26	0.60	0.26	0.60	0.26	0.00	0.00	0.00	0.00	0.60	0.26	0.60	0.26	4 x 107.0W
P206-12	MAIN DECK VEHICLE LOADING FLOOD LIGHTS CKT 2	120	3.57	4		0.107	0.43	0.60	0.26	0.60	0.26	0.60	0.26	0.60	0.26	0.00	0.00	0.00	0.00	0.60	0.26	0.60	0.26	4 x 107.0W
P206-13	MAIN DECK VEHICLE LOADING FLOOD LIGHTS CKT 3	120	2.53	4		0.076	0.30	0.90	0.27	0.90	0.27	0.90	0.27	0.90	0.27	0.00	0.00	0.00	0.00	0.90	0.27	0.90	0.27	4 x 96W
P206-14	MAIN DECK VEHICLE LOADING FLOOD LIGHTS CKT 4	120	2.53	4		0.076	0.30	0.90	0.27	0.90	0.27	0.90	0.27	0.90	0.27	0.00	0.00	0.00	0.00	0.90	0.27	0.90	0.27	4 x 96W
P206-15	PILOT HOUSE RECEPTACLES	120	7.50	5		0.180	0.90	0.20	0.18	0.20	0.18	0.10	0.09	0.10	0.09	0.00	0.00	0.00	0.00	0.10	0.09	0.10	0.09	180W /RCPT PER NEC 220.14 (I)
P206-16	BRIDGE DECK EXTERIOR RECEPTACLES	120	3.00	2		0.180	0.36	0.20	0.07	0.20	0.07	0.10	0.04	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	180W /RCPT PER NEC 220.14 (I)
P206-17	PILOT HOUSE COFFEE MAKER RECEPTACLE	120	8.33	1		1.000	1.00	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P206-18	PILOT HOUSE REF RECEPTACLE	120	4.17	1		0.500	0.50	0.30	0.15	0.30	0.15	0.30	0.15	0.30	0.15	0.00	0.00	0.00	0.00	0.30	0.15	0.30	0.15	
P206-19	02 DECK INTERIOR RECEPTACLES	120	4.50	3		0.180	0.54	0.20	0.11	0.20	0.11	0.10	0.05	0.10	0.05	0.00	0.00	0.00	0.00	0.10	0.05	0.10	0.05	180W /RCPT PER NEC 220.14 (I)
P206-21	01 DECK INTERIOR RECEPTACLES	120	12.00	8		0.180	1.44	0.20	0.29	0.20	0.29	0.10	0.14	0.10	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	180W /RCPT PER NEC 220.14 (I)
P206-22	SPARE																							
P206-23	SPARE																							
P206-24	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						10.92		4.36		4.36		3.43		3.43		0.00		0.00		2.36		2.36	

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	EMERGENCY SWITCHBOARD																							
EP201	EMERGENCY POWER PNL EP201	208/3					7.47		2.36		2.96		2.40		3.00		7.01		7.01		1.59		2.19	
EP202	EMERGENCY POWER PNL EP202	208/3					6.74		2.14		2.17		2.09		2.12		5.79		5.79		1.94		1.97	
EP203	STEERING GEAR HPU PUMP #2 ST-BY	208/3	46.20	1	15.00	12.110	12.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	12.11	1.00	12.11	0.00	0.00	0.00	0.00	
EP204	STEERING GEAR HPU PUMP #4 ST-BY	208/3	46.20	1	15.00	12.110	12.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	12.11	1.00	12.11	0.00	0.00	0.00	0.00	
EP205	BILGE/FIRE PUMP (LVR)	208/3	88.00	1	30.00	22.400	22.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	22.40	1.00	22.40	0.00	0.00	0.00	0.00	
EP206	SPARE																							
EP207	SPRINKLER PUMP	208/3	46.20	1	15.00	12.110	12.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	12.11	1.00	12.11	0.00	0.00	0.00	0.00	
EP208	MIST FIRE PUMP	208/3	46.20	1	15.00	12.110	12.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	12.11	1.00	12.11	0.00	0.00	0.00	0.00	
EP209	RESCUE BOAT DAVIT HOIST MOTOR	208/3	30.80	1	8.25	6.712	6.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	GRAVITY LOWERING INDEPENDENT OF EXT PWR
	RESCUE BOAT DAVIT SLEW MOTOR	208/3	19.10	1	5.40	4.501	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.50	1.00	4.50	0.00	0.00	0.00	0.00	
EP210	ELEVATOR	208/3	16.70	1	5.00	4.168	4.17	0.20	0.83	0.20	0.83	0.20	0.83	0.20	0.83	1.00	4.17	1.00	4.17	0.00	0.00	0.00	0.00	
EP211	AIR COMPRESSOR	208/3	16.70	1	5.00	4.168	4.17	0.30	1.25	0.30	1.25	0.30	1.25	0.30	1.25	1.00	4.17	1.00	4.17	0.10	0.42	0.10	0.42	
EP212	PILOT HOUSE BATTERY CHARGER #1	208/1	4.75	1		0.570	0.57	0.30	0.17	0.30	0.17	0.20	0.11	0.20	0.11	1.00	0.00	1.00	0.00	0.20	0.11	0.20	0.11	LAMARCHE A12B-25-24V
EP213	PILOT HOUSE BATTERY CHARGER #2	208/1	7.67	1		0.920	0.92	0.30	0.28	0.30	0.28	0.20	0.18	0.20	0.18	1.00	0.00	1.00	0.00	0.20	0.18	0.20	0.18	LAMARCHE A12B-20-12V
EP214	EMER GENSET START BATT CHARGER	208/1	12.00	1		1.450	1.45	0.20	0.29	0.20	0.29	0.20	0.29	0.20	0.29	1.00	1.45	1.00	1.45	0.10	0.15	0.10	0.15	
EP215	EMER GEN BLOCK HEATER	208/1	12.50	1		1.500	1.50	0.30	0.45	0.30	0.45	0.30	0.45	0.30	0.45	1.00	1.50	1.00	1.50	1.00	1.50	1.00	1.50	
EP216	MUPS #1 PANEL BACKUP POWER	208/1					9.76		0.00		0.00		0.00		0.00		7.91		7.91		0.00		0.00	
EP217	MUPS #2 PANEL BACKUP POWER	208/1					9.76		0.00		0.00		0.00		0.00		7.91		7.91		0.00		0.00	
EP218	SPARE																							
EP219	SPARE																							
EP220	SPARE																							
	TOTAL ELECTRICAL LOAD (KW)						128.57		7.77		8.39		7.61		8.24		115.25		115.25		5.89		6.52	
PERCENT OF EMERGENCY GENERATOR CAPACITY							138.00										84%		84%					

REQUIRED EMERGENCY GENERATOR CAPACITY WITH 10% GROWTH MARGIN = 138 KW

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	EDG ROOM EMERGENCY POWER PANEL EP201																							
EP201-1	PILOT HOUSE EMERGENCY LIGHTS	120	0.58	5		0.014	0.07	0.00	0.00	0.00	0.00	0.60	0.04	0.60	0.04	1.00	0.07	1.00	0.07	0.60	0.04	0.60	0.04	5 x 14W
EP101-2	02 DECK & P/H VOID EMERGENCY LIGHTS	120	0.67			0.081	0.08	0.60	0.05	0.60	0.05	0.60	0.05	0.60	0.05	1.00	0.08	1.00	0.08	0.60	0.05	0.60	0.05	2 x 26.3W, 2 x 14W
EP201-3	PORT PASSENGER CABIN & PORT MAIN DECK EMERGENCY LIGHTS	120	2.55			0.306	0.31	0.60	0.18	0.60	0.18	0.60	0.18	0.60	0.18	1.00	0.31	1.00	0.31	0.60	0.18	0.60	0.18	8 x 26.3W, 7 x 14W, 2 X 6w
EP201-4	STBD PASSENGER CABIN & STBD MAIN DECK EMERGENCY LIGHTS	120	2.55			0.306	0.31	0.60	0.18	0.60	0.18	0.60	0.18	0.60	0.18	1.00	0.31	1.00	0.31	0.60	0.18	0.60	0.18	8 x 26.3W, 7 x 14W, 2 X 6w
EP201-5	FWD OUTLET FOR 01 DECK INFO SCREEN	120	1.25	1		0.150	0.15	0.90	0.14	0.90	0.14	0.90	0.14	0.90	0.14	1.00	0.15	1.00	0.15	0.00	0.00	0.00	0.00	
EP201-6	AFT OUTLET FOR 01 DECK INFO SCREEN	120	1.25	1		0.150	0.15	0.90	0.14	0.90	0.14	0.90	0.14	0.90	0.14	1.00	0.15	1.00	0.15	0.00	0.00	0.00	0.00	
EP201-7	SPARE																							
EP201-8	ELEVATOR CAB LIGHT, COMM UPS	120	0.20	1		0.200	0.20	0.80	0.16	0.80	0.16	0.80	0.16	0.80	0.16	1.00	0.20	1.00	0.20	0.50	0.10	0.50	0.10	
EP201-9	END A HOLD EMERERGENCY LIGHTS STRG RM, VOID, TK VOID, ENGR'S SHOP & CREW BREAK RM	120	1.75	8		0.026	0.21	0.90	0.19	0.90	0.19	0.90	0.19	0.90	0.19	1.00	0.21	1.00	0.21	0.90	0.19	0.90	0.19	8 x 26.3W
EP201-10	ENGINE ROOM & EOS EMERGENCY LIGHTS	120	1.75	8		0.026	0.21	0.90	0.19	0.90	0.19	0.90	0.19	0.90	0.19	1.00	0.21	1.00	0.21	0.90	0.19	0.90	0.19	8 x 26.3W
EP201-11	END B HOLD EMERERGENCY LIGHTS STRG RM, VOID, TK VOID & AUX. ENGINE ROOM	120	1.75	8		0.026	0.21	0.90	0.19	0.90	0.19	0.90	0.19	0.90	0.19	1.00	0.21	1.00	0.21	0.90	0.19	0.90	0.19	8 x 26.3W
EP201-12	MAIN DECK EXTERIOR EMERGENCY LIGHTS	120	0.88	4		0.026	0.11	0.90	0.09	0.90	0.09	0.90	0.09	0.90	0.09	1.00	0.11	1.00	0.11	0.90	0.09	0.90	0.09	4 x 26.3W
EP201-13	PORT BATTERY ROOM FIRE DAMPERS (FD-3 & FD-4)	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-14	STBD BATTERY ROOM FIRE DAMPERS (FD-5 & FD-6)	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-15	ENERGY STORAGE SYSTEM (ESS) #1	208/1		1		0.400	0.40	0.90	0.36	0.90	0.36	0.90	0.36	0.90	0.36	1.00	0.40	1.00	0.40	0.30	0.12	0.30	0.12	Estimate DF
EP201-16	ENERGY STORAGE SYSTEM (ESS) #2	208/1		1		0.400	0.40	0.90	0.36	0.90	0.36	0.90	0.36	0.90	0.36	1.00	0.40	1.00	0.40	0.30	0.12	0.30	0.12	Estimate DF
EP201-17	PORT BATTERY ROOM EXHAUST FAN (E-8) &	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.72	1.00	0.72	0.00	0.00	0.00	0.00	
	PORT BATTERY ROOM BACKUP SUPPLY FAN (S-6)	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.72	1.00	0.72	0.00	0.00	0.00	0.00	BACKUP SUPPLY FAN; SECONDARY FEED
EP201-18	STBD BATTERY ROOM EXHAUST FAN (E-9)	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.72	1.00	0.72	0.00	0.00	0.00	0.00	
	STBD BATTERY ROOM BACKUP SUPPLY FAN (S-8)	208/1		1	0.75	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.72	1.00	0.72	0.00	0.00	0.00	0.00	BACKUP SUPPLY FAN; SECONDARY FEED
EP201-19	PORT & STBD BATTERY ROOM EMERGENCY AHUs	208/1		1		0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	BACKUP AHUs; SECONDARY FEED
EP201-20	ENGINE ROOM & EOS FIRE DAMPERS (SUP & EXH)	120	0.180	1		0.025	0.03	1.00	0.03	1.00	0.03	1.00	0.03	1.00	0.03	1.00	0.03	1.00	0.03	1.00	0.03	1.00	0.03	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-21	HOT WATER FURNACE CONTROL PANEL	208/1	10.00	1		1.20	1.20	0.00	0.00	0.50	0.6	0.00	0.00	0.50	0.6	1.00	1.20	1.00	1.20	0.00	0.00	0.50	0.6	WEIL-McLAIN MODEL 680
EP201-22	FIRE RELEASE UV TRIP	120	1.67	1		0.200	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0.10	0.02	0.00	0.00	0.00	0.00	
EP201-23	ENGR'S SHOP/STORES FIRE DAMPERS (FD-1 & FD-2)	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-24	EM'CY GEN ROOM FIRE DAMPERS (SUP & EXH)	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-25	HOLD SUPPLY & EXHAUST FIRE DAMPERS	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
EP201-26	EMERGENCY GENERATOR ROOM FIRE DAMPERS	120	0.180	1		0.017	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	1.00	0.02	FDL-EL (BELIMO BF120 ACTUATOR)
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						7.47		2.36		2.96		2.40		3.00		7.01		7.01		1.59		2.19	
	PILOT HOUSE EMERGENCY POWER PANEL EP202																							
EP202-1	SEARCH LIGHT PORT	120	7.00	1		0.800	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.80	1.00	0.80	0.00	0.00	0.00	0.00	CARLISLE & FINCH XY3EDE-24ARF3
EP202-2	SEARCH LIGHT STBD	120	7.00	1		0.800	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.80	1.00	0.80	0.00	0.00	0.00	0.00	CARLISLE & FINCH XY3EDE-24ARF3
EP202-3	PILOT HOUSE WINDSHIELD WIPERS FWD (3)	120		3	0.04	0.043	0.13	0.40	0.05	0.40	0.05	0.00	0.00	0.00	0.00	1.00	0.13	1.00	0.13	0.00	0.00	0.00	0.00	
EP202-4	PILOT HOUSE WINDSHIELD WIPERS AFT (3)	120		3	0.04	0.043	0.13	0.40	0.05	0.40	0.05	0.00	0.00	0.00	0.00	1.00	0.13	1.00	0.13	0.00	0.00	0.00	0.00	
EP202-5	AIR HORN CONTROLLER	120	0.17	1		0.020	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.02	1.00	0.02	0.00	0.00	0.00	0.00	
EP202-6	AIR HORN HEATER	120	0.50	1		0.060	0.06	0.00	0.00	0.40	0.02	0.00	0.00	0.40	0.02	1.00	0.06	1.00	0.06	0.00	0.00	0.40	0.02	
EP202-7	NAVIGATION LIGHT PANEL BACK UP	120	3.75	1		0.450	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.45	1.00	0.45	0.10	0.05	0.10	0.05	
EP202-8	FIRE ALARM PANEL	120	5.00	1		0.600	0.60	0.30	0.18	0.30	0.18	0.50	0.30	0.50	0.30	1.00	0.60	1.00	0.60	0.30	0.18	0.30	0.18	
EP202-9	PILOT HOUSE WINDSHIELD WIPERS PORT (2)	120		2	0.04	0.043	0.09	0.40	0.03	0.40	0.03	0.00	0.00	0.00	0.00	1.00	0.09	1.00	0.09	0.00	0.00	0.00	0.00	
EP202-10	PILOT HOUSE WINDSHIELD WIPERS STBD (2)	120		2	0.04	0.043	0.09	0.40	0.03	0.40	0.03	0.00	0.00	0.00	0.00	1.00	0.09	1.00	0.09	0.00	0.00	0.00	0.00	
EP202-11	PA SYSTEM (MAIN SOURCE)	120		1		0.360	0.36	0.30	0.11	0.30	0.11	0.30	0.11	0.30	0.11	0.30	0.11	0.30	0.11	0.10	0.04	0.10	0.04	JOTRON 19773
EP202-12	CCTV AND 12V POWER SUPPLY	120		1		1.000	1.00	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
EP202-13	PILOT HOUSE & O2 DECK EXTERIOR EMERG LTS	120	14.17	10		0.170	1.70	0.60	1.02	0.60	1.02	0.60	1.02	0.60	1.02	1.00	1.70	1.00	1.70	0.60	1.02	0.60	1.02	10 x 17W
EP202-14	02 DECK PORT LIFE RAFT TASK & FLOOD LIGHTS	120	1.18			0.141	0.14	0.60	0.08	0.60	0.08	0.60	0.08	0.60	0.08	1.00	0.14	1.00	0.14	0.60	0.08	0.60	0.08	2 x 17W, 1 x 107W
EP202-15	02 DECK STBD LIFE RAFT TASK & FLOOD LIGHTS	120	1.18			0.141	0.14	0.60	0.08	0.60	0.08	0.60	0.08	0.60	0.08	1.00	0.14	1.00	0.14	0.60	0.08	0.60	0.08	2 x 17W, 1 x 107W
EP202-16	RESCUE BOAT LAUNCH LIGHTS	120	1.18			0.141	0.14	0.60	0.08	0.60	0.08	0.60	0.08	0.60	0.08	1.00	0.14	1.00	0.14	0.60	0.08	0.60	0.08	2 x 17W, 1 x 107W
EP202-17	CELLPHONE CHARGER	120		1		0.100	0.10	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.00	0.00	0.00	0.00	0.10	0.01	0.10	0.01	
EP202-18	SPARE																							
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						6.74		2.14		2.17		2.09		2.12		5.79		5.79		1.94		1.97	

CIRCUIT	EQUIPMENT	VOLTS/ PHASE	AMPS (FLC)	CONNECTED LOAD				CRUISING CONDITION				DOCKING CONDITION				EMERGENCY CONDITION				SHORE POWER				REMARKS
								OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				OPERATING LOAD (KW)				
								SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		SUMMER		WINTER		
				QTY	INPUT HP	INPUT KW	TOTAL KW	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	D.F.	LOAD	
	MUPS#1 PANEL																							
UPS1-1	CONTROL VOLTAGE SUPPLY DC SWBD #1	230/1		1		1.800	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	Shore Power in Charging Condition
UPS1-2	CONTROL VOLTAGE SUPPLY DC SWBD #2 (BACKUP)	230/1		1		1.800	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
UPS1-3	PRPLN MOT DISC CABINET1 CONTROL POWER	230/1		1		0.050	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	0.00	0.00	0.00	0.00	
UPS1-4	NETWORK DISTRIBUTION UNIT 1 (NDU1)	230/1		1		0.200	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	
UPS1-5	GENERATOR & RECTIFIER CONTROL UNIT 1 (GRCU1)	230/1		1		0.150	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	
UPS1-6	FIELD DRIVE CONTROL UNIT 1 (FDCU1)	230/1		1		0.150	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	
UPS1-7	VESSEL MANAGEMENT SYSTEM REMOTE I/O UNIT 1	230/1		1		0.175	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	
UPS1-8	OPERATOR WORKSTATION (OWS1)	230/1		1		0.220	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	
UPS1-9	230/120V SWITCHBOARD CONTROL VOLTAGE 1	230/1		1		0.270	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	
UPS1-10	REMOTE CONTROL CABINET UNIT 1 (RCU1)	230/1		1		0.269	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	
UPS1-11	SHORE POWER CONNECTION BOX 1 CONTROL PWR	230/1		1		0.050	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	1.00	0.05	
UPS1-12	CORVUS ES1 ORCA BMS SYSTEM (ON UPS)	230/1		1		0.680	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	
UPS1-13	PM GENERATOR DISC CABINET 1 CONTROL POWER	230/1		1		0.050	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	0.00	0.00	0.00	0.00	
UPS1-14	ABB BRIDGE EQUIPMENT (OP1)	230/1		1		0.700	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	0.50	0.35	0.50	0.35	
UPS1-15	ABB BRIDGE EQUIPMENT (OWS2)	230/1		1		0.700	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	0.50	0.35	0.50	0.35	Unknown Load
UPS1-16	SPARE																							
UPS1-17	SPARE																							
UPS1-18	SPARE																							
	BATTERY CHARGER			1		2.50	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	Estimated max output
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						9.76		7.91		7.91		7.91		7.91		7.91		7.91		7.16		7.16	
	MUPS#2 PANEL																							
UPS2-1	CONTROL VOLTAGE SUPPLY DC SWBD #2	230/1		1		1.800	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80	Shore Power in Charging Condition
UPS2-2	CONTROL VOLTAGE SUPPLY DC SWBD #1 (BACKUP)	230/1		1		1.800	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
UPS2-3	PRPLN MOT DISC CABINET2 CONTROL POWER	230/1		1		0.050	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	0.00	0.00	0.00	0.00	
UPS2-4	NETWORK DISTRIBUTION UNIT 2 (NDU2)	230/1		1		0.200	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	1.00	0.20	
UPS2-5	GENERATOR & RECTIFIER CONTROL UNIT 2 (GRCU2)	230/1		1		0.150	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	
UPS2-6	FIELD DRIVE CONTROL UNIT 2 (FDCU2)	230/1		1		0.150	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	1.00	0.15	
UPS2-7	VESSEL MANAGEMENT SYSTEM REMOTE I/O UNIT 2	230/1		1		0.175	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	1.00	0.18	
UPS2-8	ABB BRIDGE EQUIPMENT (OP2)	230/1		1		0.700	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	0.50	0.35	0.50	0.35	
UPS2-9	230/120V SWITCHBOARD CONTROL VOLTAGE 2	230/1		1		0.270	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	
UPS2-10	REMOTE CONTROL CABINET UNIT 2 (RCU2)	230/1		1		0.269	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	1.00	0.27	
UPS2-11	SHORE POWER CONNECTION BOX 2 CONTROL PWR	230/1		1		0.050	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	1.00	0.05	
UPS2-12	CORVUS ES2 ORCA BMS SYSTEM (ON UPS)	230/1		1		0.680	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	1.00	0.68	
UPS2-13	PM GENERATOR DISC CABINET 2 CONTROL POWER	230/1		1		0.050	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	0.00	0.00	0.00	0.00	
UPS2-14	ABB BRIDGE EQUIPMENT (OWS2)	230/1		1		0.700	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	0.50	0.35	0.50	0.35	Unknown Load
UPS2-15	REMOTE DIAGNOSTIC SYSTEM 1 (RDS1)	230/1		1		0.220	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	1.00	0.22	
UPS2-16	SPARE																							
UPS2-17	SPARE																							
UPS2-18	SPARE																							
	BATTERY CHARGER			1		2.50	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	1.00	2.50	Estimated max output
	TOTAL ELECTRICAL LOAD ON THIS PANEL (KW)						9.76		7.91		7.91		7.91		7.91		7.91		7.91		7.16		7.16	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	0	P	Q
Battery Bank	Battery Location	Number of Batteries in Parallel	Number of Batteries in Series	Manufacturer	Model	Ampere/Hour Rating @ 20hr Rate	Total Ampere/Hour (A/H) per Bank	Total A/H +15% for Inefficiency Factor	Battery Charger Output in Amps	Time Required to Charge to 80%	Reserve Capacity in Minutes @ 25A	Total Hours of Service Battery Bank Will Provide @ Total Connected Load	Voltage	PILOTHOUSE 24VDC ELECTRONICS DISTR PANEL ELEX24	Connected Load in Amps	Remarks
WHEELHOUSE ELECTRONICS 24V BATTERY	BRIDGE DECK													X-BAND RADAR (RADAR #2)	3.9	FURUNO FR-8125 (24RPM, 93.6W)
														HORN SIGNAL TIMER	0.5	KAHLENBERG M-522
														PILOTHOUSE CONSOLE LIGHTS	0.5	
														SATELLITE COMPASS	1.1	FURUNO SC70
														AIS	3	FURUNO FA170
														GPS GP170	0.4	
														AUTOPILOT	1	SIMRAD AP70 MKII
														HORN BACK-UP POWER	0.9	
														NAV COMPUTER	2.7	
														RUDDER ANGLE INDICATOR	0.5	
														SPARE		
														SPARE		
														SPARE		
														SPARE		
		1	2	OPTIMA	D34M	55	55	63.3	25	2.28	120	3.4	24	TOTAL CONNECTED LOAD ON BATTERY BANK	**14.5**	

NOTES:

1. TWO OPTIMA D34M BATTERY CONNECTED IN SERIES CAN DELIVER 14.5A @ 24VDC FOR 3.4 HOURS
   BATTERY RESERVE CAPACITY IS 120 MIN @ 25A: BATTERY DURATION @ 14.5A = 120 MIN x 25A/14.5A (60 MIN) =3.4 HOURS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	0	P	Q
Battery Bank	Battery LocationBattery Location	Number of Batteries in Parallel	Number of Batteries in Series	Manufacturer	Model	Ampere/Hour Rating @ 20hr Rate	Total Ampere/Hour (A/H) per Bank	Total A/H +15% for inefficiency Factor	Battery Charger Output in Amps	Time Required to Charge to 80%	Reserve Capacity in Minutes @ 25A	Total Hours of Service Battery Bank Will Provide @ Total Connected Load	Voltage	PILOTHOUSE 12VDC ELECTRONICS DISTR PANEL ELEX12PILOTHOUSE 12VDC ELECTRONICS DISTR PANEL ELEX12	Connected Load in Amps	Remarks
WHEELHOUSE ELECTRONICS 12V BatteryWHEELHOUSE ELECTRONICS 12V Battery	BRIDGE DECK													LOUD HAILER (LH5000)	3.3	NOTE 1
														RITCHIE COMPASS NIGHT LIGHT	0.8	1A FUSE
														VHF RADIO #1	2.5	ICOM M506 (NOTE 2)
														VHF RADIO #2	2.5	ICOM M506 (NOTE 2)
														NAV LT PANEL ALARM	1	
														DEPTH SOUNDER	1.2	
														NMEA BACKBONE POWER	0.5	
														SPARE		
														BLANK		
														BLANK		
														BLANK		
														BLANK		
		1	1	OPTIMA	D34M	55	55	63.3	20	2.85	120	4.2	12	TOTAL CONNECTED LOAD ON BATTERY BANK	**11.8**	

NOTES:

1. THE LOAD HAILER (LH5000) DRAWS 11 AMPS @ FULL LOAD, 5 AMPS IN STANDARD MODE AND O.28 AMPS IN STAND-BY MODE. THE 3.3 AMP LOAD USED IN THESE CALCULATIONS IS BASED ON A CONSERVATIVE ASSUMPTION THAT THE LOAD HAILER IS TRANSMITTING @ FULL LOAD FOR 30 % OF THE TIME.

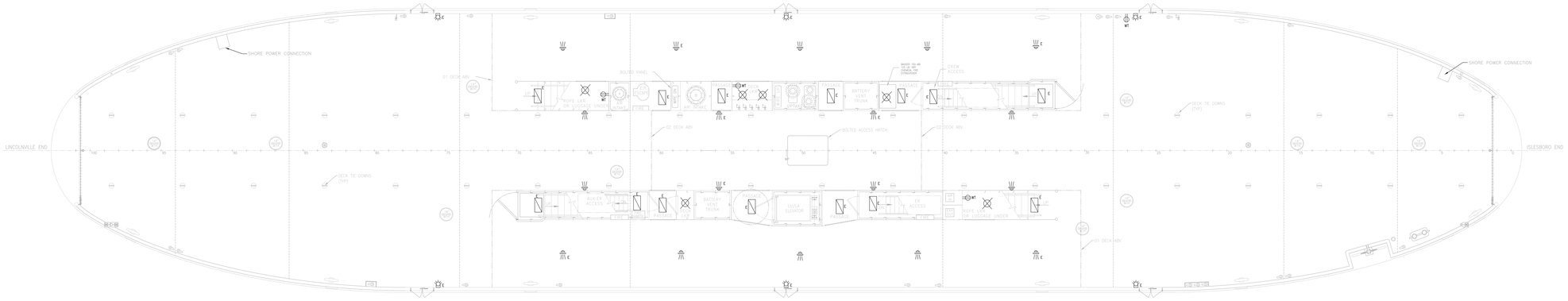
2. THE VHF RADIOS DRAW 5 AMPS ON TRANSMITTING MODE AND 3.3 AMPS ON RECEIVING MODE. THE 2.5 AMP LOAD USED IN THESE CALCULATIONS IS BASED ON A CONSERVATIVE ASSUMPTION THAT THE VHF RADIOUS ARE IN TRANSMITTING MODE FOR 50 % OF THE TIME.

3. TWO OPTIMA D34M BATTERY CONNECTED IN PARALLEL CAN DELIVER 11.8A @ 12VDC FOR 4.2 HOURS
BATTERY RESERVE CAPACITY IS 120 MIN @ 25A: BATTERY DURATION @ 11.8A = 120 MIN x 25A/11.8A/(60 MIN) =4.2 HOURS

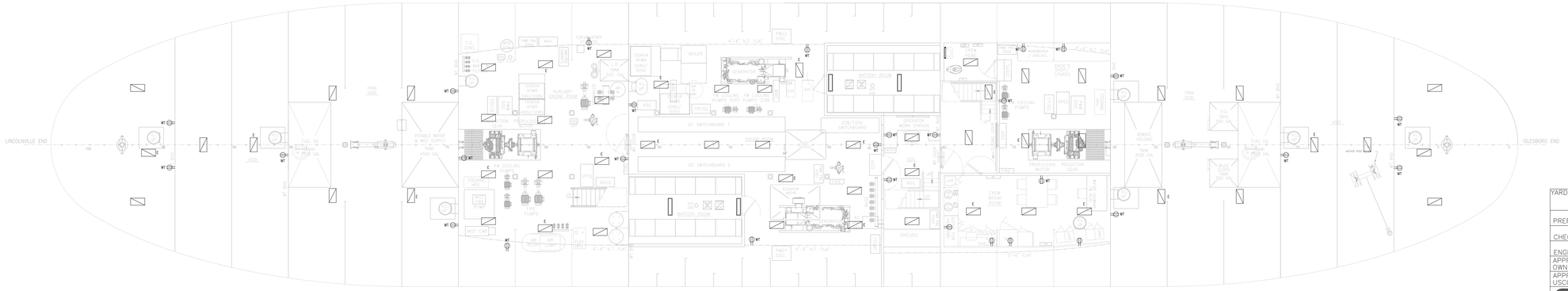
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Battery Bank	Number of Batteries in Parallel	Number of Batteries in Series	Manufacurer	Model	Ampere/Hour Rating @ 20hr Rate	Total Ampere/Hour (A/H) per Bank	Total A/H +15% for (inefficiency Factor)	Cold Cranking Amps @32 F	Reserve Capacity in Minutes @25A	Total resrve capacity in Minutes	Battery Charger Output in Amps	Time Requitred to Charge to 90%	Engine Alternator Output in Amps	Time Requitred to Charge to 90%	Battery Bank Location	Equipment Served	Voltage	Starter Draw in Amps	Remarks
(138eKW) EMER GEN STARTING	1	2	OPTIMA	34M	50	50	57.5	800	100	460	35	1.48	35	1.48	ENGINE ROOM	STARTING MOTOR	24	600CCA	
(565KW) GENERATOR #1 STARTING	1	2	OPTIMA	31M	75	75	86.25	900	150	460	35	2.22	45	1.73	ENGINE ROOM	STARTING MOTOR	24	700CCA	
(565KW) GENERATOR #2 STARTING	1	2	OPTIMA	31M	75	75	86.25	900	150	460	35	2.22	45	1.73	ENGINE ROOM	STARTING MOTOR	24	700CCA	

NOTES:

1. EMERGENCY GENERATOR ELECTICAL STARTING MOTOR DRAWS 600CCA. STARTING BATTERY BANK IS RATED TO DELIVER 800CCA, WHICH IS ADEQUATE FOR THE DUTY.
2. GENERATOR #1 STARTING ELECTRICAL STARTING MOTOR DRAWS 700CCA ??. STARTING BATTERY BANK IS RATED TO DELIVER 900CCA, WHICH IS ADEQUATE FOR THE DUTY.
3. GENERATOR #2 STARTING ELECTRICAL STARTING MOTOR DRAWS 700CCA ??. STARTING BATTERY BANK IS RATED TO DELIVER 900CCA, WHICH IS ADEQUATE FOR THE DUTY.



MAIN DECK



HOLD

SYMBOLS

- PAULUHN INTREPID LED LINEAR FIXTURE FIP52L
- DUPLEX OUTLET, NOT WATERTIGHT
- WT — DUPLEX OUTLET, WATERTIGHT
- USB — DUPLEX OUTLET, NOT WATERTIGHT, WITH USB
- PAULUHN DFL41SL LED FLOOD LIGHT
- CUBE LIGHT, PHOENIX CL-13LED-120
- HAZARDOUS AREA LED LINEAR FIXTURE, CROUSE-HINDS HLL-2-3L-0-1/8-225
- MIRROR LIGHT, GLAMOX TL14-W58 LED 800 HF 830

NOTE: 1. LOCATIONS OF EQUIPMENT SHOWN ON THIS DRAWING ARE APROXIMATE.
2. QUANTITIES SHOWN ON THIS DRAWING ARE PER LIGHTING CALCULATION.
3. (E) INDICATES CONNECTION TO EMERGENCY CIRCUIT.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	DGC

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND.

		HULL NO.
YARD		
PREPARED	D. Cirlescu	DATE 10/2023
CHECKED	M. Shortsleeves	10/2023
ENGINEER	D. Cirlescu	10/2023
APPROVED OWNER		
APPROVED USCG		

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

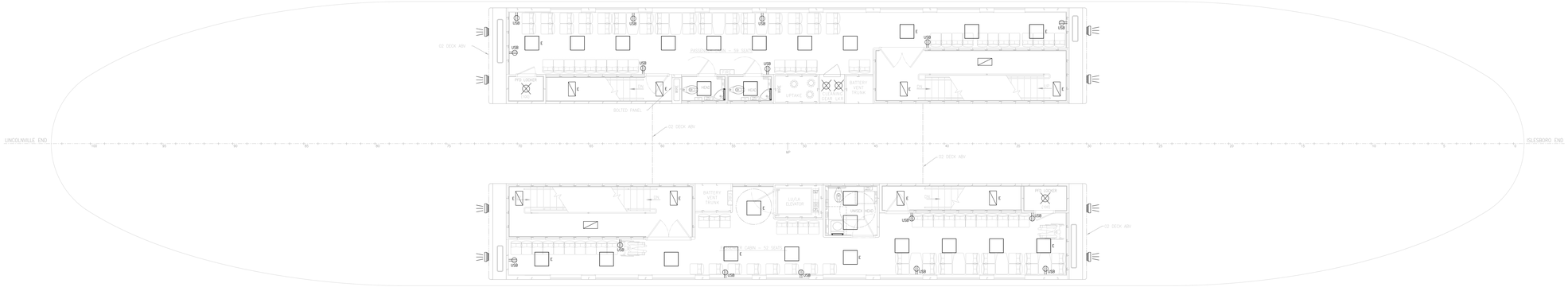
207 FT LOA FERRY VESSEL

MSCorp Marine Systems Corporation®
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE, SUITE 620W
BOSTON,MA 02210
TEL: (617) 542-3345
FAX: (617) 542-2461

LIGHTING LAYOUT
PILOT HOUSE & 02 DECK

DRAWN BY DGC DATE 10/18/23
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-E3 ALT. 0

SHEET 1 OF 3



01 DECK

SYMBOLS

- PAULUHN INTREPID LED LINEAR FIXTURE FP52L
- L.C. DOANE MR07-2-2W20-35-WARDM-122 LED FLUSH PANEL
- DUPLEX OUTLET, NOT WATERTIGHT
- DUPLEX OUTLET, WATERTIGHT
- DUPLEX OUTLET, NOT WATERTIGHT, WITH USB
- PAULUHN DFLA15L LED FLOOD LIGHT
- CROUSE-HINDS VLN2CCHBFT/UNV1 SB91
- CROUSE-HINDS EX-LITE ZE EXIT LIGHT
- MIRROR LIGHT, GLAMOX TL14-W08 LED 800 HF 830

NOTE: 1. LOCATIONS OF EQUIPMENT SHOWN ON THIS DRAWING ARE APROXIMATE.
2. QUANTITES SHOWN ON THIS DRAWING ARE PER LIGHTING CALCULATION.
3. ALL EXTERIOR LIGHTS ARE TO BE CONTROLLED FROM THE PILOTHOUSE.
4. (E) INDICATES CONNECTION TO EMERGENCY CIRCUIT.
5. (R) INDICATES WITH RED GLOBE.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	DGC

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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

YARD	HULL NO.
PREPARED D. Cirlescu	DATE 10/2023
CHECKED M. Shortsleeves	10/2023
ENGINEER D. Cirlescu	10/2023
APPROVED OWNER	
APPROVED USCG	

207 FT LOA FERRY VESSEL

LIGHTING LAYOUT
PILOT HOUSE & 02 DECK

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DRAWN BY DGC DATE 10/18/23
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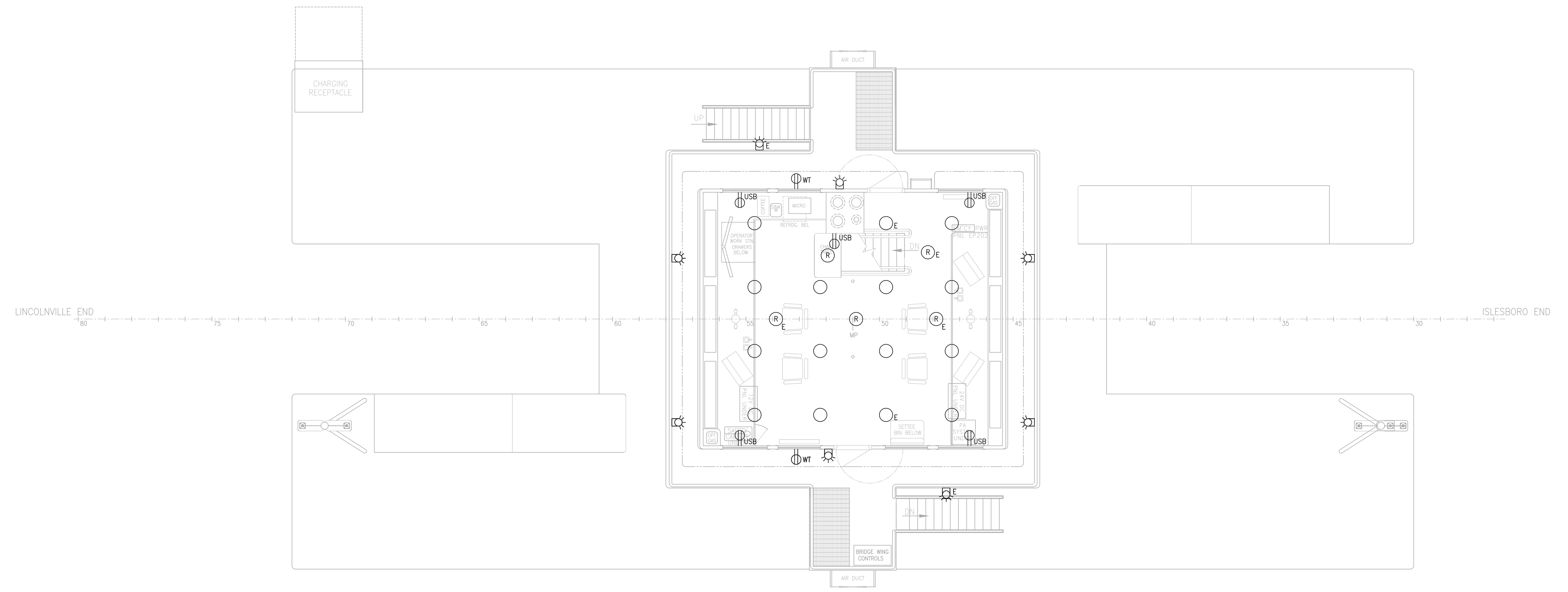
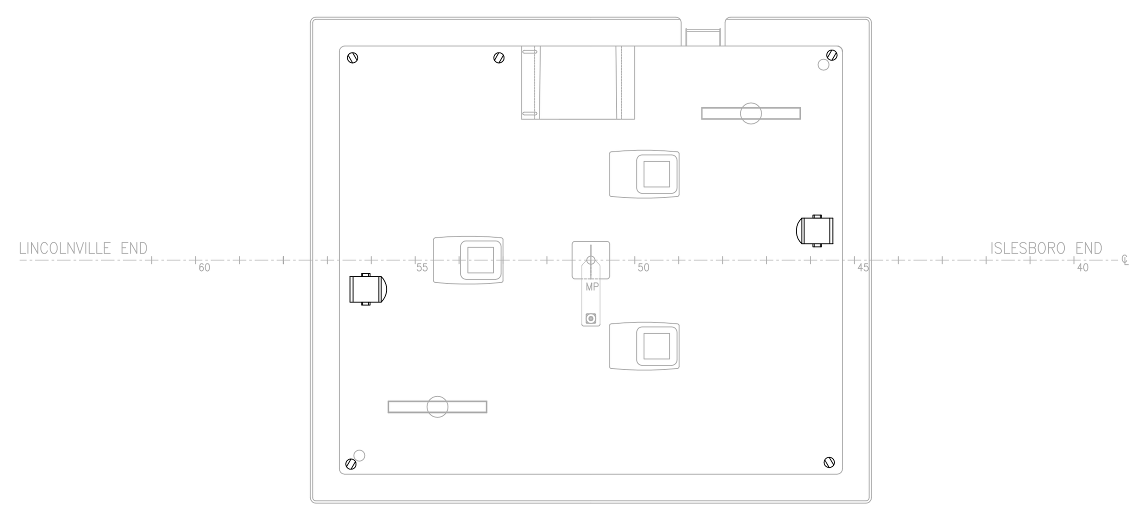
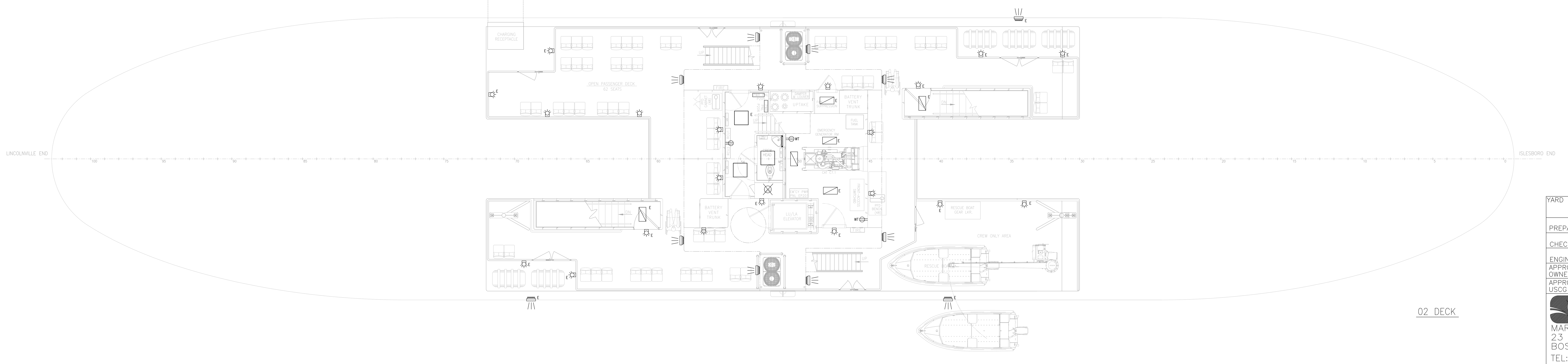


PILOT HOUSE DECK



PILOT HOUSE TOP



02 DECK

SYMBOLS

Symbol	Description
Searchlight	CARLISLE & FINCH SEARCHLIGHT MODEL XY3EDE-24ARF3
(R)	PAULUHN MERIDIAN DOWNLIGHT MODEL DLL14-35K-RV
○	PAULUHN LED DOWNLIGHT MODEL DLL14-35K
Linear fixture	PAULUHN INTREPID LED LINEAR FIXTURE FPS2L
□	L.C. DOANE M607-2-2W20-35-VARDM-122 LED FLUSH PANEL
Outlet	DUPLEX OUTLET, NOT WATERTIGHT
Outlet WT	DUPLEX OUTLET, WATERTIGHT
Outlet USB	DUPLEX OUTLET, NOT WATERTIGHT, WITH USB
Flood light	PAULUHN DFLA15L LED FLOOD LIGHT
Exterior light	EXTERIOR RAIL/BHD MOUNTED LIGHT, PHOENIX VA-W-17LED-CW-FGC
Mirror light	MIRROR LIGHT, GLAMOX TL14-W58 LED 800 HF 830

NOTE:
1. LOCATIONS OF EQUIPMENT SHOWN ON THIS DRAWING ARE APROXIMATE.
2. QUANTITIES SHOWN ON THIS DRAWING ARE PER LIGHTING CALCULATION.
3. ALL EXTERIOR LIGHTS ARE TO BE CONTROLLED FROM THE PILOTHOUSE.
4. (E) INDICATES CONNECTION TO EMERGENCY CIRCUIT.
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ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	DGC

YARD		HULL NO.
PREPARED	D. Cirlescu	DATE 10/2023
CHECKED	M. Shortsleeves	10/2023
ENGINEER	D. Cirlescu	10/2023
APPROVED OWNER		
APPROVED USCG		

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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

LIGHTING LAYOUT
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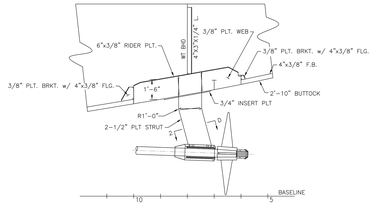
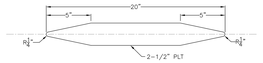
DRAWN BY DGC — DATE 10/18/23
CHECKED BY MSCORP — DATE
APPROVED BY — DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-E3 — ALT. 0

NO.	QTY.	SIZE	DESCRIPTION	MATERIAL SPECIFICATIONS
1	2	ø7"	TAIL SHAFT	ø7" AQUALOY 22 – STAINLESS STEEL
2	2	ø7"	LINE SHAFT	ø7" AQUALOY 22 – STAINLESS STEEL
3	2	ø7"	INSIDE LINE SHAFT	ø7" AQUALOY 22 – STAINLESS STEEL
4	2	ø74"	PROPELLER	ø74" 5 BLADE – STAINLESS STEEL
5	2	ø5"	PROP NUT	ø5" BRONZE NUT, 4 TPI
6	2	ø5"	JAM NUT	SAE GRADE 5 BRASS
7	2	ø14"	STRUT BARREL	14" O.D. X 10.5" I.D. X 2' 1–1/2" L. MECHANICAL TUBE, AISI 1026 ASTM A519
8	4	ø7"	CUTLESS BEARING	STRUT BARREL & AFT STERN TUBE – BRASS FLANGED BEARINGS – DURAMAX MARINE/JOHNSON CUTLESS CODE "GAVEL"
9	4	–	S.S. BOLTING PLT	14" O.D. X 9–1/4" I.D. X 1" THK.
10	2	ø7"	MUFF COUPLING	KAHLENBERG MUFF COUPLING FOR ø7" SHAFT – STAINLESS STEEL
11	2	ø14"	STERN TUBE	14" O.D. X 10.5" I.D. X 18' 11–1/2" L. MECHANICAL TUBE, AISI 1026 ASTM A519
12	2	ø7"	CUTLESS BEARING	FORWARD STERN TUBE – BRASS FLANGED BEARINGS – DURAMAX MARINE/JOHNSON CUTLESS CODE 700
13	2	–	S.S. BOLTING PLT	15–3/4" O.D. X 10–1/2" I.D. X 1" THK.
14	2	–	S.S. BOLTING PLT	15–3/4" O.D. X 13–1/2" I.D. X 1" THK.
15	2	ø7"	SHAFT SEAL	THORDON TG100 SIZE 4 FOR ø7" SHAFT
16	2	ø7"	STUFFING BOX	DURAMAX/JOHNSON 1790M FOR ø7" SHAFT
17	6	–	REDUCTION GEAR COUPLING	REINTJES SUPPLIED 2–202–125502
18	2	–	REDUCTION GEAR	REINTJES LF550 – 5.14:1
19	2	–	FLYWHEEL COUPLING	VULCAN VKF 5410–4400
20	2	–	PROPULSION MOTOR	RAMME UW860–M–950–1800–600 (950 KW)

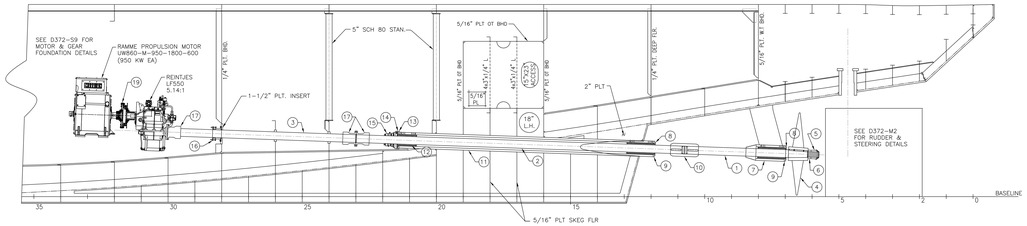
*QUANTITIES REFLECT THE INSTALLATION OF TWO PROPELLERS



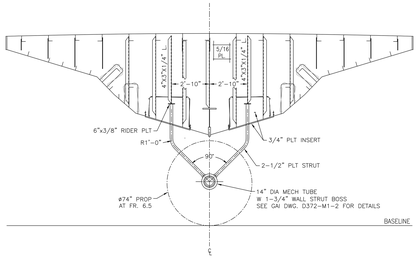
STRUT GIRDER
2'-10" OFF C.L., P+S



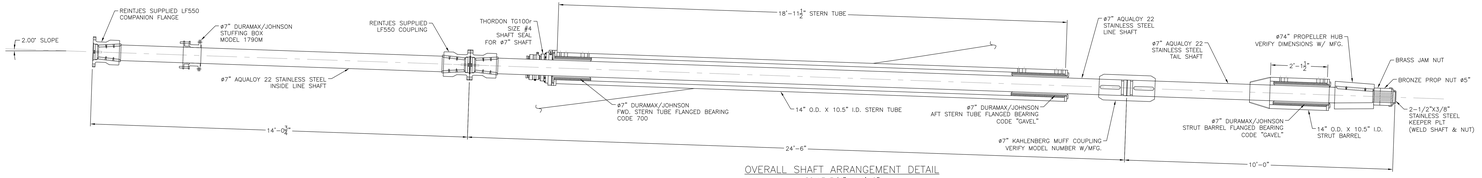
SECTION VIEW 2–D
SHAFT STRUT
SCALE 3" = 1'-0"



SHAFT CENTERLINE PROFILE
OPPOSITE END SIMILAR



FRAME 8
WATERTIGHT BHD
LKG AWAY FROM MIDSHIPS
FR. 94 SIMILAR



OVERALL SHAFT ARRANGEMENT DETAIL
SCALE 3/4" = 1'-0"

ABS SHAFTING CALCULATION (4–3–2/5.1)
SHAFT DIAMETER

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

D (LINESHAFT) = 4.995" (REQUIRED)
D (LINESHAFT) = 7" (ACTUAL)

D (TAILSHAFT) = 6.25" (REQUIRED)
D (TAILSHAFT) = 7" (ACTUAL)

D = MIN. REQUIRED SHAFT DIAMETER
U = 100,000 PSI (AQUALOY 22 LINESHAFT)
U = 87,000 PSI (AQUALOY 22 TAILSHAFT)
K = 1.045 (LINESHAFT), 1.26 (TAILSHAFT)
H = 1273.97 HP
R = 350 RPM
C_S = 3.690
C_S = 23180

ABS SHAFTING CALCULATION (4–3–2/5.7)
KEYWAY SHEAR AREA SIZING

REDUCTION GEAR & LINE SHAFT COUPLING

$A = (D^2/5.1\tau_m)*(\tau_s/\tau_k)$

A (REQUIRED) = $7.757in^2$
A (ACTUAL) = $2x(9.25"x1.375"-2x0.518in^2) = 23.365in^2$

PROPELLER HUB

$A = (D^2/5.1\tau_m)*(\tau_s/\tau_k)$

A (REQUIRED) = $15.304in^2$
A (ACTUAL) = $2x(15.625"x1.5"-2x0.518in^2) = 46.643in^2$

A = MINIMUM RQUIRED SHEAR AREA OF KEY (in^2)
D = 5.457" (LINE SHAFT)
τ_m = 3.075" (LINE SHAFT)
D = 6.25" (TAIL SHAFT)
τ_m = 3.128" (TAIL SHAFT)
τ_s/τ_k = 1

ABS SHAFTING CALCULATION (4–3–2/5.19.1)
COUPLING BOLTS

$d_b = 0.65\sqrt{D^2(U+c)/NBU_b}$

db (REQUIRED) = 0.476"
db (ACTUAL) = 24mm (0.945")

d_b = MINIMUM REQUIRED BOLT DIAMETER
D = 4.995"
N = 16 BOLTS
U = 100,000 PSI
c = 23,180
B = 12,331"
U_b = 145,000 PSI

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/30/24	BKG

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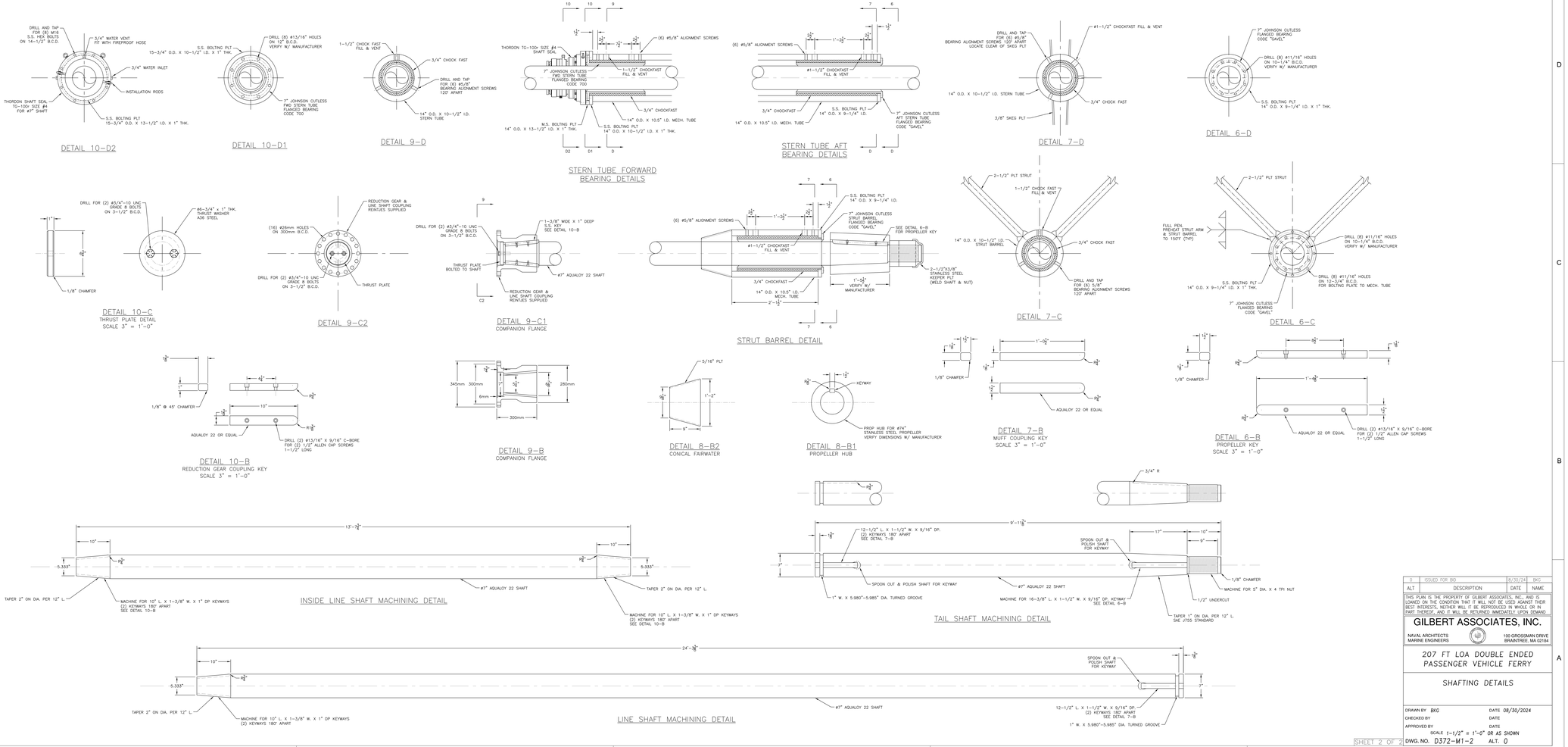
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA DOUBLE ENDED
PASSENGER/VEHICLE FERRY

SHAFTING ARRANGEMENT

DRAWN BY BKG DATE 08/30/24
CHECKED BY DATE
APPROVED BY DATE
SCALE 3/8" = 1'-0" OR AS NOTED
SHEET 1 OF 2 DWG. NO. D372-M1-1 ALT: 0



ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/30/24	BKG

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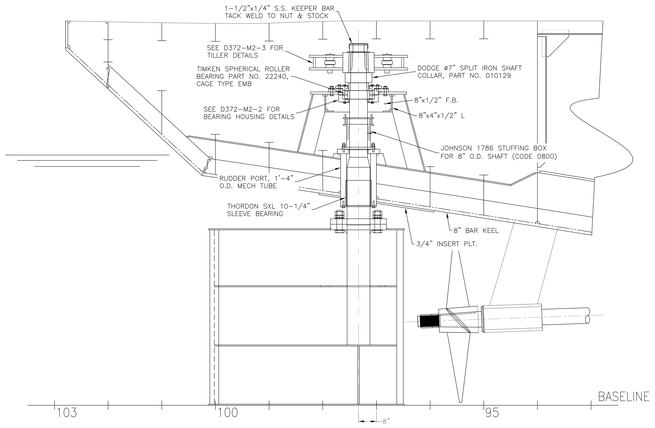
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA DOUBLE ENDED PASSENGER VEHICLE FERRY

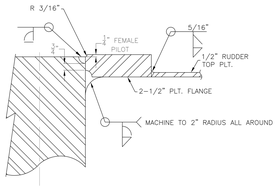
SHAFTING DETAILS

DRAWN BY BKG DATE 08/30/2024
CHECKED BY DATE
APPROVED BY DATE
SCALE 1-1/2" = 1'-0" OR AS SHOWN

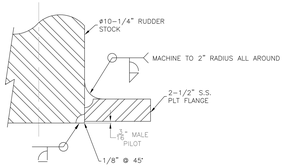
SHEET 2 OF 2 DWG. NO. D372-M1-2 ALT. 0



LINCOLNVILLE END RUDDER PROFILE
ISLEBORO END RUDDER SIMILAR



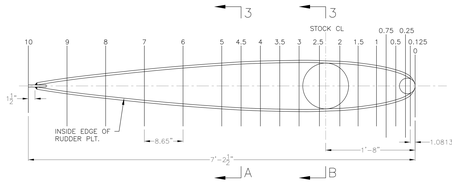
DETAIL 4-D:
LOWER PALM FLANGE WELDS
SCALE: 3" = 1'-0"



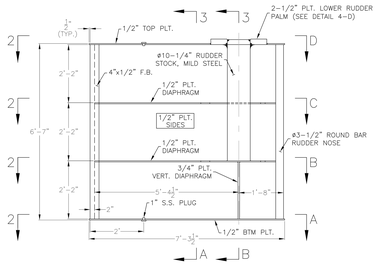
DETAIL 3-D:
UPPER PALM FLANGE WELDS
SCALE: 3" = 1'-0"

RUDDER OFFSETS – FROM RUDDER CENTERLINE TO INSIDE EDGE OF RUDDER PLT

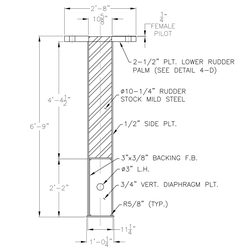
	STA. 0	STA. 0.125	STA. 0.25	STA. 0.5	STA. 0.75	STA. 1	STA. 1.5	STA. 2	STA. 2.5	STA. 3	STA. 3.5	STA. 4	STA. 4.5	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9	STA. 10
OFFSET FROM CL	0"	1.657"	2.287"	3.105"	3.671"	4.091"	4.673"	5.014"	5.192"	5.244"	5.182"	5.071"	4.893"	4.626"	3.991"	3.204"	2.292"	1.264"	0.25"*



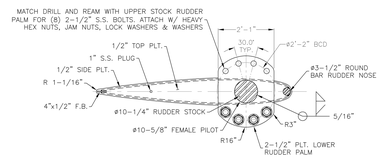
NACA RUDDER SECTION
SCALE: 1-1/2" = 1'



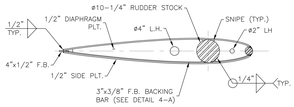
DETAIL 4-B:
RUDDER PROFILE



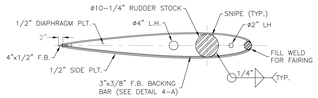
SECTION 3-B:
SECTION AT RUDDER STOCK CENTERLINE



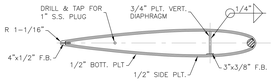
SECTION 2-D:
RUDDER TOP PLT.



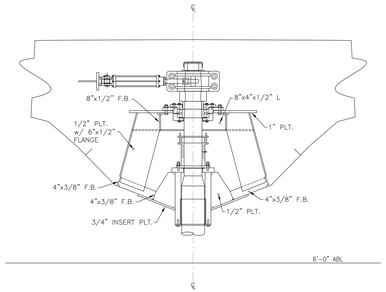
SECTION 2-C:
RUDDER DIAPHRAGM PLT.



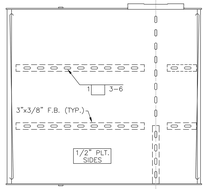
SECTION 2-B:
RUDDER DIAPHRAGM PLT.



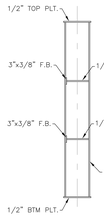
SECTION 2-A:
RUDDER BOTTOM PLT.



SECTION VIEW IN WAY OF BEARING SUPPORT
FR 97+8"
LOOKING FWD



DETAIL 4-A:
PLUG WELD DETAIL
NOTE: SLOTS TO BE FILL WELDED AND GROUND SMOOTH AFTER ASSEMBLY.



SECTION 3-A:
SECTION AT 45% OF RUDDER

RUDDER STOCK CALCULATIONS:

RUDDER PORT THICKNESS = 2.625"
UPPER LOCKING NUT: THREAD DIAMETER = 5"
UPPER LOCKING NUT: HEIGHT = 3"
UPPER LOCKING NUT: OD = 8"
UPPER STOCK: DIAMETER = 6.5"
LOWER STOCK: DIAMETER = 10.25"
RUDDER PALM: THICKNESS = 2.5"
RUDDER PALM: BOLT DIAMETER = 2.5"
RUDDER PALM: BOLTS = 8

BILL OF MATERIALS

ITEM NO.	QUANTITY	SIZE	DESCRIPTION	MATERIAL	MATERIAL SPECIFICATION
1	2	VARIES	UPPER RUDDER STOCK	AQUALOY 22	SEE SHEET 2 FOR DETAILS
2	4	1/2"	RUDDER SIDE PLT.	STEEL	ASTM A36
3	4	1/2"	RUDDER HORIZONTAL DIAPHRAGM PLT.	STEEL	ASTM A36
4	2	3/4"	RUDDER VERTICAL DIAPHRAGM PLT.	STEEL	ASTM A36
5	2	1/2"	RUDDER TOP PLT.	STEEL	ASTM A36
6	2	1/2"	RUDDER BOTTOM PLT.	STEEL	ASTM A36
7	2	4"x1/2"	RUDDER TRAILING EDGE FLAT BAR	STEEL	ASTM A36, 4"x1/2" FLAT BAR
8	2	3-1/2"ø	RUDDER NOSE	STEEL	3-1/2"ø ROUND BAR
9	4	1"	RUDDER PLUG	ST. STEEL	ASTM A316
10	AS NEEDED	3"x3/8"	FLAT BAR PLUG WELD BACKER PLT.	STEEL	ASTM A36, 3"x3/8" FLAT BAR
11	2	10.25"ø	LOWER RUDDER STOCK	MILD STEEL	SEE SHEET 1 FOR DETAILS
12	2	2-1/2"	LOWER RUDDER PALM	STEEL	ASTM A36, SEE DETAIL 4-D
13	2	2-1/2"	UPPER RUDDER PALM	ST. STEEL	ASTM A316, SEE DETAIL 3-D
14	16	2-1/2"	PALM BOLTS	ST. STEEL	ASTM A316
15	32	2-1/2"	PALM NUTS & JAM NUTS	ST. STEEL	ASTM A25 (16) HEAVY HEX NUT & (16) JAM NUT
16	48	2-1/2"	PALM WASHERS	ST. STEEL	ASTM A316 (32) WASHERS & (16) LOCK WASHERS
17	2	16" O.D.	RUDDER PORT	STEEL	ASTM A519 MECH. TUBE, 16" O.D. x 2-5/8" THICK WALL x 2' LENGTH, SEE DETAIL 12-B
18	2	2"	RUDDER PORT UPPER FLANGE	STEEL	ASTM A36, 19" O.D. x 8-1/2" I.D. x 2" THICK (SEE DETAIL 12-B)
19	2	1/2"	RUDDER PORT LOWER RETAINING PLT.	ST. STEEL	ASTM A36, SEE DETAIL 12-A
20	16	5/8"ø	LOWER RETAINING PLT. SCREWS	ST. STEEL	5/8"x2-1/2" A316 S.S. HEX HEAD CAP SCREWS
21	2	10.25"	NECK BEARING	ELASTOMER	THORDON SXL BEARING, 11.426" HOUSING DIAMETER
22	2	8"	STUFFING BOX	–	JOHNSON 1786 FOR 8" O.D. SHAFT (CODE 0800)
23	8	13/16"ø	STUFFING BOX THREADED STUDS & NUTS	ST. STEEL	13/16"x4" A316 S.S. DOUBLE ENDED STUD, JAM NUT, HEX NUT (SEE DETAIL 9-D)
24	2	7.874"ø	CARRIER BEARING	–	TIMKEN SPHERICAL ROLLER BEARING #2240EMB
25	2	–	CARRIER BEARING UPPER GREASE SEAL RETAINER PLT.	STEEL	ASTM A36, SEE SHEET 2 FOR DETAILS
26	2	–	CARRIER BEARING LOWER GREASE SEAL RETAINER PLT.	STEEL	ASTM A36, SEE SHEET 2 FOR DETAILS
27	2	–	CARRIER BEARING HOUSING	STEEL	ASTM A36, SEE SHEET 2 FOR DETAILS
28	2	8"ø SHAFT	CARRIER BEARING LOWER GREASE SEAL	MILL-RIGHT ES	GARLOCK KLOZURE SPLIT OIL SEAL, MODEL 23, 8"ø SHAFT, 9"ø BORE
29	2	9"ø SHAFT	CARRIER BEARING UPPER GREASE SEAL	MILL-RIGHT ES	GARLOCK KLOZURE SPLIT OIL SEAL, MODEL 23, 9"ø SHAFT, 10"ø BORE
30	2	–	CARRIER BEARING THRUST COLLAR	STEEL	ASTM A36, SEE DETAIL 10-D
31	2	7"ø	DODGE SPLIT IRON SHAFT COLLAR	IRON	DODGE SPLIT IRON SHAFT COLLAR, PT NO. 010129
32	4	–	TILLER HUB KEYS	STEEL	ABS GR. 2 KEYSTOCK OR EQUIV., SEE SHEET 2, DETAIL 8-D
33	2	3/8"	UPPER RUDDER STOCK WASHER	STEEL	ASTM A36, SEE DETAIL 8-A
34	2	5" I.D.	UPPER RUDDER STOCK LOCK NUT	ST. STEEL	ASTM A325 HEAVY HEX NUT, 4 TPI, SEE DETAIL 8-B
35	2	1/4"	UPPER RUDDER STOCK SECURING FB	ST. STEEL	1-1/2"x1/4" FLAT BAR

GENERAL NOTES:

1. THIS DRAWING SHALL BE READ TOGETHER WITH D372-M2-2 & D372-M2-3
2. ALL WELDING MATERIALS AND PROCEDURES SHALL BE ACCORDING TO ABS RULES AND TO SATISFACTION OF COAST GUARD OCMI.
3. RUDDERS SHALL BE WATERTIGHT AND TESTED TO SATISFACTION OF COAST GUARD OCMI.
4. EACH RUDDER SHALL BE FITTED WITH THREADED PLUGS TOP AND BOTTOM FOR DRAINAGE.
5. INTERIOR OF RUDDERS SHALL BE COATED WITH SUITABLE RUST INHIBITOR AND PROPERLY DRAINED.
6. EACH RUDDER SHALL BE FITTED WITH TWO STREAMLINED ANODES EACH 9"x5"x1" APPROX., 18" FWD OF TRAILING EDGE.
7. STEERING APPARATUS SHALL MEET THE REQUIREMENTS OF 46 CFR 58.25 AND THE APPLICABLE PORTIONS OF SUBCHAPTERS F AND J OF 46 CFR.
8. VESSEL HAS SIMILAR ASSEMBLY AT EACH END OF THE VESSEL.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/18/24	MR

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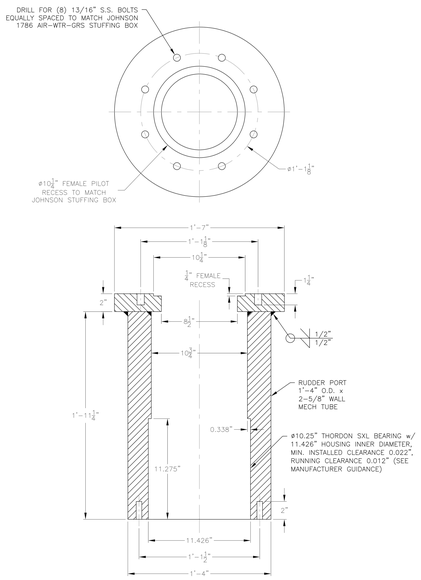
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT PASSENGER/VEHICLE FERRY

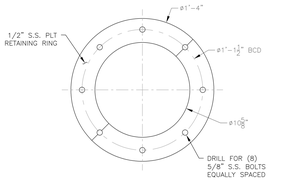
RUDDER ARRANGEMENT & DETAILS

DRAWN BY MR DATE 4/12/2024
CHECKED BY KVC DATE 8/25/24
APPROVED BY DATE
SCALE 3/4" = 1'-0" OR AS NOTED

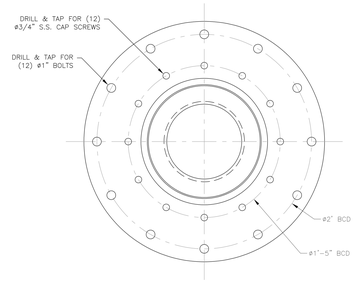
SHEET 1 OF 3 DWG. NO. D372-M2-1 ALT. 0

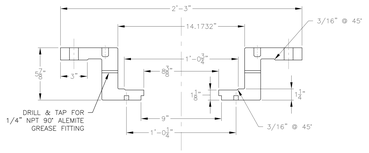


DETAIL 12-B:
RUDDER PORT
SCALE: 3" = 1'-0"



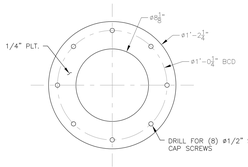
DETAIL 12-A:
RUDDER PORT SPLIT RETAINING RING
SCALE: 3" = 1'-0"



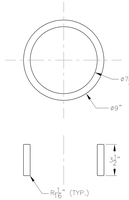


DETAIL 11-B:
RUDDER CARRIER BEARING
BEARING HOUSING
SCALE: 3" = 1'-0"

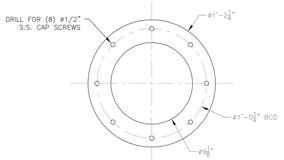
*NOTE:
VERIFY MACHINING TOLERANCES OF RUDDER STOCK & CARRIER BEARING HOUSING w/ MANUFACTURER FOR APPROPRIATE FIT



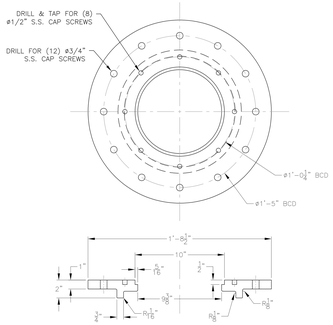
DETAIL 11-A:
RUDDER CARRIER BEARING
LOWER GREASE SEAL
RETAINER PLATE
SCALE: 3" = 1'-0"



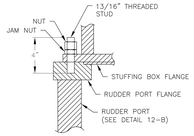
DETAIL 10-D:
CARRIER BEARING THRUST COLLAR
SCALE: 3" = 1'-0"



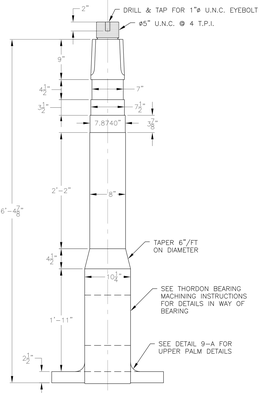
DETAIL 10-C:
RUDDER CARRIER BEARING
UPPER GREASE SEAL
RETAINER PLATE
SCALE: 3" = 1'-0"



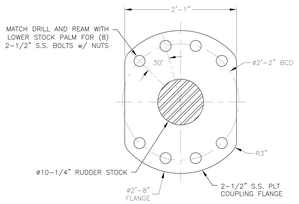
DETAIL 10-A:
RUDDER CARRIER BEARING
RETAINER PLATE
SCALE: 3" = 1'-0"



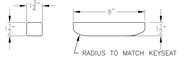
DETAIL 9-D:
STUFFING BOX ATTACHMENT DETAIL
SCALE: 3" = 1'-0"



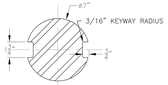
DETAIL 9-B:
UPPER RUDDER STOCK



DETAIL 9-A:
UPPER PALM

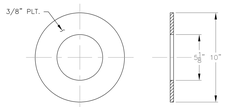


DETAIL 8-D:
TILLER HUB KEYS
SCALE: 3" = 1'-0"

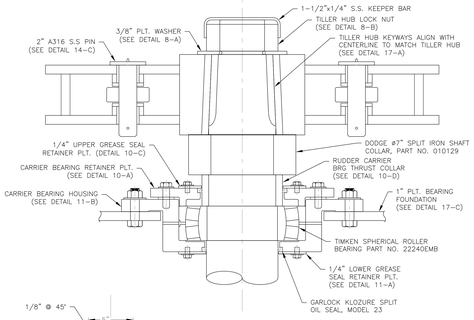


SECTION 8-C:
UPPER RUDDER STOCK
SCALE: 3" = 1'-0"

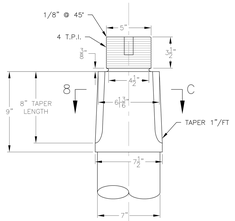
DETAIL 8-B:
TILLER HUB LOCK NUT
SCALE: 3" = 1'-0"



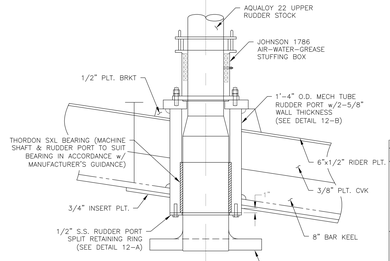
DETAIL 8-A:
LOCK NUT WASHER
SCALE: 3" = 1'-0"



UPPER STOCK ARRANGEMENT
SECTION VIEW
SCALE: 3" = 1'-0"



DETAIL 7-B:
UPPER RUDDER STOCK
TAPER AND THREAD
SCALE: 3" = 1'-0"



DETAIL 7-A:
RUDDER PORT ASSEMBLY
SECTION VIEW

O	ISSUED FOR BID	8/18/24	MR
ALT	DESCRIPTION	DATE	NAME

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GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

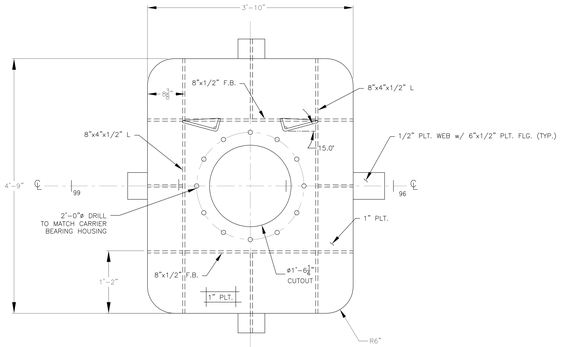
207 FT PASSENGER/VEHICLE FERRY

RUDDER ARRANGEMENT & DETAILS

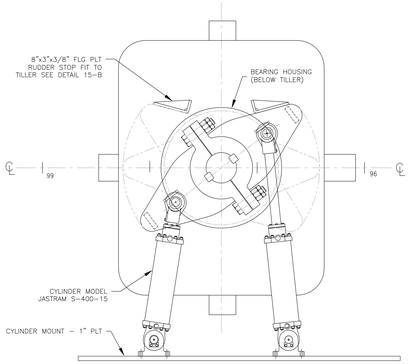
DRAWN BY MR DATE 4/12/2024
CHECKED BY KVC DATE 8/25/24
APPROVED BY DATE
SCALE 1 1/2" = 1'-0" OR AS NOTED
DWG. NO. D372-M2-2 ALT. 0

THIS DRAWING SHALL BE READ TOGETHER WITH D372-M2-1 & D372-M2-3

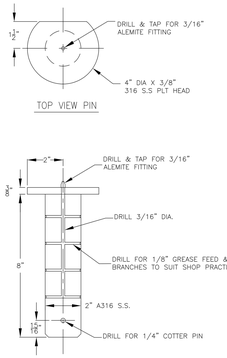
SHEET 2 OF 3



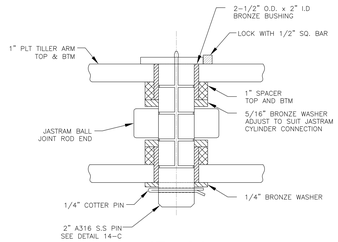
DETAIL 17-C
BEARING FOUNDATION PLATE
PLAN VIEW - TOP LKG DOWN



DETAIL 15-C
TILLER RANGE OF MOTION



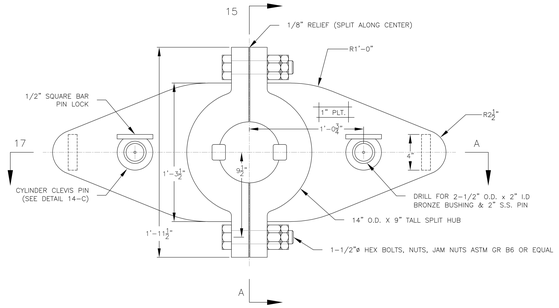
DETAIL 14-C
CYLINDER CLEVIS PIN (2 PER END)
HALF FULL SCALE



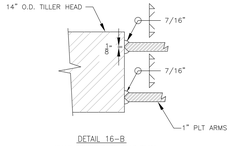
DETAIL 13-C
CYLINDER PIN ASSEMBLY

GENERAL NOTES:

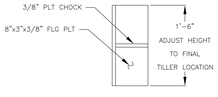
1. THIS DRAWING SHALL BE READ TOGETHER WITH D372-M2-1 & D372-M2-2
2. STEERING APPARATUS SHALL MEET THE REQUIREMENTS OF 46 CFR 58.25 AND THE APPLICABLE PORTIONS OF SUBCHAPTERS F AND J OF 46 CFR.
3. VESSEL HAS SIMILAR ASSEMBLY AT EACH END OF THE VESSEL.
4. MAX. SWING OF STEERING GEAR AT 2 x 37°. SHIPYARD TO PROVIDE EXTERNAL STOPS AT 2 x 37°. EXTERNAL STOPS TO WITHSTAND THE MAX. AXIAL LOAD IN A SINGLE CYLINDER OR TORSIONAL SHEAR LOAD OF RUDDER STOCK, WHICHEVER IS HIGHER. NORMAL WORKING ANGLE IS 2 x 35°.
5. ROD END SIDE EMBOSSED WITH WORD "UP" MUST FACE UPWARDS.
6. 1/8" NPT GREASE NIPPLE PROVIDED FOR PERIODIC LUBRICATION OF MOUNTING PAD.
7. #5/8 MOUNTING BOLTS, SAE GRADE 5 OR BETTER TO BE SUPPLIED BY SHIPYARD.



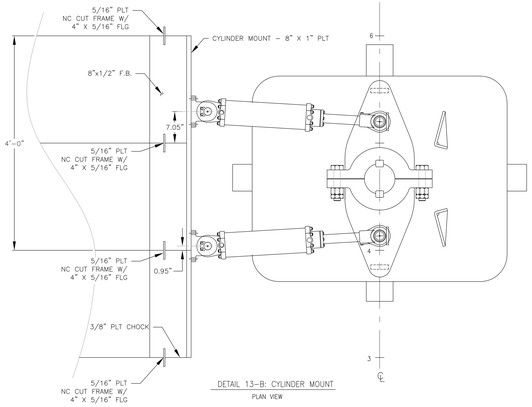
DETAIL 17-B: TILLER
PLAN VIEW TOP LOOKING DOWN
SCALE 3" = 1'-0"



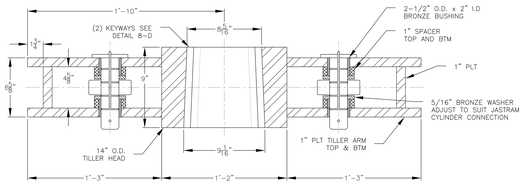
DETAIL 16-B
TILLER CONSTRUCTION WELD DETAIL
HALF FULL SCALE



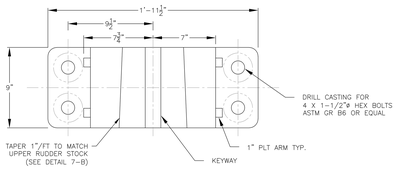
DETAIL 15-B
RUDDER STOP (TYP. 2 PLACES)



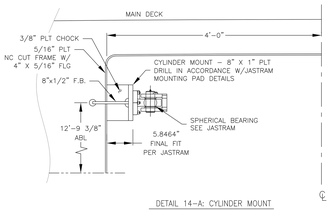
DETAIL 13-B: CYLINDER MOUNT
PLAN VIEW



SECTION 17-A
TILLER CROSS SECTION THROUGH CENTER
SCALE 3" = 1'-0"



SECTION 15-A
TILLER CROSS SECTION BOLTING FLANGE
SCALE 3" = 1'-0"



DETAIL 14-A: CYLINDER MOUNT
SECTION VIEW AT FR 5

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/18/24	MR

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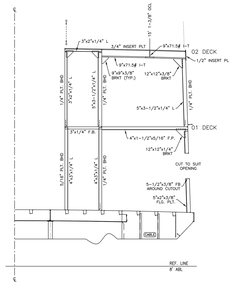
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT PASSENGER/VEHICLE FERRY

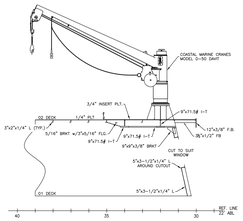
RUDDER ARRANGEMENT & DETAILS

DRAWN BY MR DATE 4/12/2024
CHECKED BY JG DATE 8/24
APPROVED BY DATE
SCALE 1 1/2" = 1'-0" OR AS NOTED

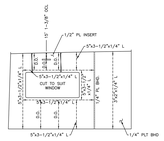
SHEET 3 OF 3
DWG. NO. D372-M2-3 ALT. 0



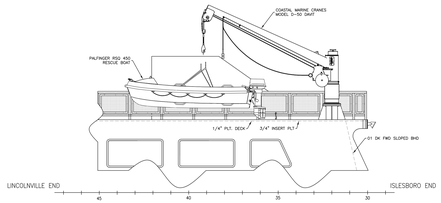
FRAME 34
AFT SIDE, LOOKING FWD



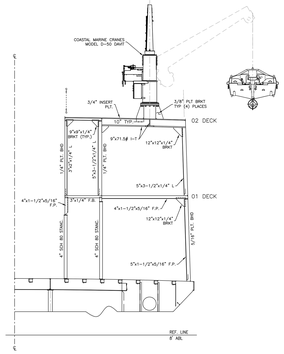
SECTION 1-A
AT 15' 1-3/8" OFF C.L.



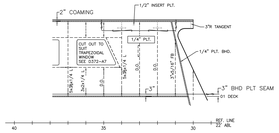
01 DK, FWD SLOPED BHD
FWD SIDE LOOKING AFT



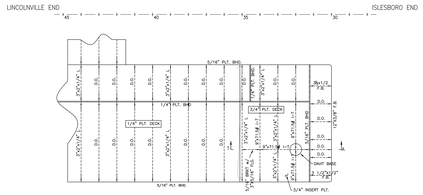
RESCUE BOAT PROFILE
02 DECK STBD LOOKING TO PORT



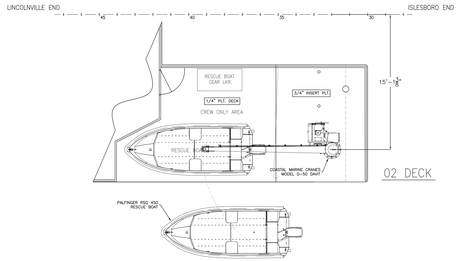
FRAME 32
AFT SIDE, LOOKING FWD



STBD SIDE BULKHEAD
LOOKING INBD



STBD 02 DECK SCANTLINGS



02 DECK

RESCUE BOAT ARRANGEMENT
STBD 02 DECK

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/14/24	MR

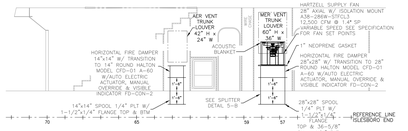
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT. LOA FERRY VESSEL

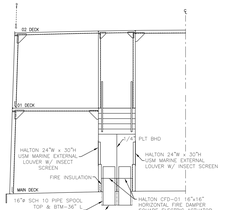
RESCUE BOAT DAVIT
ARRANGEMENT & STRUCTURE

DRAWN BY MR DATE 2/16/2024
CHECKED BY JWG DATE 8/10/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-M5 ALT. 0

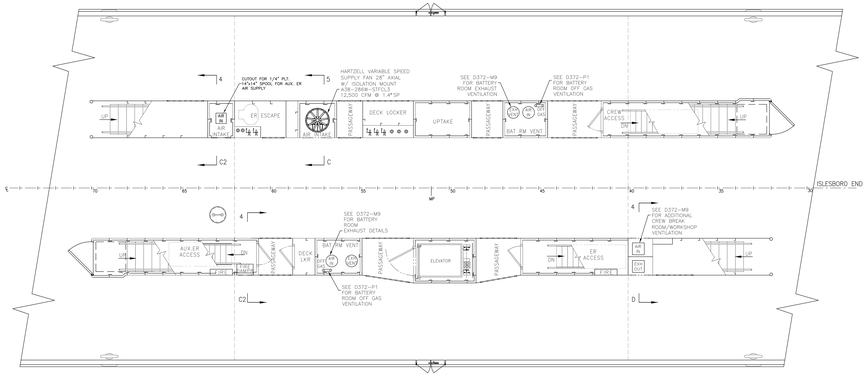
SHEET 1 OF 1



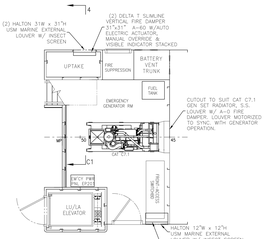
DETAIL 5-D
AUX. ENGINE ROOM & ENGINE ROOM SUPPLY
INBOARD ISLAND BHD PORT



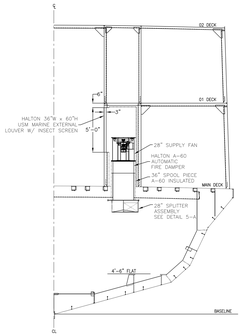
SECTION 4-D
CREW BREAK ROOM SUPPLY & EXHAUST



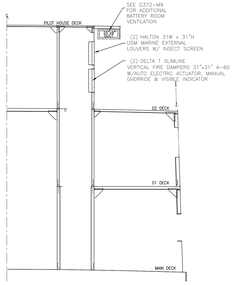
MAIN DECK



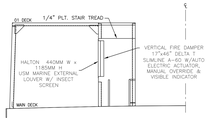
EMERGENCY GENERATOR VENTILATION
PLAN VIEW
02 DECK



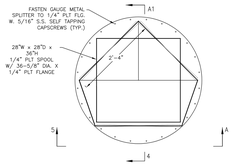
SECTION 5-C
ENGINE ROOM SUPPLY



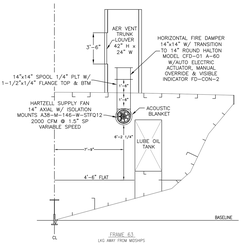
SECTION 4-C1
ENGINE ROOM EXHAUST
FR 50

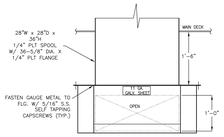


SECTION 4-C2
AUXILIARY ENGINE ROOM EXHAUST
FR 63

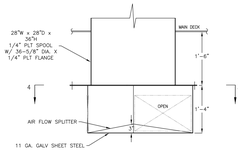


SECTION 5-B
ER AIR SPLITTER FOUNDATION
SCALE 1 1/2"=1'-0"

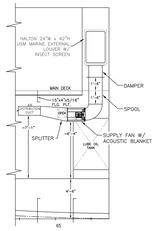




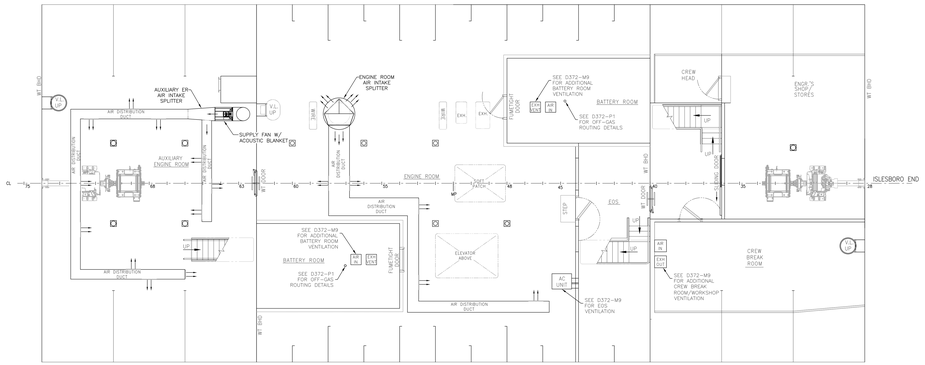
SECTION 5-A
SCALE 1 1/2"=1'-0"



SECTION 4-A1
SCALE 1 1/2"=1'-0"



AUXILIARY ER AIR SUPPLY



HOLD

0	ISSUED FOR BID	8/10/24	KVC
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

VENTILATION PLAN & DETAILS
ENGINE RM, AUX ER, & CREW SPACE

DRAWN BY KVC — DATE 02/26/24
CHECKED BY JWG — DATE 07/29/2024
APPROVED BY — DATE
SCALE 1/4" = 1'-0" OR AS NOTED
DWG. NO. D372-M7 — ALT. 0

SHEET 1 OF 1

A/C LIST

ITEM #	SERVED BY	LOCATION	MANUFACTURER	MODEL #	NOTES
AC-1	OCU-1 (MAIN)	PORT BATTERY RM	TRANE/MITSUBISHI	PLFY-P48NEMU	–
AC-2	OCU-2 (EMERG)	PORT BATTERY RM	TRANE/MITSUBISHI	PLFY-P48NEMU	–
AC-3	OCU-1 (MAIN)	PORT BATTERY RM	TRANE/MITSUBISHI	PKFY-P12NLMU	–
AC-4	OCU-2 (EMERG)	PORT BATTERY RM	TRANE/MITSUBISHI	PKFY-P12NLMU	–
AC-5	OCU-1 (MAIN)	STBD BATTERY RM	TRANE/MITSUBISHI	PLFY-P48NEMU	–
AC-6	OCU-2 (EMERG)	STBD BATTERY RM	TRANE/MITSUBISHI	PLFY-P48NEMU	–
AC-7	OCU-1 (MAIN)	STBD BATTERY RM	TRANE/MITSUBISHI	PKFY-P12NLMU	–
AC-8	OCU-2 (EMERG)	STBD BATTERY RM	TRANE/MITSUBISHI	PKFY-P12NLMU	–
AC-9	–	EOS	AMERICOOL	WPC-3000	GEN NOTE 18
AC-10	–	PILOT HOUSE	COLEMAN MACH	48203-0666	13,500 BTUH
AC-11	–	PILOT HOUSE	COLEMAN MACH	48203-0666	13,500 BTUH
AC-12	–	PILOT HOUSE	COLEMAN MACH	48203-0666	13,500 BTUH

OCU LIST

ITEM #	SERVES	LOCATION	MANUFACTURER	MODEL	NOTES
OCU-1	BATTERY RM A/C UNITS (MAIN)	O2 LEVEL, WEATHER	TRANE/MITSUBISHI	PUHY-EP120TNU-A1	GEN NOTE 19
OCU-2	BATTERY RM A/C UNITS (EMERGENCY)	O2 LEVEL, WEATHER	TRANE/MITSUBISHI	PUHY-EP120TNU-A1	GEN NOTE 19

FIRE DAMPER LIST

ITEM #	SERVES	LOCATION	MANUFACTURER	MODEL	DIMENSIONS
FD-1	ENGR'S SHOP/ STORES (SUPPLY)	ENGR'S SHOP/ STORES	HALTON	FDL-EL	15X10
FD-2	ENGR'S SHOP/ STORES (EXHAUST)	ENGR'S SHOP/ STORES	HALTON	FDL-EL	15X10
FD-3	PORT BATTERY RM (SUPPLY)	TRUNK SPACE	HALTON	FDL-EL	14X14
FD-4	PORT BATTERY RM (EXHAUST)	TRUNK SPACE	HALTON	FDL-EL	14X14
FD-5	STBD BATTERY RM (SUPPLY)	TRUNK SPACE	HALTON	FDL-EL	14X14
FD-6	STBD BATTERY RM (EXHAUST)	TRUNK SPACE	HALTON	FDL-EL	14X14
FD-7	EOS A/C	MAIN ENGINE ROOM	HALTON	FDL-EL	6"ø
FD-8	HOLD SUPPLY	TRUNK SPACE	HALTON	FDL-EL	16X16
FD-9	HOLD EXHAUST	TRUNK SPACE	HALTON	FDL-EL	16X16

AIR TERMINAL LIST

DESCRIPTION	CFM	SIZE	QTY	MANUFACTURER	MODEL
PORT PASSENGER AREA SUPPLY DIFFUSERS	205	24X24 6"ø NECK	4	TUTTLE & BAILEY	1300
PORT PASSENGER AREA EXHAUST DIFFUSER	740	24X24 10"ø NECK	1	TUTTLE & BAILEY	PR
PORT PASSENGER AREA HEADS EXHAUST DIFFUSERS	40	12X12 6"ø NECK	2	TUTTLE & BAILEY	PR
STBD PASSENGER AREA SUPPLY DIFFUSERS	175	24X24 6"ø NECK	4	TUTTLE & BAILEY	1300
STBD PASSENGER AREA EXHAUST DIFFUSER	625	24X24 10"ø NECK	1	TUTTLE & BAILEY	PR
STBD PASSENGER AREA HEADS EXHAUST DIFFUSERS	75	12X12 6"ø NECK	2	TUTTLE & BAILEY	PR
CREW SPACE SUPPLY DIFFUSER	360	24X24 8"ø NECK	1	TUTTLE & BAILEY	1300
CREW SPACE EXHAUST DIFFUSER	360	24X24 8"ø NECK	1	TUTTLE & BAILEY	PR
CREW HEAD EXHAUST DIFFUSER	65	12X12 6"ø NECK	1	TUTTLE & BAILEY	PR
ENGINEER'S SHOP/STORES SUPPLY GRILLES	480	18X6	3	TUTTLE & BAILEY	T50
ENGINEER'S SHOP/STORES EXHAUST GRILLES	685	22X6	2	TUTTLE & BAILEY	T70
EOS SUPPLY TERMINAL	405	6"ø	1	JUNIPER	JE-102A
BATTERY ROOM SUPPLY TERMINALS	855	10"ø	4	JUNIPER	JE-102A
BATTERY ROOM EXHAUST GRILLES	855	12X10	4	TUTTLE & BAILEY	T70

DUCT MATERIAL SCHEDULE

ITEM #	QTY REQ	DESCRIPTION	MTL SPEC	MTL REQD	UNIT WT LBS	REMARKS
1	AR	MATL FOR VERTICAL EXPOSED DUCTS, 16 USSG	ASTM A525	GALV STL	2.5	
2	AR	MATL FOR HORIZ OR CONCEALED VERT DUCTS GREATER THAN 30 INCHES, 16 USSG	ASTM A525	GALV STL	2.5	
3	AR	MATL FOR HORIZ OR CONCEALED VERTICAL DUCTS 18.5 TO 30 INCHES, 18 USSG	ASTM A525	GALV STL	2.0	
4	AR	MATL FOR HORIZ OR CONCEALED VERTICAL DUCTS 12.5 TO 18 INCHES, 20 USSG	ASTM A525	GALV STL	1.5	
5	AR	MATL FOR HORIZ OR CONCEALED VERTICAL DUCTS LESS THAN 12.5 INCHES, 22 USSG	ASTM A525	GALV STL	1.25	
7	8 FT	SPIRAL LOCKSEAM PIPE, 6" DIA. GALV. STEEL, 16 GA.	–	GALV STL	4.50	
8	8 FT	SPIRAL LOCKSEAM PIPE, 8" DIA. GALV. STEEL, 16 GA.	–	GALV STL	6.30	
9	8 FT	SPIRAL LOCKSEAM PIPE, 9" DIA. GALV. STEEL, 16 GA.	–	GALV STL	7.20	
10	8 FT	SPIRAL LOCKSEAM PIPE, 10" DIA. GALV. STEEL, 16 GA.	–	GALV STL	7.90	

FAN LIST

ITEM #	LOCATION	SERVES	AIRFLOW (CFM)	MANUFACTURER	MODEL #	REMARKS
E-1	O2 LEVEL HEAD	O2 LEVEL HEAD	80	NUTONE	LPNB0	–
E-2	PORT PASSENGER AREA	PORT PASSENGER AREA	740	COOLAIR	VA85H35	–
E-3	PORT PASSENGER AREA	PORT HEADS	80	COOLAIR	VA6D34	–
E-4	STBD PASSENGER AREA	STBD PASSENGER AREA	625	COOLAIR	VA85H35	–
E-5	STBD PASSENGER AREA	STBD HEAD	75	COOLAIR	VA6D34	–
E-6	CREW BREAK RM	ENGR'S SHOP/STORES	1440	COOLAIR	VA10H34	GEN NOTE 17
E-7	CREW BREAK RM	CREW BREAK RM	360	COOLAIR	VA7D32	–
E-8	TRUNK SPACE	PORT BATTERY ROOM	1705	COOLAIR	VAB14K	GEN NOTE 17
E-9	TRUNK SPACE	STBD BATTERY ROOM	1705	COOLAIR	VAB14K	GEN NOTE 17
S-1	PORT PASSENGER AREA	PORT PASSENGER AREA	820	COOLAIR	VA9H35	–
S-2	STBD PASSENGER AREA	STBD PASSENGER AREA	700	COOLAIR	VA85H35	–
S-3	CREW BREAK RM	ENGR'S SHOP/STORES	1440	COOLAIR	VA10H34	GEN NOTE 17
S-4	CREW BREAK RM	CREW BREAK RM	360	COOLAIR	VA7D32	–
S-5	TRUNK SPACE	PORT BATTERY RM	1705	COOLAIR	VAB14K	GEN NOTE 17
S-6	TRUNK SPACE	PORT BATTERY RM	1705	COOLAIR	VAB14K	GEN NOTE 17
S-7	TRUNK SPACE	STBD BATTERY RM	1705	COOLAIR	VAB14K	GEN NOTE 17
S-8	TRUNK SPACE	STBD BATTERY RM	1705	COOLAIR	VAB14K	GEN NOTE 17

PHR LIST

ITEM #	SERVES	LOCATION	MANUFACTURER	MODEL
PHR-1	PORT PASSENGER AREA	PORT PASSENGER AREA	MULTITHERM	104/58B-06X18-10-1WER-A
PHR-2	STBD PASSENGER AREA	STBD PASSENGER AREA	MULTITHERM	104/58B-06X18-10-1WER-A
PHR-3	ENGR'S SHOP/STORES	CREW BREAK RM	MULTITHERM	108/58B-09X18-10-1WER-A
PHR-4	CREW BREAK RM	CREW BREAK RM	MULTITHERM	105/58B-09X9-10-1WER-A

FILTER HOUSING LIST

ITEM #	SERVES	LOCATION	MANUFACTURER	MODEL	FILTER SIZE
FH-1	PORT BATTERY RM	PORT BATTERY RM	AIR BOX FILTER	AIR BOX JUNIOR	12X12
FH-2	PORT BATTERY RM	PORT BATTERY RM	AIR BOX FILTER	AIR BOX JUNIOR	12X12
FH-3	STBD BATTERY RM	STBD BATTERY RM	AIR BOX FILTER	AIR BOX JUNIOR	12X12
FH-4	STBD BATTERY RM	STBD BATTERY RM	AIR BOX FILTER	AIR BOX JUNIOR	12X12

GENERAL NOTES

1. THIS DRAWING WAS DEVELOPED FOR THE INSTALLATION OF NEW HEATING AND VENTILATION FOR THE PASSENGER AREAS ON THE ISLESBORO FERRY
2. THIS DRAWING IS A SCHEMATIC ONLY AND NOT INTENDED TO LOCATE AND DUCTWORK, FITTINGS OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED.
3. TEMPLATE WORK FOR VESSEL AND EQUIPMENT.
4. THIS DRAWING IS BASED ON THE REQUIREMENTS, RULES AND REGULATIONS OF THE UNITED STATES COAST GUARD (U.S.C.G.) CODE OF FEDERAL REGULATIONS, 46 CFR WHOSE PROVISIONS SHALL PREVAIL WHERE THIS DRAWING IS SILENT.
5. MOUNTING HARDWARE NOT ORDERED ON THIS DRAWING SHALL BE SUPPLIED BY THE INSTALLING ACTIVITY AND SHALL INCLUDE SELF LOCKING NUTS. ALL NUTS FOR DISSIMILAR METALS SHALL BE NYLOCK STYLE.
6. ALL EQUIPMENT AND FOUNDATIONS SHALL BE INSTALLED PARALLEL TO AND/OR PERPENDICULAR TO THE HORIZONTAL BASE PLAN OF THE VESSEL.
7. VENTILATION DUCTWORK SHALL BE SUPPORTED BY HANGERS. CONTRACTOR TO SUPPLY ALL HANGERS, LINERS AND FASTENERS. MATERIAL SHALL BE APPROVED BY OWNERS REPRESENTATIVE. HANGERS SHALL BE MOUNTED TO THE STRUCTURAL STIFFENERS AND NOT TO THE PLANE SURFACE OF THE OVERHEAD OR BULKHEADS.
8. FINAL LOCATIONS OF ALL DUCTWORK AND EQUIPMENT SHALL BE DETERMINED ON THE FERRY TO BEST SUIT INSTALLATION.
9. ALL DUCTWORK AND EQUIPMENT SHALL BE THERMALLY INSULATED USING NON COMBUSTIBLE MATERIAL AND UNITED STATES COAST GUARD APPROVED.
10. ALL HVAC EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING AND BALANCING OF THE HVAC SYSTEM.
12. ALL HVAC EQUIPMENT AND SYSTEMS SHALL HAVE INDENTIFYING MARKS AND LABELS.
13. GRIND SMOOTH ALL SHARP CORNERS AND ROUGH EDGES LIABLE TO CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.
14. VENTILATION EQUIPMENT AND DUCTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE, ASTM 1005, SNAME, & SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION).
15. TEST AND BALANCE THE VENTILATION SYSTEMS TO DELIVER THE QUANTITY OF AIR TO EACH COMPARTMENT TO BE NOT LESS THAN 90% NOR MORE THAN 110% OF THE DESIGN QUANTITY.
16. MEANS SHALL BE PROVIDED TO READILY INSPECT AND CLEAN THE INLET AND OUTLET SIDES OF DUCT HEATERS AND COOLING COILS, THE INLET SIDE OF VANED TURNS, SPLITTERS, AND THE IMPELLER END OF AXIAL FANS.
17. FANS SERVING THE ENGR'S SHOP/STORES AND BATTERY ROOMS ARE TO BE EXPLOSION PROOF WITH SPARK-RESISTANT MOTORS. BATTERY ROOM FANS ARE TO BE BELT-DRIVEN WITH THE MOTOR LOCATED OUTSIDE OF THE AIRSTREAM.
18. AC-9 SHALL BE ORDERED WITH 115V INTERNAL CONDENSATE PUMP KIT, PART NO. WPCPUMP-115B, AND 20 FT. LONG 5/8" ID DISCHARGE TUBING. THE EOS A/C SYSTEM SHALL CONSIST OF THE A/C UNIT AND THERMOSTAT.
19. OCU-1 AND OCU-2 SHALL BE INSTALLED WITH AN AIR OUTLET GUIDE PER MANUFACTURER GUIDANCE IN THE INSTALLATION MANUAL.

NO.	TITLE	DRAWING NO.
3	ELECTRICAL A/C ONE LINE DIAGRAM	D-372-E1
2	HVAC BOILER PIPING SYSTEM INSTALLATION	D-372-P15
1	A/C PIPING AND COND DRAIN SYSTEM INSTL	D-372-M11

SHEET 1 OF 4 — REFERENCES

		DATE
PREPARED	E. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2338
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

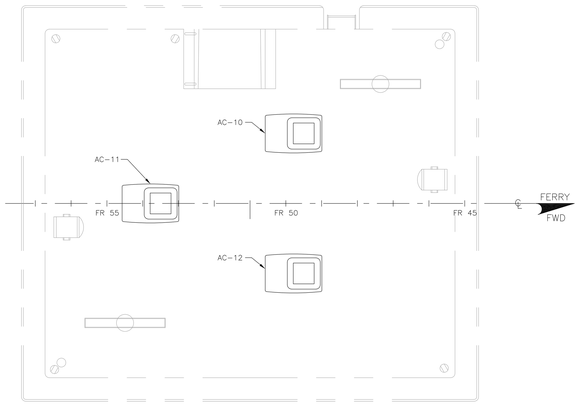
ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	6/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

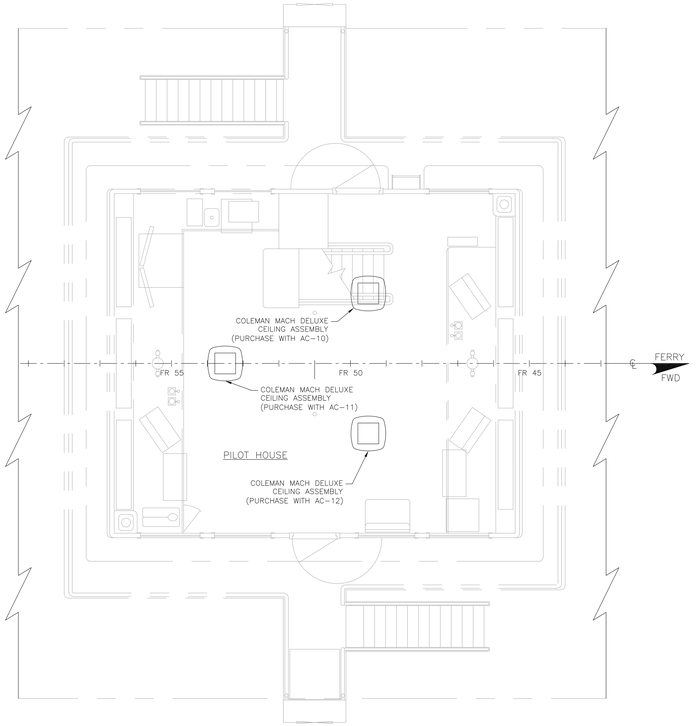
207 FT LOA FERRY VESSEL

HVAC SYSTEM INSTALLATION

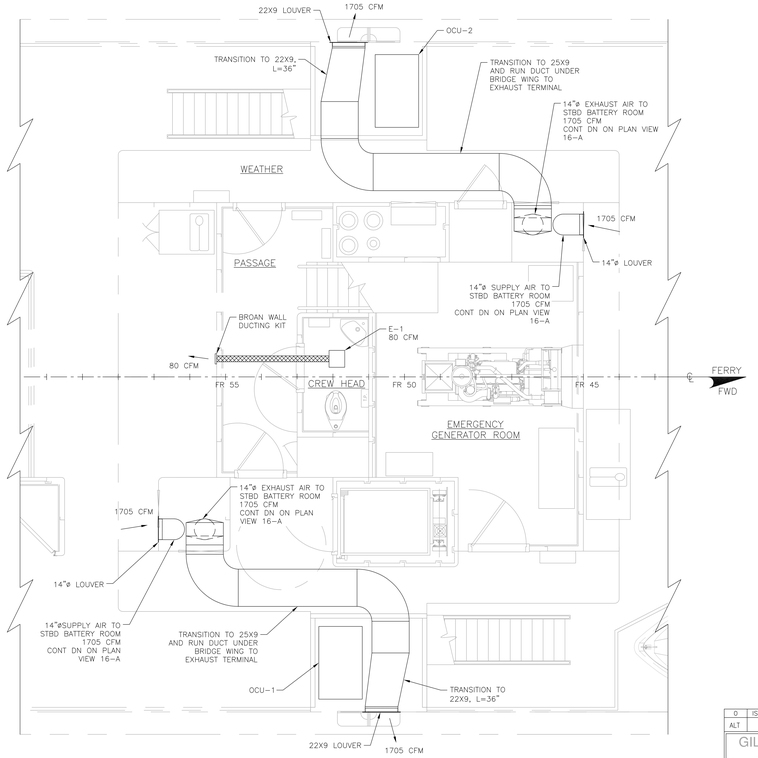
DRAWN BY AMR — DATE 6/29/24
CHECKED BY MSCORP — DATE
APPROVED BY — DATE
SCALE AS SHOWN
DWG. NO. D372-M9-1 — ALT. 0



PLAN VIEW 11-A
PILOT HOUSE TOP
SCALE: 1/2"=1'-0"



PLAN VIEW 10-A
PILOT HOUSE
SCALE: 1/2"=1'-0"



PLAN VIEW 8-A
02 LEVEL
SCALE: 1/2"=1'-0"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

HVAC SYSTEM
INSTALLATION

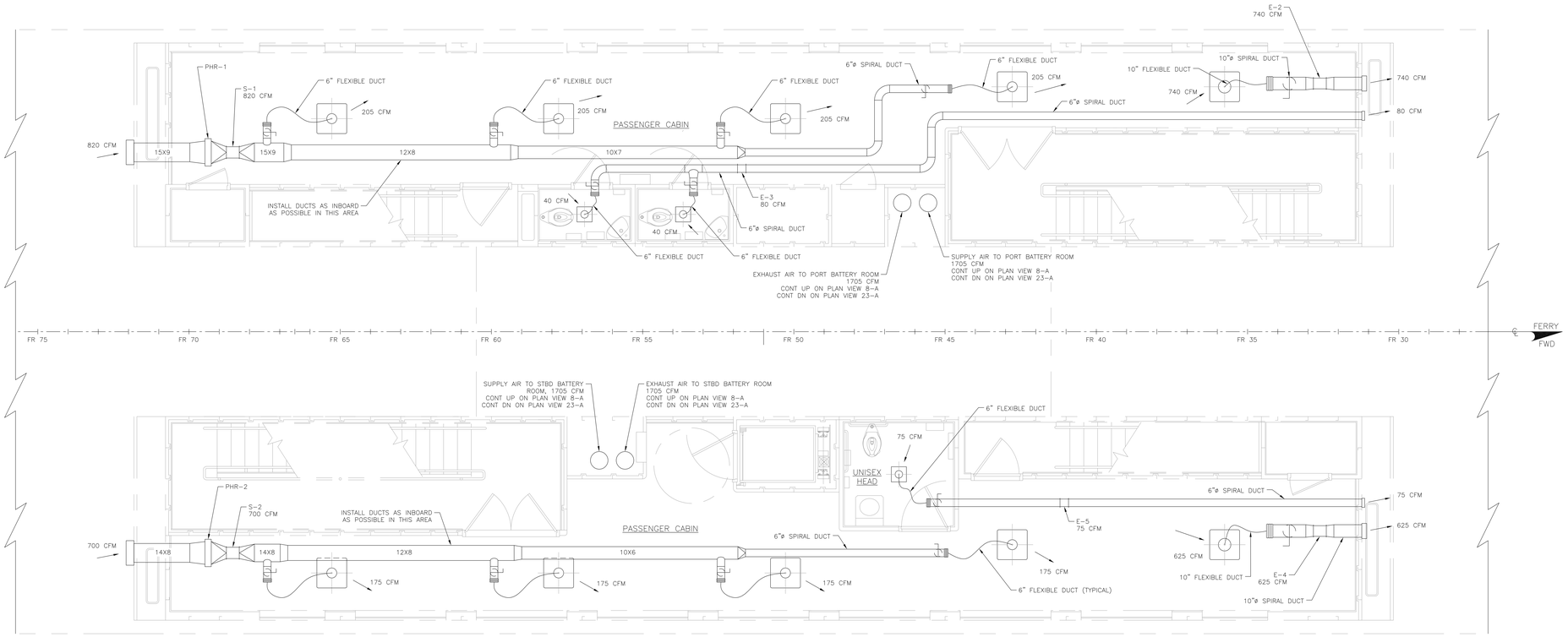
		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2338
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE AS SHOWN

SHEET 2 OF 4

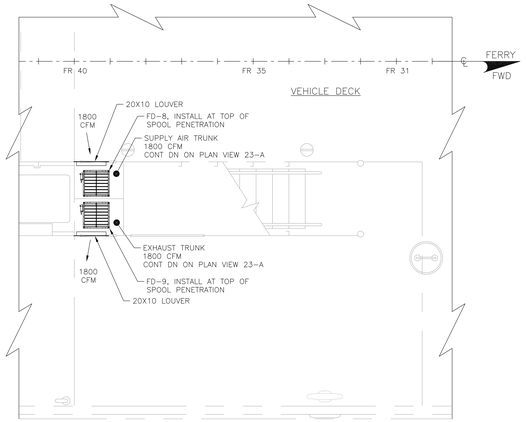
DWG. NO. D372-M9-2 ALT. 0



PLAN VIEW 16-A

01 DECK

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



PLAN VIEW 13-B

VEHICLE DECK

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

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

HVAC SYSTEM
INSTALLATION

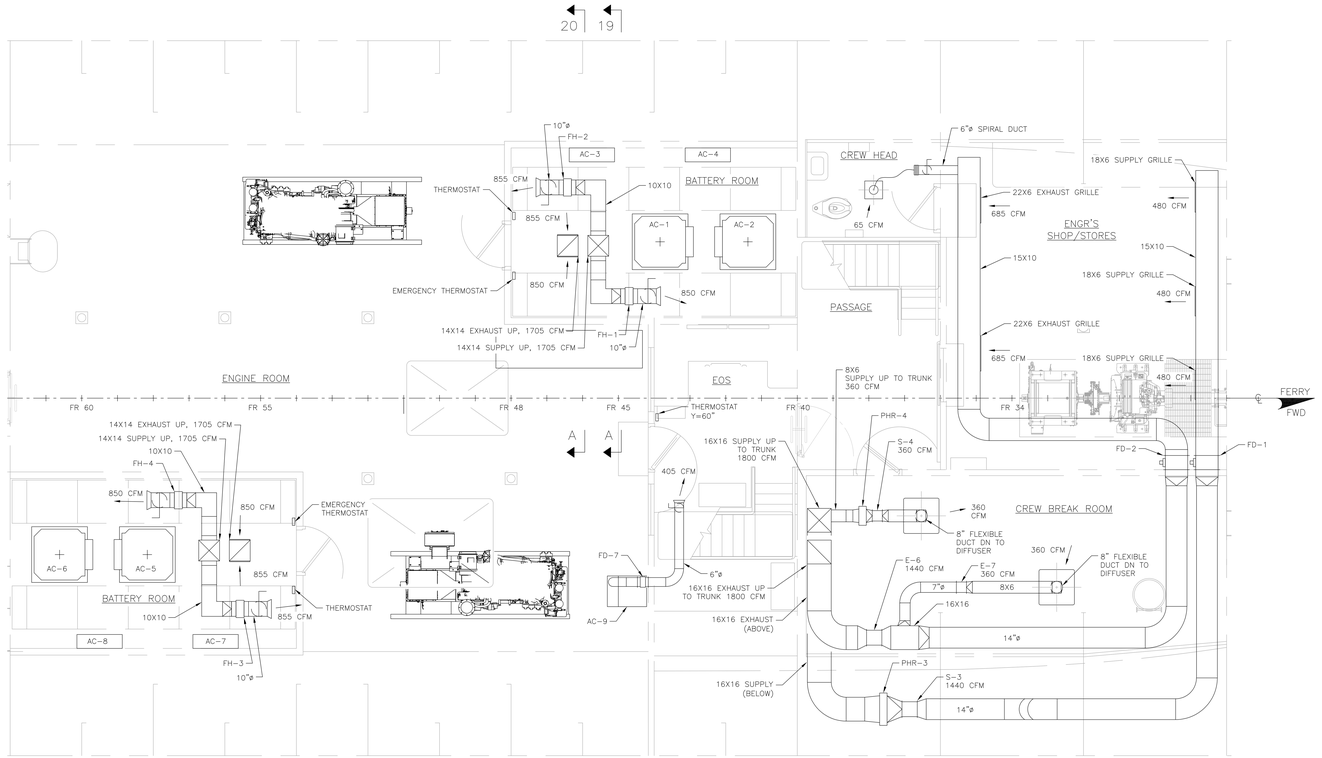
		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2338
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

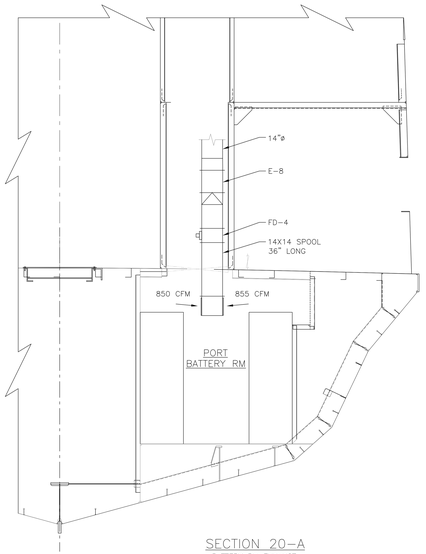
DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE AS SHOWN

DWG. NO. D372-M9-3 ALT. 0

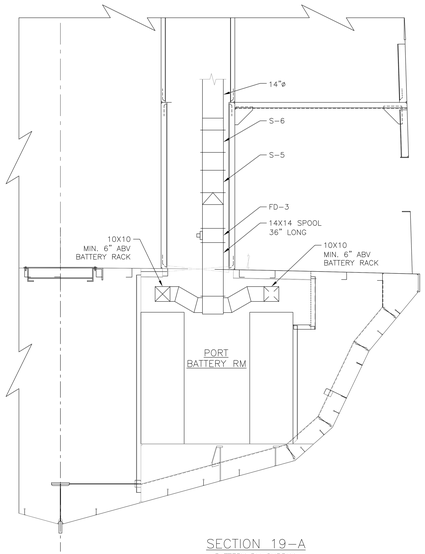
SHEET 3 OF 4



PLAN VIEW 23-A
HOLD
SCALE: 1/2"=1'-0"



SECTION 20-A
BATTERY RM EXHAUST
PORT SIDE SHOWN,
STBD SIMILAR BUT OPPOSITE
SCALE: 1/2"=1'-0"



SECTION 19-A
BATTERY RM SUPPLY
PORT SIDE SHOWN,
STBD SIMILAR BUT OPPOSITE
SCALE: 1/2"=1'-0"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

HVAC SYSTEM
INSTALLATION

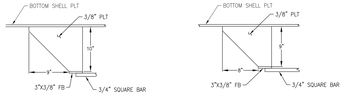
		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2338
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE AS SHOWN

SHEET 4 OF 4

DWG. NO. D372-M9-4 ALT. 0



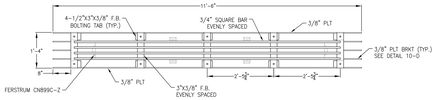
DETAIL 10–D: TYPICAL GUARD BRACKETS
SCALE: 1–1/2"=1'

GENERAL NOTES

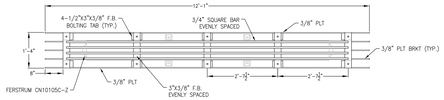
1. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE AS DETERMINED ON THE VESSEL TO BEST SUIT THE INSTALLATION.
2. SIZES ARE TO BE VERIFIED. ANY NECESSARY ADJUSTMENT AS REQUIRED BY THE EQUIPMENT AND SYSTEMS, SHALL BE MADE SUBJECT TO THE APPROVAL OF THE NAVAL ARCHITECT.
3. ALL VALVES SHALL HAVE IDENTIFYING MARKS AND LABELS.
4. ALL VALVES SHALL BE LOCATED TO PROVIDE FOR EASY ACCESS AT ALL TIMES.
5. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR EASY REMOVAL.
6. ALL SYSTEMS SHALL HAVE PROVISION FOR COMPLETE DRAINAGE.
7. ALL CONNECTIONS BETWEEN PUMPS & PIPES SHALL BE FLEXIBLE "AEROQUIP" (MODEL FC234) OR EQUAL.
8. GAUGES INDICATING COOLING WATER DISCHARGE TEMPERATURE AND LUBRICATING OIL PRESSURE SHALL BE PROVIDED FOR ALL COOLANT LOOPS.
9. THE ENGINE COOLING SYSTEMS SHALL FULFILL ALL REQUIREMENTS OF THE ENGINE AND REDUCTION GEAR MANUFACTURER'S RECOMMENDATIONS.
10. LINES LEADING TO REMOTE EXPANSION TANKS REQUIRE AT LEAST 1/4" RISE PER 12" RUN OF DECLIVITY.
11. KEEL COOLERS TO BE ELECTRICALLY ISOLATED FROM HULL USING NEOPRENE DISKS AS SUPPLIED WITH COOLERS AND INSTALLED ACCORDING TO FERNSTRUM RECOMMENDATIONS.
12. INSTALLATIONS SHALL BE PER 46 CFR 56.50–96 KEEL COOLER INSTALLATIONS AND 46 CFR PART 56 IN GENERAL. SHUTOFF VALVES SHALL BE LOCATED WHERE PIPING PENETRATES THE SHELL AS NEAR THE SHELL AS PRACTICAL.
13. FOR COOLING SYSTEM PIPE SCHEMATIC SEE JWGA DRAWING D372–P14. THIS PLAN IS NOT MEANT TO LOCATION MACHINERY OR STRUCTURE, BUT COOLER PENETRATIONS HAVE BEEN LOCATED TO AVOID BOTTOM STRUCTURE.
14. CONTRACTOR IS TO CONFIRM ALL HEAT REJECTIONS AND COOLANT FLOW RATES WITH VENDORS SERVED BY THIS PLAN FOR GRID COOLER SIZE CONFIRMATION

EQUIPMENT LIST

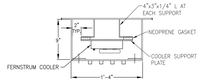
ENGINES, GEARS, EQUIP. COOLED		KEEL COOLERS		
QUANTITY	MODEL	ITEM	MODEL	MANUFACTURER
2	GENERATOR ENGINE: CAT C18 (AFTERCOOLER LOOP)	GRID COOLER	D12120U–Z	FERNSTRUM
2	GENERATOR ENGINE: CAT C18 (JACKET WATER LOOP)	GRID COOLER	D14184U–Z	FERNSTRUM
2	GENERATOR MOTOR: RAMME HW500 AND DC SWITCHBOARD LIQUID COOLING UNIT	GRID COOLER	CN10105C–Z	FERNSTRUM
2	PROPULSION MOTOR: RAMME UW 860 AND REDUCTION GEAR: REINTJES LF550	GRID COOLER	CN899C–Z	FERNSTRUM



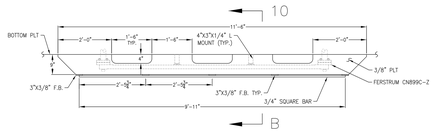
PROPULSION MOTOR & REDUCTION GEAR GRIDCOOLER GUARD
BOTTOM SIDE LKG UP
SCALE: 3/4"=1'



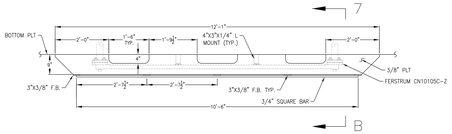
ALTERNATOR & DC SWITCHBOARD GRIDCOOLER GUARD
BOTTOM SIDE LKG UP
SCALE: 3/4"=1'



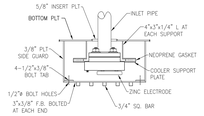
SECTION 10–B
SCALE: 1–1/2"=1'



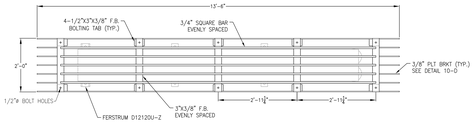
PROFILE 9–B: PROPULSION MOTOR & REDUCTION GEAR GRIDCOOLER GUARD
OUTBD SIDE LKG INBD
SCALE: 3/4"=1'



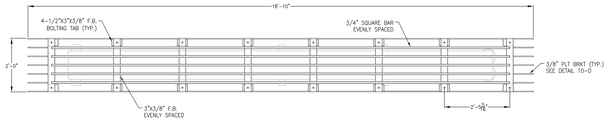
PROFILE 8–B: ALTERNATOR & DC SWITCHBOARD GRIDCOOLER GUARD
OUTBD SIDE LKG INBD
SCALE: 3/4"=1'



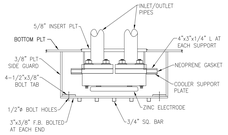
SECTION 7–B
SCALE: 1–1/2"=1'



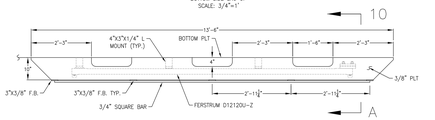
GENSET AFTERCOOLER GRIDCOOLER GUARD
BOTTOM SIDE LKG UP
SCALE: 3/4"=1'



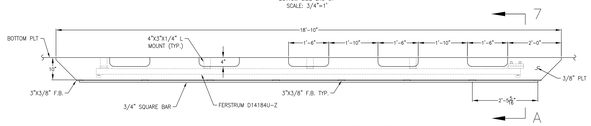
GENSET JACKET WATER GRIDCOOLER GUARD
BOTTOM SIDE LKG UP
SCALE: 3/4"=1'



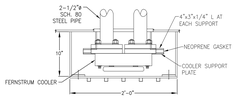
SECTION 10–A
SCALE: 1–1/2"=1'



PROFILE 9–A: GENSET AFTERCOOLER GRIDCOOLER GUARD
OUTBD SIDE LKG INBD
SCALE: 3/4"=1'



PROFILE 8–A: GENSET JACKET WATER GRIDCOOLER GUARD
OUTBD SIDE LKG INBD
SCALE: 3/4"=1'



SECTION 7–A
SCALE: 1–1/2"=1'

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

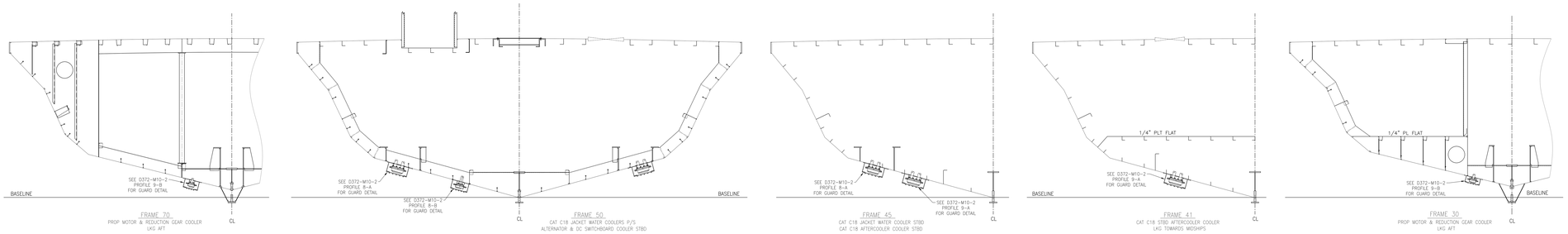
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

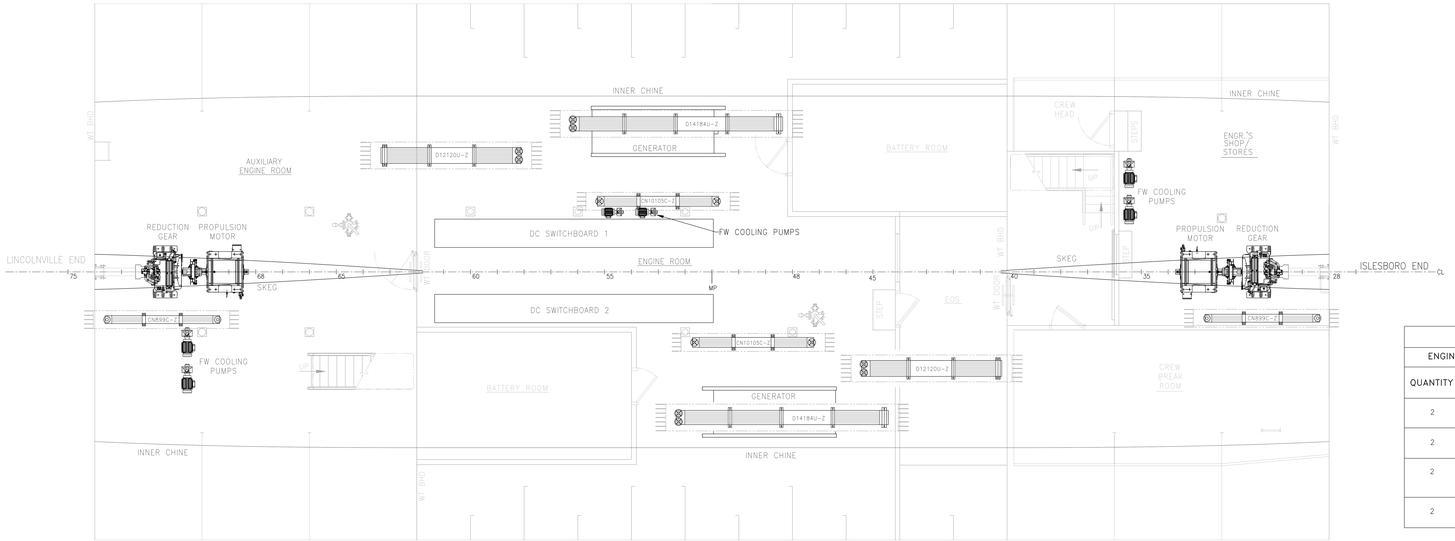
KEEL COOLER ARRAANGEMENTS AND GUARDS

DRAWN BY KVC DATE 07/26/24
CHECKED BY JWG DATE 07/29/24
APPROVED BY DATE
SCALE 3/8" = 1'–0"
DWG. NO. D–372–M10–2 ALT. 0

SHEET 2 OF 2



GRIDCOOLER ARRANGEMENTS
ON BOTTOM SHELL



GRIDCOOLER ARRANGEMENT
IN HOLD

EQUIPMENT LIST				
ENGINES, GEARS, EQUIP. COOLED		KEEL COOLERS		
QUANTITY	MODEL	ITEM	MODEL	MANUFACTURER
2	GENERATOR ENGINE: CAT C18 (AFTERCOOLER LOOP)	GRID COOLER	D12120U-Z	FERNSTRUM
2	GENERATOR ENGINE: CAT C18 (JACKET WATER LOOP)	GRID COOLER	D14184U-Z	FERNSTRUM
2	GENERATOR MOTOR: RAMME HW500 AND DC SWITCHBOARD LIQUID COOLING UNIT	GRID COOLER	CN10105C-Z	FERNSTRUM
2	PROPULSION MOTOR: RAMME UW 860 AND REDUCTION GEAR: REINTJES LF550	GRID COOLER	CN899C-Z	FERNSTRUM

* SEE D-372-M10-2 FOR GENERAL NOTES
THIS PLAN IS NOT INTENDED TO LOCATE STRUCTURE OTHER THAN FOR KEEL COOLER GUARDS. REFER TO D372-S3 FOR HULL CONSTRUCTION SECTIONS.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

KEEL COOLER ARRAANGEMENTS
AND GUARDS

DRAWN BY KVC DATE 07/26/24
CHECKED BY JWG DATE 07/29/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-M10-1 ALT. 0

SHEET 1 OF 2

CITY MULTI

SYSTEM SCHEMATIC DWG.

DIAGRAM SYMBOL LEGEND	
DISPLAY	DESCRIPTION
—///—	POWER WIRE
— — —	CONTROL WIRE
———	REF. PIPE

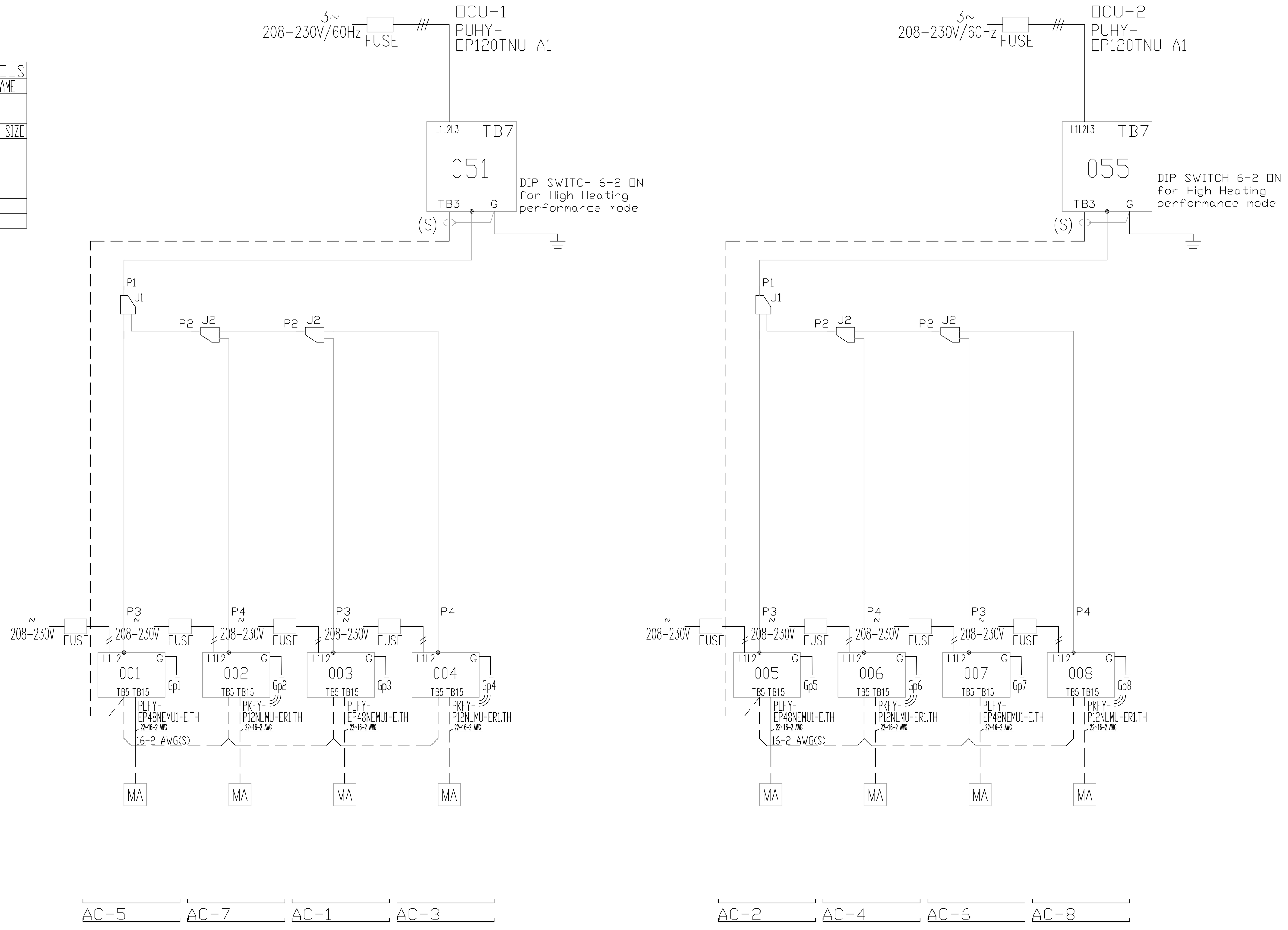
CONT.No		PAGE	

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-Y102LS-G2
J2	CMY-Y102SS-G2
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	3/8 / 1-1/8
P2	3/8 / 3/4
P3	3/8 / 5/8
P4	1/4 / 1/2
SYMBOL	MODEL NUMBER
MA	PAR-41MAAU



Diamond System Builder
sw: 5.4.0.43
db: 5.4.0.19
6/10/2024
4:34 PM

DETAIL 5-A

MITSUBISHI SYSTEM SCHEMATIC
PIPING / WIRING DIAGRAM
NOT TO SCALE

CLEANING NOTES

C-1. PIPING, PIPING APPURTENANCES AND APPLICABLE EQUIPMENT SHALL BE CLEANED AFTER FABRICATION AND PRIOR TO INSTALLATION TO REMOVE LOOSE PARTICLES, GREASE, DIRT AND OIL. AFTER COMPLETE ONBOARD INSTALLATION EACH SYSTEM, INCLUDING DEAD-ENDED PORTIONS OF SYSTEM PIPING, SHALL BE CLEANED AND FLUSHED OF FOREIGN MATTER WITH THE APPLICABLE SYSTEMS MEDIUM. TEMPORARY STRAINERS SHALL BE INSTALLED DURING THE CLEANING OPERATION.

C-2. PIPING SYSTEMS SHALL BE FLUSHED AND MAINTAINED CLEAN DURING THE PROCEDURE UNTIL COMPLETION OF OVERHAUL AND CRAFT DELIVERY.

CONDENSATE DRAIN TEST NOTES

T-1. HYDROSTATICALLY TEST THE NEW CONDENSATE DRAIN PIPING SYSTEM AT ATMOSPHERIC PRESSURE FOR A MINIMUM OF 30 MINUTES PRIOR TO INSPECTING THE FIRST JOINT. NO LEAKS OR WEEPS ALLOWED.

T-2. IF ANY LEAKS OR WEEPS ARE FOUND, THE PIPING SHALL BE REPAIRED AND RETESTED AS STATED ABOVE.

T-3. AFTER SATISFACTORY COMPLETION OF HYDROSTATIC AND TIGHTNESS TESTS, THE CONDENSATE DRAIN PIPING SHALL BE TESTED FOR PROPER OPERATION AND UNOBSTRUCTED FLOW.

DECK PENETRATION NOTE

BULKHEAD PENETRATION LOCATIONS SHOWN ARE APPROXIMATE AND FINAL LOCATIONS WILL BE DETERMINED BY PIPING CONTRACTOR. CONTRACTOR TO REVIEW THE INSTALLATION MANUAL FOR DETAILS.

MATERIAL LIST

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS	VALVES — BODIES	VALVES — TRIM	FITTINGS
A/C PIPING SYSTEM	ALL	COPPER ACR TUBE ASTM-B280	UNION, GROUND JOINT BRONZE PRO PRESS CONNECTION FLANGE, 150# BRONZE ANSI B16.51 PRO PRESS CONNECTION	BALL: BRONZE ASTM B61 OR B62 MSS SP-110 FULL PORT, 3 PIECE 600 PSI THREADED END GATE/GLOBE/SWING CHECK: BRONZE ASTM B61 OR B62 ANSI B16.34 600 PSI THREADED END	BALL: CHROME PLATED BRONZE BALL PTFE SEATS AND SEALS GATE/GLOBE/SWING CHECK: BRONZE DISC & SEAT	COPPER PRO PRESS CONNECTION ASME B16.51
CONDENSATE DRAIN SYSTEM	ALL	COPPER TUBE TYPE K ASTM-B88	UNION, GROUND JOINT BRONZE PRO PRESS CONNECTION FLANGE, 150# BRONZE ANSI B16.51 PRO PRESS CONNECTION	GATE/GLOBE/SWING CHECK: BRONZE ASTM B61 OR B62 ANSI B16.34 600 PSI THREADED END	GATE/GLOBE/SWING CHECK: BRONZE DISC & SEAT	COPPER PRO PRESS CONNECTION ASME B16.51

REFRIGERANT SYSTEM VALVES

SYSTEM	DESCRIPTION
AC-1	3/8" REFRIGERANT VALVE, MUELLER MODEL A18942 5/8" REFRIGERANT VALVE, MUELLER MODEL A18944
AC-2	3/8" REFRIGERANT VALVE, MUELLER MODEL A18942 5/8" REFRIGERANT VALVE, MUELLER MODEL A18944
AC-3	1/4" REFRIGERANT VALVE, MUELLER MODEL A18941 1/2" REFRIGERANT VALVE, MUELLER MODEL A18943
AC-4	1/4" REFRIGERANT VALVE, MUELLER MODEL A18941 1/2" REFRIGERANT VALVE, MUELLER MODEL A18943
AC-5	3/8" REFRIGERANT VALVE, MUELLER MODEL A18942 5/8" REFRIGERANT VALVE, MUELLER MODEL A18944
AC-6	3/8" REFRIGERANT VALVE, MUELLER MODEL A18942 5/8" REFRIGERANT VALVE, MUELLER MODEL A18944
AC-7	1/4" REFRIGERANT VALVE, MUELLER MODEL A18941 1/2" REFRIGERANT VALVE, MUELLER MODEL A18943
AC-8	1/4" REFRIGERANT VALVE, MUELLER MODEL A18941 1/2" REFRIGERANT VALVE, MUELLER MODEL A18943

CONDENSATE DRAIN PUMP

COMPARTMENT / PUMP No.	QTY	MODEL	GPM	HEAD (FT)	HP	RPM	PHASE	VOLTS	MANUFACTURER
EOS	1	WPCPUMP-115B	0.8	10	1/20	–	1	115	AMERICOOL
ENGINE ROOM	1	WC12-20B-MA	18	46	1/3	3500	1	115	BELL & GOSSET
ENGINE ROOM	1	VCMA-15	0.4	10	1/50	–	1	115	LITTLE GIANT

(Column group above QTY through VOLTS: PUMP CHARACTERISTIC)

SPLIT SYSTEM TEST NOTES

SEE TRANE/MITSUBISHI COMMISSIONING BOOKLET FOR LATEST INFORMATION AND STATEMENTS ON TESTING AND COMMISSIONING

1. AIRTIGHT TEST

A.) PERFORM WITH THE VALVE OF THE OUTDOOR UNIT CLOSED, AND PRESSURIZE THE CONNECTION PIPING AND THE INDOOR UNIT FROM THE SERVICE PORT PROVIDED ON THE VALVE OF THE OUTDOOR UNIT. (ALWAYS PRESSURIZE FROM BOTH THE HIGH-PRESSURE PIPE AND THE LOW-PRESSURE PIPE SERVICE PORTS.)

B.) OBSERVE THE FOLLOWING RESTRICTIONS WHEN CONDUCTING AN AIR TIGHTNESS TEST TO PREVENT NEGATIVE EFFECTS ON THE REFRIGERATING MACHINE OIL. ALSO, WITH NONAZEOTROPIC REFRIGERANT (R410A), GAS LEAKAGE CAUSES THE COMPOSITION TO CHANGE AND AFFECTS PERFORMANCE. THEREFORE, PERFORM THE AIRTIGHTNESS TEST CAUTIOUSLY.

- AFTER PRESSURIZING TO THE DESIGN PRESSURE (4.15 MPa [602 psi]) USING NITROGEN GAS, ALLOW IT TO STAND FOR ABOUT ONE DAY. IF THE PRESSURE DOES NOT DROP, AIRTIGHTNESS IS GOOD.
  HOWEVER, IF THE PRESSURE DROPS, SINCE THE LEAKING POINT IS UNKNOWN, THE FOLLOWING BUBBLE TEST MAY ALSO BE PERFORMED.
- AFTER THE PRESSURIZATION DESCRIBED ABOVE, SPRAY THE FLARE CONNECTION PARTS, BRAZED PARTS, FLANGES, AND OTHER PARTS THAT MAY LEAK WITH A BUBBLING AGENT (KYUBOFLEX, ETC.) AND VISUALLY CHECK FOR BUBBLES.
- AFTER THE AIRTIGHTNESS TEST, WIPE OFF THE BUBBLING AGENT.
- RESTRICTION; NO FLAMMABLE GAS OR AIR (OXYGEN) SHALL BE USED FOR TESTING AS THE PRESSURIZATION GAS, IT MAY CATCH FIRE OR EXPLODE.

2. EVACUATION

A.) EVACUATE WITH THE VALVE OF THE OUTDOOR UNIT CLOSED AND EVACUATE BOTH THE CONNECTION PIPING AND THE INDOOR UNIT FROM THE SERVICE PORT PROVIDED ON THE VALVE OF THE OUTDOOR UNIT USING A VACUUM PUMP. (ALWAYS EVACUATE FROM THE SERVICE PORT OF BOTH THE HIGH-PRESSURE PIPE AND THE LOW-PRESSURE PIPE.) AFTER THE VACUUM REACHES 650 Pa [abs] [0.0943 psi/5 Torr], CONTINUE EVACUATION FOR AT LEAST ON HOUR OR MORE. THEN, STOP THE VACUUM PUMP AND LEAVE IT FOR 1 HOUR. ENSURE THE DEGREE OF VACUUM HAS NOT INCREASED. (IF THE DEGREE OF VACUUM INCREASE IS LARGER THAN 130 Pa [0.01886 psi/1.0 Torr], WATER MIGHT HAVE ENTERED. APPLY PRESSURE TO DRY NITROGEN GAS UP TO 0.05 MPa [7.25 psi] AND VACUUM AGAIN. REPEAT THE EVACUATION PROCESS THREE OR MORE TIMES UNTIL THE VACUUM PRESSURE IS LOST BY 130 PA OR BELOW.)
FINALLY, SEAL IN WITH THE LIQUID REFRIGERANT THROUGH THE HIGH-PRESSURE PIPE, AND ADJUST THE LOW-PRESSURE PIPING TO OBTAIN AN APPROPRIATE AMOUNT OF THE REFRIGERANT DURING OPERATION.
*NEVER PERFORM AIR PURGING USING REFRIGERANT.

NOTE: FOR EVACUATION, THE FOLLOWING PROCEDURES CAN BE REFERRED.

- ALWAYS ADD AN APPROPRIATE AMOUNT OF REFRIGERANT. ALSO ALWAYS CHARGE THE SYSTEM WITH LIQUID REFRIGERANT.
- USE A GAUGE MANIFOLD, CHARGING HOSE, AND OTHER PARTS FOR THE REFRIGERANT INDICATED ON THE UNIT.
- USE A GRAVIOMETER. (ONE THAT CAN MEASURE DOWN TO 0.1 KG [3 OZ].)
- USE A VACUUM PUMP WITH A REVERSE FLOW CHECK VALVE.
  (RECOMMENDED VACUUM GAUGE: ROBINAIR 14830A THERMISTOR VACUUM GAUGE OR MICRON GAUGE)
  DO NOT USE A MANIFOLD GAUGE TO MEASURE VACUUM PRESSURE.
  ALSO USE A VACUUM GAUGE THAT REACHES 65 Pa [abs] [0.00943 psi/0.5 Torr] OR BELOW AFTER OPERATING FOR FIVE MINUTES.

<TRIPLE EVACUATION>
- EVACUATE THE SYSTEM TO 4,000 MICRONS FROM BOTH SERVICE VALVES. SYSTEM MANIFOLD GAUGES MUST NOT BE USED TO MEASURE VACUUM.
  A MICRON GAUGE MUST BE USED AT ALL TIMES.
  – BREAK THE VACUUM WITH NITROGEN (N2) INTO THE DISCHARGE SERVICE VALVE TO 0 PSIG.
- EVACUATE THE SYSTEM TO 1,500 MICRONS FROM THE SUCTION SERVICE VALVE.
  – BREAK THE VACUUM WITH NITROGEN (N2) INTO THE DISCHARGE SERVICE VALVE TO 0 PSIG.
- EVACUATE THE SYSTEM TO 500 MICRONS. SYSTEM MUST HOLD THE VACUUM AT 500 MICRONS FOR A MINIMUM OF 1 HOUR.
  CONDUCT A RISE TEST FOR A MINIMUM OF 30 MINUTES.

3. REFRIGERANT CHARGING

A.) DO NOT USE REFRIGERANT OTHER THAN THE TYPE INDICATED IN THE MANUALS PROVIDED WITH THE UNIT AND ON THE NAMEPLATE.
- DOING SO MAY CAUSE THE UNIT OR PIPES TO BURST, OR RESULT IN EXPLOSION OR FIRE DURING USE, DURING REPAIR, OR AT THE TIME OF DISPOSAL OF THE UNIT.
- IT MAY ALSO BE IN VIOLATION OF APPLICABLE LAWS.
- MITSUBISHI ELECTRIC CORPORATION CANNOT BE HELD RESPONSIBLE FOR MALFUNCTIONS OR ACCIDENTS RESULTING FROM THE USE OF THE WRONG TYPE OF REFRIGERANT.

SINCE THE REFRIGERANT USED WITH THE UNIT IS NONAZEROTROPIC, IT MUST BE CHARGED IN THE LIQUID STATE. CONSEQUENTLY, WHEN CHARGING THE UNIT WITH REFRIGERANT FROM A CYLINDER, IF THE CYLINDER DOES NOT HAVE A SIPHON PIPE, CHARGE THE LIQUID REFRIGERANT BY TURNING THE CYLINDER UPSIDE-DOWN. IF THE CYLINDER HAS A SIPHON PIPE, THE LIQUID REFRIGERANT CAN BE CHARGED WITH THE CYLINDER STANDING UPRIGHT. THEREFORE, GIVE CAREFUL ATTENTION TO THE CYLINDER SPECIFICATIONS. IF THE UNIT SHOULD BE CHARGED WITH GAS REFRIGERANT, REPLACE ALL THE REFRIGERANT WITH NEW REFRIGERANT. DO NOT USE THE REFRIGERANT REMAINING IN THE CYLINDER.

GENERAL NOTES

1. THIS DRAWING WAS DEVELOPED FOR THE INSTALLATION OF NEW REFRIGERANT AND CONDENSATE DRAIN PIPING FOR THE PASSENGER AREAS ON THE 207'-0" LBP PASSENGER VEHICLE FERRY
2. THIS DRAWING IS A SCHEMATIC ONLY AND NOT INTENDED TO LOCATE ANY PIPING TUBING OR FITTINGS EXCEPT IN GENERAL OR AS NOTED.
3. TEMPLATE WORK FOR VESSEL AND EQUIPMENT.
4. THIS DRAWING IS BASED ON THE REQUIREMENTS, RULES AND REGULATIONS OF THE UNITED STATES COAST GUARD (U.S.C.G.) CODE OF FEDERAL REGULATIONS, 46 CFR WHOSE PROVISIONS SHALL PREVAIL WHERE THIS DRAWING IS SILENT.
5. MOUNTING HARDWARE NOT ORDERED ON THIS DRAWING SHALL BE SUPPLIED BY THE INSTALLING ACTIVITY AND SHALL INCLUDE SELF LOCKING NUTS. ALL NUTS FOR DISSIMILAR METALS SHALL BE NYLOCK STYLE.
6. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. DRAIN PIPING SHALL BE INSTALLED WITH A MINIMUM 1/8" PER FOOT AND A MAXIMUM OF 1/4" PER FOOT SLOPE IN THE DIRECTION OF FLOW.
8. GRIND SMOOTH ALL SHARP CORNERS AND ROUGH EDGES LIABLE TO CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.
9. THE PART NUMBER IN THE LIST OF MATERIAL SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING PROCUREMENT.
10. PIPE AND TUBING BEND RADII SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
11. FABRICATION, BRAZING AND INSPECTION FOR REFRIGERANT PIPING SHALL BE IN ACCORDANCE WITH AWS B2.2.
12. REFRIGERANT TUBING AND CONDENSATE DRAIN PIPING SHALL BE INSULATED AND LAGGED IN ACCORDANCE WITH ASTM-F-683 AFTER SUCCESSFUL COMPLETION OF HYDROSTATIC, TIGHTNESS AND OPERATIONAL TESTING. CONTRACTOR TO PROVIDE AND INSTALL ALL INSULATION.
13. PIPING SHALL BE PROPERLY SUPPORTED USING HANGERS SUITABLE FOR THE SYSTEM AND CONDITIONS ONBOARD THE CRAFT. HANGERS, SUPPORTERS, LINERS AND FASTENERS SHALL BE IN ACCORDANCE WITH ASTM-F-708 AND SHALL BE PROVIDED BY THE CONTRACTOR.
14. PIPING SHALL BE ARRANGED TO PERMIT MAINTENANCE OF THE CRAFTS MACHINERY, EQUIPMENT OR OTHER PIPING SYSTEMS.
15. PIPING SHALL BE ARRANGED SO THAT IT WILL NOT NORMALLY BE SUBJECT TO MECHANICAL INJURY AND TO PRECLUDE ITS USE FOR OTHER PURPOSES SUCH AS GRABRODS, STEPPING JOINTS AND HANDRAILS.
16. ALL FABRICATION, WELDING, FASTENING AND INSPECTION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE AMERICAN BUREAU OF SHIPPING (ABS) RULES FOR BUILDING AND CLASSING STEEL VESSELS.
17. WHERE AN ITEM MANUFACTURER IS SPECIFIED IN THE LIST OF MATERIAL, ANOTHER MANUFACTURERS ITEM OF EQUAL QUALITY MAY BE SUBSTITUTED.
18. PRIOR TO INSTALLATION THE INSTALLING CONTRACTOR SHALL CHECK ALL PIPING CONNECTIONS TO EQUIPMENT SHOWN ON THIS DRAWING AND MAKE NECESSARY ADJUSTMENTS AS REQUIRED BEFORE ORDERING MATERIAL.
19. TUBING SHALL BE FLARED AS REQUIRED BY THE INSTALLING CONTRACTOR.
20. PAINT, DECK COVERING AND INSULATION DAMAGED BY WORK SHOWN ON THIS DRAWING SHALL BE REPAIRED TO MATCH EXISTING CONDITIONS AND MEET THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
21. TEMPORARY REMOVAL AND INSTALLATION OF INTERFERENCES NECESSARY TO ACCOMPLISH WORK SHOWN ON THIS DRAWING SHALL BE THE INSTALLING ACTIVITY RESPONSIBILITY.
22. THE LIST OF MATERIAL IS THE OWNERS PRESENT BEST ESTIMATE OF THE MATERIALS REQUIRED. THE CONTRACTOR IS REQUIRED TO ESTIMATE MATERIALS FROM THE PROVIDED DRAWING INCLUDING BUT NOT LIMITED TO FITTINGS, CONSUMABLES, HANGERS, FOUNDATIONS, INSULATION AND GASKETS.
23. USE OF SUBSTITUTE MATERIAL MAY ADVERSELY AFFECT SYSTEM PERFORMANCE OR STRUCTURAL INTEGRITY. SUBSTITUTE MATERIAL SHALL NOT BE USED WITHOUT PRIOR CONCURRENCE OF THE OWNER'S TECHNICAL REPRESENTATIVE.
24. MISCELLANEOUS MATERIAL REQUIRED FOR INSTALLATION, NOT IDENTIFIED ON THIS DRAWING SHALL BE INSTALLING ACTIVITY FURNISHED MATERIAL.
25. CONDENSATE HOSES SHALL BE INCLUDED WITH CONDENSATE PUMPS AND A/C UNITS AND SHALL BE INSTALLED IN ACCORDANCE WITH 46 CFR 56.50-25(a)(3). HOSES SHALL BE LESS THAN 30" IN LENGTH AND SHALL NOT PENETRATE ANY BULKHEAD OR DECK.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

A/C PIPING AND CONDENSATE DRAIN SYSTEM INSTALLATION

		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
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23 DRYDOCK AVE SUITE 620W
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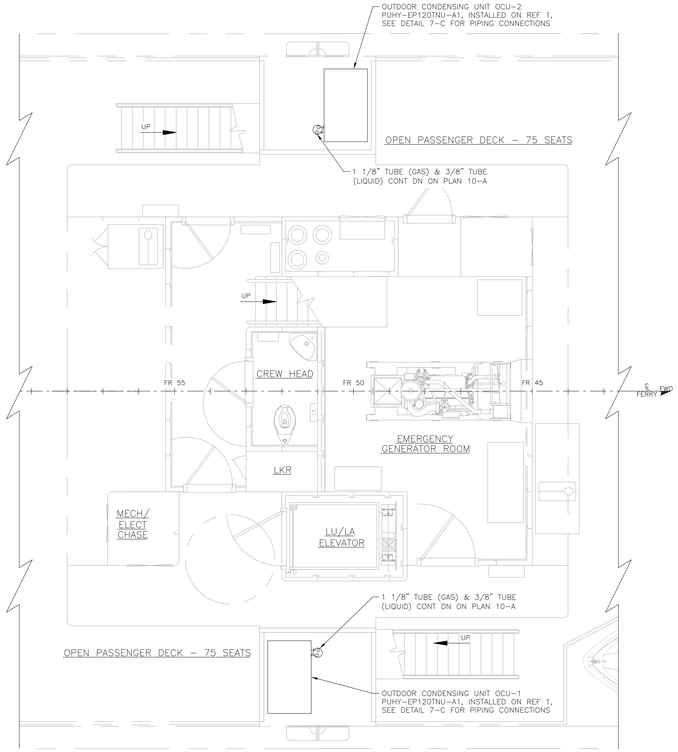
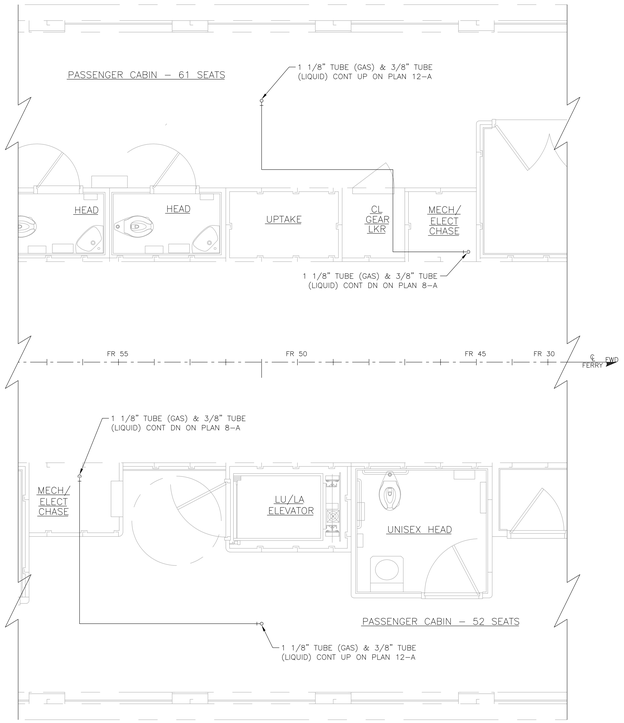
DRAWN BY AMR — DATE 8/29/24
CHECKED BY MSCORP — DATE
APPROVED BY — DATE
SCALE NONE
DWG. NO. D372-M11-1 — ALT. 0

NO.	TITLE	DRAWING NO.
2	DRAIN, WASTE, VENT PIPE SCHEMATIC	D-372-P6
1	HVAC SYSTEM, ARRANGEMENTS, & DETAILS	D-372-M9

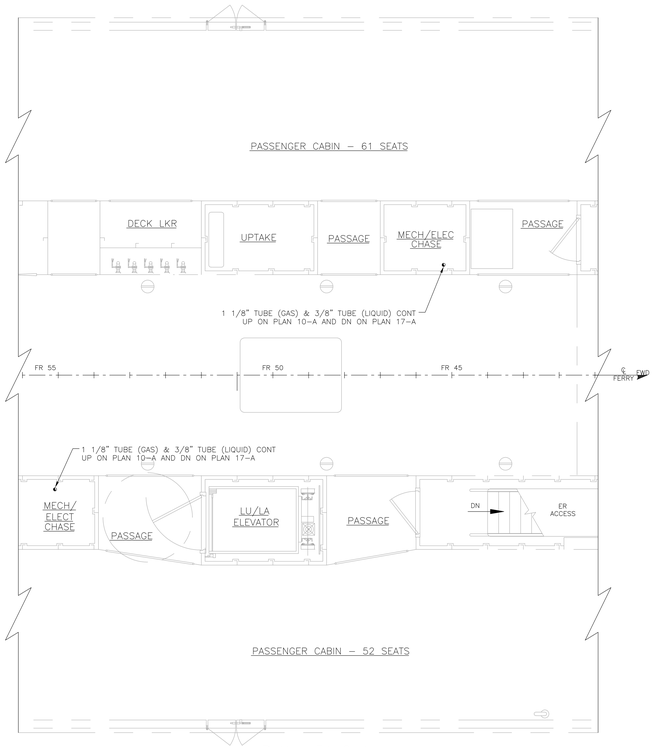
REFERENCES



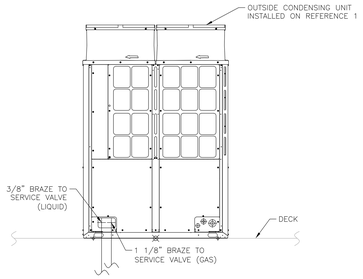
PLAN VIEW 12-A
02 DECK
REFRIGERANT PIPING
SCALE: 1/2"=1'-0"



PLAN VIEW 10-A
01 DECK
REFRIGERANT PIPING
SCALE: 1/2"=1'-0"



PLAN VIEW 8-A
MAIN DECK
REFRIGERANT PIPING
SCALE: 1/2"=1'-0"



DETAIL 7-C
10 TON OCU REFRIGERANT PIPING CONNECTION
(TYPICAL 2 PLACES)
NOT TO SCALE

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

A/C PIPING AND CONDENSATE DRAIN
SYSTEM INSTALLATION

		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

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DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
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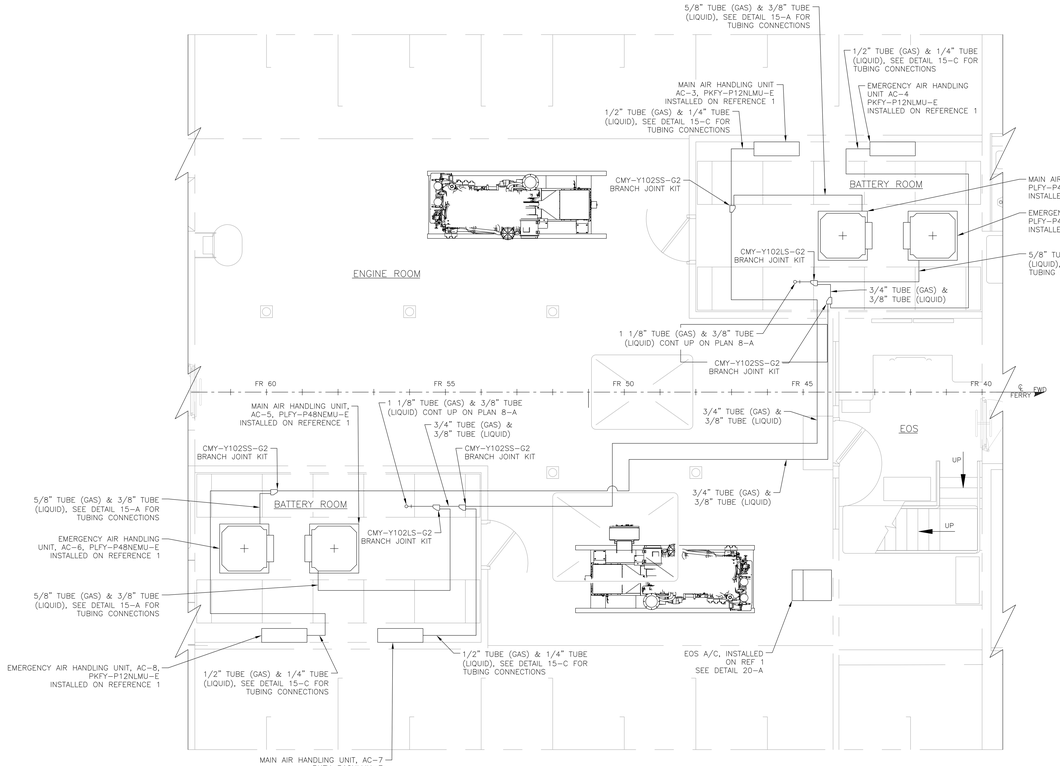
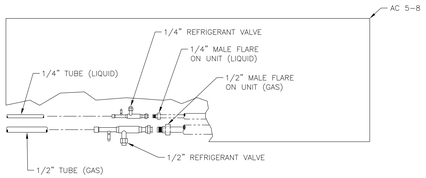
SCALE AS SHOWN
DWG. NO. D372-M11-2 ALT. 0

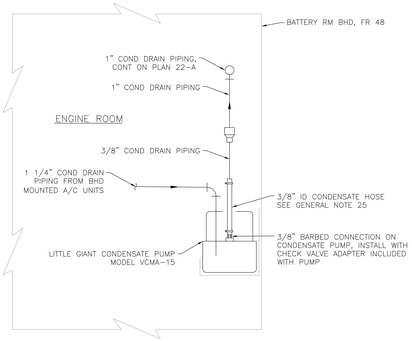
SHEET 2 OF 4



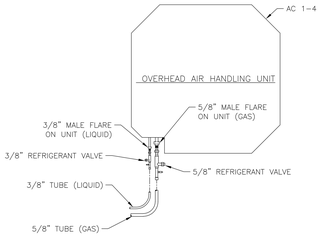
PLAN VIEW 17-A
HOLD
REFRIGERANT PIPING
SCALE: 1/2"=1'-0"



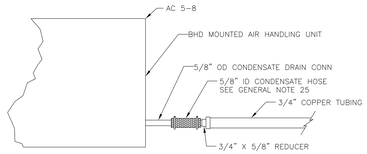
DETAIL 15-C
BULKHEAD MOUNTED AHU
REFRIGERANT PIPING CONNECTION
(TYPICAL 4 PLACES)
NOT TO SCALE



DETAIL 14-B
CONDENSATE PUMP CONNECTION
NOT TO SCALE



DETAIL 15-A
OVERHEAD AHU REFRIGERANT PIPING CONNECTION
(TYPICAL 4 PLACES)
NOT TO SCALE



DETAIL 14-A
BULKHEAD MOUNTED AHU
CONDENSATE DRAIN CONNECTION
(TYPICAL 4 PLACES)
(NOT TO SCALE)

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

A/C PIPING AND CONDENSATE DRAIN SYSTEM INSTALLATION

		DATE
PREPARED	A. RUSSO	8/7/24
CHECKED	E. JOHNSON	8/7/24
ENGINEER		
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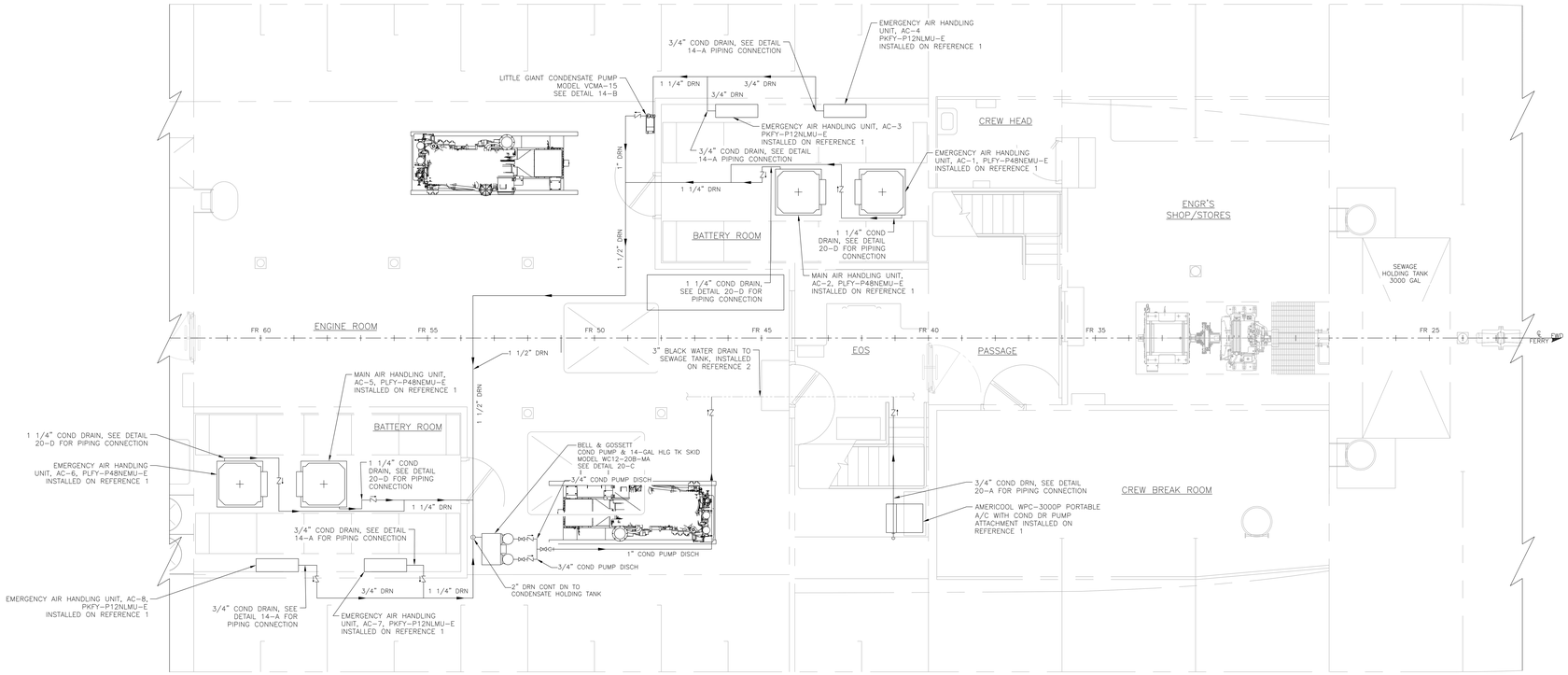
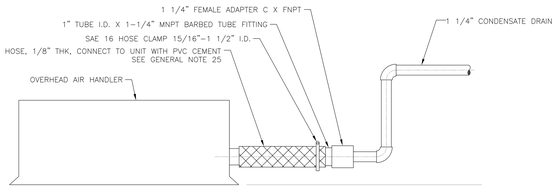
DWG. NO. D372-M11-3 ALT. 0

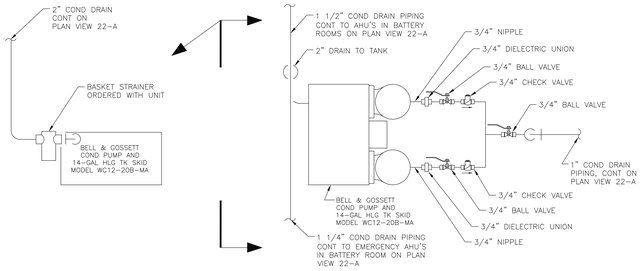
SHEET 3 OF 4



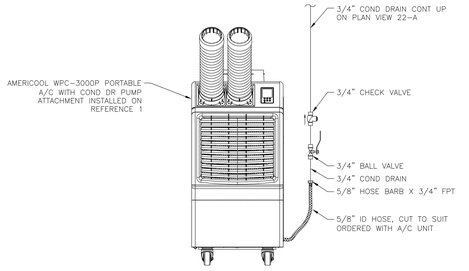
PLAN VIEW 22-A
HOLD
CONDENSATE DRAIN PIPING
SCALE: 1/2"=1'-0"



DETAIL 20-D
OVERHEAD AHU WITH INTERNAL CNDS PUMP
(TYPICAL 4 PLACES)
NOT TO SCALE



DETAIL 20-C
CONDENSATE PUMP
SCALE: 1 1/2" = 1'-0"



DETAIL 20-A
EOS FLOOR AHU WITH INTERNAL CNDS PUMP
SCALE: 1 1/2" = 1'-0"

0	ISSUED FOR BID	8/29/24	AMR
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

A/C PIPING AND CONDENSATE DRAIN SYSTEM INSTALLATION

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CHECKED	E. JOHNSON	6/7/24
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APPROVED		

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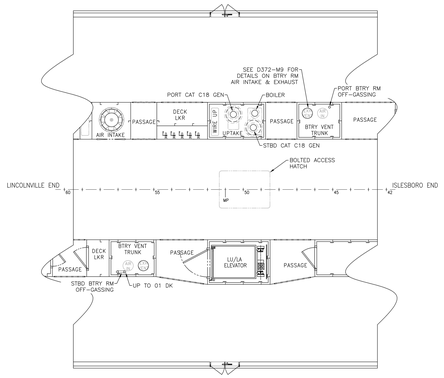
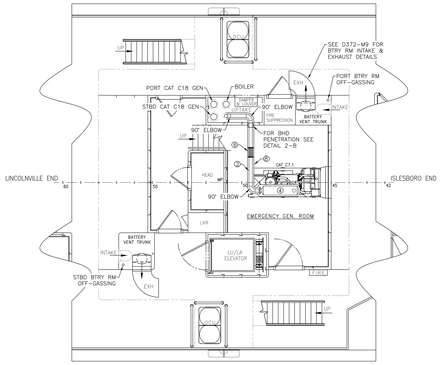
SHEET 4 OF 4

MAIN DECK



EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
MAIN DECK

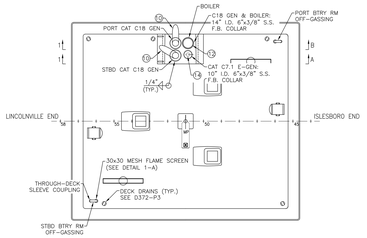
02 DECK



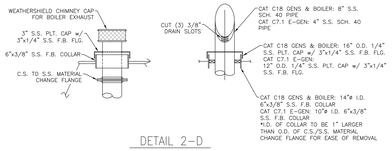
EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
02 DECK

EXHAUST STACK SECTIONS

PILOT HOUSE TOP



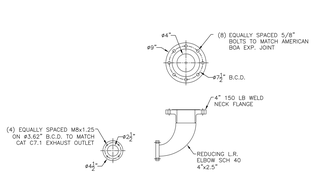
EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
PILOTHOUSE TOP, LOOKING DOWN AT TOP OF STACK



DETAIL 2-D
EXHAUST STACK PIPE PENETRATION DETAIL
SCALE: 3/4"=1'

BILL OF MATERIALS		
NUMBER	DESCRIPTION	MATERIAL SPEC.
1	2-1/2" SCH. 40 BLACK PIPE*	ASTM A53 GR. B
2	4" SCH. 40 BLACK PIPE	ASTM A53 GR. B
3	8" SCH. 40 BLACK PIPE	ASTM A53 GR. B
4	GT A202-5104 4" SPARK ARRESTING CRITICAL GRADE SILENCER, STYLE 2	ALUMINIZED STEEL
5	GT A202-5108 8" SPARK ARRESTING CRITICAL GRADE SILENCER, STYLE 1	ALUMINIZED STEEL
6	EXPANSION JOINT – BOA 4025E 4"ø TYPE FSP OR EQUAL	BELLOWS ASTM F 1120
7	EXPANSION JOINT – BOA 4025E 8"ø TYPE FSP OR EQUAL	BELLOWS ASTM F 1120
8	2" PIPE INSULATION FOR INTERIOR SECTIONS:* GT 103-400 FOR 4"ø PIPE OR EQUAL; GT 104-8-400 FOR 4"ø BELLOWS OR EQUAL; GT 106-400 FOR 4"ø FLANGES OR EQUAL; GT 103-863 FOR 8"ø PIPE OR EQUAL; GT 104-8-800 FOR 8"ø BELLOWS OR EQUAL; GT 106-800 FOR 8"ø FLANGES OR EQUAL; GT 108 OTHER BLANKETS FOR OTHER INTERIOR SECTIONS	INSULATION USCG APPROVED HIGH DENSITY TYPE E FIBERGLASS, MESH: 304 STAINLESS
9	4" SCH. 40 STAINLESS STEEL PIPE	ASTM A312
10	8" SCH. 40 STAINLESS STEEL PIPE	ASTM A312
11	8" TURNKLIND HS4 POWER VENTER	–
12	8" WEATHERSHELD CHIMNEY CAP, NON AIR-COOLED, 1" MESH	304 SS
13	GOOSENECK w/ 30x30 MESH FLAME SCREEN	SEE DETAIL 1-A
14	GT 3AC1-22-400-5304 4" EXHAUST RAIN CAP	304 SS

*NOTE: NO INSULATION REQUIRED ON BATTERY ROOM OFF-GASSING PIPES

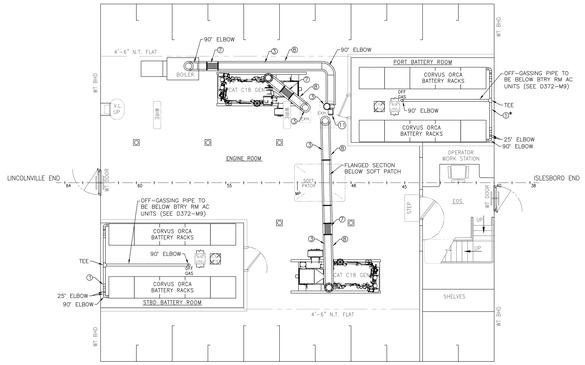


DETAIL 2-C
CAT C7.1 EXHAUST ATTACHMENT
VERIFY ATTACHMENT FLANGES TO CAT C7.1 & BOA EXPANSION JOINT
SCALE: 1-1/2"=1'

GENERAL NOTES

1. THIS DRAWING SHOWS A PROPOSED EXHAUST SYSTEM. FINAL FIELD INSTALLATION, WHILE CONFORMING AS CLOSELY AS POSSIBLE TO THE INTENT OF THE PLAN, SHALL REFLECT A NEAT, AND EFFICIENT INSTALLATION.
2. SIZES SHOWN ARE FOR GUIDANCE ONLY AND NECESSARY ADJUSTMENTS MAY BE REQUIRED BY EQUIPMENT AND SYSTEMS TO ENSURE SATISFACTORY OPERATION.
3. ALL PIPING DIAGRAMS, SPECIFICATIONS, AND RECOMMENDATIONS FURNISHED BY EQUIPMENT MANUFACTURERS ARE TO BE OVERSEE.
4. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL IN SEVERAL SECTIONS.
5. INSULATION SHALL BE WRAPPED ON ALL SURFACES OF THE EXHAUST SYSTEM COMPONENTS. INSULATION HAS BEEN OMITTED IN DIFFERENT VIEWS FOR CLARITY. (INSULATION NOT REQUIRED FOR BATTERY OFF-GASSING PIPING)
6. EXHAUST SYSTEM SHALL COMPLY WITH USCG 46 CFR, PART 56 & ABYC STANDARD P-1.
7. EXHAUST SYSTEMS SHALL BE PROPERLY SUPPORTED THROUGHOUT ITS LENGTH WITH PIPE HANGERS AS REQUIRED.
8. PIPE HANGERS SHALL BE LOCATED TO ALLOW FOR EXPANSION AND CONTRACTION OF EXHAUST PIPES.
9. INSTALLATION OF EXHAUST HANGERS SHALL TAKE INTO ACCOUNT MAIN ENGINES'S ISOLATION MOUNT STIFFNESS.
10. FINAL EXHAUST INSTALLATION SHALL BE VERIFIED TO BE WITHIN RATED ENGINE EXHAUST BACK-PRESSURE LIMITS.
11. FINAL OFF-GASSING INSTALLATION SHALL BE VERIFIED TO BE WITHIN RATED BATTERY RACK BACK PRESSURE LIMITS, AND FINAL INSTALLATION SHALL BE APPROVED BY CORVUS.

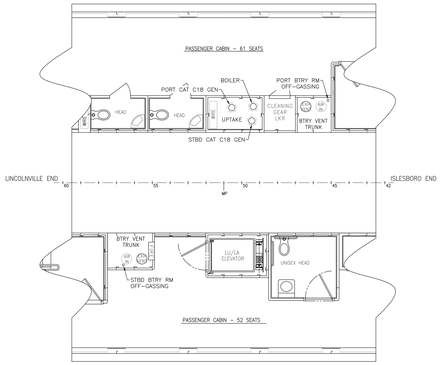
ENGINE ROOM



*OFF-GAS PIPING NOTES:
1. NO INSULATION REQUIRED FOR BATTERY OFF-GASSING PIPES.
2. BATTERY OFF-GAS PIPES TO BE BELOW BATT. RM. AC UNITS (SEE D372-M9)

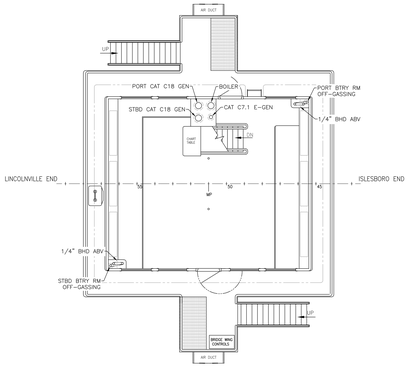
EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
ENGINE ROOM

01 DECK

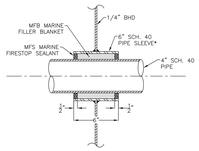


EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
01 DECK

PILOT HOUSE DECK

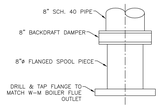


EXHAUST SYSTEM ARRANGEMENT
PLAN VIEW
PILOTHOUSE DECK

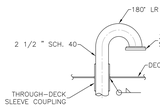


DETAIL 2-B
TYPICAL BHD PENETRATION
SCALE: 2-1/2"=1'

*BHD PENETRATION CAN BE EXPANDED TO SUIT MULTIPLE PIPE PENERTRATIONS. SEE STI MARINE GUIDANCE FOR MAX OPENING SIZE



DETAIL 2-A
BOILER FLUE
EXHAUST SPOOL DETAIL
SCALE: 1-1/2"=1'



DETAIL 1-A
OFF-GASSING INVERTED VENT & THROUGH DECK DETAIL
SCALE: 1-1/2"=1'

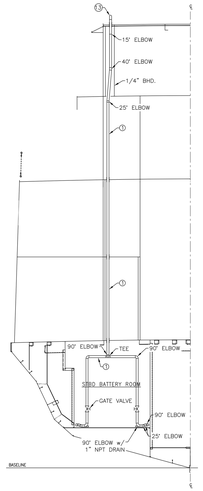
ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	MR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

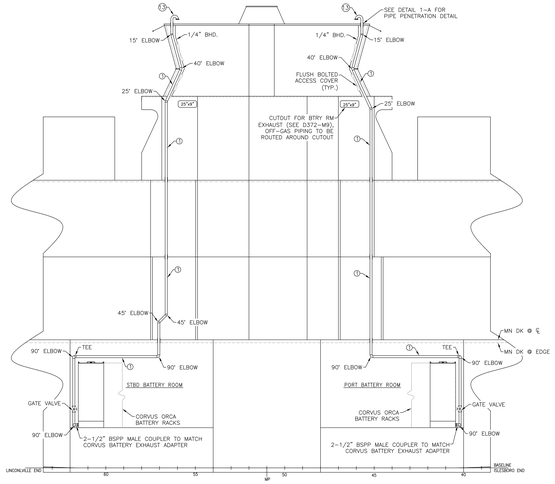
207 FT LOA FERRY VESSEL
MAINE DOT

EXHAUST ARRANGEMENT AND DETAILS

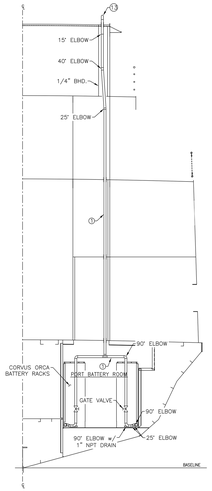
DRAWN BY MR DATE 7/18/2024
CHECKED BY KVC DATE 8/10/24
APPROVED BY DATE
SCALE 1/4" = 1'-0" OR AS NOTED
SHEET 1 OF 3
DWG. NO. D372-P1-1 ALT. 0



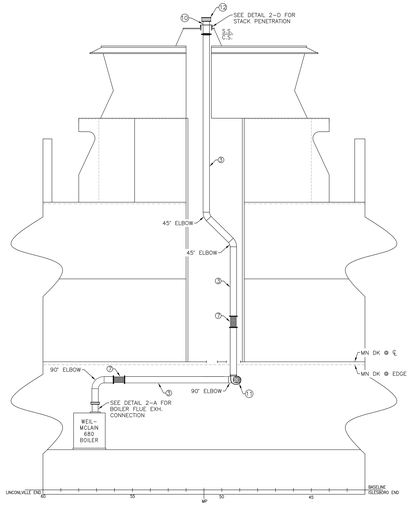
STBD BATTERY ROOM OFF-GASSING
FRAME 55+12"
LKG AFT



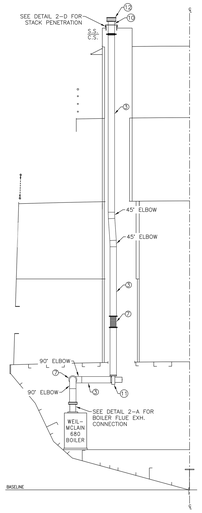
BATTERY ROOM OFF-GASSING
PROFILE VIEW
OUTBOARD LKG INBOARD TO PORT



PORT BATTERY ROOM OFF-GASSING
FRAME 40+3" BLW MN DECK,
FRAME 45 ABOVE
LKG AFT



BOILER EXHAUST ARRANGEMENT
OUTBOARD PROFILE LOOKING INBOARD TO PORT



BOILER EXHAUST ARRANGEMENT
FRAME 57 LOOKING FWD

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	MR

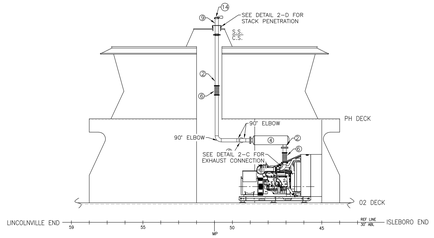
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

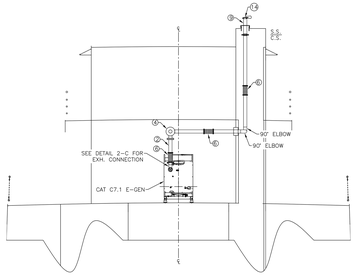
EXHAUST ARRANGEMENT
AND DETAILS

DRAWN BY MR DATE 7/18/2024
CHECKED BY KVC DATE 8/10/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-P1-2 ALT. 0

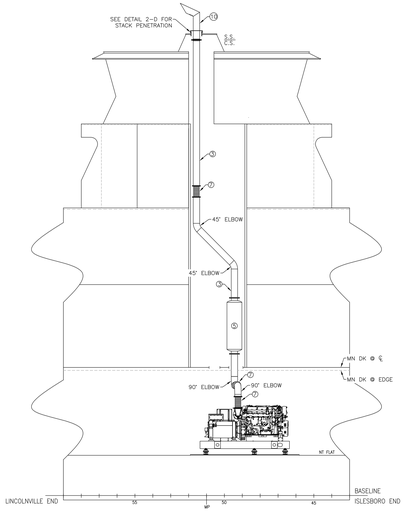
SHEET 2 OF 3



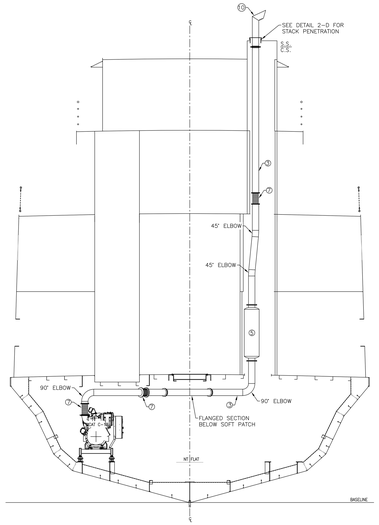
CAT C7.1 EMERGENCY GENERATOR
EXHAUST ARRANGEMENT
OUTBOARD PROFILE LOOKING INBOARD TO PORT



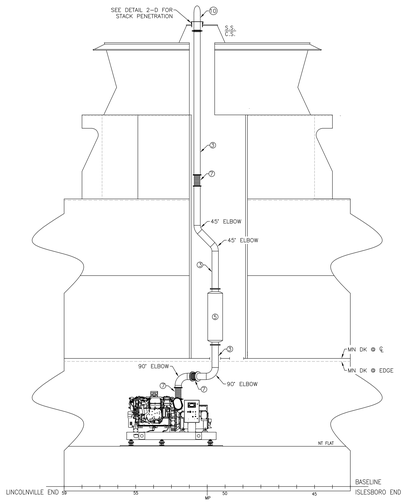
CAT C7.1 EMERGENCY GENERATOR
EXHAUST ARRANGEMENT
FRAME 47 LOOKING AFT



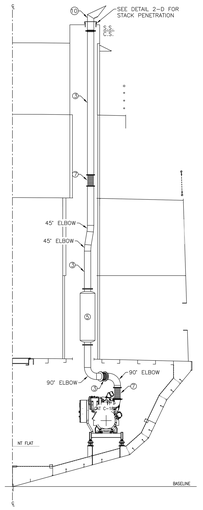
STBD CAT C18 GENERATOR EXHAUST ARRANGEMENT
OUTBOARD PROFILE LOOKING INBOARD TO PORT



STBD CAT C18 GENERATOR EXHAUST
ARRANGEMENT
FRAME 49 LOOKING AFT



PORT CAT C18 GENERATOR EXHAUST ARRANGEMENT
OUTBOARD PROFILE LOOKING INBOARD TO PORT



PORT CAT C18 GENERATOR EXHAUST
ARRANGEMENT
FRAME 51 LOOKING AFT

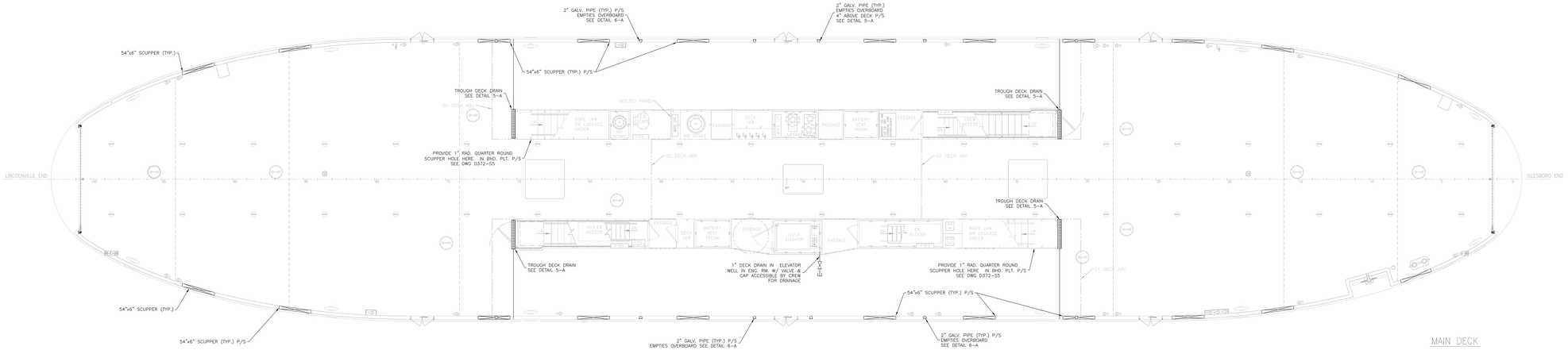
0	ISSUED FOR BID	8/10/24	MR
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

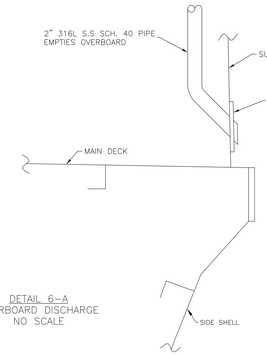
207 FT LOA FERRY VESSEL
MAINE DOT

EXHAUST ARRANGEMENT
AND DETAILS

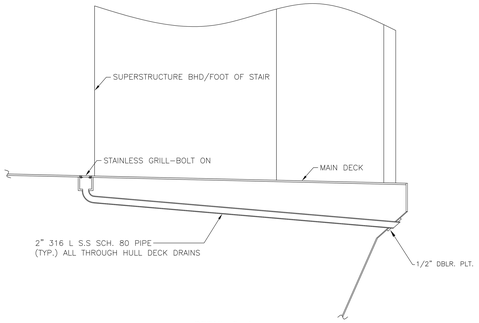
DRAWN BY MR DATE 7/18/2024
CHECKED BY KVC DATE 8/10/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
SHEET 3 OF 3 DWG. NO. D372-P1-3 ALT. 0



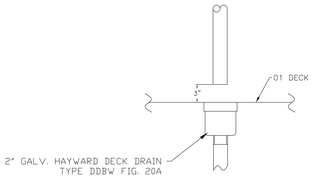
MAIN DECK



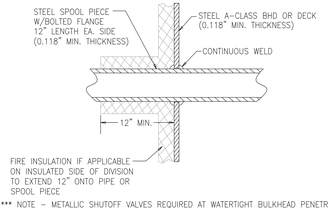
DETAIL 6-A
OVERBOARD DISCHARGE
NO SCALE



DETAIL 5-A
TROUGH DECK DRAIN AT
DOOR/STAIR
NO SCALE



DETAIL 4-A
PIPE EMPTYING ABOVE DECK DRAIN
NO SCALE



*** NOTE – METALLIC SHUTOFF VALVES REQUIRED AT WATERTIGHT BULKHEAD PENETRATIONS

DETAIL – METALLIC PIPE PENETRATION
THROUGH A-CLASS BULKHEAD OR DECK
NOT TO SCALE

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS EXCEPT IN GENERAL OR AS NOTED.
2. FINAL LOCATION OF ALL PIPE AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT INSTALLATION.
3. ALL HORIZONTAL PIPES SHALL BE INSTALLED WITH A SLOPE OF 1/4" PER FOOT.
4. THE DECK AND BULKHEAD PENETRATIONS SHALL HAVE 1/2" DOUBLER PLATES AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
5. ALL DECK DRAINS SHALL BE HAYWARD GALV. DDBW TYPE FITTED WITH A REMOVABLE BRONZE OR REINFORCED PLASTIC STRAINER PLATE HAVING A FREE AREA OF AT LEAST TWICE THE AREA OF THE DRAIN PIPE. THE STRAINERS SHALL BE FLUSH WITH THE DECK.
6. ALL THE DECK DRAIN PIPES SHALL BE 316L S.S SCHEDULE 40 OR 80 PIPE.

SYMBOLS

- DRAIN
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/14/24	KVC

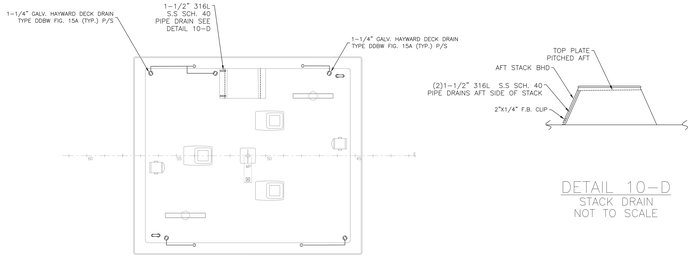
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

DECK DRAIN SCHEMATIC

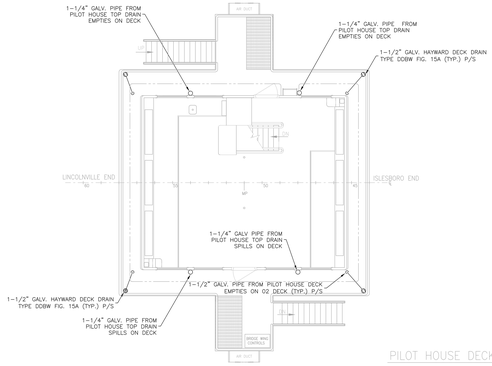
DRAWN BY GN DATE 1/2024
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 1/4"=1'-0" (TO PRINT)
DWG. NO. D372-P3-1 ALT. 0

SHEET 1 OF 2



DETAIL 10-D
STACK DRAIN
NOT TO SCALE

PILOT HOUSE TOP



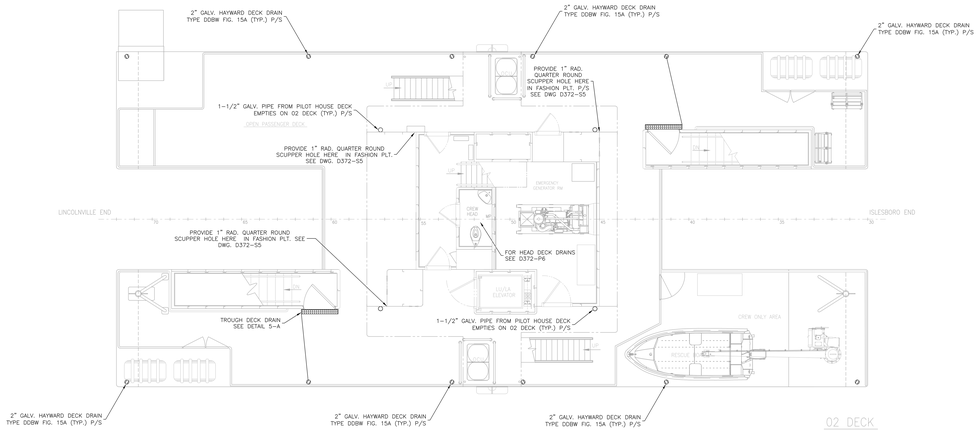
PILOT HOUSE DECK

GENERAL NOTES

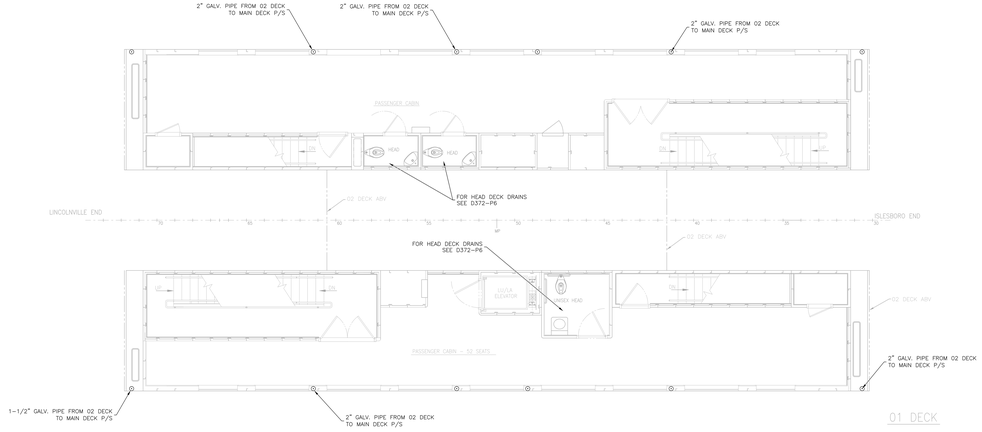
1. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS EXCEPT IN GENERAL OR AS NOTED.
2. ALL PIPING, TUBING, PIPE AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT INSTALLATION.
3. ALL HORIZONTAL PIPES SHALL BE INSTALLED WITH A SLOPE OF 1/4" PER FOOT.
4. THE DECK AND BULKHEAD PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
5. ALL DECK DRAINS SHALL BE FITTED WITH A REMOVABLE BRASS OR APPROVED REINFORCED PLASTIC STRAINER PLATE HAVING A FREE AREA OF AT LEAST TWICE THE AREA OF THE DRAIN PLATE. THE STRAINERS SHALL BE SECURED AND SHALL BE FLUSH WITH THE DECK.

SYMBOLS

- DRAIN
- PIPE RUN UP
- PIPE RUN DOWN
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK



02 DECK



01 DECK

0	ISSUED FOR BID	8/14/24	KVC
ALT	DESCRIPTION	DATE	NAME

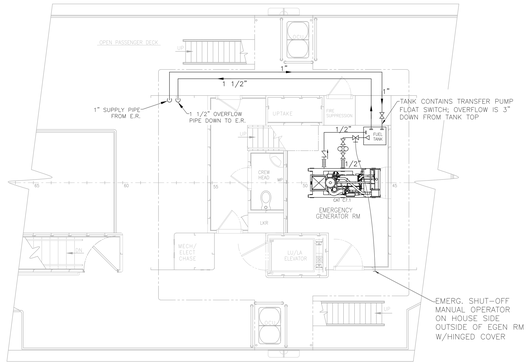
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

DECK DRAIN SCHEMATIC

DRAWN BY GN DATE 1/2024
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 1/4"=1'-0" (TO PRINT)
DWG. NO. D372-P3-2 ALT. 0

SHEET 2 OF 2



02 DECK

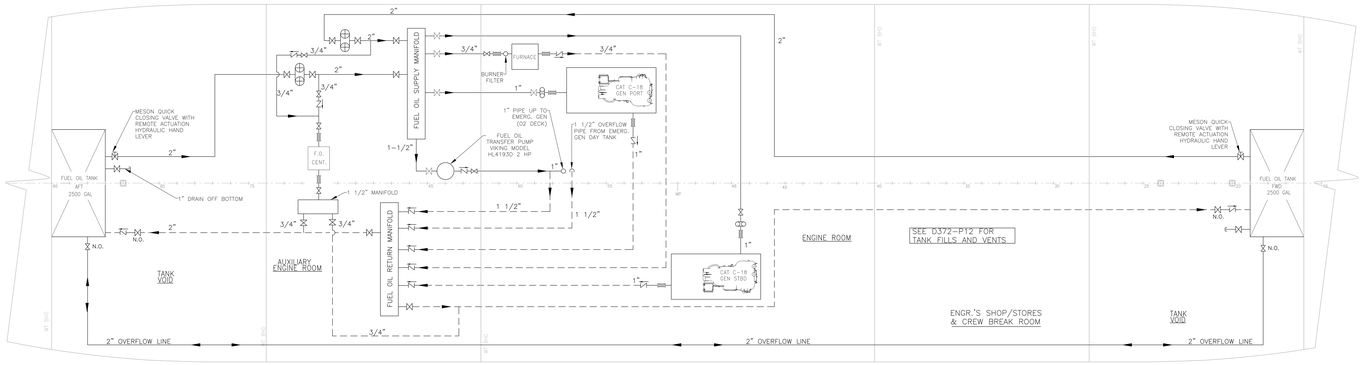
SCHEDULE OF MATERIALS

SERVICE	SIZE	PIPE	MATERIAL JOINT: MATERIAL	MATERIAL JOINT: GASKETS	MATERIAL JOINT: BOLTING	VALVES: BODY	VALVES: TRIM	FITTINGS
FUEL OIL PIPING MAWP: 100 PSIG MAX TEMP: 120°F	2½" & ABOVE	CARBON STEEL ASTM ASTM A53 OR A106, GRADE B SEAMLESS ANSI B36.10 SCH 40	FLANGE CARBON STEEL ASTM A105 ANSI B16.5 150# SLIP-ON OR WELD NECK	GARLOCK IFG 5500	BOLTS: CARBON STEEL ASTM A307 GRADE B ANSI B18.2.1 NUTS: CARBON STEEL ASTM A563 GRADE A ANSI B18.2.2			CARBON STEEL ASTM A234, GR WPB ANSI B16.9 BUTT WELD LONG RADIUS
	2" & UNDER	CARBON STEEL ASTM ASTM A53 OR A106, GRADE B SEAMLESS ANSI B36.10 SCH 80	UNION GROUND JOINT CARBON STEEL ASTM A105 ANSI B16.11 SOCKET WELD			GATE: CARBON STEEL ASTM A105N 150# FLANGED GLOBE:DUCTILE IRON FLANGED ANSI 150 BALL: CRBM ASTM A315 SOCKET WELD OR THREADED 1500 PSI SWING CHECK: CARBON STEEL ASTM A216 GR WCB 150#, SOCKET WELD OR THREADED	GATE: METAL-SEATED GLOBE:304SS DISC,SEAT,STEM BRASS CYL. BALL: A351-CF8M BALL RPTFE SEATS GRAPHITE SEAL SEE NOTE 17, 24 & 25	CARBON STEEL ASTM A105 ANSI B16.11 3000# SOCKET WELD

DESCRIPTION	MATERIAL SPEC.
FUEL OIL TRANSFER PUMP	VIKING MODEL HL4195 30 GPM 2HP MOTOR @ 1750 RPM
FLEXIBLE NON-METALLIC HOSE	AEROQUIP FC 234 HOSE - SAE J1942 SAE J1475 (MAX 30" LENGTH)
FUEL CENTRIFUGE	ALFA-LAVAL MAB-103 FUEL OIL SEPARATOR - NOTE 240 VAC, 60 Hz
SYSTEM PRIMARY FUEL OIL STRAINER	EATON CORP.2" MODEL 53 BTK, CAST STEEL, W. S.S. BASKET
SECONDARY FUEL WATER SEPARATORS	RAYCOR TURBINE SERIES #75000MAX10
MESON QUICK CLOSING VALVE	MESON 901002 QUICK CLOSING VALVE STRAIGHT TYPE W/ HYDRAULICALLY ACTUATED RELEASE CYLINDER
MESON HYDRAULIC CONTROL STATION	MESON (HCS) GC UNIT 1-3. CABINET W/ HYDRAULIC LEVERS TO ACTUATE MESON QUICK CLOSE VALVE

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS OR EQUIPMENT EXCEPT IN GENERAL.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT THE INSTALLATION.
3. SIZES SHOWN ARE FOR GUIDANCE ONLY AND NECESSARY ADJUSTMENT SHALL BE REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL PIPING DIAGRAMS, SPECIFICATIONS AND RECOMMENDATIONS FURNISHED BY THE MANUFACTURERS OF EQUIPMENT SERVICED BY A SYSTEM SHALL SUPERSEDE.
5. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.
6. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
7. ALL OIL PIPING SYSTEMS, SHALL COMPLY WITH THE REQUIREMENT OF U.S. COAST GUARD 46 CFR 56.50-60, 56.50-75, 58.01-25, etc.
8. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
9. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
10. THE DECK AND BULKHEAD PIPING PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND SHALL BE WELDED ON BOTH SIDES OF THE PENETRATIONS.
11. ALL SYSTEMS SHALL HAVE PROVISIONS FOR COMPLETE DRAINAGE.
12. ALL OIL SUPPLY AND RETURN, FLEXIBLE CONNECTIONS INSTALLED AT THE ENGINES, SHALL BE TO THE SATISFACTION OF THE OCMI (SEE NOTE 14).
13. THE INSTALLATION, TESTING AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE OFFICER IN CHARGE MARINE INSPECTION (O.C.M.I.)
14. 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 BE NO MORE THAN 30" IN LENGTH
15. DRIP PANS WITH UP-TURNED, SEALED, AND FLANGED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS, PUMPS, STRAINERS, AND ANY OTHER EQUIPMENT THAT CONTAINS OIL AND REQUIRES PERIODIC MAINTENANCE. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN VALVE.
16. TANK SUCTION VALVES SHALL BE FITTED WITH A REMOTE QUICK CLOSING VALVES LOCATED ON THE MAIN DECK NEAR TANKS SERVED OR IN ENGINE ROOM EGRESS.
17. TANK SHUT-OFF VALVES SHALL HAVE FIRE SAFE METALLIC SEATS.
18. SLOPE FUEL OIL TANK VENT LINE 1/8" PER FOOT TOWARDS TANK.
19. THE HEIGHT OF THE FUEL SUCTION TAIL PIECE SHALL BE ABOVE THE BOTTOM OF THE FUEL TANK.
20. THE FUEL RETURN LINE SHALL ENTER NEAR THE TOP OF THE TANK AND SHALL HAVE DIFFUSER AS REQUIRED TO MINIMIZE STIRRING UP THE OIL IN THE TANK.
21. FUEL PUMPS AND CENTRIFUGE SHALL HAVE REMOTE SHUTDOWNS.
22. EMERGENCY GEN FUEL TANK SHALL BE EQUIPPED WITH HIGH & LOW LEVEL ALARMS AND PROVIDED WITH FUEL TRANSFER PUMP CUTOFF.
23. VENT OUTLETS FROM FUEL OIL TANKS SHALL BE FITTED WITH FLAME SCREENS IN ACCORDANCE WITH 46 CFR 56.50-85(a)(8)
24. VALVES WITH RESILIENT SEATED MATERIALS REQUIRED AT A VITAL PIPING SYSTEM MANIFOLD MUST MEET THE MINIMUM STANDARDS FOR A CATEGORY A VALVE IN ACCORDANCE WITH 46 CFR 56.20-15(b)(2)(i).
25. REMOTE OPERATION VALVES SHALL BE ARRANGED IN ACCORDANCE WITH 46 CFR 56.50-1(d) AND 46 CFR 56.50-60(D).



HOLD

LEGEND

- GATE VALVE
- CHECK VALVE
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- FLEXIBLE CONNECTION
- PRIMARY DUPLEX STRAINER
- FUEL WATER SEPARATOR
- BELLMOUTH
- GATE VALVE W/ REMOTE ACTUATOR
- SUPPLY PIPE
- RETURN PIPE

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/19/24	KVC

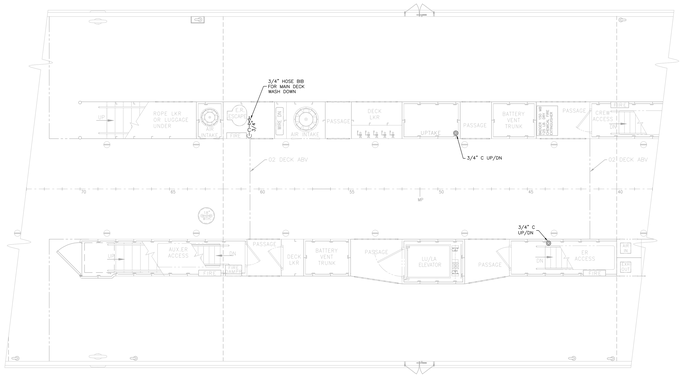
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

FUEL OIL SCHEMATIC

DRAWN BY MR DATE 10/30/2023
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-P4 ALT. 0

SHEET 1 OF 1



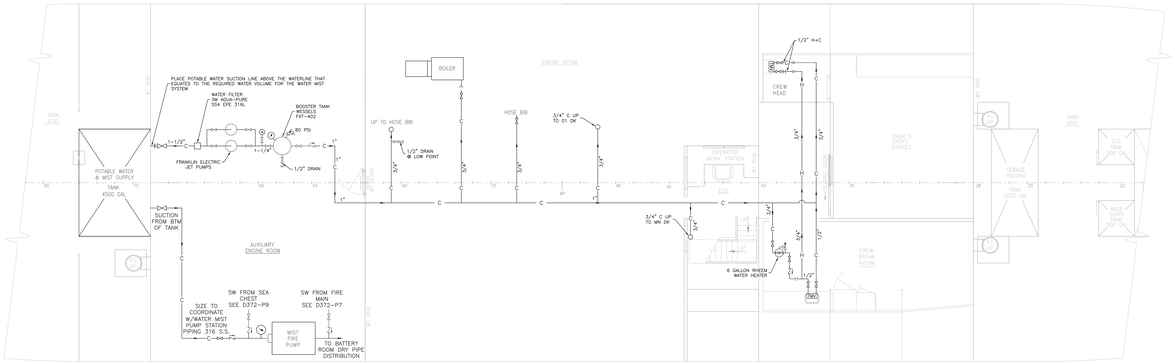
MAIN DECK

BILL OF MATERIALS

SERVICE	SIZE	PIPE	FITTINGS	VALVE BODIES	VALVE MOUNTINGS	FITTINGS/NOTES
POTABLE WATER PUMP SUCTION AND DISCHARGE UP TO HYDROPNEUMATIC TANKS	2 IN. AND ABV.	COPPER TUBE ASTM B88 TYPE L	AS SPECIFIED, TYPE L COPPER, 300#	150# FLANGED ANSI B16.24	BRONZE	VIEGA PROPRESS *NOTE 18
	1.5 IN AND BEL.		MAPRESS COMPRESSION TYPE CONNECTIONS	150# THREADED OR SOLDER ENDS, ASTM B62		
POTABLE WATER FROM HYDROPNEUMATIC TANK (HOT & COLD)	1.5 IN. AND ABV.	S.D. COPPER TUBING TYPE L ASTM B88	AS SPECIFIED, TYPE L COPPER, 300#	BRONZE SCREWED 150# STD	BRONZE	VIEGA PROPRESS *NOTE 18
	1.25 IN. AND BEL		AS SPECIFIED, TYPE L COPPER, 300#	BRONZE HARD SOLDER 100# STD		
POTABLE WATER FROM WATER HEATER	1.5 IN AND ABV.	COPPER TUBE ASTM B88 TYPE L	AS SPECIFIED, TYPE L COPPER, 300#	150# FLANGED ANSI B16.24	BRONZE	VIEGA PROPRESS *NOTE 18
	1.25 IN AND BEL.		AS SPECIFIED, TYPE L COPPER, 300#	150# THREADED OR SOLDER ENDS, ASTM B62		
PIPE INSULATION		SPI MARINE 59M FIBERGLASS PIPE INSULATION	USE W/SYSTEM INSULATION JOINT TAPE			
WATER MIST FIRE SUPPRESSION SYSTEM						SHIPYARD TO SUBMIT SELECTED WATER MIST SYSTEM FOR APPROVAL UNDER SEPARATE COVER. SYSTEM TO BE APPROVED UNDER 162.135/14 OR 162.135/17
POTABLE WATER TO/FROM WATER MIST PUMP	ALL SIZES	316 STAINLESS STEEL SCH 80 A312 ASME B31.1 ASME B36.19	STAINLESS STEEL FITTINGS, TEES & ELBOWS SOCKET WELD SCH 80 ASTM A403 ASME B16.3	STAINLESS STEEL ASME B16.34, API 608	STAINLESS STEEL ASME B16.10, ASME B16.5	316 STAINLESS STEEL
RHEEM POINT OF USE ELECTRIC WATER HEATER - 6 GAL.	3/4 IN TANK VALVE SIZE & WATER CONNECTION SIZE	COPPER TUBE ASTM B88 TYPE L	OVERHEAT PROTECTION, TEMPERATURE PRESSURE RELIEF VALVE	UL 174		120 VOLT, 2000 W
RHEEM POINT OF USE ELECTRIC WATER HEATER - 2 GAL.	1/2 IN TANK VALVE SIZE & WATER CONNECTION SIZE		OVERHEAT PROTECTION, TEMPERATURE PRESSURE RELIEF VALVE	UL 174		120 VOLT, 1440 W
BOOSTER TANK WESSELS FXT-402	25 GAL					ASME PRESSURE VESSEL & BOILER CODE
FRANKLIN ELECTRIC PRO (RM2) JET PUMP	25 GPM					

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS EXCEPT IN GENERAL OR AS NOTED.
2. FINAL LOCATION OF ALL PIPE AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT A NEAT & EFFICIENT SYSTEM.
3. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
4. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED TOGETHER AS MUCH AS POSSIBLE
5. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
6. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
7. ALL SYSTEMS SHALL HAVE PROVISION FOR COMPLETE DRAINAGE.
8. ALL PIPING DIAGRAMS, SPECIFICATIONS AND RECOMMENDATIONS FURNISHED BY MANUFACTURER OF EQUIPMENT SERVICED BY A SYSTEM SHALL SUPERSEDE.
9. THE POTABLE WATER SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS AND STANDARDS OF SANITATION FOR THE CONSTRUCTION.
10. ALL MATERIALS FOR POTABLE WATER SUPPLY SHALL BE OF MATERIALS APPROVED BY THE PUBLIC HEALTH SERVICE.
11. ON THE MAIN BRANCHES OF HOT AND COLD WATER, SHUT-OFF VALVES SHALL BE PROVIDED.
12. SIZES SHOWN ARE FOR GUIDANCE ONLY AND NECESSARY ADJUSTMENT SHALL BE AS REQUIRED BY THE EQUIPMENT AND SYSTEM TO INSURE SATISFACTORY OPERATION.
13. THE DECK AND BULKHEAD PIPING PENETRATIONS SHALL MAINTAIN THE WATERTIGHT INTEGRITY AND FIRE-RATING OF DIVISION. NVIC 9-97 CH 1 SHALL BE USED FOR GUIDANCE.
14. ALL WATER PIPES SHALL BE INSULATED AGAINST CONDENSATION AND FREEZING.
15. ALL PIPE LINES SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION.
16. PROPER SUPPORTS SHALL BE PROVIDED FOR ALL PIPE RUNS AS REQUIRED BY THE REGULATORY BODIES AND ESTABLISHED MARINE PRACTICE.
17. ALL POTABLE WATER RISERS ARE TO BE LOCATED WITHIN HEATED AREAS OF THE BOAT
18. ALL VIEGA PROPRESS COMPRESSION FITTINGS MUST BE DOCUMENTED TO ENSURE MATERIAL, SIZE, PRESSURE, TEMPERATURE, AND VIBRATIONS RATINGS ARE NOT EXCEEDED.
19. THE POTABLE WATER PUMPS SHALL BE SUPPLIED WITH INTEGRAL PRESSURE SWITCHES TO CONTROL PUMP OPERATION. THE PUMP SHALL BE SET TO START WHEN PRESSURE REACHES 40 PSI AND STOP AT 60 PSI. THE PUMPS SHALL HAVE INTEGRAL CHECK VALVE. THE NORMAL SYSTEM OPERATION IS ONE PUMP PRESSURIZING THE SYSTEM AND ONE PUMP ON STANDBY.
20. MATERIAL TRANSITION FROM STAINLESS STEEL TO COPPER SHALL BE ACCOMLISHED VIA FLANGED JOINT WITH GALVANIC ISOLATION.



HOLD

LEGEND

- GATE VALVE
- CHECK VALVE
- AQUAPURE F.W. FILTER (1"x1", STAINLESS BODY)
- PRESSURE GAUGE
- RELIEF VALVE
- HOSE CONNECTION
- HOSE CONNECTOR C/W CAP & KEEP CHAIN
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK
- H — HOT POTABLE WATER
- C — COLD POTABLE WATER
- HOSE BIB
- TMV — TOUCHLESS MIXING VALVE
- HWH — HOT WATER HEATER
- CONCENTRIC REDUCER

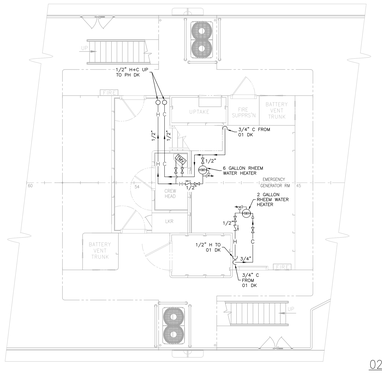
0	ISSUED FOR BID	8/29/24	MR
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

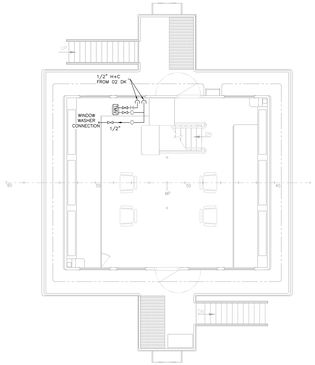
207 FT LOA FERRY VESSEL

POTABLE WATER SCHEMATIC

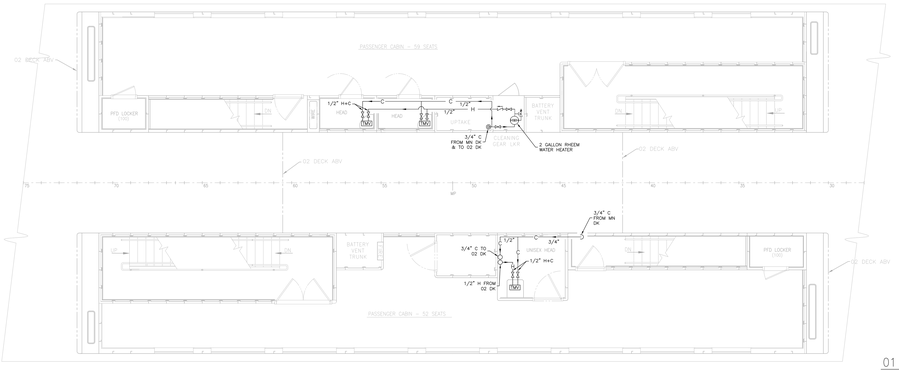
DRAWN BY MR DATE 12/11/23
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
SHEET 1 OF 2 DWG. NO. D372-P5-1 ALT. 0



02 DECK



PILOT HOUSE DECK



01 DECK

LEGEND

- GATE VALVE
- CHECK VALVE
- AQUAPURE F.W. FILTER (1"x1", STAINLESS BODY)
- PRESSURE GAUGE
- RELIEF VALVE
- HOSE CONNECTION
- HOSE CONNECTOR C/W CAP & KEEP CHAIN
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK
- HOT POTABLE WATER
- COLD POTABLE WATER
- HOSE BIB
- TVMV TOUCHLESS MIXING VALVE
- HWH HOT WATER HEATER
- CONCENTRIC REDUCER

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	MR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

POTABLE WATER SCHEMATIC

DRAWN BY MR DATE 12/11/23
CHECKED BY KVC DATE 8/14/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-P5-2 ALT. 0

SHEET 2 OF 2

GENERAL NOTES

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3. SIZES SHOWN ARE FOR GUIDANCE ONLY AND THE NECESSARY ADJUSTMENTS SHALL BE MADE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
5. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED TOGETHER AS MUCH AS POSSIBLE.

ALL THROUGH-HULL CONNECTIONS SHALL HAVE VALVES FITTED AS CLOSELY AS POSSIBLE AND SHALL CONFORM TO THE REQUIREMENTS OF U.S. COAST GUARD SUBCHAPTER F.

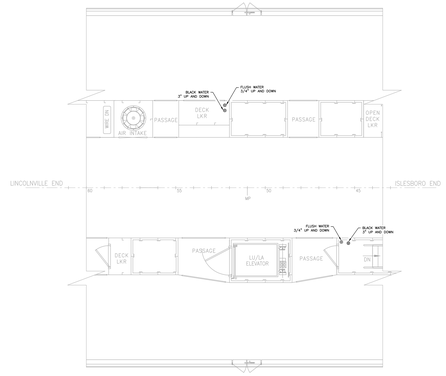
6. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
7. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
8. ALL DECK AND LAVATORY DRAINAGE SYSTEMS SHALL BE FITTED WITH TRAPS.
9. SLOPE SANITARY DRAIN PIPE RUNS BETWEEN 1/4" AND 1/2" PER FOOT.
10. ALL LAVATORY DRAIN PIPES SHALL BE 1-1/2", OR AS SHOWN ON THE DRAWING.
11. ALL WATER CLOSET DRAIN PIPES SHALL BE 3".
12. EACH WATER CLOSET DRAIN OR COMBINATION OF WATER CLOSETS SHALL BE VENTED TO THE ATMOSPHERE BY STUDOR AIR ADMITTANCE VALVES.
13. ALL LAVATORY AND SINK DRAINS SHALL BE VENTED TO THE ATMOSPHERE BY STUDOR AIR ADMITTANCE VALVES
14. ALL MATERIALS FOR POTABLE AND SANITARY SYSTEMS SHALL BE STAMPED AND APPROVED BY NATIONAL SANITATION FOUNDATION TESTING LABORATORY (NSF)
15. THE DECK AND BULKHEAD PENETRATIONS SHALL HAVE PIPE NIPPLE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
16. ALL NONMETALLIC PIPING MATERIALS SHALL MEET THE REQUIREMENTS OF 46 CFR 56.60-25. PLASTIC PIPE AND ASSOCIATED FITTINGS MUST BE IN ACCORDANCE WITH IMO RESOLUTION A.753 (18) AND IMO RESOLUTION MSC.313(88) AND BE USCG TYPE APPROVED TO SERIES 164.141.
17. PVC PIPING SHALL BE IN ACCORDANCE WITH IMO RESOLUTION A.753(18).
18. ALL PENETRATIONS THROUGH FIRE-RATED BULKHEADS BY NONMETALLIC PIPE SHALL BE IN ACCORDANCE WITH U.S. COAST GUARD NVIC 9-97 CH1. SEE SHEET 2 DETAILS.
20. ALL PENETRATIONS THROUGH WATERTIGHT BULKHEADS BY NONMETALLIC PIPE SHALL BE FITTED WITH METALLIC SHUTOFF VALVES.
21. FLUSHING WATER PUMPS SHALL BE SUPPLIED WITH INTEGRAL PRESSURE SWITCHES TO CONTROL PUMP OPERATION. THE PUMP SHALL BE SET TO START & STOP WHEN PRESSURE REACHES PRESET POINTS APPROPRIATE FOR SYSTEM FUNCTION. THE PUMPS SHALL HAVE INTEGRAL CHECK VALVE. THE NORMAL SYSTEM OPERATION IS ONE PUMP PRESSURIZING THE SYSTEM AND ONE PUMP ON STANDBY.
20. MATERIAL TRANSITION FROM STEEL TO COPPER & COPPER-NICKEL SHALL BE ACCOMPLISHED VIA FLANGED JOINT WITH GALVANIC ISOLATION.

BILL OF MATERIALS

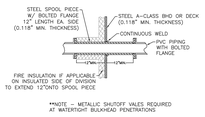
SERVICE	SIZE	PIPE	JOINTS	VALVE BODIES	VALVE MOUNTINGS	FITTINGS
SANITARY WATER PUMP SUCTION AND DISCHARGE UP TO PRESSURE SET	1 1/2 IN. AND BEL.	COPPER - NICKEL ASME SB-467	MALLEABLE IRON UNION SCREWED 150# STD GALVANIZED	BRONZE SCREWED 150# STD	BRONZE	MALLEABLE IRON SCREWED 150# STD VIEGA PROPRESS
SANITARY WATER FROM PRESSURE SET (HOT & COLD)	1 IN. AND ABV.	S.D. COPPER TUBING TYPE K ASTM B88	BRONZE SILBRAZED 150# STANDARD	BRONZE FLANGED OR HARD SOLDER 100# STD.	BRONZE	WROUGHT COPPER OR BRASS SWEATED TYPE SILVER BRAZED VIEGA PROPRESS
	1 IN. AND BEL.		BRONZE SWEATED OR SILVER BRAZED UNION	BRONZE HARD SOLDER 100# STD.		
SANITARY DRAINS AND SHORE PUMPOUT	ALL	SCH. 40 GALV. STEEL A-53	FORGED STEEL SLIP-ON ASTM A105 ANSI B16.5	BRONZE ASME SB61 OR SB62	BRONZE ASME SB61 OR SB62	GALV. STEEL ASTM A234
PVC SANITARY DRAINS	ALL	PVC SCH. 80 ASTM D1784, ASTM D1785	PVC SOCKET FLANGE ASTM D2467 ANSI B16.5 150#	PVC BALL VALVES ASTM F1970	PVC	PVC ASTM D2467, ASTM D1784
BHD PENETRATION FIRE STOP MATERIAL	STI MARINE MFB MARINE FILLER BLANKET & MFS MARINE FIRESTOP SEALANT					
LIFT STATION PUMP	LIBERTY PUMPS 702/LES2A/A2, 208V, 1/2 HP, 70 GAL SEWAGE EJECTOR UNIT					
FLUSHING WATER PUMPS	FRANKLIN ELECTRIC JET PUMPS PRO (RM2)					
PRESSURE TANK	WESSELS FXT-403 45 GAL ASME PRESSURE VESSEL & BOILER CODE RATED					
SEWAGE TANK	MILLER PLASTICS 3000 GAL HOLDING TANK - 12'-0" W x 5'-3" D x 6'-6" H - INTERNAL BAFFLES, EXTERNAL BANDING, CLOSED TANK WITH BOLT ON LID, INTEGRAL V.L. ACCESS W/ MANHOLE, ULLAGE NIPPLE, LEVEL GAUGE W/ HIGH LEVEL ALARM					

SYMBOLS

- STUDOR AIR ADMITTANCE VALVE
- VALVE
- CHECK VALVE
- DECK DRAIN W/ TRAP
- TRAP
- HOSE CONNECTOR C/W CAP & KEEP CHAIN
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK
- G — GRAY WATER DRAIN
- B — BLACK WATER DRAIN
- V — VENT PIPE
- F — FLUSH WATER
- DISCHARGE STATION
- THREADED CAP FOR CLEAN OUT
- HOSE CONNECTION

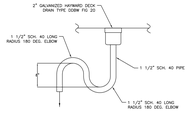


MAIN DECK



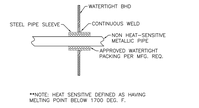
*NOTE - METALLIC SHUTOFF VALES REQUIRED AT WATERTIGHT BULKHEAD PENETRATIONS

DETAIL - NON METALLIC PIPE PENETRATION THROUGH A-CLASS BULKHEAD OR DECK
NOT TO SCALE



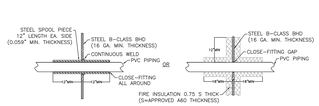
DETAIL-PASSENGER HEAD DECK DRAIN
NOT TO SCALE

*NOTE: TO INSURE THAT THAT TANK GASSES ARE SEPARATED FROM PASSENGER CABINS AT ALL TIMES, FILL THAT WITH WATER ON A REGULAR BASIS

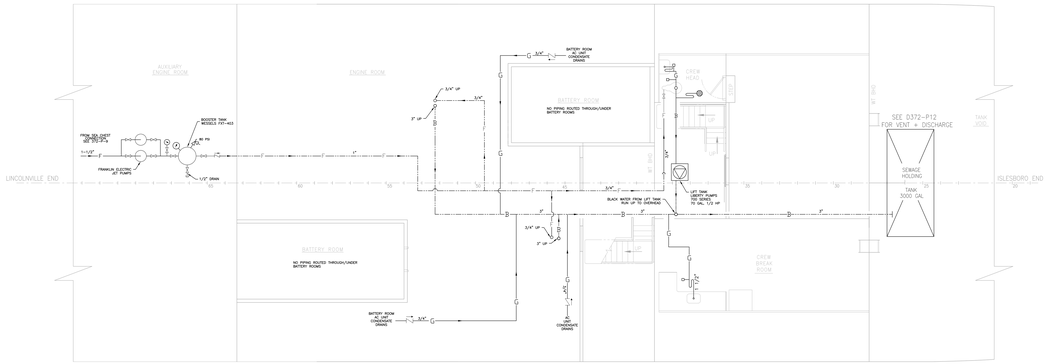


**NOTE: HEAT SENSITIVE DEFINED AS HAVING MELTING POINT BELOW 1700 DEG. F.

DETAIL - NON HEAT-SENSITIVE METALLIC PIPE PENETRATION THROUGH WATERTIGHT BULKHEAD OR DECK
NOT TO SCALE



DETAIL - NON METALLIC PIPE PENETRATION THROUGH B-CLASS BULKHEAD
NOT TO SCALE



HOLD

NOTE REQ. FOR STEEL SPOOLPIECE AT EACH DECK & FIRE BHD PENETRATION FOR NON-METALLIC PIPE - SEE DETAILS

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/11/24	KVC

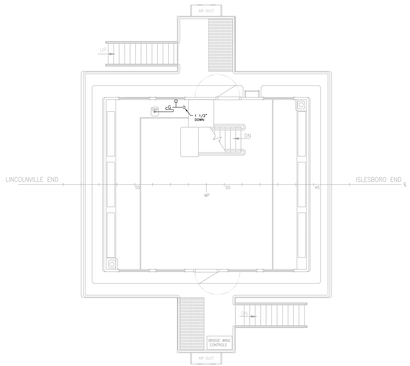
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

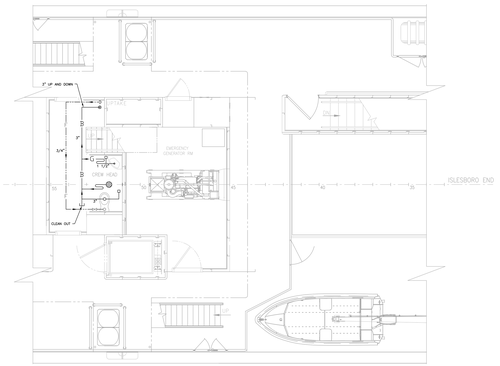
DRAIN, WASTE, VENT PIPING SCHEMATIC

DRAWN BY GN — DATE 1/17/2024
CHECKED BY JG — DATE 8/28/24
APPROVED BY — DATE
SCALE 1/4"=1'-0"
DWG. NO. D372-P6-1 — ALT. 0

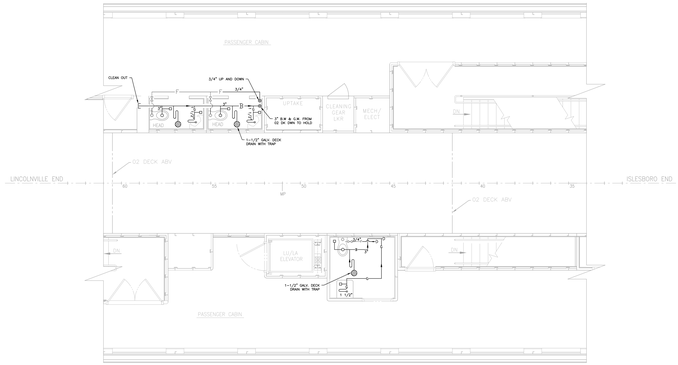
SHEET 1 OF 2



PILOT HOUSE DECK



02 DECK



01 DECK

GENERAL NOTES

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4. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
5. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED TOGETHER AS MUCH AS POSSIBLE.
6. ALL THROUGH-HULL CONNECTIONS SHALL HAVE VALVES FITTED AS CLOSELY AS POSSIBLE AND SHALL CONFORM TO THE REQUIREMENTS OF U.S. COAST GUARD SUBCHAPTER F.
7. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
8. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
9. ALL DECK AND LAVATORY DRAINAGE SYSTEMS SHALL BE FITTED WITH TRAPS.
10. SLOPE SANITARY DRAIN PIPE RUNS BETWEEN 1/4" AND 1/2" PER FOOT.
11. ALL LAVATORY DRAIN PIPES SHALL BE 1-1/2", OR AS SHOWN ON THE DRAWING.
12. ALL WATER CLOSET DRAIN PIPES SHALL BE 3".
13. EACH WATER CLOSET DRAIN OR COMBINATION OF WATER CLOSETS SHALL BE VENTED TO THE ATMOSPHERE BY STUDOR AIR ADMITTANCE VALVES.
14. ALL LAVATORY AND SINK DRAINS SHALL BE VENTED TO THE ATMOSPHERE BY STUDOR AIR ADMITTANCE VALVES
15. ALL MATERIALS FOR POTABLE AND SANITARY SYSTEMS SHALL BE STAMPED AND APPROVED BY NATIONAL SANITATION FOUNDATION TESTING LABORATORY (NSF)
16. THE DECK AND BULKHEAD PENETRATIONS SHALL HAVE PIPE NIPPLE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
17. ALL NONMETALLIC PIPING MATERIALS SHALL MEET THE REQUIREMENTS OF 46 CFR 56.60-25. PLASTIC PIPE AND ASSOCIATED FITTINGS MUST BE IN ACCORDANCE WITH IMO RESOLUTION A.753 (18) AND IMO RESOLUTION MSC.313(88) AND BE USCG TYPE APPROVED TO SERIES 164.141.
18. PVC PIPING SHALL BE IN ACCORDANCE WITH IMO RESOLUTION A.753(18).
19. ALL PENETRATIONS THROUGH FIRE-RATED BULKHEADS BY NONMETALLIC PIPE SHALL BE IN ACCORDANCE WITH U.S. COAST GUARD NVIC 9-97 CH1. SEE SHEET 1 DETAILS.
20. ALL PENETRATIONS THROUGH WATERTIGHT BULKHEADS BY NONMETALLIC PIPE SHALL BE FITTED WITH METALLIC SHUTOFF VALVES.

SYMBOLS

- STUDOR AIR ADMITTANCE VALVE
- VALVE
- CHECK VALVE
- DECK DRAIN
- TRAP
- HOSE CONNECTOR C/W CAP & KEEP CHAIN
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- PIPE RUN OVERHEAD
- PIPE RUN BELOW DECK
- —G— GRAY WATER DRAIN
- —B— BLACK WATER DRAIN
- —V— VENT PIPE
- —F— FLUSH WATER
- DISCHARGE STATION
- THREADED CAP FOR CLEAN OUT
- HOSE CONNECTION

NOTE REQ. FOR STEEL SPOOLPIECE AT EACH DECK & FIRE BHD PENETRATION FOR NON-METALLIC PIPE – SEE DETAILS

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/11/24	KVC

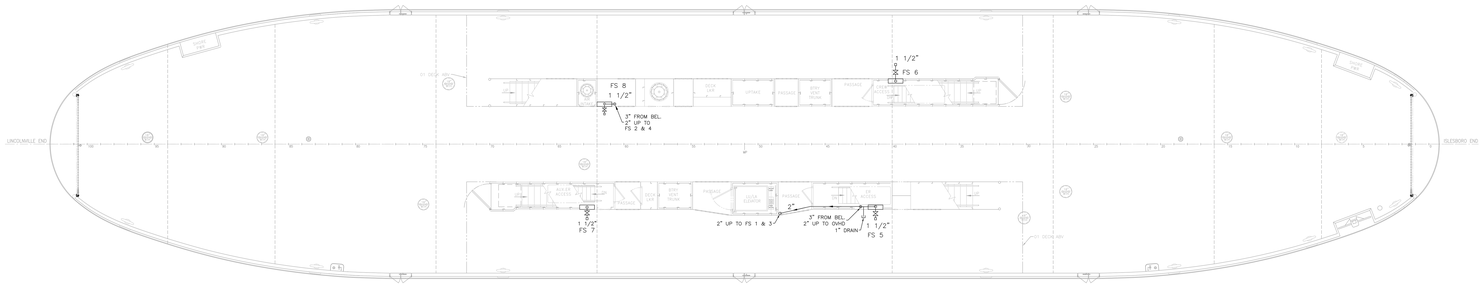
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

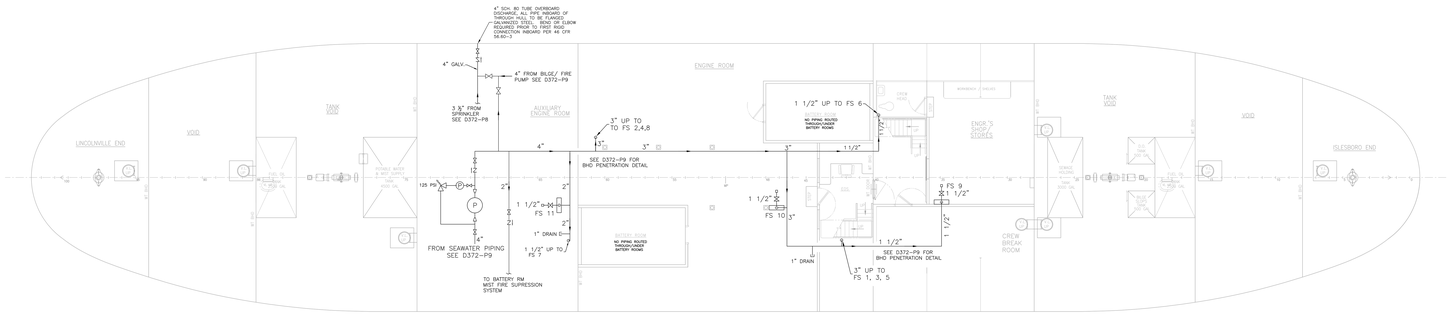
DRAIN,WASTE,VENT PIPE SCHEMATIC

DRAWN BY GN DATE 1/17/2024
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 1/4"=1'-0"
DWG. NO. D372-P6-2 ALT. 0

SHEET 2 OF 2



MAIN DECK



HOLD

SYMBOLS

- PIPE RUN
- PIPE RUN UP
- PIPE RUN DOWN
- PIPE RUN UP AND DOWN
- GATE VALVE
- CHECK VALVE
- PRESSURE RELIEF VALVE
- SC — SEA CHEST
- PRESSURE GAUGE
- P — PUMP
- DUPLEX STRAINER
- VENT
- N.C. — NORMALLY CLOSED
- 1 1/2" CONNECTION
- DRAIN
- CONCENTRIC PIPE REDUCER

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

GILBERT ASSOCIATES, INC.

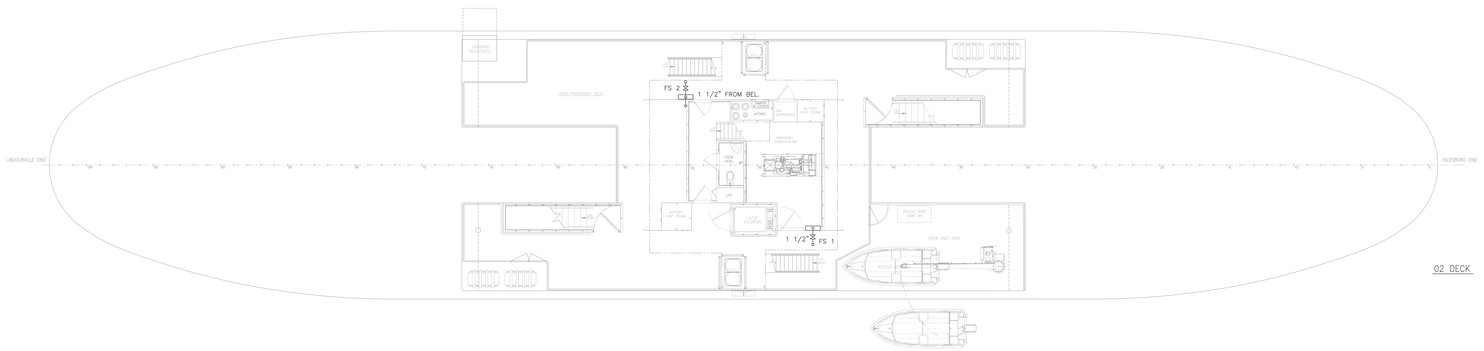
NAVAL ARCHITECTS
MARINE ENGINEERS

100 GROSSMAN DRIVE
BRAINTREE, MA 02184

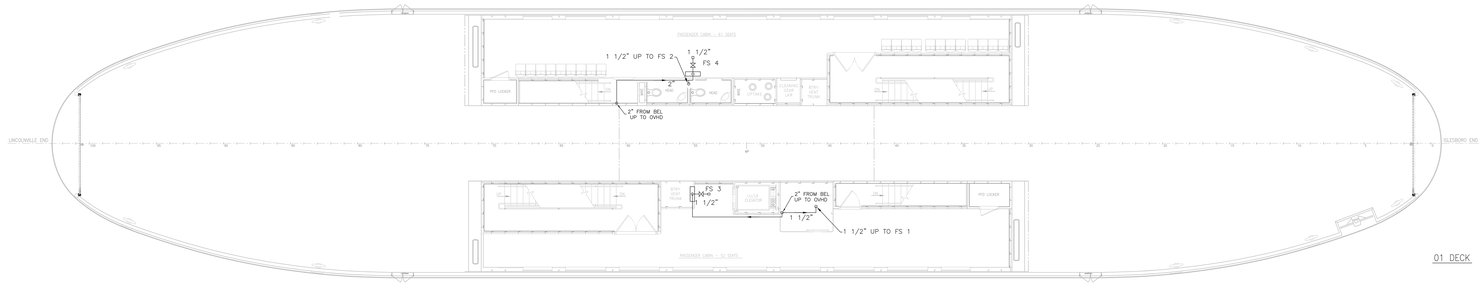
207 FT LOA FERRY VESSEL

FIRE MAIN PIPING SCHEMATIC
& DETAILS

DRAWN BY MR DATE 9/6/2023
CHECKED BY KVC DATE 8/15/24
APPROVED BY DATE
SCALE 3/16" = 1'-0" (TO PRINT)
SHEET 1 OF 2 DWG. NO. D372-P7-1 ALT. 0



02 DECK



01 DECK

MATERIAL LIST

ITEM	QUANTITY	SPECIFICATION	MATERIAL
3", 2", 1 1/2" GALVANIZED STEEL PIPE	AS NEEDED	FURNACE BUTT-WELDED STEEL, SCH. 40 GALVANIZED W/ STEEL PLATE SLIP-ON OR FORGED STEEL JOINTS SOCKET WELDED FLANGE, GALV.	ASTM A53
VALVES BRONZE GATE VALVES 150# CHECK VLVS BRONZE THRD 300#	AS NEEDED	BRONZE SCREWED OR FLANGED, W/ BRONZE MOUNTINGS	ASME SB62 ANSI B16.24 MSS SP-6,25,80
STEEL FITTINGS, TEES, AND ELBOWS IN BILGE SYSTEM	AS NEEDED	MALLEABLE IRON, DUCTILE OR NODULAR CAST IRON, FORGED STEEL, OR CAST STEEL FLANGED, OR SCREWED ENDS, GALV. SCH 40	ASTM A234 ASME B16.1 THRU ASME B16.11
PRIMARY FIRE PUMP	1	GRISWOLD HH SERIES, 3x2-8, 200 GPM @ 210', SELF-PRIMING, CENTRIF. 3600 RPM @ 25 HP.	--
HOSE NOZZLE	11	1 1/2" BRASS NOZZLE W/ 5/8" ORIFICE – USCG APPROVED AKRON OR EQUAL	ASTM F1546
HOSE	11	1 1/2" x 50' SINGLE JACKET USCG	UL 19

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY, AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT INSTALLATION.
3. SIZES SHOWN ARE SHOWN AS MINIMUMS. IF NECESSARY, ADJUSTMENTS SHALL BE MADE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.
5. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS. FIRE EQUIPMENT SHALL BE LABELED IN ACCORDANCE WITH 46 CFR 78.47
6. ALL THROUGH-HULL CONNECTIONS SHALL HAVE VALVES FITTED AS CLOSE AS POSSIBLE TO THE HULL TO COMPLY WITH 46 CFR 56.50-95
7. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
8. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS TO PROVIDE FOR REMOVAL OF EQUIPMENT OR PIPE AND FOR SYSTEM CLEANING IN EACH WATER TIGHT COMPARTMENT. SYSTEMS SHALL ALSO HAVE PROVISIONS FOR EXPANSION OF PIPE BETWEEN EACH WATERTIGHT BULKHEAD.
9. THE BULKHEAD PIPING PENETRATION SHALL HAVE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
10. THE FIRE MAIN SYSTEM SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SUBCHAPTER H 46 CFR 76.10 AND APPLICABLE PORTIONS OF 46 CFR 56.50 AND 56.55
11. THE SEA CHESTS SHALL BE FITTED WITH PORTABLE STEEL STRAINER PLATES FITTED AT THE OUTSIDE OF THE HULL SUITABLY PERFORATED. THE CLEAR AREA SHALL BE AT LEAST 2 1/2 TIMES THE COMBINED AREA OF ALL THE VALVES CONNECTED TO THE SEA CHEST.
12. EACH PUMP DISCHARGE SHALL BE FITTED WITH A PRESSURE GAUGE.
13. ALL PIPING VALVES AND FITTINGS SHALL BE INSTALLED WITH REGARDS TO GOOD MARINE PRACTICE AND SUITABLE FOR ITS INTENDED PURPOSE. THE INSTALLATION, TESTING, AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE U.S. COAST GUARD OFFICER IN CHARGE MARINE INSPECTION (O.C.M.I.)
14. SYSTEMS SHALL BE DESIGNED WITH MEANS FOR COMPLETE DRAINAGE. ALL PIPE RUNS ON SLOPE FOR DRAINAGE WITH PIPE PLUGS OR CAPS AT LOW POINTS PER 46 CFR 76.10-10(e)
15. EACH FIRE PUMP MUST BE CAPABLE OF DELIVERING WATER SIMULTANEOUSLY TO THE TWO HIGHEST HYDRANTS THROUGH THE REQUIRED HOSE AND NOZZLE, AT A PITOT TUBE PRESSURE OF 50 PSI PER 46 CFR 76.10-5(c)
16. EXTERIOR FIRE STATIONS SHALL BE FITTED WITH AN ACCESSIBLE LOCAL DRAIN VALVE THAT DOES NOT ENCROACH ON WALKWAYS OR VEHICLE SPACES.

SYMBOLS

- PIPE RUN
- PIPE RUN UP
- PIPE RUN DOWN
- PIPE RUN UP AND DOWN
- GATE VALVE
- CHECK VALVE
- PRESSURE RELIEF VALVE
- SC — SEA CHEST
- PRESSURE GAUGE
- P — PUMP
- DUPLEX STRAINER
- VENT
- N.C. — NORMALLY CLOSED
- 1 1/2" CONNECTION
- DRAIN

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

GILBERT ASSOCIATES, INC.

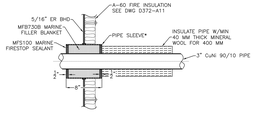
NAVAL ARCHITECTS
MARINE ENGINEERS

100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

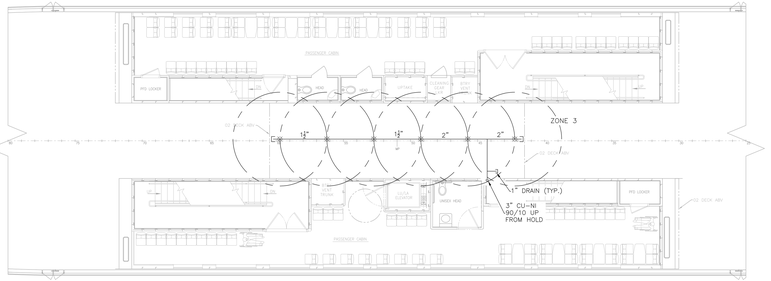
FIRE MAIN PIPING SCHEMATIC & DETAILS

DRAWN BY MR DATE 9/6/2023
CHECKED BY KVC DATE 8/15/24
APPROVED BY DATE
SCALE 3/16" = 1'-0"
SHEET 2 OF 2 DWG. NO. D372-P7-2 ALT. 0

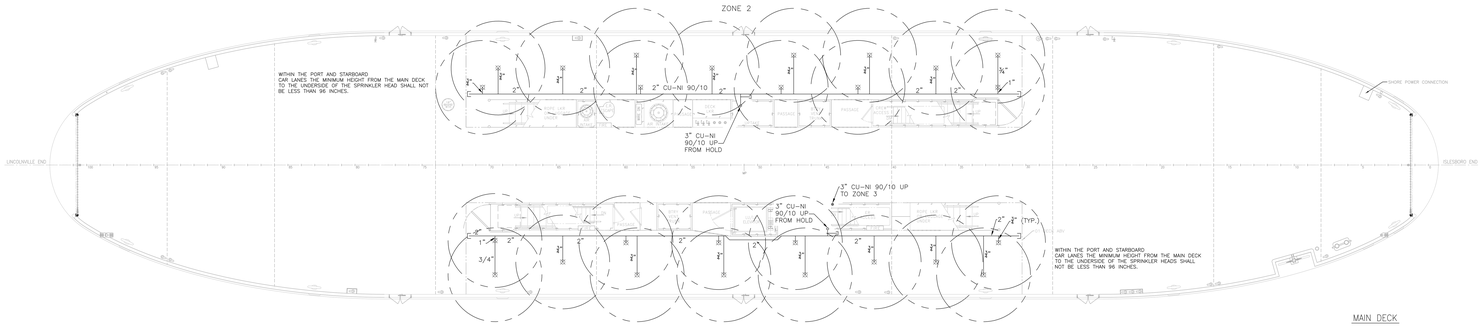


DETAIL 5-D
BHD PENETRATION
DECK SIMILAR-CHECK MANUFACTURER
INSTALLATION INSTRUCTIONS

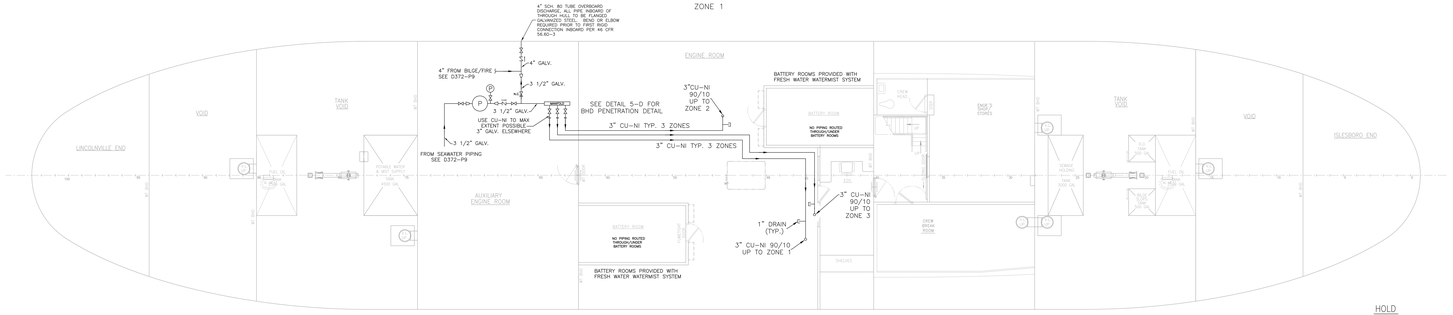
*BHD PENETRATION SLEEVE CAN BE EXPANDED TO SUIT MULTIPLE PIPE PENETRATIONS
MAX OPENING SIZE PER STI MARINE GUIDANCE



01 DECK



MAIN DECK



HOLD

SPRINKLER DECK AREA CAPACITY CALCULATION

TOTAL DECK AREA = 900+900+500 = 2300 SQ. FT.
46 CFR 76.23-10(c)(1): 12 GPM/100 SQ. FT. OF DECK AREA

LARGEST ZONE = 900 SQ. FT.

MINIMUM CAPACITY = 900 SQ. FT. x 12 GPM/100 SQ. FT.
MINIMUM CAPACITY = 108 GPM

EACH PUMP MUST BE ABLE TO SUPPLY TO LARGEST ZONE, EACH SPRINKLER AT 15 PSI (SEE SUPPORTING CALCULATIONS. SUMMARY SHOWN BELOW)

SUMMARY TABLE – SEE CALCULATIONS

ZONE	AREA (SQ. FT.)	NO. OF SPRINKLERS	FLOW RATE (GPM)	HEAD (FT)	UNIT FLOW RATE (GPM/100 SQ.FT.)
1	900	13	166	95	18.4
2	900	13	159	83	17.7
3	500	6	75	41	15

MATERIAL LIST

ITEM	QUANTITY	SPECIFICATION	ASTM
3 1/2", 3" GALVANIZED STEEL PIPE	AS NEEDED IN HOLD	FURNACE BUTT-WELDED STEEL, SCH. 40 GALVANIZED W/ STEEL PLATE SLIP-ON OR FORGED STEEL JOINTS SOCKET WELDED FLANGE, GALV.	A53
3", 2", 1 1/2", 3/4" COPPER-NICKEL 90/10 PIPE	AS NEEDED ABV MAIN DECK SEE NOTE 18 WHERE NOTED	COPPER-NICKEL 90/10 CLASS 200 SEE NOTE 18	ASTM B466
8" SCH. 80 PIPE SPRINKLER MANIFOLD	AS NEEDED	CARBON STEEL, HOT-DIP GALVANIZED	ASTM A53
OVERBOARD DISCHARGE PIPES & FITTINGS	AS NEEDED	SCH 80 STEEL	ASTM A53
VALVES	AS NEEDED IN HOLD	BRONZE SCREWED OR FLANGED, W/ BRONZE MOUNTINGS	ASME SB62 ANSI B16.24 MSS SP-6,9,25,80
FITTINGS	AS NEEDED IN HOLD	MALLEABLE IRON, DUCTILE OR NODULAR CAST IRON, FORGED STEEL, OR CAST STEEL FLANGED, OR SCREWED ENDS, GALV.	ASTM A234 ASME B16.1 THRU ASME B16.11
FITTINGS	AS NEEDED ABV MAIN DECK	VEGA MEGAPRESS COPPER-NICKEL 90/10	ASTM B369
SPRINKLER PUMP	1	GOULDS 3796 (3"x3"-13), 200 GPM @ 100 FT HEAD, 15 HP @ 1770 RPM (2)MAGJ4	--
PENDANT SPRINKLER HEAD	AS NEEDED	3/8" OPEN TYPE, UL APPROVED VIKING MODEL E SPRAY NOZZLE (VK812)	--
GASKETS	AS NEEDED	SEE NOTE 18	ASME B16.21
PIPE HANGERS	AS NEEDED	SEE NOTE 12, 316 STAINLESS STEEL MATERIAL	MSS SP-69
WT BHD & DECK PENETRATION FIRE STOP MATERIAL	AS NEEDED	STI MARINE MFB-B MARINE FILLER BLANKET, MFS MARINE FIRESTOP SEALANT, MWS MARINE WRAP	USCG APPROVAL # 164.138/44/0

GENERAL NOTES

1. THE MANUAL SPRINKLER SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF 46 CFR SUB PART 76.23
2. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS OR EQUIPMENT EXCEPT IN GENERAL. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION.
3. THE FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE BASIS OF BEST SUIT INSTALLATION.
4. ALL PIPE SIZES SHALL BE REVIEWED UPON INSTALLATION TO INSURE PROPER OPERATION OF THE SYSTEM AND SHALL CONFORM TO THE REQUIREMENT OF 46 CFR
5. ALL PIPES ABOVE MANIFOLD SHALL BE COPPER-NICKEL 90/10 CLASS 200, VALVES SHALL BE CuNi 90/10 AND SHALL CONFORM TO THE REQUIREMENTS OF 46 CFR PART 56.
6. THE SYSTEM AND ALL VALVES SHALL HAVE IDENTIFYING MARKS AND LABELS. ZONE LINE VALVES FROM THE DISTRIBUTION MANIFOLD SHALL BE PLAINLY AND PERMANENTLY MARKED INDICATING THE SPACES SERVED.
7. ALL THE SPRINKLER HEADS SHALL BE 3/8" OPEN TYPE AND APPROVED BY UNDERWRITERS LABORATORIES.
8. THE SYSTEM SHALL BE INSTALLED WITH UNIONS AND OR FLANGES TO PROVIDE FOR REMOVAL AND PREVENTATIVE MAINTENANCE
9. THE SYSTEM SHALL HAVE PROVISIONS FOR COMPLETE DRAINAGE.
10. BULKHEAD PIPE PENETRATIONS SHALL BE STEEL AND HAVE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION.
11. ALL PIPING, VALVES, FITTINGS AND SPRINKLER HEADS SHALL BE SECURELY SUPPORTED AND WHERE NECESSARY, PROTECTED AGAINST INJURY TO COMPLY WITH THE REQUIREMENTS OF 46 CFR 76.23-20 (C).
12. DRAINS AND DIRT TRAPS SHALL BE FITTED WHERE NECESSARY TO PREVENT THE ACCUMULATION OF DIRT AND MOISTURE IN ACCORDANCE WITH 46 CFR 76.23-20 (D).
13. THE SYSTEM SHALL BE INSTALLED TO THE SATISFACTION OF THE OFFICER IN CHARGE OF MARINE INSPECTION.
14. PUMP CENTERLINE TO BE AT OR BELOW WATERLINE.
15. SPRINKLER SYSTEM CONTROLS MUST BE LOCATED OUTSIDE OF THE PROTECTED SPACES. THESE CONTROLS ARE REQUIRED AND MUST BE ACCESSIBLE IN THE EVENT OF A FIRE IN ANY OF THE PROTECTED SPACES AS PER 46 CFR 76.23-15(a).
16. VEGA MEGAPRESS COPPER NICKEL FITTINGS DO NOT EXCEED THE PRESSURE AND TEMPERATURE PARAMETER OF 232 PSI AND 284°F FOR 3" SIZE AND 181 PSI AND 284°F FOR SIZE 4" TO SATISFY THE OCMI STANDARD.
17. GASKETS MEETING 46CFR 56.25-15 SHALL BE USED AT GALVANIZED TO COPPER-NICKEL FLANGED CONNECTIONS.
18. THE MINIMUM HEIGHT OF THE UNDERSIDE OF THE SPRINKLER HEADS AND PIPING SHALL NOT BE LESS THAN 96 INCHES IN CAR LANES.

SYMBOLS

- PIPE RUN
- PIPE RUN UP
- PIPE RUN DOWN
- PIPE RUN UP AND DOWN
- PENDANT SPRINKLER HEAD
- GATE VALVE
- CHECK VALVE
- DRAIN
- P — PRESSURE GAUGE
- N.C. — NORMALLY CLOSED
- FLANGED TRANSITION CONNECTION
- CONCENTRIC PIPE REDUCER
- SC — SEA CHEST
- P — PUMP
- DUPLEX STRAINER
- VENT

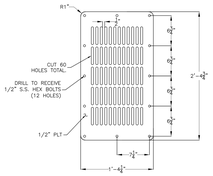
ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	MR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

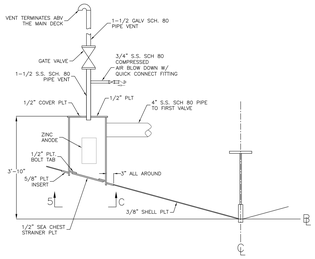
207 FT LOA FERRY VESSEL

SPRINKLER PIPING SCHEMATIC & DETAILS

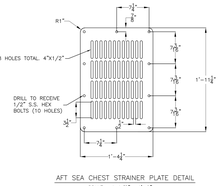
DRAWN BY MR DATE 8/28/2023
CHECKED BY JG DATE 8/24
APPROVED BY DATE
SCALE 3/16" = 1'-0" (TO PRINT)
SHEET 1 OF 1 DWG. NO. D372-P8 ALT. 0



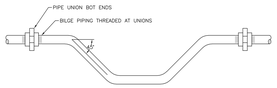
FWD SEA CHEST STRAINER PLATE DETAIL
SCALE : 1 1/2" =1'-0"



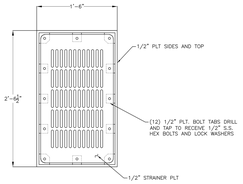
TYPICAL SECTION THROUGH SEA CHEST
FWD SIDE LKG AFT FWD SEA CHEST
SCALE : 3/4" =1'-0"



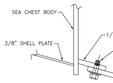
AFT SEA CHEST STRAINER PLATE DETAIL
SCALE : 1 1/2" =1'-0"



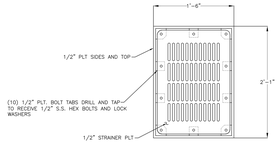
DETAIL 3-C
TYPICAL BILGE PIPING EXPANSION JOINT
NO SCALE



PLAN VIEW 5-C
FWD SEA CHEST
BOTTOM SIDE LOOKING UP
SCALE : 1 1/2" =1'-0"

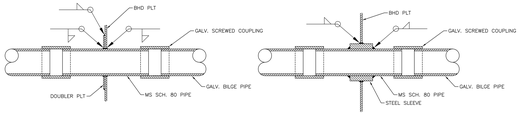


BOLT CONNECTION
SCALE 3" = 1'-0"



PLAN VIEW 4-C
AFT SEA CHEST
BOTTOM SIDE LOOKING UP
SCALE : 1 1/2" =1'-0"

TYP. SEA CHEST STRAINER HOLE
SCALE 3" = 1'-0"



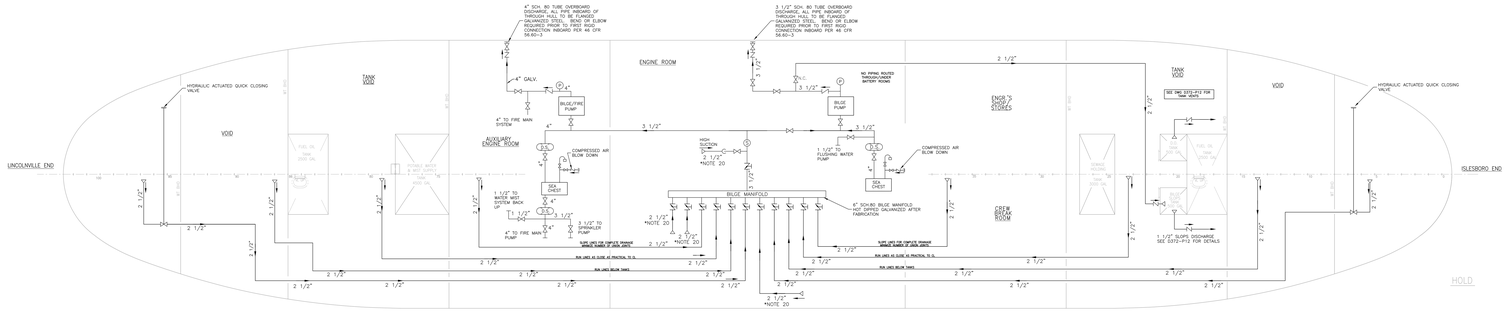
DETAIL 3-B
TYPICAL PIPE PENETRATION DETAIL
NOT TO SCALE

BILL OF MATERIALS

ITEM	QUANTITY	SPECIFICATION	MATERIAL
3 1/2", 2 1/2" GALVANIZED STEEL PIPE	AS NEEDED	FURNACE BUTT-WELDED OR SEAMLESS STEEL, SCH. 80 GALVANIZED W/ THREADED JOINTS	ASTM A53
ALL SIZES STAINLESS STEEL PIPE	AS NEEDED	STAINLESS STEEL GRADE 316	A312 ASME B31.1 ASME B36.19
6" SC. 80 M.S TUBE W. 1/2" PLT. END CAPS	AS NEEDED	BLACK STEEL, HOT DIPPED GALVANIZED AFTER FABRICATION	ASTM A53
VALVES GATE VALVE 150#, STOP CHECK 150#, CHECK VALVE 150#	AS NEEDED	BRONZE FLANGED, BOLT-IN TYPE, W/ BRONZE MOUNTINGS	ASME SB62 ANSI B16.24 MSS SP-6,9,25,80
MILD STEEL FITTINGS, TEES, AND ELBOWS IN BILGE SYSTEM	AS NEEDED	BLACK STEEL SCREWED ENDS, GALV. SCH 80	ASTM A234, A105 ASME B16.11 THRU ASME B16.11
STAINLESS STEEL FITTINGS, TEES, AND ELBOWS IN BILGE SYSTEM	AS NEEDED	316 STAINLESS STEEL SOCKET WELD SCH 80	ASTM A403 ASME B16.3
OVERBOARD DISCHARGE & SEACHEST TO 1ST VALVES PIPING	AS NEEDED	STAINLESS STEEL GRADE 316 SCH 80 WELDED	ASTM A312 ASME B31.1 ASME B36.19
OVERBOARD DISCHARGE – VALVES	AS NEEDED	BRONZE FLANGED, W/ STAINLESS TRIM PER CONTRACT SPEC.	ASTM A395, ASME B16.34
FOOT VALVE/STRAINER	12	2 1/2" FLOWMATIC CORP. THREADED, BRONZE BODY STAINLESS HARDWARE AND SCREEN MODEL 605E	ASTM C89833 BODY
BILGE PUMP	1	GRISWOLD HH SERIES, 3x2-8, 200 GPM @ 210'. SELF-PRIMING, CENTRIF. 3600 RPM @ 25 HP.	--
STAND-BY BILGE PUMP/ FIRE PUMP	1	GRISWOLD HH SERIES, 3x2-8, 200 GPM @ 210'. SELF-PRIMING, CENTRIF. 3600 RPM @ 25 HP.	--
SPRINKLER PUMP	1	GOULDS 3796 (3"x3"-13), 200 GPM @ 100 FT HEAD, 15 HP @ 1770 RPM CD4MCuN	--
FOREPEAK SHUT OFF VALVES	2	MESON HYDRAULIC QUICK CLOSING VALVES	
DUPLEX STRAINER	3	4" KRAISSL MODEL 72, CAST BRONZE W/ S.S. BASKETS	ASTM F-1199
SIMPLEX STRAINER	1	KRAISSL MODEL 72, CAST BRONZE W/ S.S. BASKETS	ASTM F-1199

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY, AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE VESSEL TO BEST SUIT INSTALLATION.
3. SIZES ARE SHOWN AS MINIMUMS. IF NECESSARY, ADJUSTMENTS SHALL BE MADE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.
5. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
6. ALL THROUGH-HULL CONNECTIONS SHALL HAVE VALVES FITTED AS CLOSE AS POSSIBLE TO THE HULL TO COMPLY WITH 46 CFR 56.50-95.
7. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
8. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS TO PROVIDE FOR REMOVAL OF EQUIPMENT OR PIPE AND FOR SYSTEM CLEANING IN EACH WATER TIGHT COMPARTMENT.
9. THE BILGE MANIFOLD VALVES SHALL BE OF THE STOP-CHECK TYPE OR, STOP VALVE AND CHECK VALVE. IN ACCORDANCE WITH 46 CFR 56.50-50 (C).
10. ALL THROUGH HULL & THROUGH BULKHEAD PIPING PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND BE WELDED ON BOTH SIDES OF THE PENETRATION IN COMPLIANCE WITH ASTM F994 & ABS 4.4.2/19.3 (SEE DETAIL 3-B)
11. THE BILGE SYSTEM SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SUBCHAPTER F 46 CFR 56.50 AND 56.55.
12. EACH INDIVIDUAL BILGE SUCTION SHALL BE FITTED WITH A SUITABLE BILGE STRAINER HAVING AN OPEN AREA OF NOT LESS THAN THREE TIMES OF THE SUCTION PIPE.
13. ALL CONNECTIONS BETWEEN PUMPS AND PIPE SHALL BE HARD PIPED.
14. EACH PUMP DISCHARGE SHALL BE FITTED WITH A PRESSURE GAGE AND A PRESSURE RELIEF VALVE IF NON-CENTRIFUGAL PUMPS ARE USED.
15. ALL PIPING VALVES AND FITTINGS SHALL BE INSTALLED WITH REGARDS TO GOOD MARINE PRACTICE AND SUITABLE FOR ITS INTENDED PURPOSE. THE INSTALLATION, TESTING, AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE U.S. COAST GUARD OFFICER IN CHARGE MARINE INSPECTION (O.C.M.I.).
16. BILGE LEVEL ALARMS, VISUAL AND AUDIBLE, SHALL BE INSTALLED IN EACH HULL COMPARTMENT, AS REQUIRED. ALARM TO SOUND IN THE ENGINE ROOM AND IN THE PILOT HOUSE.
17. SYSTEMS SHALL BE DESIGNED WITH MEANS FOR COMPLETE DRAINAGE. ALL PIPE RUNS ARE TO SLOPE WHERE POSSIBLE FOR DRAINAGE WITH PIPE PLUGS OR CAPS AT LOW POINTS.
18. ALL THE VENTS ABOVE THE MAIN DECK SHALL BE PROVIDED WITH A VENT CHECK VALVE WHERE THE BALL FLOAT, NORMALLY IN THE OPEN POSITION, WILL FLOAT UP AND CLOSE UNDER THE ACTION OF A SUBMERGING WAVE.
19. ALL SEA CHEST STRAINER PLATES ARE TO HAVE AN OPEN AREA EQUAL TO 2 1/2 TIMES THE CONNECTED AREA OF ALL CONNECTED SUCTION PIPES.
20. BILGE SUCTIONS IN ENGINE ROOM SHALL BE LOCATED NEAR BATTERY ROOM ENTRIES AND AS NEAR AS PRACTICAL TO SWITCHBOARDS OR MAJOR ELECTRICAL CABLE RUNS BELOW THE FLOOR PLATES.



SYMBOLS

- BILGE FOOT VALVE/STRAINER
- STOP CHECK VALVE
- SWING CHECK VALVE
- NORMALLY OPEN GATE VALVE
- N.C. NORMALLY CLOSED GATE VALVE
- DUPLEX STRAINER
- SIMPLEX STRAINER
- DIRECTION OF FLOW
- CAP
- SC SEA CHEST
- P PRESSURE GAGE
- VENT
- PRESSURE RELIEF VALVE
- FLANGE JOINT WITH MATERIAL ISOLATION
- STRAINER

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KM

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

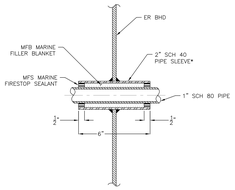
207 FT LOA FERRY VESSEL

BILGE PIPING SCHEMATIC & DETAILS

DRAWN BY KM DATE 09/12/2023
CHECKED BY JG DATE 8/10/24
APPROVED BY DATE
SCALE 3/16" = 1'-0" (TO PRINT)
SHEET 1 OF 1 DWG. NO. D372-P9 ALT. 0

GENERAL NOTES:

1. THIS PLAN IS A SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT IN GENERAL.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE SHIP TO BEST SUIT THE INSTALLATION.
3. SIZES SHOWN ARE FOR GUIDANCE ONLY AND NECESSARY ADJUSTMENT SHALL BE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL PIPING DIAGRAMS, SPECIFICATIONS, AND RECOMMENDATIONS FURNISHED BY THE MANUFACTURERS OF EQUIPMENT SERVICED BY A SYSTEM SHALL SUPERCEDE.
5. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.
6. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
7. ALL AIR PIPING SYSTEMS SHALL COMPLY WITH THE REQUIREMENT OF U.S. COAST GUARD 46 CFR 56.50-60, 46 CFR 56.50-75, AND 58.01-25. PRESSURE VESSELS MUST CONFORM TO THE APPLICABLE REQUIREMENTS OF 46 CFR 54 FOR CLASS I PRESSURE VESSELS AND BE STAMPED WITH THE ASME "U" SYMBOL. PIPING INSTALLATION AND INSPECTION SHALL CONFORM TO ANSI B31.1
8. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
9. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
10. ALL PIPE CONNECTION BETWEEN THE AIR COMPRESSORS, PUMPS, AND ENGINES, SHALL BE FLEXIBLE.
11. THE DECK AND BULKHEAD PIPING PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND SHALL BE WELDED ON BOTH SIDES OF THE PENETRATIONS.
12. ALL SYSTEMS SHALL HAVE PROVISIONS FOR COMPLETE DRAINAGE.
13. ALL AIR SUPPLY AND RETURN, FLEXIBLE CONNECTIONS INSTALLED AT THE ENGINES, SHALL BE TO THE SATISFACTION OF THE OFFICER IN CHARGE OF MARINE INSPECTION (O.C.M.I).
14. THE INSTALLATION, TESTING, AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE O.C.M.I.
15. STARTING AIR COMPRESSOR SWITCHES SHALL BE SET TO TURN ON THE LEAD COMPRESSOR AT 100 PSIG AND OFF AT 200 PSI. THE LAG COMPRESSOR SWITCHES SHALL BE SET TO TURN THE COMPRESSOR ON AT 80 PSIG AND OFF AT 180 PSIG. BOTH COMPRESSORS SHALL HAVE REMOTE RUN INDICATOR LIGHTS IN THE ENGINE ROOM AND PILOT HOUSE CONSOLES. A SELECTION SWITCH SHALL BE INSTALLED FOR USER SELECTION OF THE LEAD COMPRESSOR.
16. FLEXIBLE NONMETALLIC HOSE SHALL MEET SAE J-1942 AND IS SUBJECT TO THE LIMITATIONS OF 46 CFR 182.720 (d)(1) THROUGH (d)(4). UNREINFORCED HOSES ARE LIMMITED TO A MAXIMUM SERVICE PRESSURE OF 50 PSIG, REINFORCED HOSES ARE LIMITED TO A MAXIMUM SERVICE PRESSURE OF 150 PSIG. HOSE FITTINGS SHALL COMPLY WITH SAE J1475.



TYPICAL PIPE & W.T. BULKHEAD PENETRATION DETAIL
NOT TO SCALE

*BHD PENETRATION SLEEVE CAN BE EXPANDED TO SUIT MULTIPLE PIPE PENETRATIONS MAX OPENING SIZE PER STI MARINE GUIDANCE

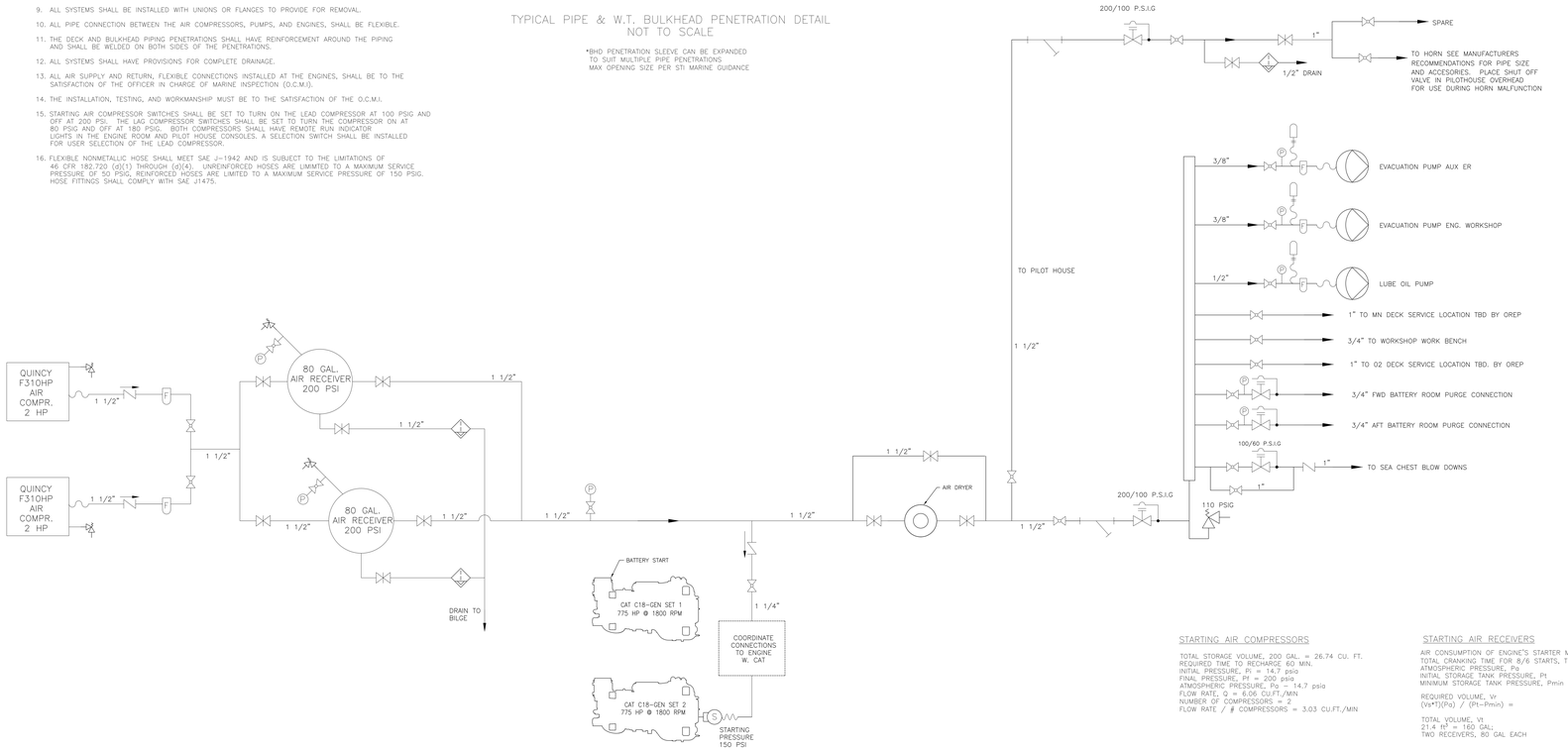
MATERIALS LIST

SERVICE	SIZE	PIPE	JOINTS	VALVE BODIES	VALVE TRIM	FITTINGS
COMPRESSED AIR PIPING	2-1/2" AND ABOVE	SEAMLESS STEEL ASTM A53 OR ASTM A106 GR.B ANSI B36.10 SCHEDULE 80	2000# FORGED STEEL, SOCKET WELDED, FLANGED ASTM A105 OR I OR II AND MSS-SP-83	CARBON STEEL ASTM A216, GR WCB ANSI B16.34 SOCKET WELD OR THREADED 600 PSI 600#	BALL: CHROME PLT CARBON STL BALL PTFE SEATS & SEALS GATE/GLOBE/ CHECK: CARBON STL DISC & SEAT	CARBON STEEL ASTM A105 GR. I OR GR. II, 2000# ANSI B16.11 SOCKET WELD
	OVER 1" TO 2"					
	1" AND BELOW		2000# FORGED STEEL UNIONS, SCREWED & SEALED	FORGED STEEL SCREWED AND SEALED		FORGED STEEL SCREWED AND SEALED

DESCRIPTION	MATERIAL SPEC.
FLEXIBLE NON-METALLIC HOSE	EATON AEROQUIP 2807 HOSE W/ 1906 FITTINGS – SAE J1942 SAE J1475 (MAX 30" LENGTH)

EQUIPMENT LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY
2	SHIP SERVICE AIR COMPRESSOR TANK MOUNTED	2 STAGE RECIP	QUINCY QR MODEL #F310HP	2 HP,4.59 ACFM @300 PSI 230/3/60 TEFC
2	SHIP SERVICE AIR RECEIVER	HORIZONTAL AIR RECEIVER	QUINCY	80 GAL 200 PSI MAWP
1	SHIP'S HORN	BRONZE	KAHLENBURG D-2	29 SCFM @ 100 PSI
1	AIR DRYER	HIGH PRESSURE REFRIGERATED DRYER	QUINCY-DPNC-21	21 CFM @ 100 PSI
1	CONTROL PANEL	NEMA 4	DUPLEX-SINGLE PWR	
2	AIR FILTER	MICRONIC COALESCER	QMF 50	50 CFM @ 100 PSIG



SYMBOLS

- BALL VALVE
- CHECK VALVE
- GATE VALVE
- RELIEF VALVE
- FLEXIBLE CONNECTION
- AIR RELAY VALVE
- PRESSURE GAUGE
- STARTING MOTOR
- VALVE W/ HOSE CONNECTION
- AIR LUBRICATOR
- "Y" STRAINER
- AIR FILTER
- PRESSURE REDUCING VALVE
- PIPE RUN UP
- PIPE RUN DN.
- AUTOMATIC CONDENSATE DRAIN VALVE
- ELECTRONIC RELAY VALVE
- SURGE DAMPENER

STARTING AIR COMPRESSORS

TOTAL STORAGE VOLUME, 200 GAL. = 26.74 CU. FT.
REQUIRED TIME TO RECHARGE 60 MIN.
INITIAL PRESSURE, Pi = 14.7 psio
FINAL PRESSURE, Pf = 200 psig
ATMOSPHERIC PRESSURE, Pa = 14.7 psia
FLOW RATE, Q = 6.06 CU.FT./MIN
NUMBER OF COMPRESSORS = 2
FLOW RATE / # COMPRESSORS = 3.03 CU.FT./MIN

STARTING AIR RECEIVERS

AIR CONSUMPTION OF ENGINE'S STARTER MOTOR, Vs — 5.1 ft^3/s
TOTAL CRANKING TIME FOR 8/6 STARTS, T — 8*5=40s
ATMOSPHERIC PRESSURE, Pa — 14.7 psi
INITIAL STORAGE TANK PRESSURE, Pi — 200 psi
MINIMUM STORAGE TANK PRESSURE, Pmin — 80 psi

REQUIRED VOLUME, Vr
(Vs*T)(Pa) / (Pi-Pmin) = — 21.4 ft^3

TOTAL VOLUME, Vt
21.4 ft^3 = 160 GAL;
TWO RECEIVERS, 80 GAL EACH

GENERATOR ENGINE

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

COMPRESSED AIR PIPING SCHEMATIC

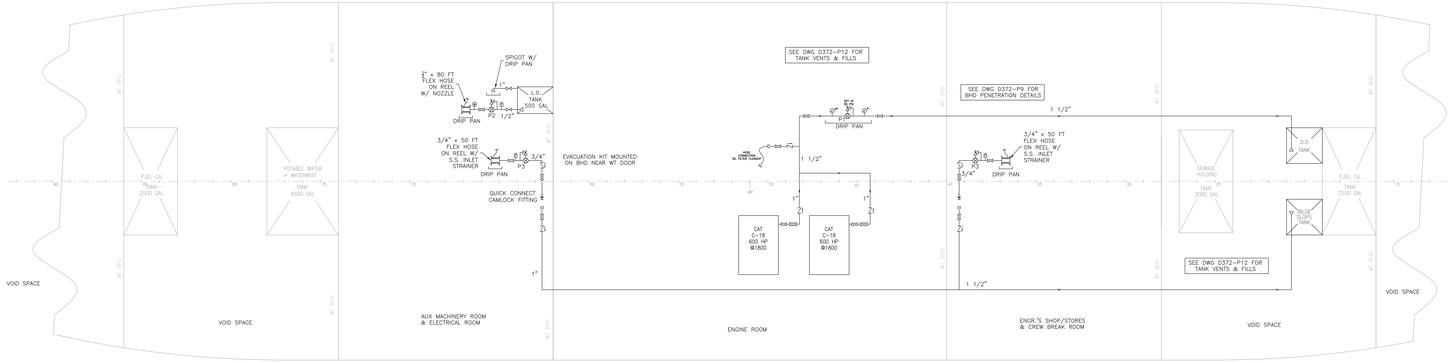
DRAWN BY KVC DATE 4/10/24
CHECKED BY JG DATE 8/29/24
APPROVED BY DATE
SCALE 1/2" = 1'-0"
SHEET 1 OF 1 DWG. NO. D372-P10 ALT. 0

SERVICE	SIZE	PIPE	MATERIALS LIST					FITTINGS
			JOINTS			VALVE		
			MATERIAL	GASKETS	BOLTING	BODIES	TRIM	
LUBE OIL MAWP: 100 PSIG MAX TEMP: 120°F	2-1/2" AND ABOVE	CARBON STEEL ASTM A53 OR A106, GRADE B SEAMLESS ANSI B36.10 SCH 40	FLANGE CARBON STEEL ASTM A105 ANSI B16.5 150# SLIP-ON OR WELD NECK	GARLOCK IFG 5500	BOLTS: CARBON STEEL ASTM A307 GRADE B ANSI B18.2.1 NUTS: CARBON STEEL ASTM A563 GRADE A ANSI B18.2.2	BALL: CARBON STEEL ASTM A216 GR WCB SOCKET WELD OR THREADED, 1500 PSI SWING CHECK: DUCTILE IRON ASTM A395 150#	BALL: CHROME PLATED CARBON STEEL BALL RPTFE SEATS CHECK: BRONZE; RENEWABLE DISK + SEAT	CARBON STEEL ASTM A234, GR WPB ANSI B16.9 BUTT WELD LONG RADIUS
	2" AND BELOW	SAME AS ABOVE, SCH 80	UNION GROUND JOINT CARBON STEEL ASTM A105 ANSI B16.11 SOCKET WELD					CARBON STEEL ASTM A105 ANSI B16.11 3000# SOCKET WELD

DESCRIPTION	MATERIAL SPEC.
P1 – DIRTY LUBE OIL PUMP	TUTHILL CC9 SERIES PUMP RATED 9 GPM, 1/2 HP @ 1750 RPM MOTOR
P2 – CLEAN LUBE OIL SUPPLY PUMP	ALEMITE PNEUMATIC OIL PUMP 8322-A RATED 15 GPM W/ OIL REEL 8080-B, METER 3670, HOSE 317813-80 & FILTER/REGULATOR 7936
FLEXIBLE NON-METALLIC HOSE	AEROQUIP FC 234 HOSE – SAE J1942 SAE J1475 (MAX 30" LENGTH)
BHD PENETRATION FIRE STOP MATERIAL	STI MARINE MFB MARINE FILLER BLANKET & MFS MARINE FIRESTOP SEALANT
P3 – DIRTY OIL EVACUATION PUMP KIT (2 EACH ITEM)	ALEMITE PNEUMATIC OIL EVACUATION KIT 8595-B W/ OIL REEL 8080-E, HOSE 317868-50, T-STRAINER 343264, FILTER/REGULATOR 7506-1, PUMP WALL MOUNTING BRACKET 343283, FILTER WALL MOUNTING BRACKET 343357, CAM-LOCK CONNECTOR 343262 ON DISCHARGE HOSE, STANLESS STEEL HOSE INLET STRAINER

GENERAL NOTES

1. THIS DRAWING IS A SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT EXCEPT IN GENERAL. NO PIPING SHALL BE ROUTED THROUGH BATTERY ROOMS.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE SHIP TO BEST SUIT THE INSTALLATION.
3. SIZES SHOWN ARE FOR GUIDANCE ONLY AND NECESSARY ADJUSTMENT SHALL BE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.
4. ALL PIPING DIAGRAMS, SPECIFICATIONS, AND RECOMMENDATIONS FURNISHED BY THE MANUFACTURERS OF EQUIPMENT SERVICED BY THIS SYSTEM SHALL SUPERSEDE.
5. ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.
6. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS. PIPING SHALL BE MARKED WITH STANDARDIZED COLOR-CODED SYMBOLS FOR TYPE OF SERVICE AND DIRECTION OF FLOW.
7. ALL OIL PIPING SYSTEMS SHALL COMPLY WITH THE REQUIREMENT OF U.S.C.G. 46 CFR 56.50-60, 56.50-75, 58.01-25.
8. ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.
9. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
10. THE DECK AND BULKHEAD PIPING PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND SHALL BE WELDED ON BOTH SIDES OF THE PENETRATIONS.
11. ALL SYSTEMS SHALL HAVE PROVISIONS FOR COMPLETE DRAINAGE.
12. ALL OIL SUPPLY AND RETURN SHALL HAVE FLEXIBLE CONNECTIONS INSTALLED AT THE ENGINES AND SHALL BE TO THE SATISFACTION OF THE OCMI (SEE NOTE 14).
13. THE INSTALLATION, TESTING, AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE O.C.M.I.
14. FLEXIBLE HOSE SECTIONS BETWEEN THE ENGINE ATTACHED CONNECTIONS AND VESSEL PIPING SHALL BE 37° SAE FLARE SWIVEL ON BOTH ENDS. FLEXIBLE HOSE SHALL BE IN ACCORDANCE WITH 46 CFR 56.60-25(b)(1-6). HOSE ASSEMBLIES SHALL BE NO MORE THAN 30" IN LENGTH.
15. DRIP PANS WITH UP-TURNED, SEALED, AND FLANGED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS, PUMPS, STRAINERS, AND ANY OTHER EQUIPMENT THAT CONTAINS OIL AND REQUIRES PERIODIC MAINTENANCE. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN VALVE.
16. TANK SHUT-OFF VALVES SHALL HAVE FIRE SAFE METALLIC SEATS.
17. BULKHEAD PENETRATIONS SHALL BE INBOARD OF THE HULL SIDE GREATER THAN 20% OF THE BEAM, MEASURED AT THE BOUNDARY PENETRATED.
18. DIRTY OIL EVACUATION PIPE TO BE RUN TO WITHIN A HOSE LENGTH OF THE BULKHEAD MOUNTED EVACUATION KITS FOR QUICK CONNECTION WHEN IN USE. HOSE ON REEL TO BE FITTED TO INLET SIDE OF PUMP WITH THREADED INLET STRAINER AT END OF HOSE.



LEGEND

- BALL VALVE
- DIRECTION OF FLOW
- CHECK VALVE
- GATE VALVE
- FLEXIBLE CONNECTION
- PIPE RUN UP
- POSITIVE DISPLACEMENT PUMP
- VACUUM GAUGE
- PRESSURE GAUGE
- RELIEF VALVE
- BELLMOUTH
- PIPE CAP
- HOSE REEL
- FILTER & REGULATOR
- FLOW METER

HOLD

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/10/24	KVC

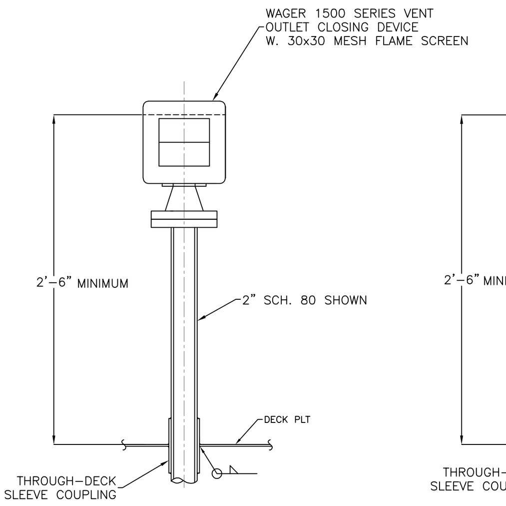
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

LUBE OIL AND WASTE OIL PIPING SCHEMATIC

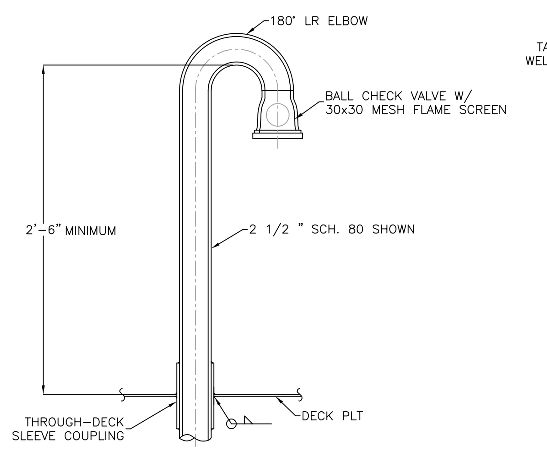
DRAWN BY MR DATE 11/2/2023
CHECKED BY KVC DATE 8/29/24
APPROVED BY DATE
SCALE 1/4"=1'-0" (TO PRINT)
DWG. NO. D372-P11 ALT. 0

SHEET 1 OF 1



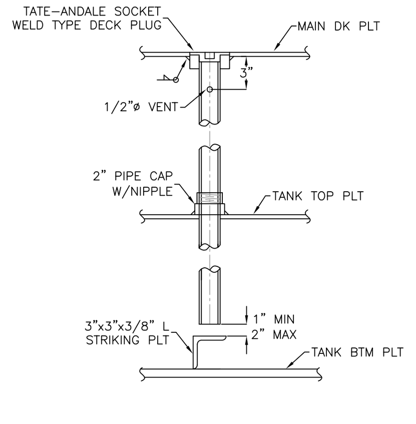
TYPICAL VERTICAL VENT

SCALE: NONE



TYPICAL INVERTED VENT

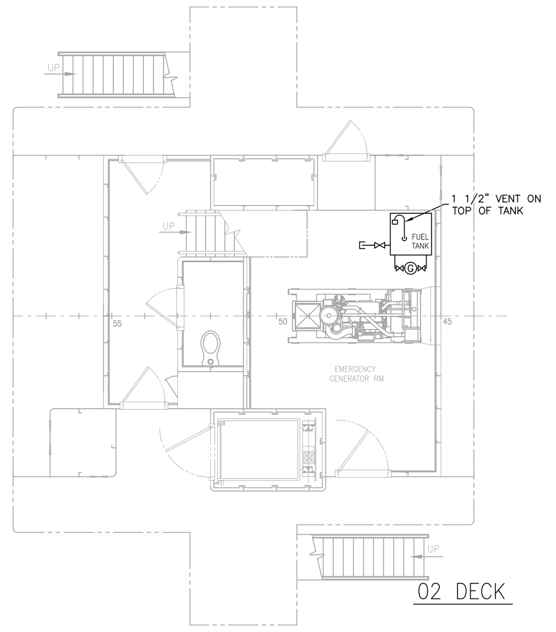
SCALE: NONE



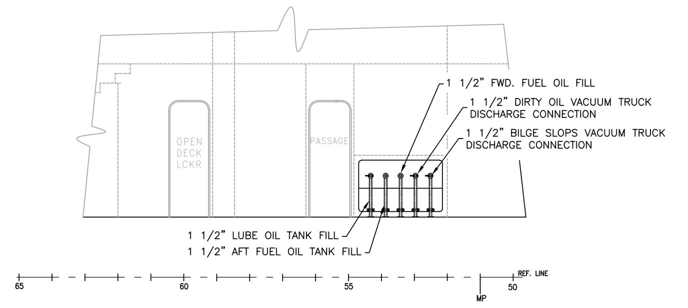
TYPICAL SOUNDING TUBE DETAIL

FLUSH DECK SOUNDING

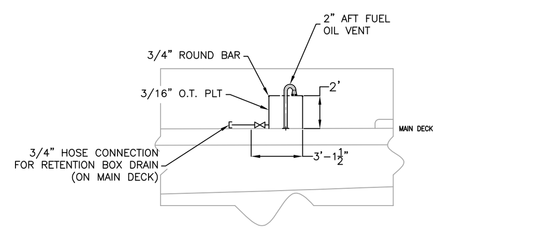
SCALE: NONE



02 DECK

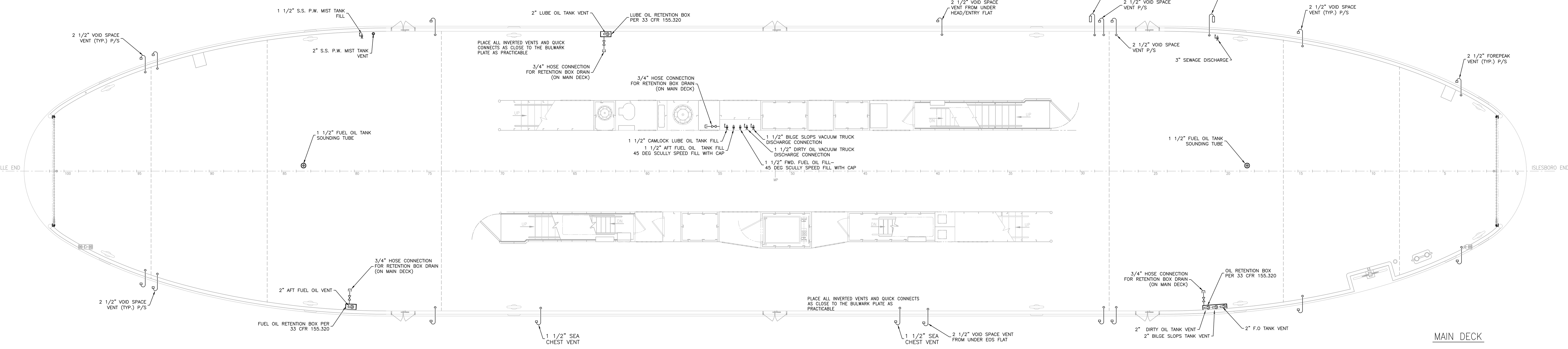


FILL AND VENT PROFILE VIEW

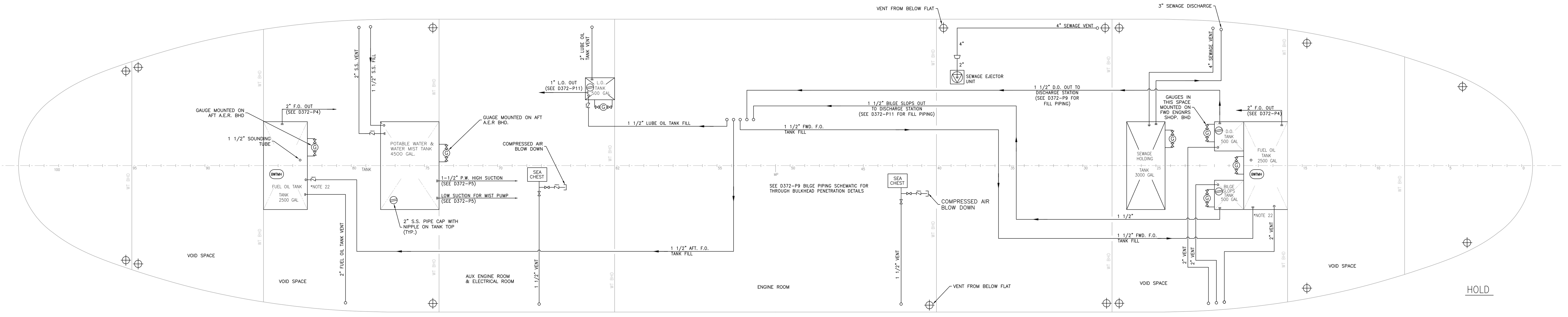


AFT FUEL OIL RETENTION BOX DETAIL

FWD SIMILAR



MAIN DECK



HOLD

BILL OF MATERIALS

QTY.	SIZE	DESCRIPTION	MATERIAL	ASTM
AS NEEDED	1-1/2"ø	PIPE, SCH. 80, SEAMLESS	BLK STEEL	A 53
AS NEEDED	1-1/2"ø	ELBOW, SCH. 80, SEAMLESS	BLK STEEL	A 234
AS NEEDED	1-1/2"ø	TEE, SCH. 80, SEAMLESS	BLK STEEL	A 234
3	1-1/2"ø	VALVE, CHECK, MANUAL HANDLE	D.I.	A 395
16	1-1/2"ø	VALVE, GATE, MANUAL HANDLE	D.I.	A 395
AS NEEDED	2"ø	PIPE, SCH. 80, SEAMLESS	BLK STEEL	A 53
AS NEEDED	2"ø	ELBOW, SCH. 80, SEAMLESS	BLK STEEL	A 234
AS NEEDED	2"ø	TEE, SCH. 80, SEAMLESS	BLK STEEL	A 234
AS NEEDED	2-1/2"ø	PIPE, SCH. 80, SEAMLESS	BLK STEEL	A 53
AS NEEDED	2-1/2"ø	ELBOW, SCH. 80, SEAMLESS	BLK STEEL	A 234
AS NEEDED	2-1/2"ø	TEE, SCH. 80, SEAMLESS	BLK STEEL	A 234
AS NEEDED	1-1/2"x1"	CONCENTRIC REDUCER	BLK STEEL	A 234
AS NEEDED	2"x1"	CONCENTRIC REDUCER	BLK STEEL	A 234
AS NEEDED	2"x1-1/2"	CONCENTRIC REDUCER	BLK STEEL	A 234
AS NEEDED	LENGTHS NOT TO EXCEED 18"	EATON AEROQUIP FC234 FLEXIBLE HOSE	--	SAE J1942 SAE J1475
AS NEEDED	--	GEMS SURESIGHT – SIGHT GLASSES	--	--
AS NEEDED	2" 2-1/2"ø	WAGER 1500-1 VERTICAL VENT CHECK VALVE W/30x30 MESH FLAME SCREEN	--	--
2	4"ø	WAGER 1850 ODOR CONTROL VENT CHECK VALVE	--	--
AS NEEDED	ALL SIZES	PIPE, STAINLESS STEEL GRADE 316 SCH 80 SEAMLESS	316 S.S.	A312 ASME B31.1 ASME B36.19
AS NEEDED	ALL SIZES	STAINLESS STEEL FITTINGS, TEES, & ELBOWS SOCKET WELD SCH 80	316 S.S.	ASTM A403 ASME B16.3

GENERAL NOTES

1) THIS DRAWING IS A SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE SHIP TO BEST SUIT INSTALLATION. ALL FILLS AND DISCHARGE FITTINGS SHALL BE CLEAR OF THE VEHICLE LANE. ALL ATTEMPTS SHALL BE MADE TO PREVENT INCURSION OF THE FITTINGS BEYOND THE SHIP STRUCTURES INTO THE TRAVEL LANES AT THE ISLANDS AND BULWARKS.

2) SIZES SHOWN ARE FOR GUIDANCE ONLY. NECESSARY ADJUSTMENT SHALL BE AS REQUIRED BY THE EQUIPMENT AND SYSTEMS TO ASSURE SATISFACTORY OPERATION.

3) ALL DIAGRAMS, SPECIFICATIONS, AND RECOMMENDATIONS FURNISHED BY THE MANUFACTURERS OF EQUIPMENT SERVICED BY THIS SYSTEM SHALL SUPERCEDE THIS PLAN.

4) VENT PIPES FOR FUEL OIL TANKS SHALL BE SLOPED AS NECESSARY TO PROVIDE DRAINAGE TO TANK AND TO PREVENT POCKETING.

5) VENTS WITH "U" BENDS SHALL TERMINATE CLOSE TO THE HOUSE SIDES AND BE INBOARD OF THE SUPERSTRUCTURE SIDE.

6) SOUNDING TUBES SHALL BE INSTALLED WITH STRIKER PLATES IN ACCORDANCE WITH GOOD SHIPBUILDING PRACTICE.

7) WHERE SOUNDING TUBES TERMINATE FLUSH WITH THE DECK, FLUSH BRASS DECK PLUGS SHALL BE INSTALLED ON THE SOUNDING TUBES.

8) WHERE SOUNDING TUBES TERMINATE BELOW THE BULKHEAD DECK, A SELF-CLOSING GATE VALVE SHALL BE INSTALLED IN ACCORDANCE WITH 46 CFR 56.50-90(b).

9) SOUNDING TUBES SHALL BE MADE VERTICAL. WHERE THIS IS DEEMED IMPRACTICAL, SOUNDING TUBES SHALL NOT HAVE AN ANGLE OF MORE THAN 15° FROM VERTICAL.

10) ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.

11) ALL VALVES SHALL BE LOCATED TO PROVIDE EASY ACCESS AT ALL TIMES.

12) ALL VALVES CONTROLLING AN INDIVIDUAL SYSTEM SHALL BE GROUPED AS MUCH AS POSSIBLE.

13) ALL CONNECTIONS BETWEEN THE PUMPS, ENGINES, AND PIPES SHALL BE FLEXIBLE.

14) FINAL FIELD INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD SHIPBUILDING PRACTICES.

15) ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL. PIPE AND FITTINGS ABOVE MAIN DECK SHALL BE THREADED FOR EASE OF MAINTENANCE EXCEPT AT DECK PENETRATIONS.

16) THE DECK AND BULKHEAD PIPING PENETRATIONS SHALL HAVE REINFORCEMENT AROUND THE PIPING AND SHALL BE WELDED ON BOTH SIDES OF THE PENETRATIONS.

17) THE INSTALLATION, TESTING AND WORKMANSHIP MUST BE TO THE SATISFACTION OF THE OFFICER IN CHARGE, MARINE INSPECTION.

18) VENT OUTLETS FROM FUEL, BILGE SLOPS, SEWAGE, DIRTY OIL, AND EMERGENCY GENERATOR FUEL TANKS SHALL BE FITTED WITH 30 BY 30 MESH SCREEN OF CORROSION RESISTANT WIRE AND SHALL COMPLY WITH 46 CFR. 56.50-85.

19) PROPER SUPPORTS SHALL BE PROVIDED FOR ALL PIPE RUNS AS REQUIRED BY THE REGULATORY BODIES AND ESTABLISHED MARINE PRACTICE.

20) VERTICAL VENT CHECK TYPE VENTS ARE PREFERRED FOR ALL TANKS AND VOIDS WHERE PERMITTED AND AT THE DISCRETION OF THE OREP. INVERTED VENT CHECK VALVES MAY BE SUBSTITUTED ELSEWHERE.

21) FUEL OIL RETENTION BOXES SHALL BE INSTALLED IN ACCORDANCE WITH 33 CFR 155.320. EACH RETENTION BOX SHALL HAVE A CAPACITY OF AT LEAST 1/2 BARREL, AND FITTED WITH A DRAIN W/ 3/4" HOSE CONNECTION LOCATED ABV MAIN DECK.

22) FUEL OIL FILL & VENT LINES PENETRATE THE TANK TOP PER 46 CFR 58.50-10(a)(4).

LEGEND

- TANK SOUNDING TUBE
- SOUNDING TUBE DECK FITTING
- PIPE RUN UP
- PIPE RUN DOWN
- PIPE RUN UP AND DOWN
- VENT WITH "U" BEND, BALL CHECK VALVE, OR WAGER VERTICAL VENT AND REMOVABLE FLAME SCREEN
- WAGER 1850 ODOR CONTROL VALVE
- HOSE QUICK CONNECT
- GATE VALVE
- CHECK VALVE
- BALL VALVE
- LEVEL GAUGE
- PIPE CAP

PRINT INSTRUCTIONS
SET CYAN SCREENING TO 35

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/14/24	MR

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

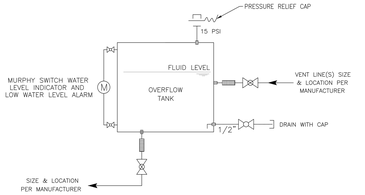
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

TANK VENTS, FILLS, AND SOUNDING PIPE SCHEMATICS

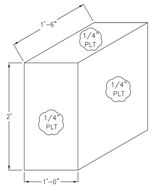
DRAWN BY MR — DATE 11/9/2023
CHECKED BY KVC — DATE 8/14/24
APPROVED BY JWG — DATE 8/14/24
SCALE 3/16" = 1'-0" (TO PRINT)
DWG. NO. D372-P12 — ALT. 0

SHEET 1 OF 1



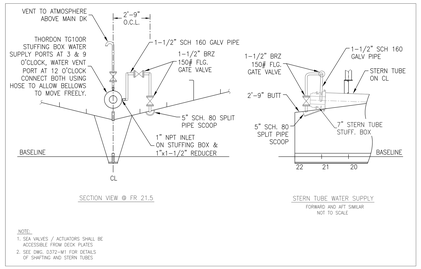
DETAIL 5–D

TYP OVERFLOW TANK CONNECTIONS



DETAIL 5–C

TYP OVERFLOW TANK CONSTRUCTION
*NOTE DIMENSIONS APPROXIMATE, FINAL FIT PER SHIPYARD/VENDOR

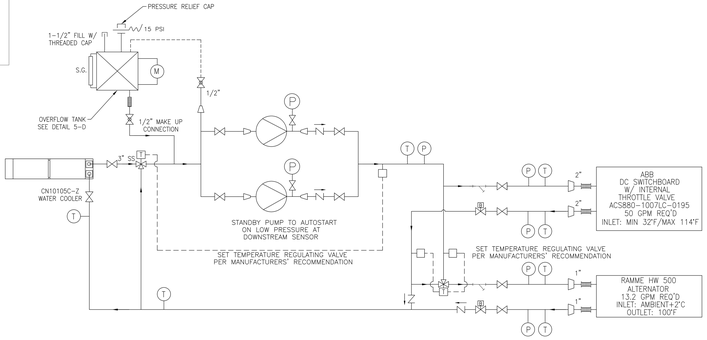


MATERIALS LIST

PIPE MATERIAL				VALVE MATERIAL						FITTING MATERIAL			
SERVICE	SIZE	SPECIFICATION	MATERIAL	SIZE	PRESS CLASS	VALVE TYPE	VALVE POSITION	BODY MATERIAL	TRIM MATERIAL	SIZE	CONNECTION	SPECIFICATION	MATERIAL
50–50 MIX FRESH WATER & ETHYLENE GLYCOL COOLING FOR ALL ENGINES AND VENTS.	ALL	ASTM A-53 GR B	STEEL, ERW, BLK, SCH 80	ALL	ALL	ALL	ALL	DUCTLE IRON ASTM A 395	BRONZE	2" & BELOW	SOCKET WELD	ANSI B16.11	ASTM A-105 FORGED STEEL
										2 1/2" & ABOVE	BUTT WELD	ANSI B16.9	ASTM A-234 GR WPB FORGED STEEL
70–30 MIX FRESH WATER & ETHYLENE GLYCOL COOLING FOR ALL MOTOR, SWITCHBOARD, & RED'N GEAR LOOPS.	ALL	ASTM A312 ASME B31.1, ASME B36.19	316 STAINLESS SCH. 80 WELDED	ALL	ALL	ALL	ALL	STAINLESS STEEL ASTM A 351 THREADED	STAINLESS STEEL	ALL	FLANGED OR WELDED	ASTM A403 ASME B16.1 THRU ASME B16.11	316 STAINLESS
DESCRIPTION			MATERIAL SPEC.										
FLEXIBLE NON–METALLIC HOSE			AEROQUIP FC 234 HOSE – SAE J–1942 WITH FITTINGS PER SAE J–1475 (MAX 30" LENGTH)										

EQUIPMENT LIST

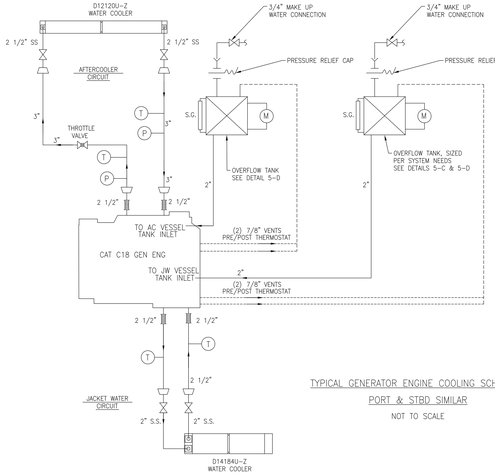
ENGINES, GEARS, EQUIP. COOLED		KEEL COOLERS		
QUANTITY	MODEL	ITEM	MODEL	MANUFACTURER
2	GENERATOR ENGINE: CAT C18 (AFTERCOOLER LOOP)	GRD COOLER	D12120U–Z	FERNSTRUM
2	GENERATOR ENGINE: CAT C18 (JACKET WATER LOOP)	GRD COOLER	D14184U–Z	FERNSTRUM
2	GENERATOR MOTOR: RAMME HW500 AND DC SWITCHBOARD LIQUID COOLING UNIT	GRD COOLER	CN10105C–Z	FERNSTRUM
2	PROPULSION MOTOR: RAMME UW 860 AND REDUCTION GEAR: REINTJES LF550	GRD COOLER	CN899C–Z	FERNSTRUM
OTHER				
8	CENT. PUMP 1–1/2X2–6 @1750 RPM 0.75 HP, 1 PH, 208V @1800RPM 70 GPM @ 20 FT	FW COOLING PUMP	3BF2D4A0	XYLEM



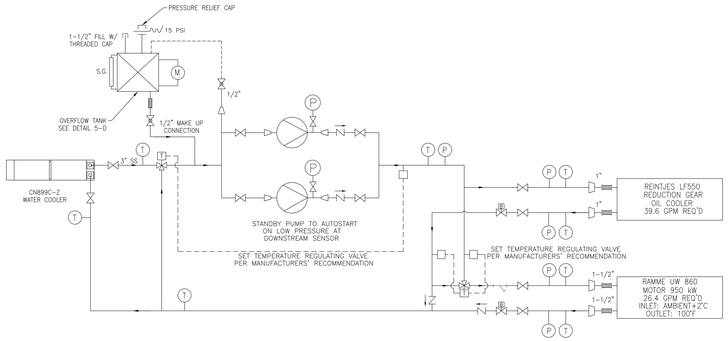
TYPICAL DC SWITCHBOARD & ALTERNATOR
COOLING SCHEMATIC PORT & STARBOARD SIMILAR

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY AND DOES NOT INTEND TO LOCATE ANY PIPING, FITTINGS OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED. SHIPYARD IS RESPONSIBLE FOR DEVELOPMENT OF DETAILED DESIGN SUITABLE FOR INSTALLATION.
2. VESSEL IS TO BE CONSTRUCTED IN ACCORDANCE WITH 46 CFR SUBCHAPTER H REGULATIONS.
3. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE AS DETERMINED ON THE VESSEL TO BEST SUIT THE INSTALLATION.
4. SIZES ARE TO BE VERIFIED AGAINST EQUIPMENT AND SYSTEM REQUIREMENTS. KEEL COOLER SELECTIONS ARE BASED ON PRELIMINARY VENDOR DATA. FINAL KEEL COOLER SELECTIONS SHALL BE VERIFIED PRIOR TO PURCHASE. KEEL COOLER SELECTION IS BASED ON MAXIMUM EXPECTED HEAT REJECTION AT ZERO KNOTS IN 75 DEG F SEAWATER.
5. ALL VALVES SHALL HAVE IDENTIFYING MARKS AND LABELS.
6. ALL VALVES SHALL BE LOCATED TO PROVIDE FOR EASY ACCESS AT ALL TIMES.
7. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR EASY REMOVAL.
8. ALL SYSTEMS SHALL HAVE PROVISION FOR COMPLETE DRAINAGE.
9. ALL CONNECTIONS BETWEEN PUMPS, OVERFLOW TANK, & PIPES SHALL BE FLEXIBLE IN ACCORDANCE WITH MATERIALS LIST.
10. THE PIPE SIZES SHALL BE VERIFIED WITH THE ENGINE, ALTERNATOR, PROPULSION MOTOR, SWITCHBOARD, AND REDUCTION GEAR MANUFACTURERS. SHIPYARD SHALL GAIN APPROVAL OF SCHEMATIC AND INSTALLATION DETAILS FROM EACH VENDOR PRIOR TO CONSTRUCTION.
11. GAUGES TO INDICATE COOLING WATER INLET AND DISCHARGE TEMPERATURE AND PRESSURE SHALL BE PROVIDED FOR ALL KEEL COOLED EQUIPMENT. GUAGES SHALL BE LOCATED FOR EASY OBSERVATION BY OPERATORS. VALVES SHALL BE LOCATED CLEAR OF OBSTRUCTIONS AND WITHIN EASY REACH FOR OPERATION. 3–WAY TEMPERATURE REGULATING VALVES SHALL HAVE SETTING INDICATORS LOCATED FOR EASY OBSERVATION BY OPERATORS.
12. THE KEEL COOLING SYSTEMS SHALL FULFILL ALL REQUIREMENTS OF THE GENERATOR, MOTORS AND DC SWITCHBOARD MANUFACTURER'S RECOMMENDATIONS. TO PREVENT THE FORMATION OF CONDENSATION IN THE ALTERNATORS AND PROPULSION MOTORS, THE COOLANT INLET TEMPERATURE FOR A STATIONARY MACHINE AND STILL OPERATIONAL COOLING SYSTEM MUST BE HIGHER THAN THE AMBIENT TEMPERATURE, PREFERABLY BY 2 DEG. C.
13. LINES LEADING TO REMOTE OVERFLOW TANKS REQUIRE AT LEAST 1/4" RISE PER 12' RUN OF DECLIVITY.
14. OVERFLOW TANKS ARE TO BE FITTED WITH LOW WATER MURPHY SWITCH ALARMS AND SIGHT GLASSES.
15. MATERIALS AND INSTALLATION SHALL COMPLY WITH 46 CFR 56.50
16. ALL THROUGH–HULL CONNECTIONS SHALL HAVE VALVES FITTED AS CLOSE AS POSSIBLE TO THE HULL TO COMPLY WITH 46 CFR 56.50–95.
17. EXPANSION TANKS SHALL BE CONSTRUCTED OF 1/4" PLT A36 MILD STEEL OR COMMERCIALLY AVAILABLE EXPANSION TANK MEETING ASME U STANDARD FOR PRESSURE VESSELS. LOCATE EXPANSION TANKS ABOVE THE HIGHEST POINT IN THE SYSTEM AND NEARBY THE COOLING CIRCUIT BEING SERVED. VOLUME TO SUIT MANUFACTURERS REQUIREMENTS.
18. TEMPERATURE AND PRESSURE SWITCHES SHALL BE INTERFACED WITH THE SHIP'S ALARM AND MONITORING SYSTEM AS WELL AS LOW COOLANT LEVEL ALARMS FOR EACH COOLING CIRCUIT.
19. COOLING PUMP PAIRS SHALL BE CONFIGURED FOR RUNNING/STANDBY OPERATION. RUNNING PUMP SHALL BE OPERATOR SELECTABLE. THE STANDBY PUMP SHALL START AUTOMATICALLY ON LOW PRESSURE SENSOR DOWNSTREAM.
20. NO COOLING PIPING OR PENETRATIONS SHALL PENETRATE BATTERY ROOMS.
21. SEE DWG D372–M–10 FOR KEEL COOLER GUARDS AND LOCATION DETAILS.
22. MANUAL CIRCUIT BALANCING VALVES SHALL BE CALIBRATED BALANCING VALVES WITH INTEGRATED FLOW MEASUREMENT PORTS, MEMORY STOP, AND ISOLATION CAPACITY. COOLING SYSTEMS SHALL BE BALANCED SO THAT EACH PIECE OF EQUIPMENT RECEIVES TO MANUFACTURERS REQUIRED FLOW.
23. COOLING PUMPS AND KEEL COOLERS SHALL BE LOCATED IN CLOSE PROXIMITY TO THE EQUIPMENT BEING SERVED. PUMPS HAVE BEEN SELECTED FOR 70 GPM AT 20 FT HEAD LOSS. IF LOCATIONS ARE ADJUSTED, PUMPS SHALL ALSO BE RE–EVALUATED.



TYPICAL GENERATOR ENGINE COOLING SCHEMATIC
PORT & STBD SIMILAR
NOT TO SCALE



TYPICAL PROPULSION MOTOR & REDUCTION GEAR
COOLING SCHEMATIC FORWARD & AFT SIMILAR

LEGEND

	STRAINER		CONCENTRIC REDUCER
	GATE VALVE		PUMP
	THROTTLE VALVE	T	TEMPERATURE GAUGE
	THREE WAY BYPASS VALVE	P	PRESSURE GAUGE
	MANUAL BALANCING VALVE	M	MURPHY SWITCH
	FLEXIBLE HOSE CONNECTION	S.G.	SIGHT GLASS
	FLOW DIRECTION		

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/19/24	KVC

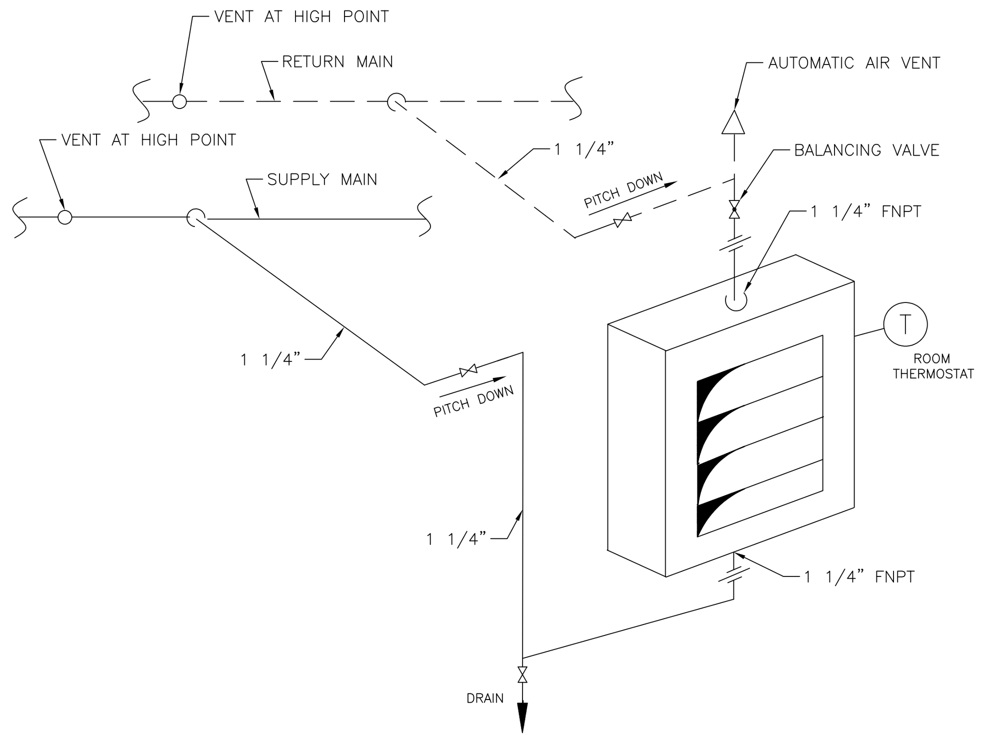
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

104 FT LOA FERRY VESSEL

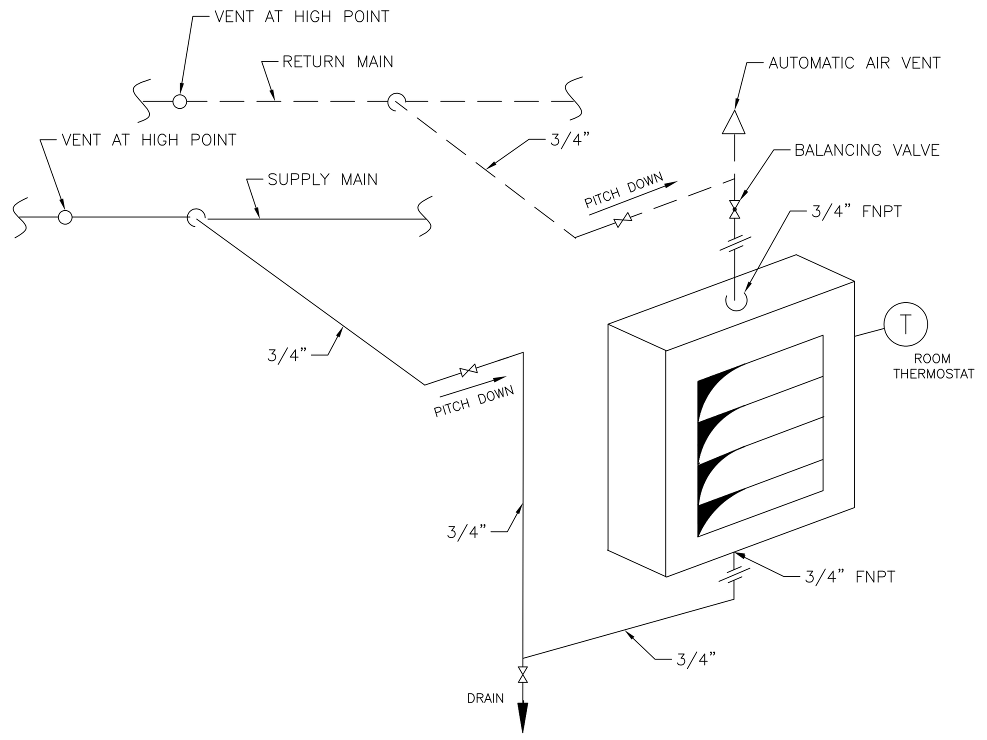
KEEL COOLING SCHEMATIC & DETAILS

DRAWN BY KC DATE 03/22/2024
CHECKED BY SD DATE 7/29/24
APPROVED BY DATE
SCALE 3/8" = 1'–0"
DWG. NO. D372–P14 ALT. 0

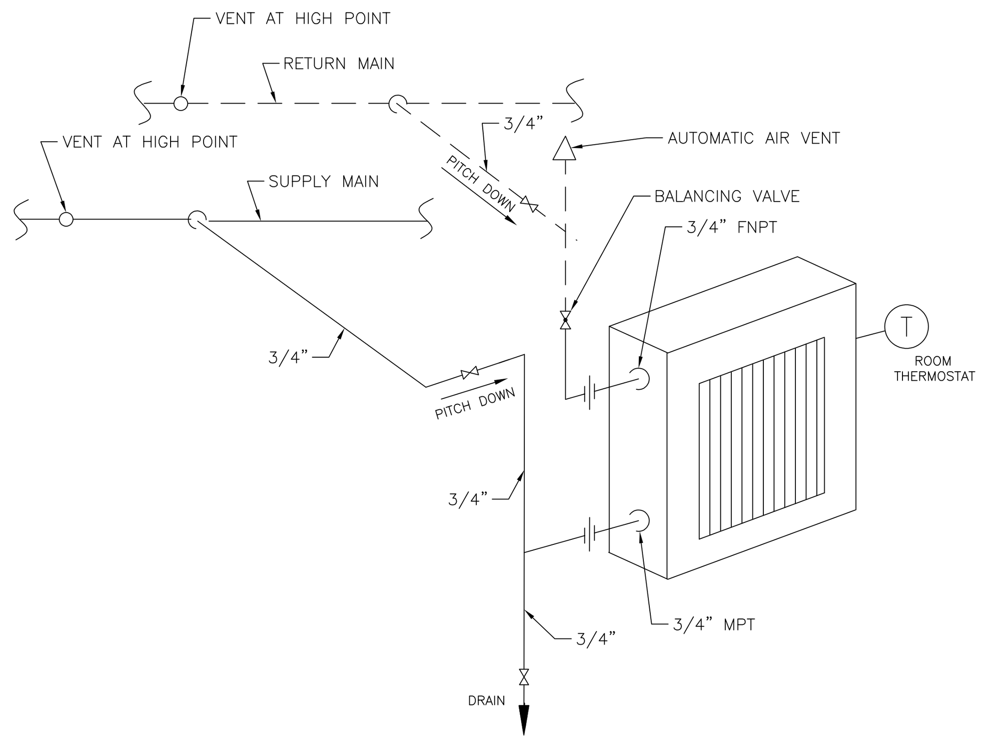
SHEET 1 OF 1



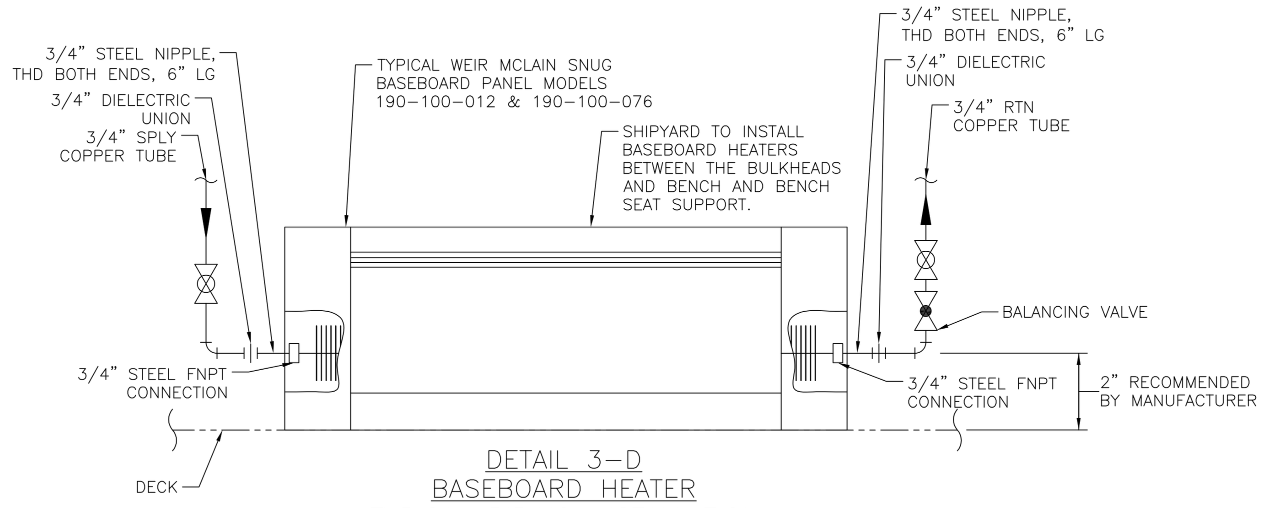
DETAIL 6–C
HORIZONTAL UNIT–HOT WATER HEATER
TYPICAL PIPING INSTALLATION
NOT TO SCALE



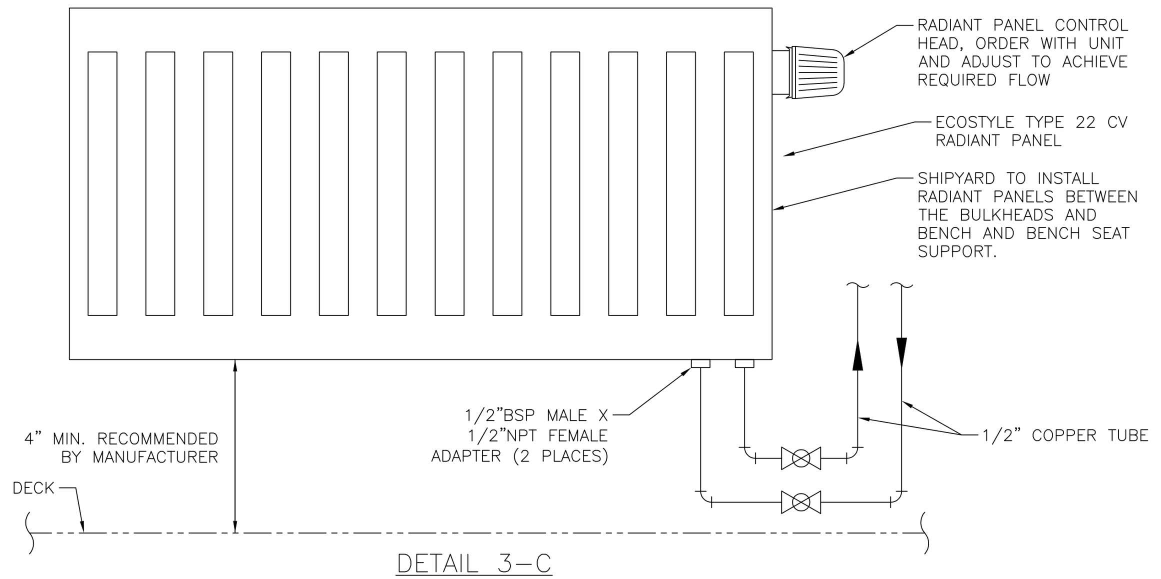
DETAIL 5–C
HORIZONTAL UNIT–HOT WATER HEATER
TYPICAL PIPING INSTALLATION
NOT TO SCALE



DETAIL 4–C
HOT WATER DUCT HEATER
TYPICAL PIPING INSTALLATION
NOT TO SCALE



DETAIL 3–D
BASEBOARD HEATER
TYPICAL PIPING INSTALLATION
NOT TO SCALE



DETAIL 3–C
RADIANT PANEL
TYPICAL PIPING INSTALLATION
NOT TO SCALE

SYMBOLS

- BALL VALVE
- DIRECTION OF FLOW
- CHECK VALVE
- PRESSURE RELIEF VALVE
- PRESSURE GAUGE
- "Y" TYPE STRAINER
- THERMOMETER
- HOT WATER SUPPLY LINE
- HOT WATER RETURN LINE
- PIPE CAP
- UNION
- HOT WATER MODINE UNIT HEATER
- PIPE RUN DOWN
- PIPE RUN UP
- PIPE RUN UP & DOWN
- CIRCULATION PUMP
- AUTOMATIC AIR VENT
- S — SUPPLY
- R — RETURN
- THERMOSTAT
- BALANCING VALVE
- RADIANT PANEL
- BACKFLOW PREVENTER

GENERAL NOTES

1. THIS DRAWING IS SCHEMATIC ONLY AND NOT INTENDED TO LOCATE ANY PIPING, FITTINGS, OR EQUIPMENT EXCEPT IN GENERAL OR AS NOTED.
2. FINAL LOCATION OF ALL PIPES AND FITTINGS SHALL BE DETERMINED ON THE SHIP TO BEST SUIT INSTALLATION.
3. THE DECK AND BULKHEAD PIPING PENETRATION SHALL HAVE REINFORCEMENT AROUND PIPING AND SHALL BE WELDED ON BOTH SIDES OF THE PENETRATION.
4. THE PIPING SUPPLY AND RETURN SHALL BE INSULATED WITH PIPE INSULATION OF NON COMBUSTIBLE MATERIAL AND U.S.COAST GUARD APPROVED.
5. ALL PIPING DIAGRAMS, SPECIFICATIONS AND RECOMMENDATIONS FURNISHED BY MANUFACTURER OF EQUIPMENT SERVICED BY A SYSTEM SHALL SUPERSEDE.
6. THE HOT WATER SYSTEM SHALL BE EQUIPPED WITH SUITABLE AIR VENT VALVES FOR RAPID AND COMPLETE REMOVAL OF AIR AT THE HIGH POINTS AND ENDS OF BOTH, SUPPLY AND RETURN MAINS.
7. THE SYSTEM SHALL BE PROVIDED WITH MEANS FOR FOR COMPLETE AND ADEQUATE DRAINAGE AT CONVENIENT LOW POINTS TO SUIT INSTALLATION, AS PER OWNER APPROVAL. THE PITCH SHALL BE AT LEAST 1/8–INCH PER FOOT.
8. THE RELIEF VALVE SHALL BE IN ACCORDANCE WITH 46 CFR 53.05–2. THE RELIEF VALVE REQUIREMENTS FOR HOT WATER BOILER MUST BE AS INDICATED IN ARTICLE 4 OF SECTION IV OF THE ASME CODE. ACCORDING TO 46 CFR 53.01–10(b)(1) BOILERS OF WROUGHT MATERIAL SHALL BE RESTRICTED TO A MAXIMUM OF 100 PSIG OR 250 DEG.F. FOR HOT WATER, AND ACCORDING TO 46 CFR 53.01–10(b)(2) BOILERS OF CAST IRON MATERIAL SHALL BE RESTRICTED TO A MAXIMUM OF 30 PSIG OR 250 DEG.F. FOR HOT WATER.
9. THE PIPES SHALL BE PROTECTED AGAINST MECHANICAL INJURY AND SUITABLY SUPPORTED.
10. MAKE PROPER PROVISION FOR EXPANSION AND CONTRACTION IN ALL PART OF PIPING SYSTEM WHEREVER POSSIBLE BY MEANS OF PIPE BENDS, SWING CONNECTIONS OR CHANGES IN DIRECTION OF PIPING. GUIDES SHALL BE PROVIDED WHERE NECESSARY TO CONFINE LATERAL MOVEMENT OF PIPING. PIPE SUPPORTS SHALL ALLOW AXIAL MOVEMENT.
11. ALL HEATING EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
12. THE HOT WATER HEATING BOILER SHALL OPERATE AT A PRESSURE OF 30 PSIG AND A TEMPERATURE OF 200 DEGREES F. AND MUST MEET THE REQUIREMENTS OF 46 CFR PART 53 FOR HEATING BOILERS AND 46 CFR PART 63 FOR AUTOMATIC AUXILIARY BOILERS CONTROL.
13. THE CONTRACTOR SHALL TEST BALANCING AND ADJUSTING THE HEATING SYSTEM.
14. THE HOT WATER HEATING PIPING SHALL BE AS INDICATED IN THE MATERIAL LIST.
15. THE HOT WATER HEATING GATE VALVES SHALL BE BRONZE.
16. ALL VALVES AND SYSTEMS SHALL HAVE IDENTIFYING MARKS AND LABELS.
17. ALL SYSTEMS SHALL BE INSTALLED WITH UNIONS OR FLANGES TO PROVIDE FOR REMOVAL.
18. THE CONTRACTOR SHALL VERIFY THE WATER CIRCULATION PUMP CHARACTERISTICS (GPM AND HEAD) AFTER FINAL LAYOUT OF THE PIPING AND EQUIPMENT AS WELL AS SIZING THE EXPANSION TANK.
19. BULKHEAD PENETRATIONS NEED TO BE INBOARD OF THE HULL SIDE GREATER THAN 20% OF THE BEAM, MEASURED AT THE BOUNDARY PENETRATED.
20. HEATING SYSTEM PIPING SHOULD HAVE A 40% MIXTURE OF PROPYLENE GLYCOL (DO NOT USE ETHYLENE GLYCOL) ADDED TO WATER FOR FREEZE PROTECTION.
21. MODINE HEATERS SHALL BE OF THE INTERMITTENT FAN OPERATION TYPE AND THERMOSTAT CONTROLLED.
22. THE HOT WATER CIRCULATING PUMPS SHALL BE CONFIGURED FOR TRIM MATERIAL TO BE BRONZE.
22. WHERE DISSIMILAR MATERIAL IS USED WITHIN THE HEATING SYSTEM PIPING, EQUIPMENT AND FITTINGS, ADEQUATE ISOLATION SHALL BE PROVIDED.
23. THE HOT WATER PIPING SYSTEM SHALL BE INSTALLED IN A MANNER THAT ALLOWS FOR ISOLATION OF HEATERS AND PANELS FOR SERVICING. HEATING EQUIPMENT IS NOT TO BE INSTALLED IN SERIES UNLESS SPECIFIED OTHERWISE.

LIST OF HOT WATER UNIT HEATERS

MODEL / DECK/LOCATION	"MODINE" UNIT HEATER MODEL HSB33SB02SA	"MODINE" UNIT HEATER MODEL HSB86SB02SA	"MODINE" UNIT HEATER MODEL HSB108SB02SA	"MODINE" UNIT HEATER MODEL HSB165SB02SA
	QTY	QTY	QTY	QTY
HOLD – FWD STEERING GEAR	0	1	0	0
HOLD – ENG'RS SHO/STORES	1	0	0	0
HOLD – ENGINE ROOM	0	0	2	0
HOLD – AUX. MACHINERY ROOM	0	0	0	1
HOLD – AFT STEERING GEAR	0	1	0	0
TOTAL	1	2	2	1

LIST OF RADIANT PANELS

MODEL / DECK/LOCATION	"ECOSTYLE" RADIANT PANEL MODEL ECS16 1622CV	"ECOSTYLE" RADIANT PANEL MODEL ECS16 2422CV	"ECOSTYLE" RADIANT PANEL MODEL ECS20 2422CV	"ECOSTYLE" RADIANT PANEL MODEL ECS36 2422CV	"ECOSTYLE" RADIANT PANEL MODEL ECS36 3222CV	"ECOSTYLE" RADIANT PANEL MODEL ECS36 4022CV	"ECOSTYLE" RADIANT PANEL MODEL ECS20 5622CV
	QTY	QTY					
PILOT HOUSE	0	0	0	0	0	2	0
02 LVL – CREW HEAD	0	1	0	0	0	0	0
02 LVL – PASSAGEWAY	0	0	0	0	2	0	0
01 LVL – (P) FWD HEAD	1	0	0	0	0	0	0
01 LVL – (P) AFT HEAD	1	0	0	0	0	0	0
01 LVL – (S) UNISEX HEAD	0	1	0	0	0	0	0
HOLD – CREW BREAK ROOM	0	0	1	1	0	0	0
HOLD – CREW HEAD	1	0	0	0	0	0	0
HOLD – EOS	0	0	0	0	0	0	1
TOTAL	3	2	1	1	2	2	1

LIST OF ZONE CONTROL VALVES

NO.	DESCRIPTION	SIZE	MODEL
1	ZONE 1 – 02 DECK & PILOT HOUSE	1 1/4"	BELIMO B232VS+AMX230–3–X1+NO
2	ZONE 2 – STBD PASSENGER SPACE	2"	BELIMO B249VS+AMX230–3–X1+NO
3	ZONE 3 – CREW HOLD SPACES	1 1/4"	BELIMO B232VS+AMX230–3–X1+NO
4	ZONE 4 – MACHINERY SPACES	2 1/2"	BELIMO B265VS+AMX230–3–X1+NO
5	ZONE 5 – PORT PASSENGER SPACE	2"	BELIMO B249VS+AMX230–3–X1+NO

LIST OF BALANCING VALVES

NO.	DESCRIPTION	FLOW (GPM)	SIZE	MODEL
1	PORT PASSENGER AREA 4 FT BASEBOARD HEATER	4.0	3/4"	HAYS MV1–6–005
2	PORT PASSENGER AREA 20 FT BASEBOARD HEATER – FORWARD	4.0	3/4"	HAYS MV1–6–005
3	PORT PASSENGER AREA 20 FT BASEBOARD HEATER – MID	4.0	3/4"	HAYS MV1–6–005
4	PORT PASSENGER AREA 20 FT BASEBOARD HEATER – AFT	4.0	3/4"	HAYS MV1–6–005
5	PORT PASSENGER AREA PREHEATER PHR–1	4.0	3/4"	HAYS MV1–6–005
6	STBD PASSENGER AREA 4 FT BASEBOARD HEATER	4.0	3/4"	HAYS MV1–6–005
7	STBD PASSENGER AREA 20 FT BASEBOARD HEATER – FORWARD	4.0	3/4"	HAYS MV1–6–005
8	STBD PASSENGER AREA 20 FT BASEBOARD HEATER – MID	4.0	3/4"	HAYS MV1–6–005
9	STBD PASSENGER AREA 20 FT BASEBOARD HEATER – AFT	4.0	3/4"	HAYS MV1–6–005
10	STBD PASSENGER AREA PREHEATER PHR–2	4.0	3/4"	HAYS MV1–6–005
11	FWD STEERING GEAR COMPT UNIT HEATER	8.0	1 1/4"	HAYS MV1–6–005
12	ENGINEER'S SHOPS/STORES UNIT HEATER	2.3	1 1/4"	HAYS MV1–6–005
13	MAIN ENGINE ROOM FWD UNIT HEATER	8.7	1 1/4"	HAYS MV1–6–005
14	MAIN ENGINE ROOM AFT UNIT HEATER	8.7	1 1/4"	HAYS MV1–6–005
15	AUX ENGINE ROOM UNIT HEATER	13.6	1 1/4"	HAYS MV1–6–005
16	AFT STEERING GEAR COMPT UNIT HEATER	8.0	1 1/4"	HAYS MV1–6–005
17	CREW BREAK ROOM PREHEATER PHR–4	4.0	3/4"	HAYS MV1–6–005
18	ENGINEER'S SHOP/STORES PREHEATER PHR–3	4.0	3/4"	HAYS MV1–6–005

MATERIAL LIST

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS	VALVES		FITTINGS
				BODIES	TRIM	
HEATING SYSTEM	ALL	COPPER TUBE TYPE K ASTM–B88	UNION, GROUND JOINT BRONZE PRO PRESS CONNECTION FLANGE, 150# BRONZE ANSI B16.51 PRO PRESS CONNECTION	BALL: BRONZE ASTM B61 OR B62 MSS SP–110 FULL PORT, 3 PIECE 600 PSI THREADED END GATE/GLOBE/SWING CHECK: BRONZE ASTM B61 OR B62 ANSI B16.34 600 PSI THREADED END	BALL: CHROME PLATED BRONZE BALL PTFE SEATS AND SEALS GATE/GLOBE/SWING CHECK: BRONZE DISC & SEAT	COPPER PRO PRESS CONNECTION ASME B16.51

HEATING CIRCULATON PUMP

COMPARTMENT / PUMP No.	PUMP CHARACTERISTIC								MANUFACTURER
	QTY	MODEL	GPM	HEAD (FT)	HP	RPM	PHASE	VOLTS	
GENERATOR ROOM ENGINE ROOM / P1	2	Be612T 2x2–5.25	86	27	1	1,750	3	230	BELL & GOSSETT

LIST OF HOT WATER BASEBOARD HEATERS

MODEL / DECK/LOCATION	"WEIL MCLAIN" BASEBOARD HEATER MODEL 190–100–012 4 FT LONG	"WEIL MCLAIN" BASEBOARD HEATER MODEL 190–100–076 20 FT LONG
	QTY	QTY
01 LVL – (P) PASSENGER CABIN	1	3
01 LVL – (S) PASSENGER CABIN	1	3
TOTAL	2	6

REFERENCES

NO.	TITLE	DRAWING NO.
3	ELECTRICAL A/C ONE LINE DIAGRAM	D–372–E1
2	POTABLE WATER PIPING SCHEMATIC	D–372–P5
1	HVAC SYSTEM, ARRANGEMENTS, & DETAILS	D–372–M9

SHEET 1 OF 4

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

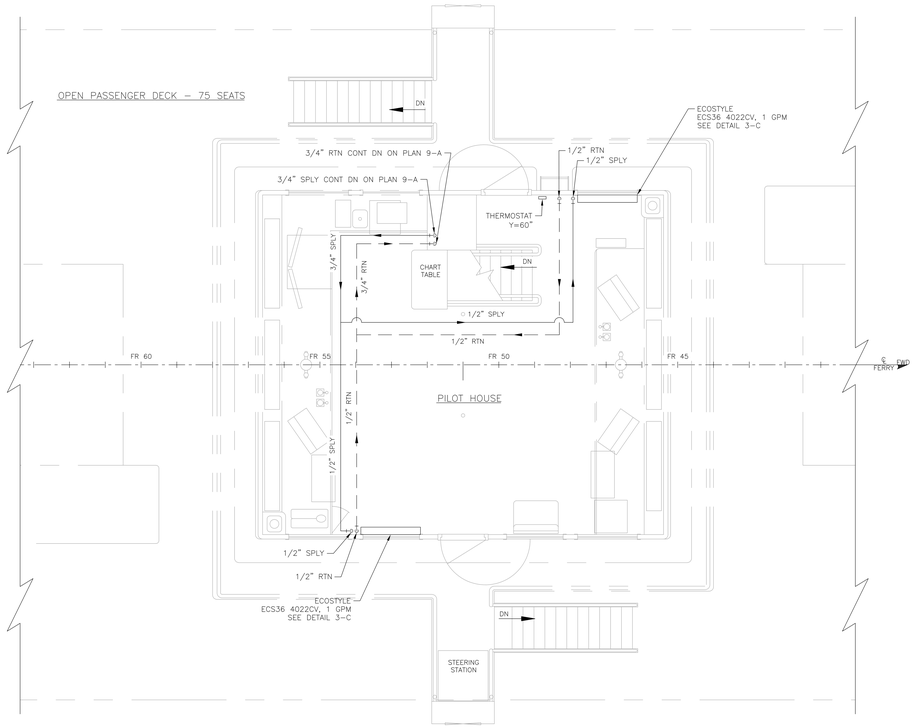
MSCorp
MarineSystemsCorporation
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE SUITE 620W
BOSTON, MA 02210–2138
PHONE: (617) 542–3345
FAX: (617) 542–2461
WWW.MSCORP.NET

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

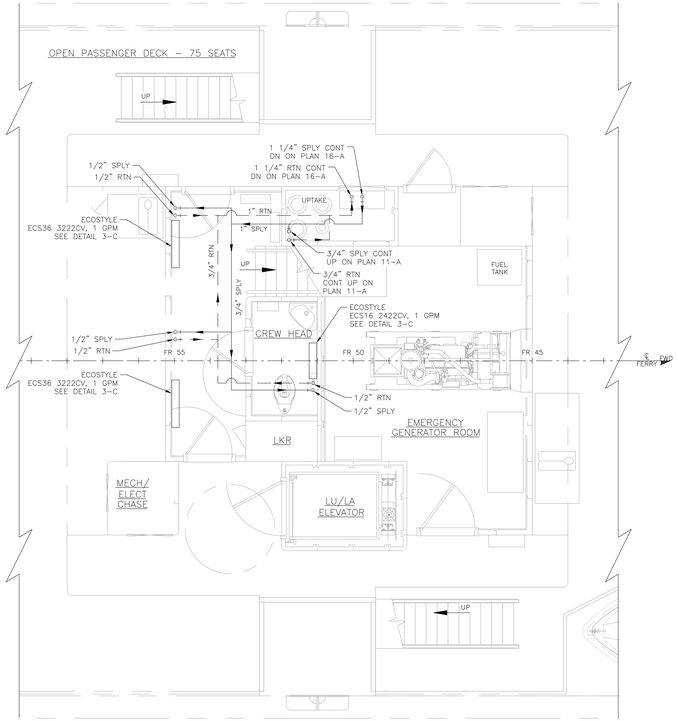
207 FT LOA FERRY VESSEL

HVAC BOILER PIPING SCHEMATIC

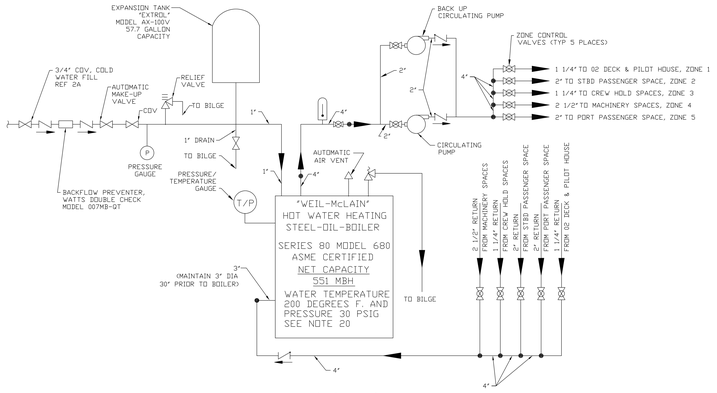
DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE NONE
DWG. NO. D372–P15 ALT. 0



PLAN VIEW 11–A
PILOT HOUSE
SCALE: 1/2"=1'–0"



PLAN VIEW 9–A
02 DECK
SCALE: 1/2"=1'–0"



DETAIL 7–B
TYPICAL BOILER PIPING INSTALLATION
NOT TO SCALE

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

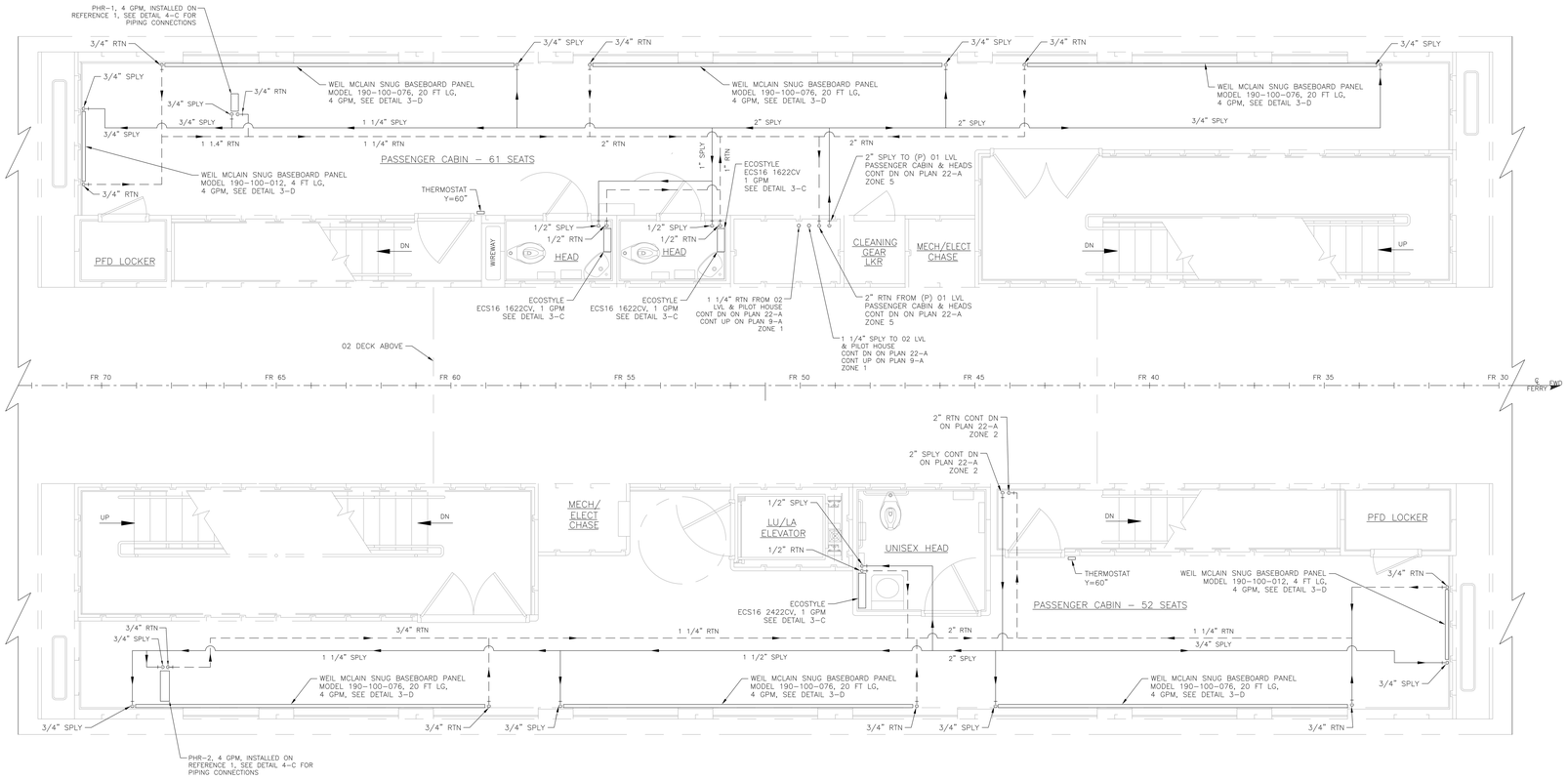
HEATING BOILER PIPING SYSTEM
INSTALLATION

		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210–2138
PHONE: (617) 542–3345
FAX: (617) 542–2481
WWW.MSCORP.NET

DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE 1/2" = 1'–0"
DWG. NO. D372–P15 ALT. 0

SHEET 2 OF 4



PLAN VIEW 16–A

01 DECK

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

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS MARINE ENGINEERS

100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

HEATING BOILER PIPING SYSTEM INSTALLATION

		DATE
PREPARED	A. RUSSO	6/7/24
CHECKED	E. JOHNSON	6/7/24
ENGINEER		
APPROVED		

MSCorp

MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2338
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

DRAWN BY AMR DATE 8/29/24

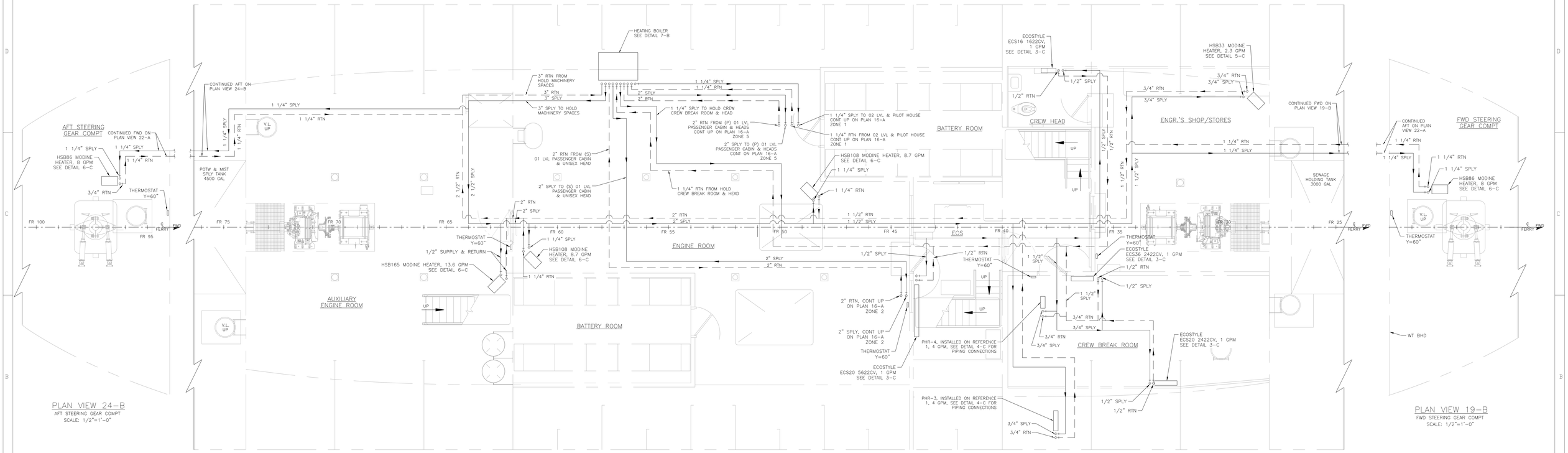
CHECKED BY MSCORP DATE

APPROVED BY DATE

SCALE 1/2" = 1'-0"

DWG. NO. D372-P15 ALT. 0

SHEET 3 OF 4



PLAN VIEW 24-B
AFT STEERING GEAR COMPT
SCALE: 1/2"=1'-0"

PLAN VIEW 22-A
HOLD
SCALE: 1/2"=1'-0"

PLAN VIEW 19-B
FWD STEERING GEAR COMPT
SCALE: 1/2"=1'-0"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	AMR

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

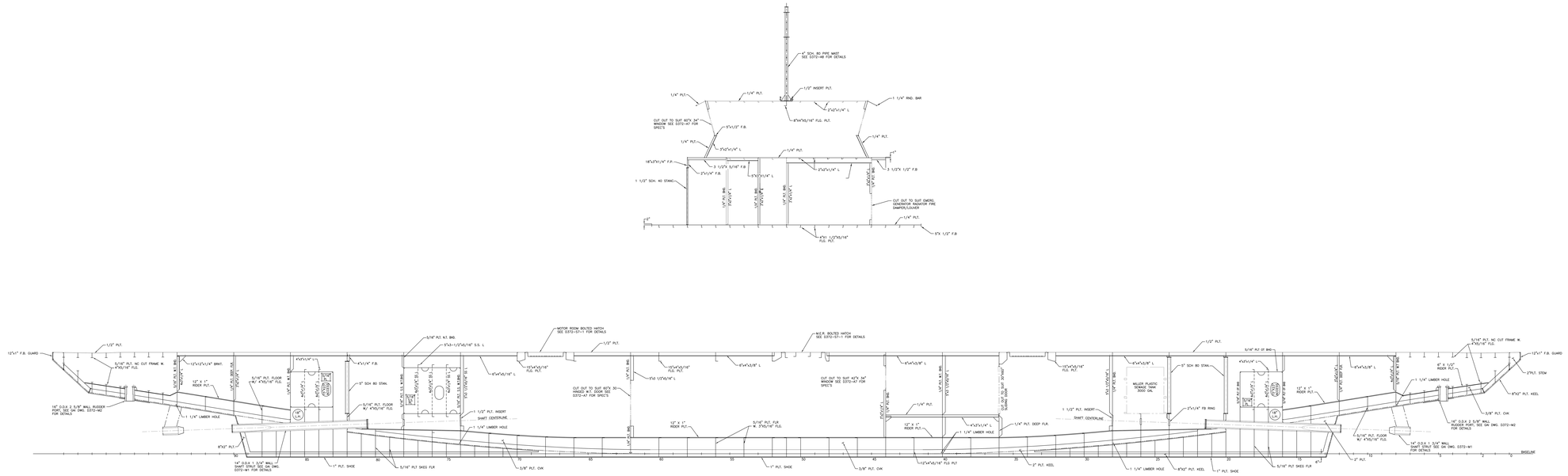
HEATING BOILER PIPING SYSTEM INSTALLATION

PREPARED A. RUSSO 6/7/24
CHECKED E. JOHNSON 6/7/24
ENGINEER
APPROVED

MSCorp
MARINE SYSTEMS CORPORATION
23 DRYDOCK AVE. SUITE 620W
BOSTON, MA 02210-2138
PHONE: (617) 542-3345
FAX: (617) 542-2481
WWW.MSCORP.NET

DRAWN BY AMR DATE 8/29/24
CHECKED BY MSCORP DATE
APPROVED BY DATE
SCALE 1/2" = 1'-0"
DWG. NO. D372-P15 ALT. 0

SHEET 4 OF 4



0	ISSUED FOR BID	8/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND.

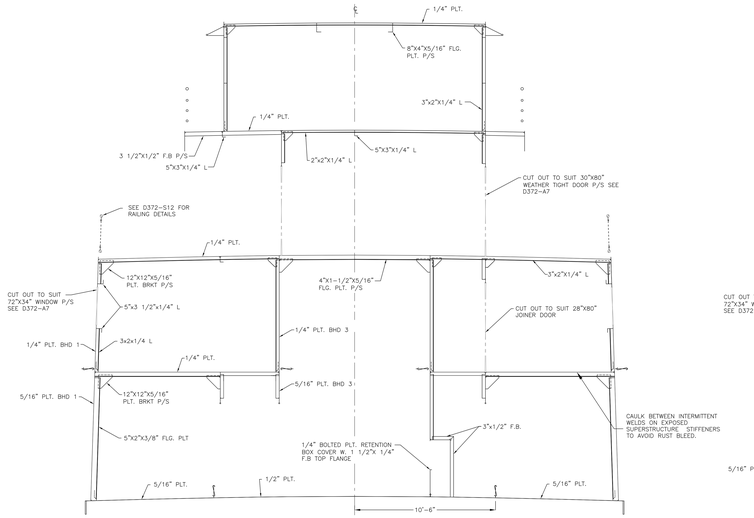
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

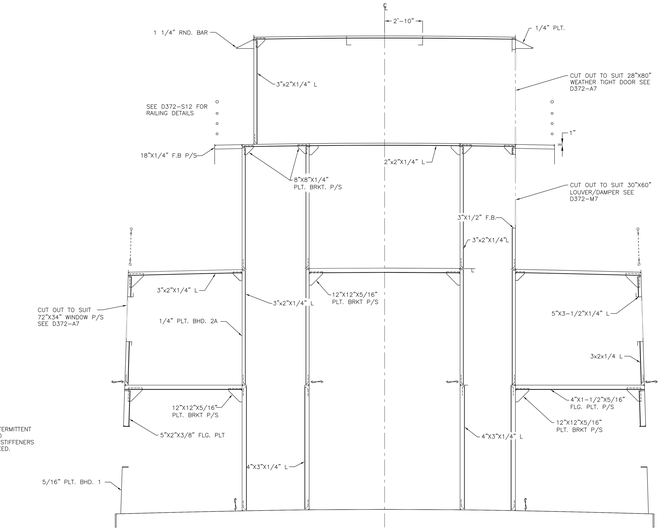
STRUCTURAL PROFILE

DRAWN BY JG DATE 7/14/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-S1 ALT. 0

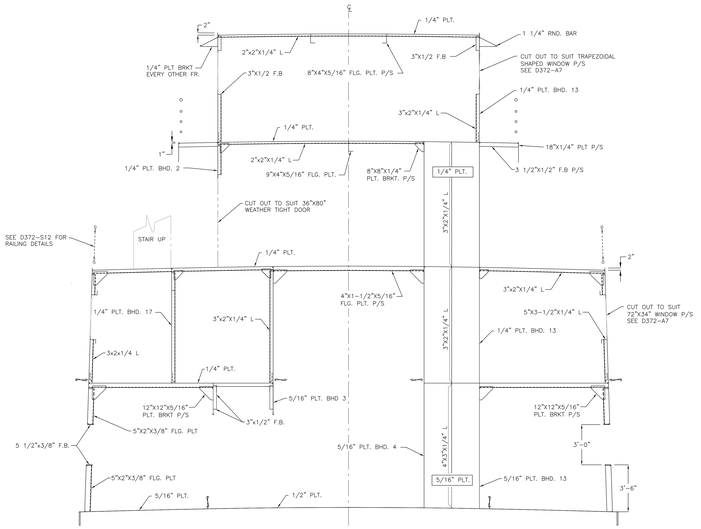
SHEET 1 OF 1



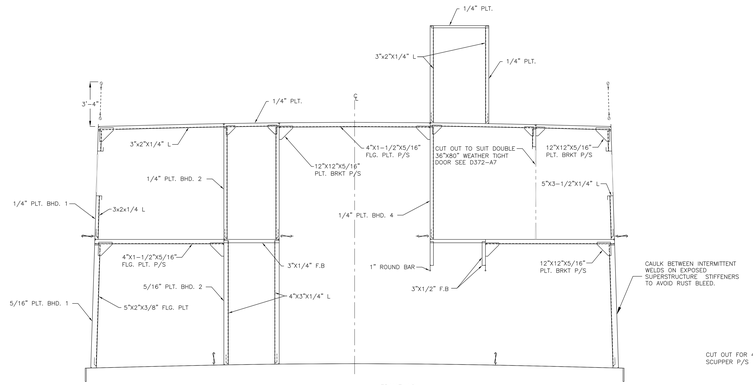
FRAME 54
LKG AFT



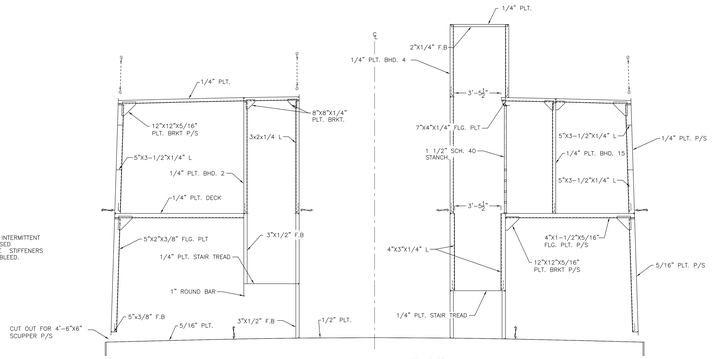
FRAME 50
LKG TOWARDS MID-SHIPS



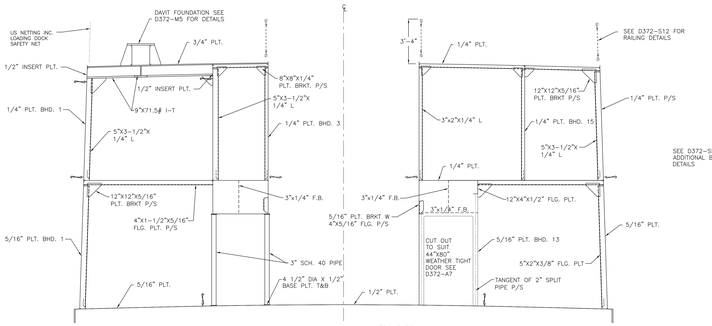
FRAME 47
LKG TOWARDS MID-SHIPS



FRAME 42
LKG TOWARDS MID-SHIPS



FRAME 37
LKG TOWARDS MID-SHIPS



FRAME 32
LKG TOWARDS MID-SHIPS

0	ISSUED FOR BID	XXXX	KVC/JG
ALT	DESCRIPTION	DATE	NAME

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND.

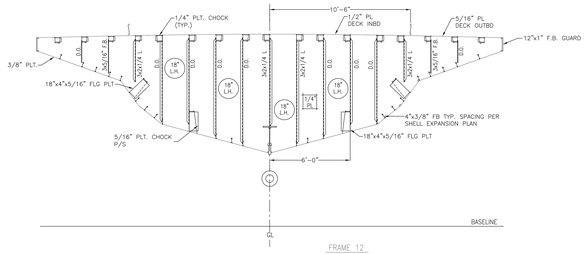
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

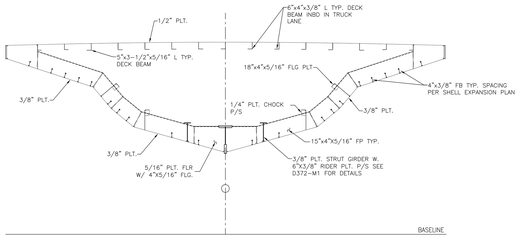
TYPICAL CONSTRUCTION SECTIONS ABOVE MAIN DECK

DRAWN BY JG DATE 4/19/24
CHECKED BY JG DATE 7/29/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"

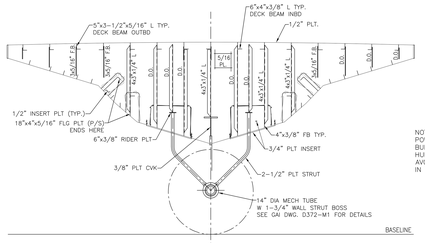
SHEET 1 OF 1 DWG. NO. D372-S2-1 ALT. 0



FRAME 12
DEEP FLOOR
LKG AWAY FROM MIDSHIPS
FR. 90 SIMILAR

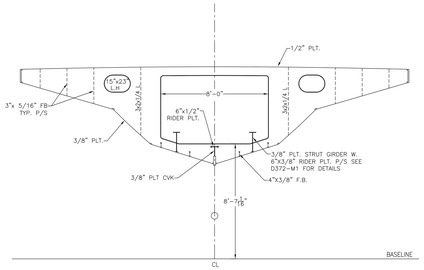


FRAME 10
TRANSVERSE FRAME
LKG TOWARDS MIDSHIPS
FR. 92 SIMILAR

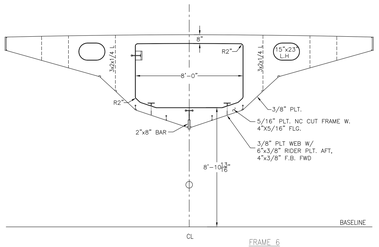


NOTE: ROUTE SHORE POWER CABLE ALONG THE BULWARK THEN INTO THE HULL AFT OF FRAME 8 TO AVOID CABLE PENETRATION IN THE COLLISION BHD.

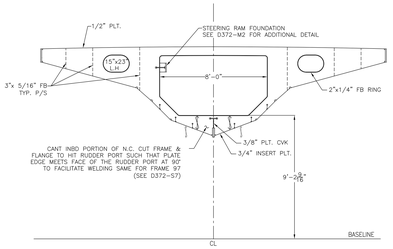
FRAME 8
WATERTIGHT BHD
LKG AWAY FROM MIDSHIPS
FR. 94 SIMILAR



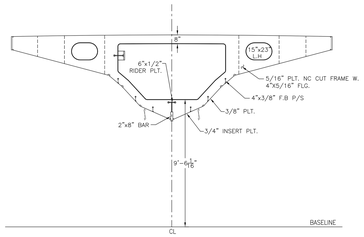
FRAME 7
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 95 SIMILAR



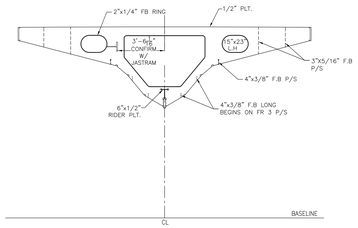
FRAME 6
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 96 SIMILAR



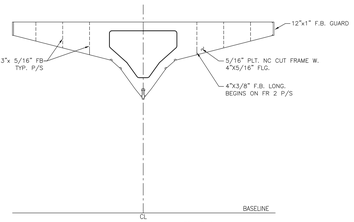
FRAME 5
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 97 SIMILAR



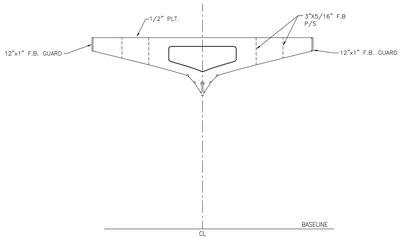
FRAME 4
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 98 SIMILAR



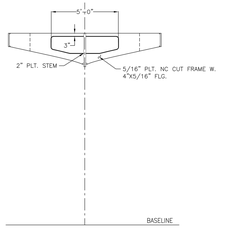
FRAME 3
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS



FRAME 2
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 100 SIMILAR



FRAME 1
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 101 SIMILAR



FRAME 0
N.C. CUT FRAME
LKG TOWARDS MID-SHIPS
FR. 102 SIMILAR

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/25/24	KVC/JG

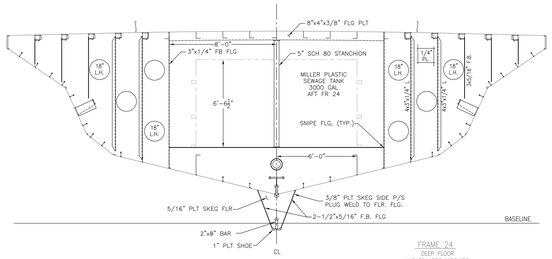
THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

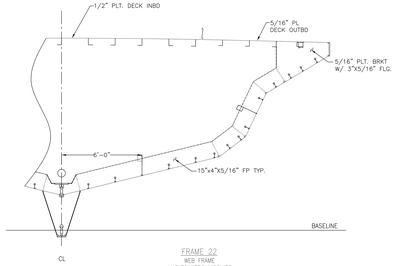
207 FT LOA FERRY VESSEL
MAINE DOT

CONSTRUCTION SECTIONS
BELOW MN DK FR 0-10

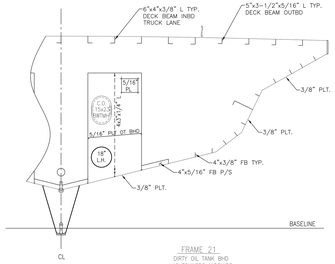
DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-S3-1 ALT. 0



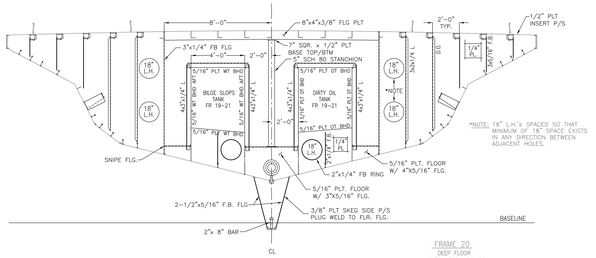
FRAME 24
DEEP FLOOR
LKG TOWARDS MIDSHIPS



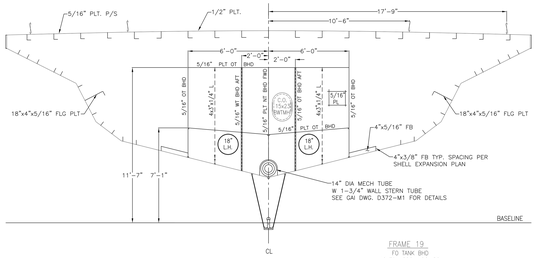
FRAME 22
WEB FRAME
LKG TOWARDS MIDSHIPS



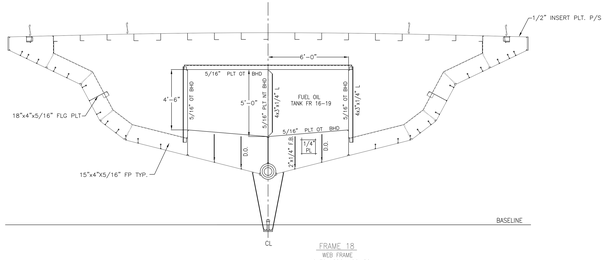
FRAME 21
DIRTY OIL TANK BHD
LKG TOWARDS MIDSHIPS



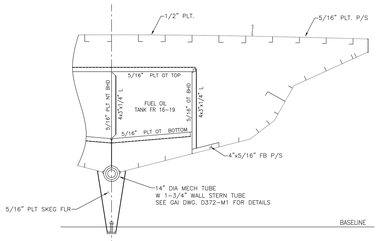
FRAME 20
DEEP FLOOR
LKG TOWARDS MIDSHIPS



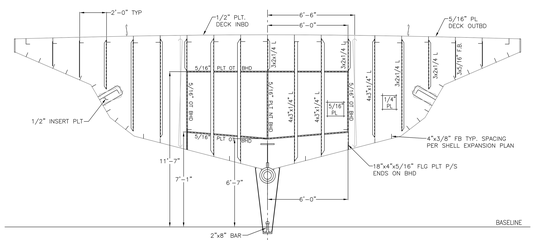
FRAME 19
FO TANK BHD
LKG TOWARDS MIDSHIPS



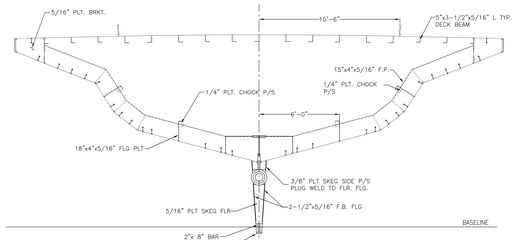
FRAME 18
WEB FRAME
LKG TOWARDS MIDSHIPS
FR. 84 SIMILAR



FRAME 17
SHALLOW FRAME
LKG TOWARDS MIDSHIPS
FR. 85 SIMILAR



FRAME 16
WATERTIGHT BHD
LKG TOWARDS MIDSHIPS
FR. 86 SIMILAR



FRAME 14
TRANSVERSE FRAME
LKG TOWARDS MIDSHIPS
FR. 88 SIMILAR

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	5/29/24	KVC/JG

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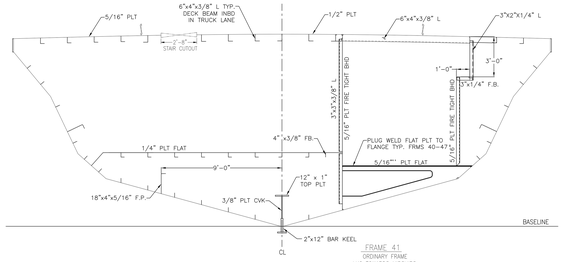
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

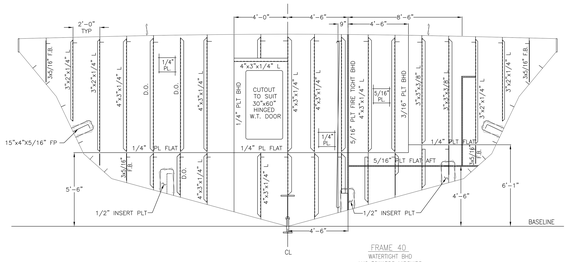
207 FT LOA FERRY VESSEL
MAINE DOT

CONSTRUCTION SECTIONS
BELOW MN DK FR 14-24

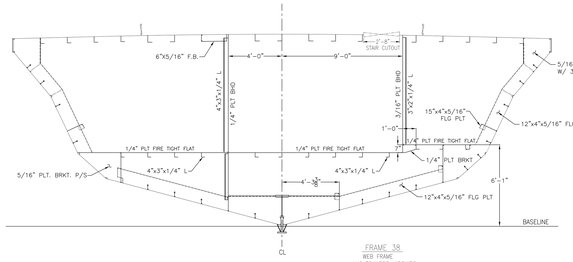
DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG.NO. D-372-S3-2 ALT. 0



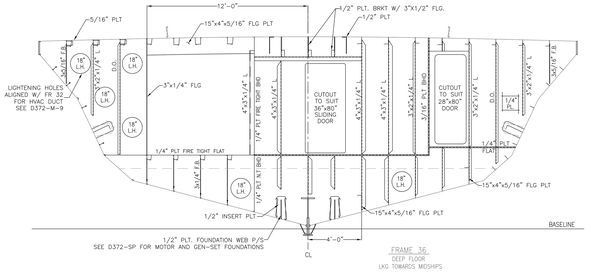
FRAME 41
ORDINARY FRAME
LKG TOWARDS MIDSHIPS



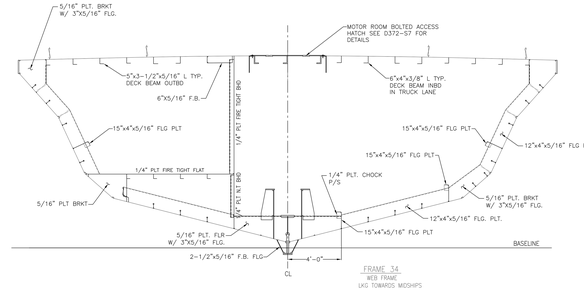
FRAME 40
WATERTIGHT BHD
LKG TOWARDS MIDSHIPS



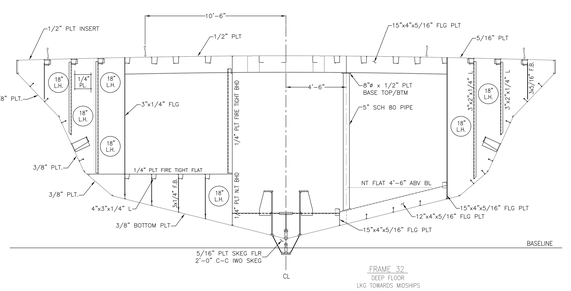
FRAME 38
WEB FRAME
LKG TOWARDS MIDSHIPS



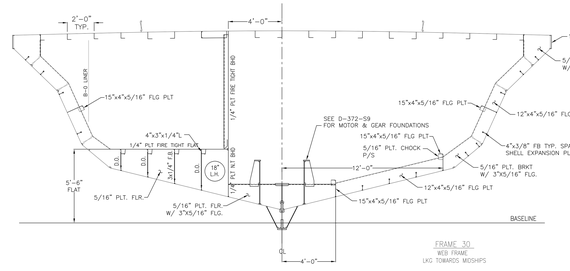
FRAME 36
DEEP FLOOR
LKG TOWARDS MIDSHIPS



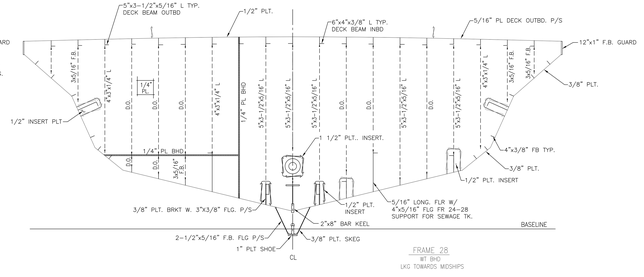
FRAME 34
WEB FRAME
LKG TOWARDS MIDSHIPS



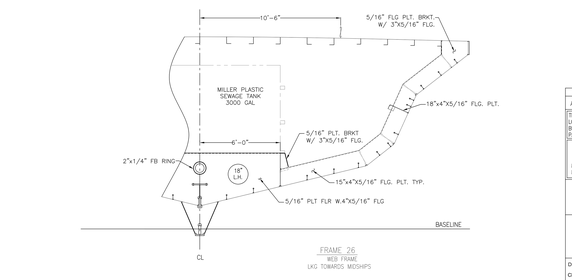
FRAME 32
DEEP FLOOR
LKG TOWARDS MIDSHIPS



FRAME 30
WEB FRAME
LKG TOWARDS MIDSHIPS



FRAME 28
WT BHD
LKG TOWARDS MIDSHIPS



FRAME 26
WEB FRAME
LKG TOWARDS MIDSHIPS

0	ISSUED FOR BID	9/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND

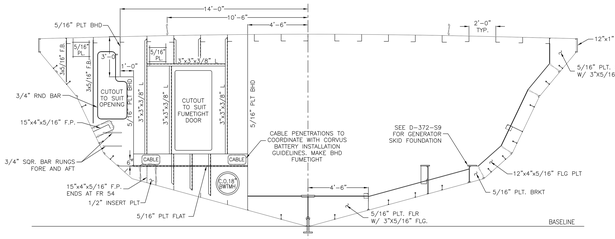
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

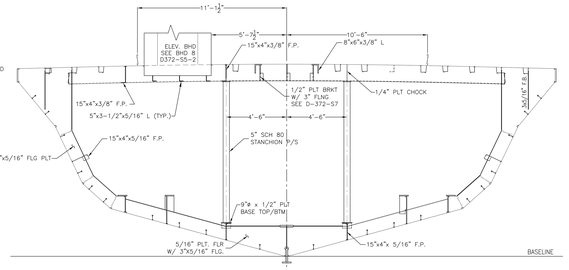
CONSTRUCTION SECTIONS
BELOW MN DK FR 26-41

DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-S3-3 ALT. 0

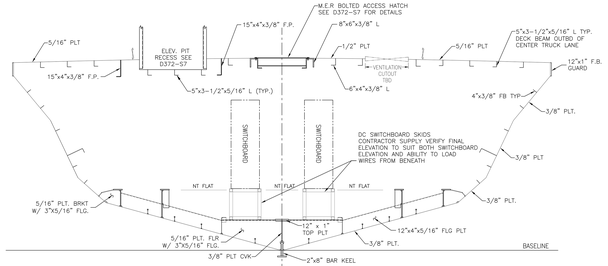
SHEET 3 OF 6



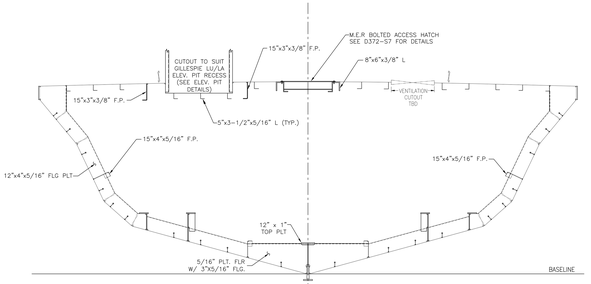
FRAME 54
SHALLOW FRAME
LKG AWAY FROM MIDSHIPS



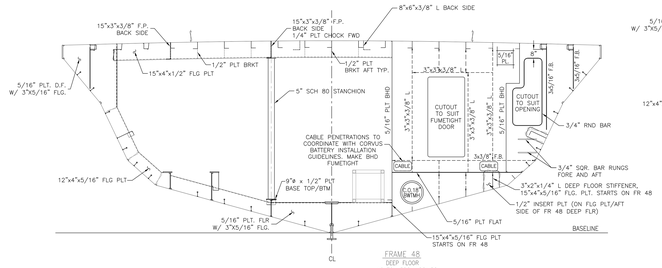
FRAME 52
DEEP FLOOR
LKG AWAY FROM MIDSHIPS



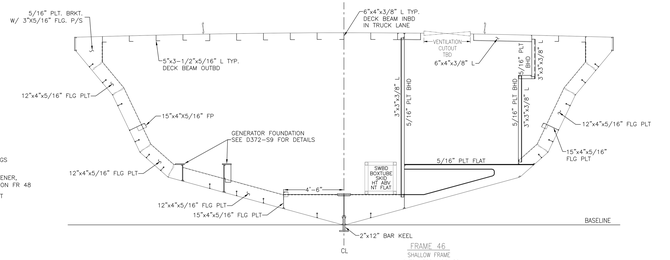
FRAME 51
MIDSHIP



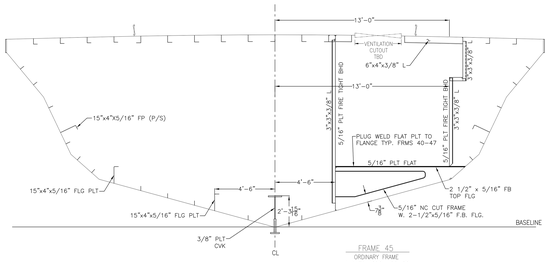
FRAME 50
TRANSVERSE FRAME
LKG TOWARDS MIDSHIPS



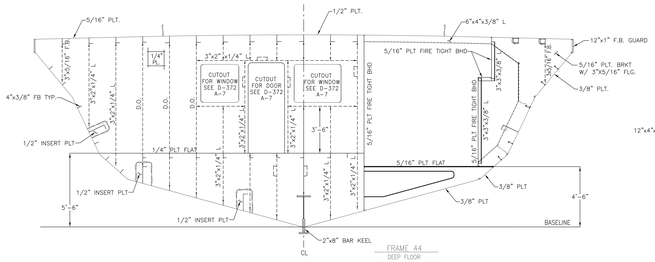
FRAME 48
DEEP FLOOR
LKG TOWARDS MIDSHIPS



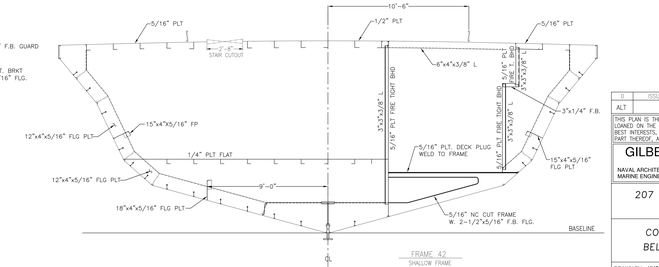
FRAME 46
SHALLOW FRAME
LKG TOWARDS MIDSHIPS



FRAME 45
ORDINARY FRAME
LKG TOWARDS MIDSHIPS



FRAME 44
DEEP FLOOR
LKG TOWARDS MIDSHIPS



FRAME 42
SHALLOW FRAME
LKG TOWARDS MIDSHIPS

0	ISSUED FOR BID	9/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

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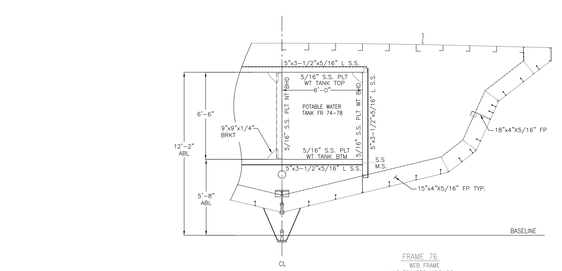
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

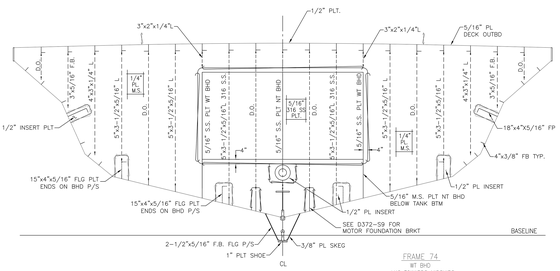
CONSTRUCTION SECTIONS
BELOW MN DK FR 42-54

DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-S3-4 ALT. 0

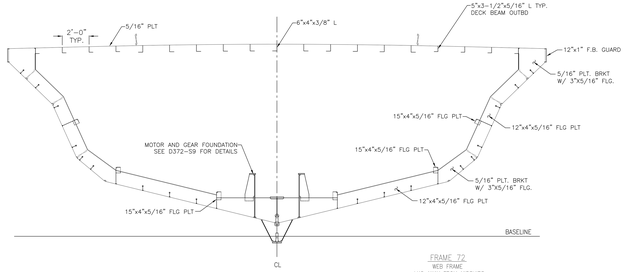
SHEET 4 OF 6



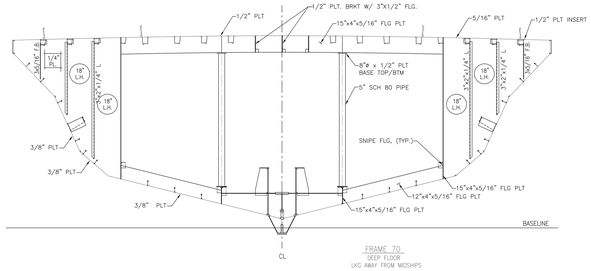
FRAME 76
WEB FRAME
LKG TOWARDS MIDSHIPS



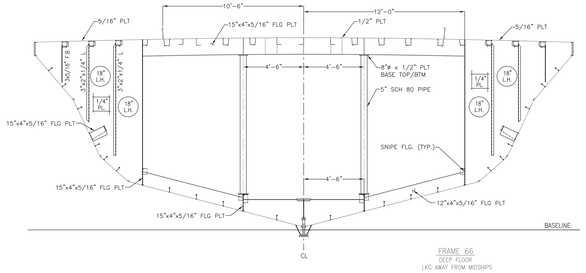
FRAME 74
WT BHD
LKG TOWARDS MIDSHIPS



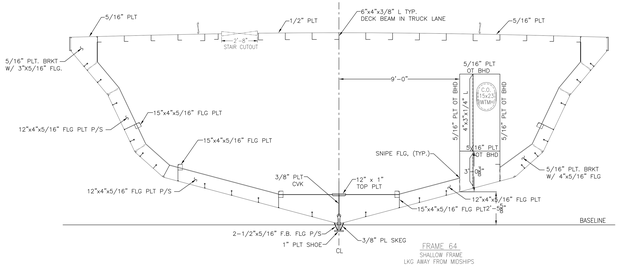
FRAME 72
WEB FRAME
LKG AWAY FROM MIDSHIPS



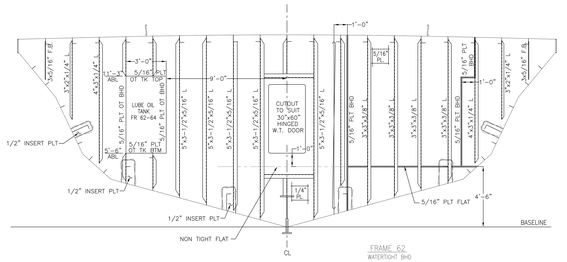
FRAME 70
DEEP FLOOR
LKG AWAY FROM MIDSHIPS



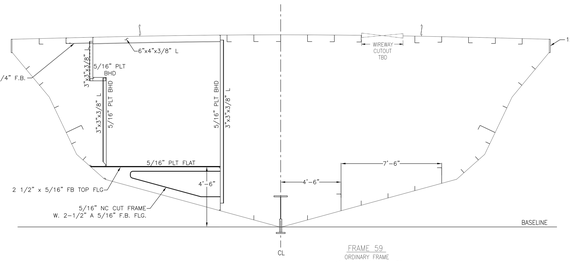
FRAME 66
DEEP FLOOR
LKG AWAY FROM MIDSHIPS



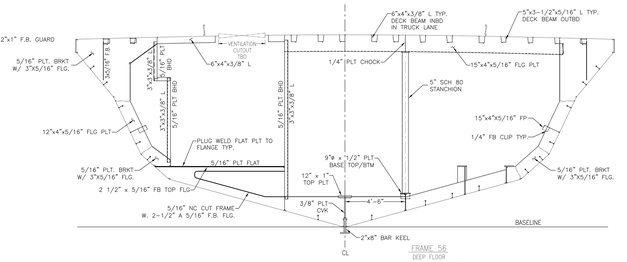
FRAME 64
SHALLOW FRAME
LKG AWAY FROM MIDSHIPS



FRAME 62
WATERTIGHT BHD
LKG TOWARDS MIDSHIPS



FRAME 59
ORDINARY FRAME
LKG AWAY FROM MIDSHIPS



FRAME 56
DEEP FLOOR
LKG AWAY FROM MIDSHIPS

0	ISSUED FOR BID	5/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

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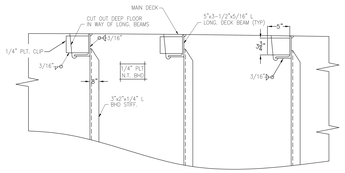
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

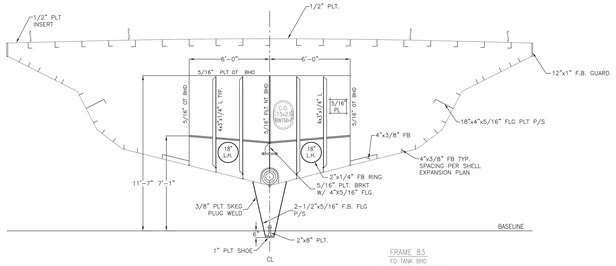
207 FT LOA FERRY VESSEL
MAINE DOT

CONSTRUCTION SECTIONS BELOW MN DK FR 56-76

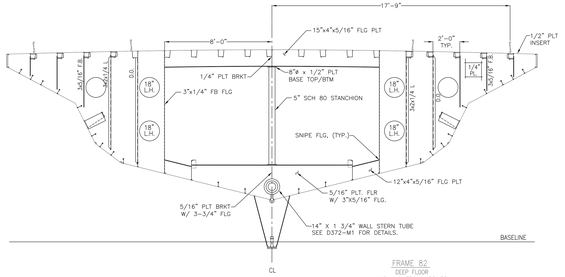
DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-S3-5 ALT. 0



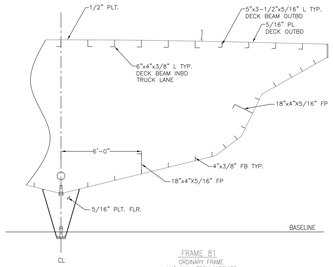
DETAIL 27-D
DECK BEAM ATTACHMENT AT
TYPICAL TRANSVERSE DEEP FLOOR
SCALE : 1 1/2" = 1'-0"



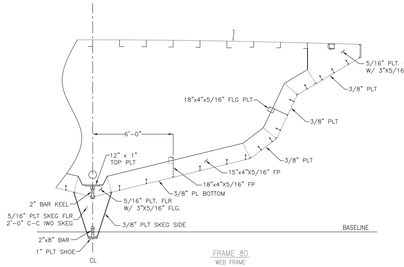
FRAME 83
FO TANK BHD
LKG AWAY FROM MIDSHIPS



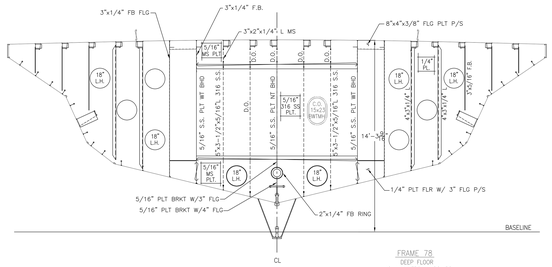
FRAME 82
DEEP FLOOR
LKG AWAY FROM MIDSHIPS



FRAME 81
ORDINARY FRAME
LKG AWAY FROM MIDSHIPS



FRAME 80
WEB FRAME
LKG AWAY FROM MIDSHIPS



FRAME 78
DEEP FLOOR
LKG AWAY FROM MIDSHIPS

0	ISSUED FOR BID	9/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

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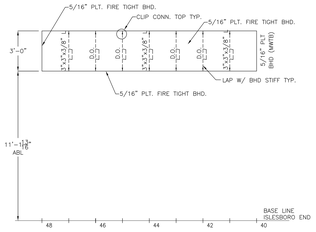
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

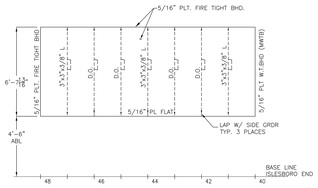
CONSTRUCTION SECTIONS
BELOW MN DK FR 72-83

DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D-372-S3-6 ALT. 0

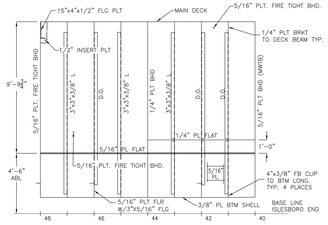
SHEET 6 OF 6



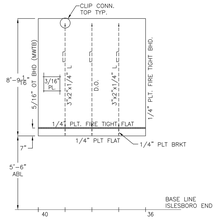
LONGITUDINAL BHD AT 14'-0" OCL PORT
BATTERY ROOM OUTBD BHD
PORT SIDE/FWD SHOWN, STBD/AFT SIMILAR
INBOARD SIDE LOOKING OUTBOARD



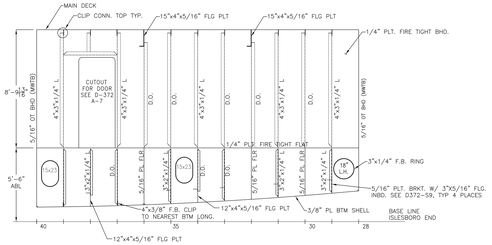
LONGITUDINAL BHD AT 13'-0" OCL PORT
BATTERY ROOM OUTBD BHD
PORT SIDE/FWD SHOWN, STBD/AFT SIMILAR
INBOARD SIDE LOOKING OUTBOARD



LONGITUDINAL BHD AT 4'-6" OCL PORT
BATTERY ROOM INBD BHD
PORT SIDE/FWD SHOWN, STBD/AFT SIMILAR
INBOARD SIDE LOOKING OUTBOARD



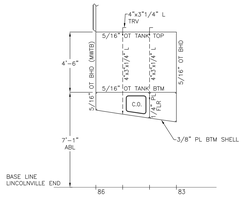
LONGITUDINAL BHD AT 9'-0" OCL PORT
CREW HEAD ROOM INBD BHD
INBOARD SIDE LOOKING OUTBOARD



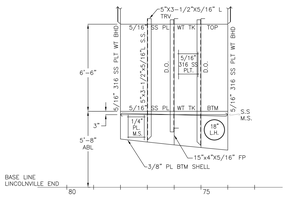
LONGITUDINAL BHD AT 4'-0" OCL STBD
CREW BREAK ROOM INBD BHD
INBOARD SIDE LOOKING OUTBOARD

NOTE:

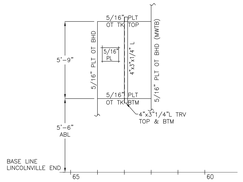
THE FOLLOWING REFERENCES APPLY
THE ISLESBORO END IS REFERRED TO AS BOW AND THE
LINCOLNVILLE END IS REFERRED TO AS STERN.



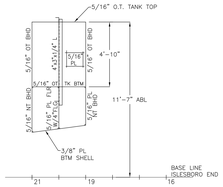
LONGITUDINAL O.T. BHD AT 6'-0" OCL
AFT FUEL OIL TANK PORT BHD
STBD SIDE SIMILAR
INBOARD SIDE LOOKING OUTBOARD



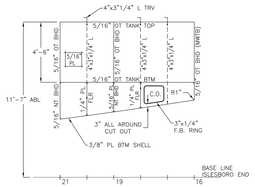
LONGITUDINAL O.T. BHD AT 6'-0" OCL
POTABLE WATER TANK STARBOARD BHD
PORT SIDE SIMILAR
OUTBOARD SIDE LOOKING INBOARD



LONGITUDINAL O.T. BHD AT 9'-0" OCL
LUBE OIL TANK INBOARD BHD
OUTBOARD BHD SIMILAR @ 12'-0" OCL
INBOARD SIDE LOOKING OUTBOARD



LONGITUDINAL O.T. BHD AT 2'-0" OCL
DIRTY OIL TANK & BILGE SLOPS TANK
PORT SIDE/FWD SHOWN, STBD & AFT SIMILAR
INBOARD SIDE LOOKING OUTBOARD



LONGITUDINAL O.T. BHD AT 6'-0" OCL
FUEL OIL TANK & DIRTY OIL TANK
PORT SIDE/FWD SHOWN, STBD SIMILAR
INBOARD SIDE LOOKING OUTBOARD

0	ISSUED FOR BID	9/29/24	KVC/JG
ALT	DESCRIPTION	DATE	NAME

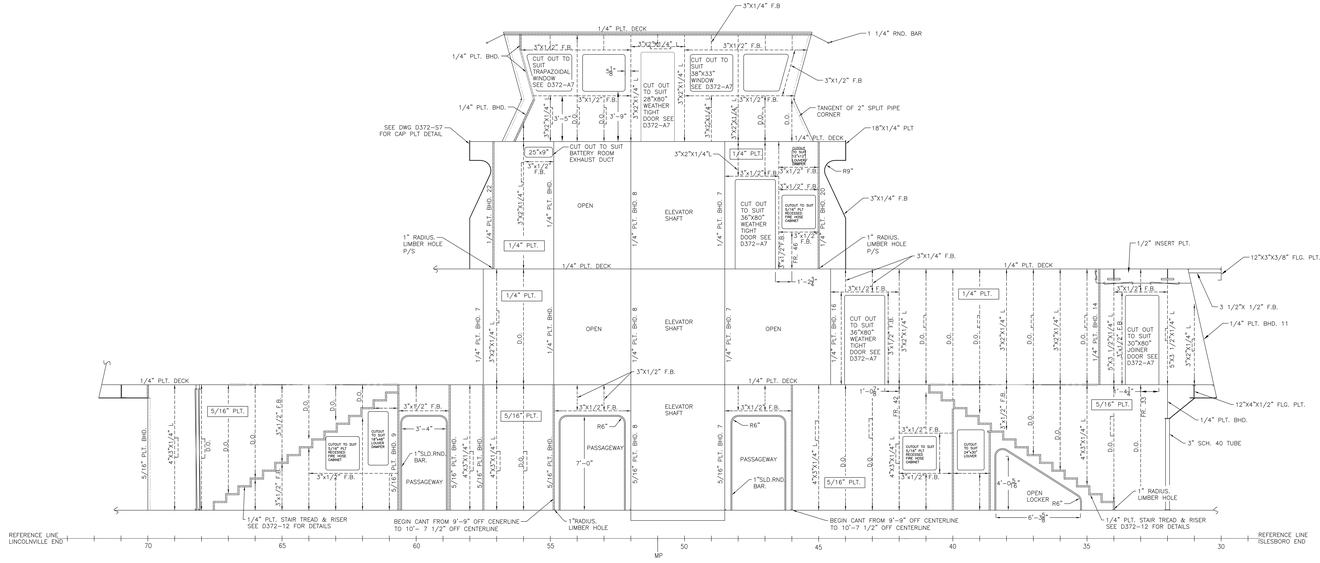
THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

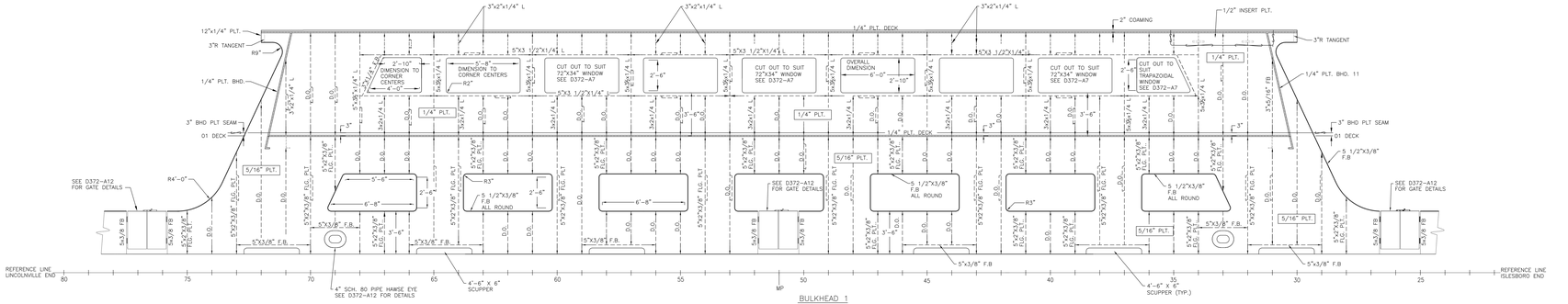
LONGITUDINAL BULKHEADS
BELOW MN DK

DRAWN BY KVC DATE 08/05/24
CHECKED BY JG DATE 8/28/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
SHEET 1 OF 1 DWG. NO. D-372-S4 ALT. 0



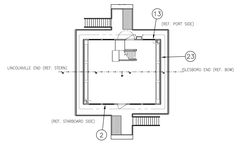
BULKHEAD 2

9'-9" OFF C.L STBD.
OUTBD. SIDE LKG. INBD.

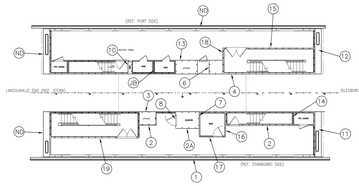


BULKHEAD 1

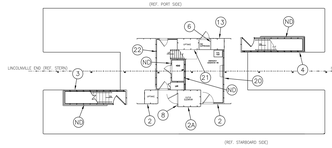
OUTBD. SIDE LKG. INBD.



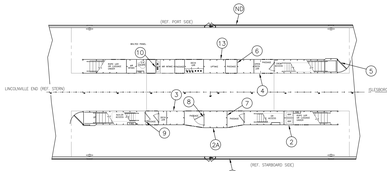
PILOTHOUSE DECK BULKHEAD KEY PLAN



01 DECK BULKHEAD KEY PLAN

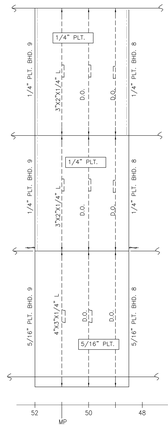


02 DECK BULKHEAD KEY PLAN



JB = JOINER BULKHEAD
NO = NOT DRAWN

MAIN DECK BULKHEAD KEY PLAN



BULKHEAD 2A

10'-7 1/2" OFF C.L STBD.
OUTBD. SIDE LKG. INBD.

NOTE:

THE FOLLOWING REFERENCES APPLY
THE ISLESBORO END IS REFERRED TO AS BOW AND THE LINCOLNVILLE END IS REFERRED TO AS STERN

⊙	ISSUED FOR BID	9/29/24	JG
ALT	DESCRIPTION	DATE	NAME

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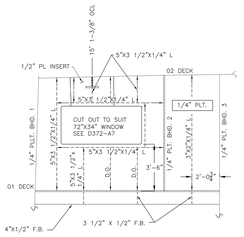
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

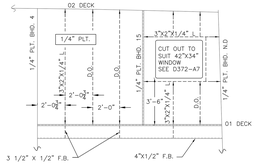
LONGTUDINAL & TRANSVERSE BULKHEADS ABOVE MAIN DECK

DRAWN BY JG DATE 2/9/24
CHECKED BY GEG DATE 7/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"

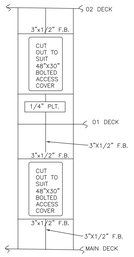
SHEET 1 OF 3 DWG. NO. D372-S5-1 ALT. 0



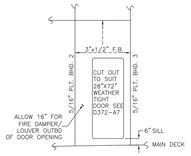
STBD. BULKHEAD 11
FWD. SIDE LKG. AFT.



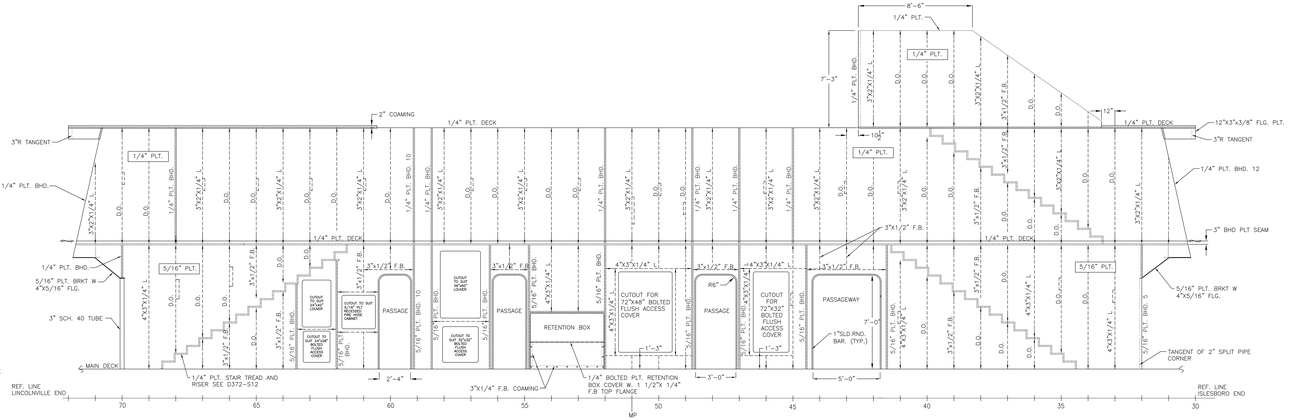
PORT BULKHEAD 12
FWD. SIDE LKG. AFT.



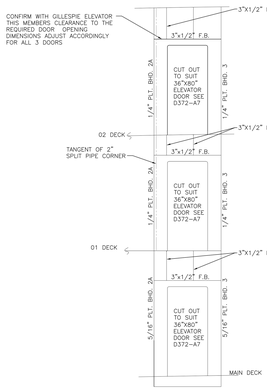
PORT BULKHEAD 10
FWD. SIDE LKG. AFT.



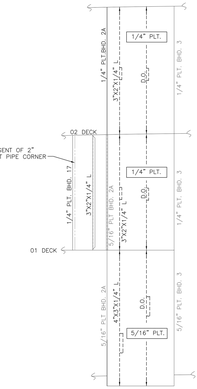
STBD. BULKHEAD 9 @ FR. 61
FWD. SIDE LKG. AFT.



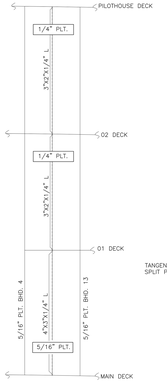
BULKHEAD 4
INBD. SIDE LKG. OUTBD.
STBD. 5'-7 1/2" OFF CENTERLINE



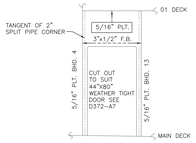
STBD. BULKHEAD 8 @ FR. 52
FWD. SIDE LKG. AFT.



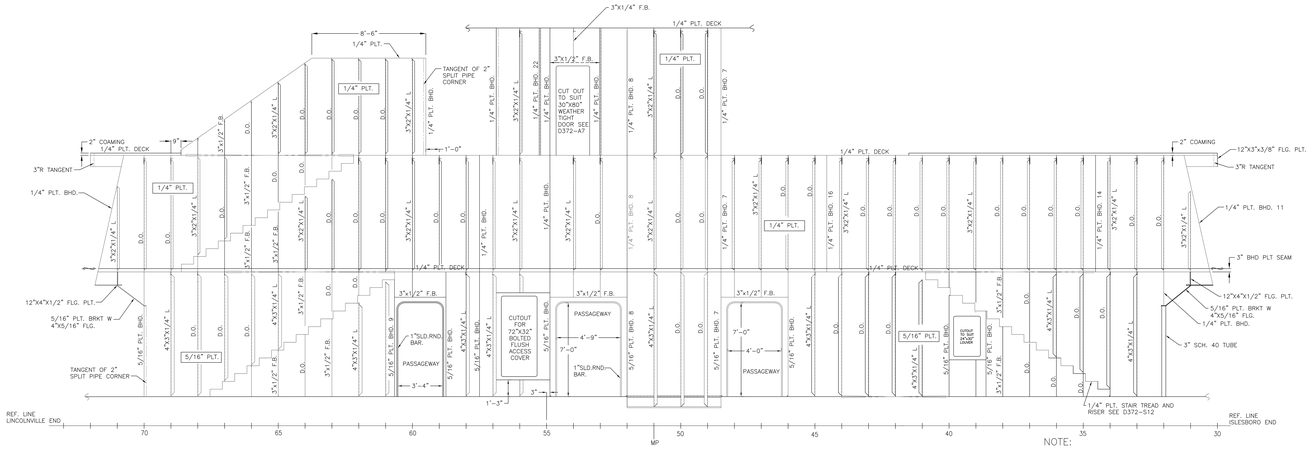
STBD. BULKHEAD 7 @ FR. 48 1/2
FWD. SIDE LKG. AFT.



PORT BULKHEAD 6 @ FR. 47
FWD. SIDE LKG. AFT.



PORT BULKHEAD 5 @ FR. 32
FWD. SIDE LKG. AFT STBD. SIDE BHD. FR. 70 SIMILAR



BULKHEAD 3
OUTBD. SIDE LKG. INBD.
PORT, 5'-7 1/2" OFF CENTERLINE

NOTE:

THE FOLLOWING REFERENCES APPLY
THE ISLESBORO END IS REFERRED TO AS BOW AND THE LINCOLNVILLE END IS REFERRED TO AS STERN.

SEE SHEET 1 FOR BULKHEAD KEY PLAN

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	JG

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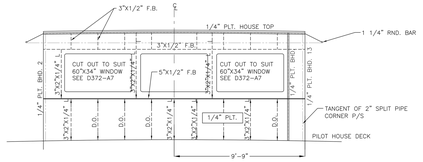
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

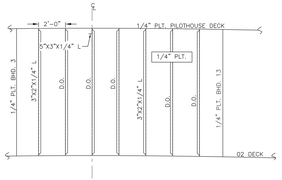
207 FT LOA PASSENGER/VEHICLE FERRY

LONGTUDINAL & TRANSVERSE BULKHEADS ABOVE MAIN DECK

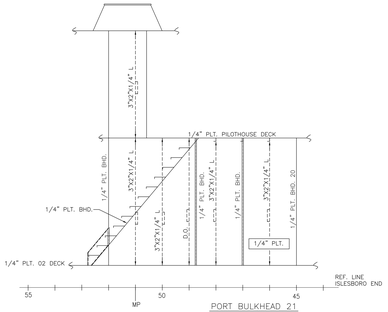
DRAWN BY JG DATE 2/9/24
CHECKED BY GEG DATE 7/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D372-S5-2 ALT. 0



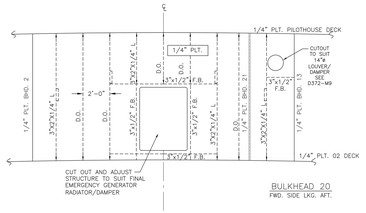
BULKHEAD 23
FWD. SIDE LKG. AFT.



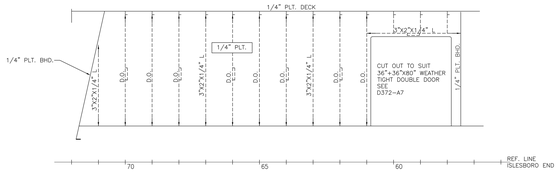
BULKHEAD 22
FWD. SIDE LKG. AFT.



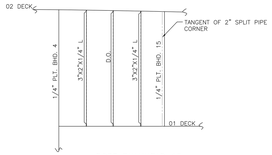
PORT BULKHEAD 21
INBD. SIDE LKG. OUTBD.



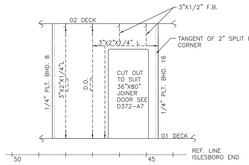
BULKHEAD 20
FWD. SIDE LKG. AFT.



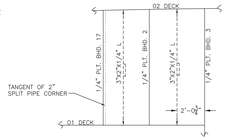
STBD. BULKHEAD 19
OUTBD. SIDE LKG. INBD.



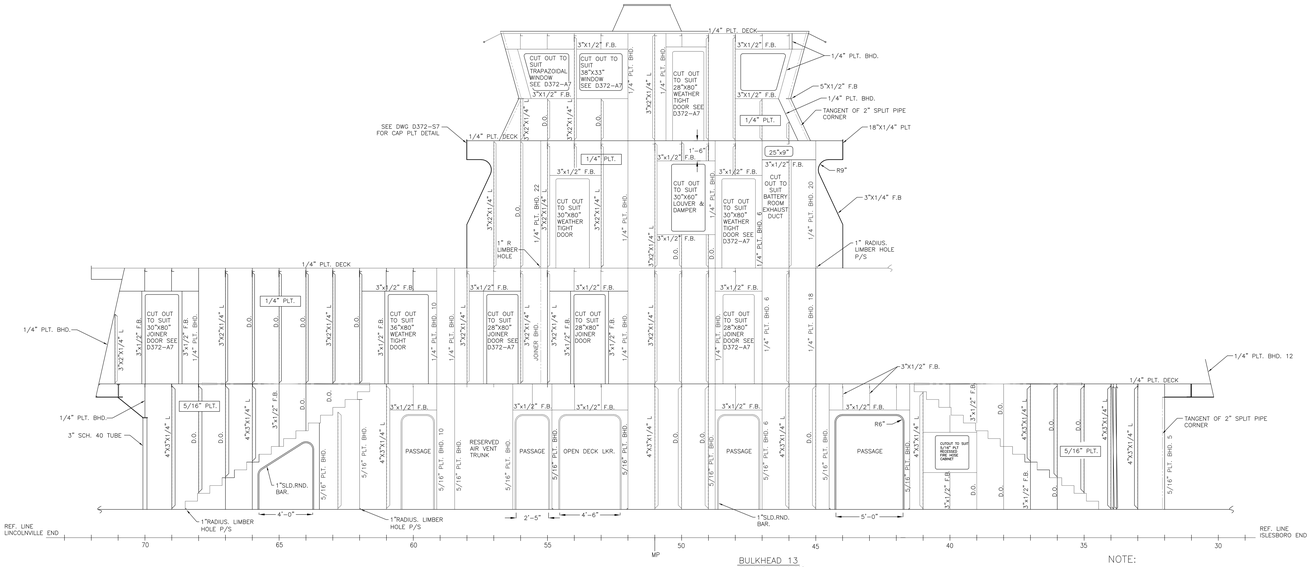
PORT BULKHEAD 18
FWD. SIDE LKG. AFT.



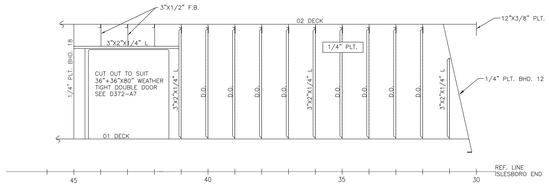
STBD. BULKHEAD 17
OUTBD. SIDE LKG. INBD.



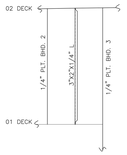
STBD. BULKHEAD 16
FWD. SIDE LKG. TOWARDS MIDSHIP
FWD. SIDE LKG. AFT.



BULKHEAD 13
INBD. SIDE LKG. OUTBD.



BULKHEAD 15
INBD. SIDE LKG. OUTBD.



STBD. BULKHEAD 14
FWD. SIDE LKG. AFT.

NOTE:

THE FOLLOWING REFERENCES APPLY.
THE ISLESBORO END IS REFERRED TO AS BOW AND THE LINCOLNVILLE END IS REFERRED TO AS STERN.

SEE SHEET 1 FOR BULKHEAD KEY PLAN

0	ISSUED FOR BID	9/29/24	JG
ALT	DESCRIPTION	DATE	NAME

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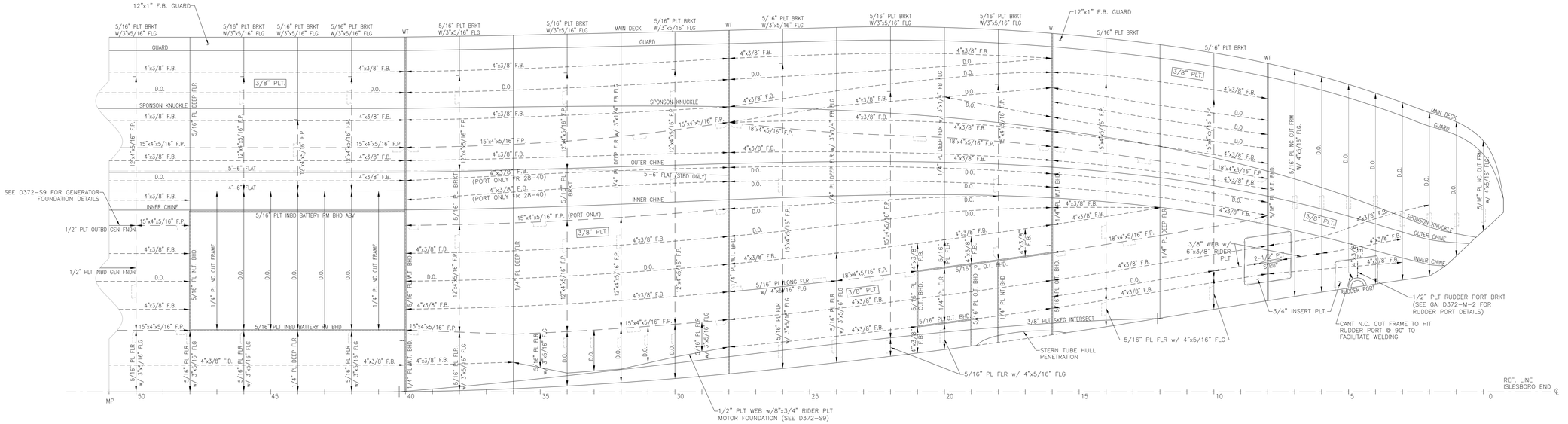
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA PASSENGER/VEHICLE FERRY

LONGTUDINAL & TRANSVERSE BULKHEADS ABOVE MAIN DECK

DRAWN BY JG	DATE 2/9/24
CHECKED BY GEG	DATE 7/24
APPROVED BY	DATE
SCALE 3/8" = 1'-0"	
DWG. NO. D372-S5-3	ALT. 0



GENERAL NOTES:

1. THIS DRAWING IS TO BE READ ALONG WITH GAI D372-S-3 CONSTRUCTION SECTIONS & GAI D372-S-7 DECK SCANTLINGS
2. THIS DRAWING SHOWS PORT SIDE STRUCTURE, STBD SIDE IS SIMILAR EXCEPT WHERE NOTED. FWD (ISLEBORO) END SHOWN, AFT (LINCOLNVILLE) END SIMILAR.

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	8/29/24	KVC

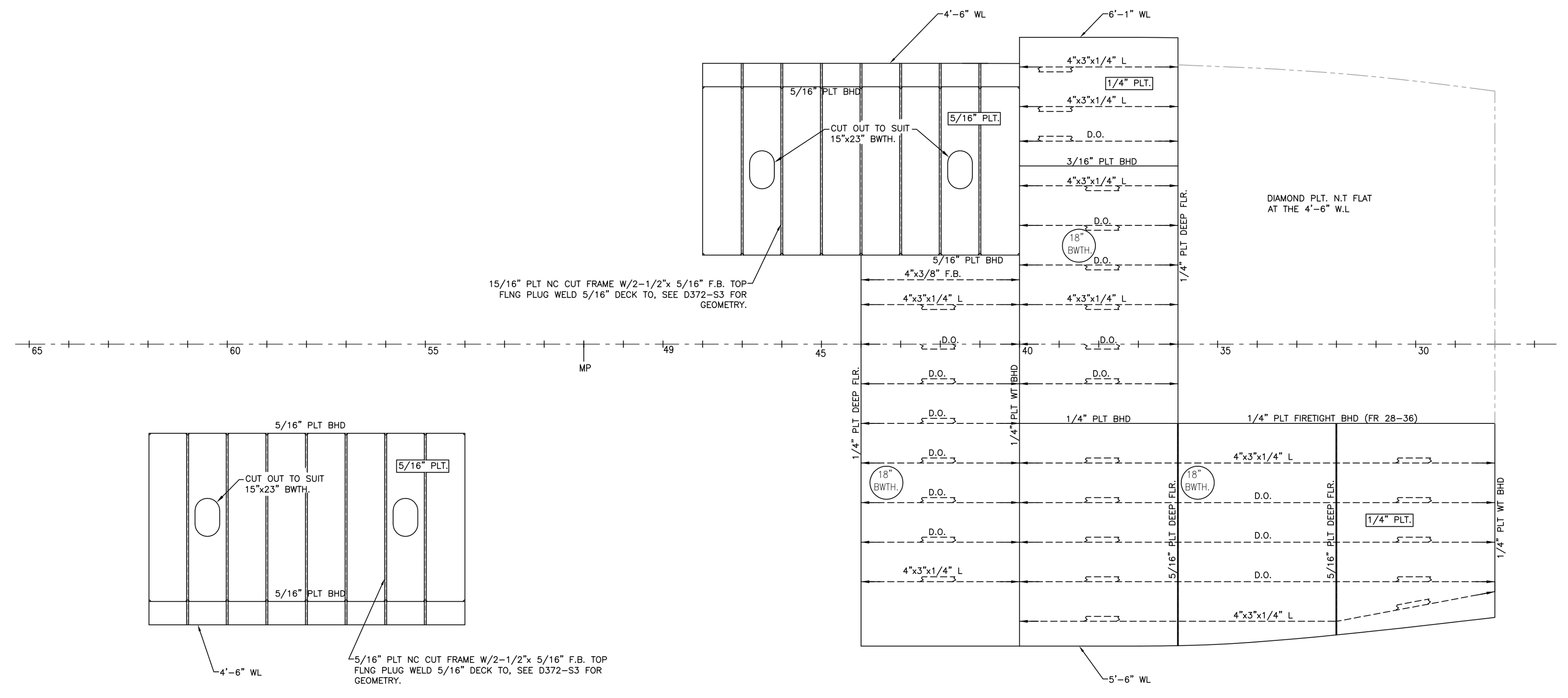
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
100 GROSSMAN DRIVE BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

SHELL EXPANSION

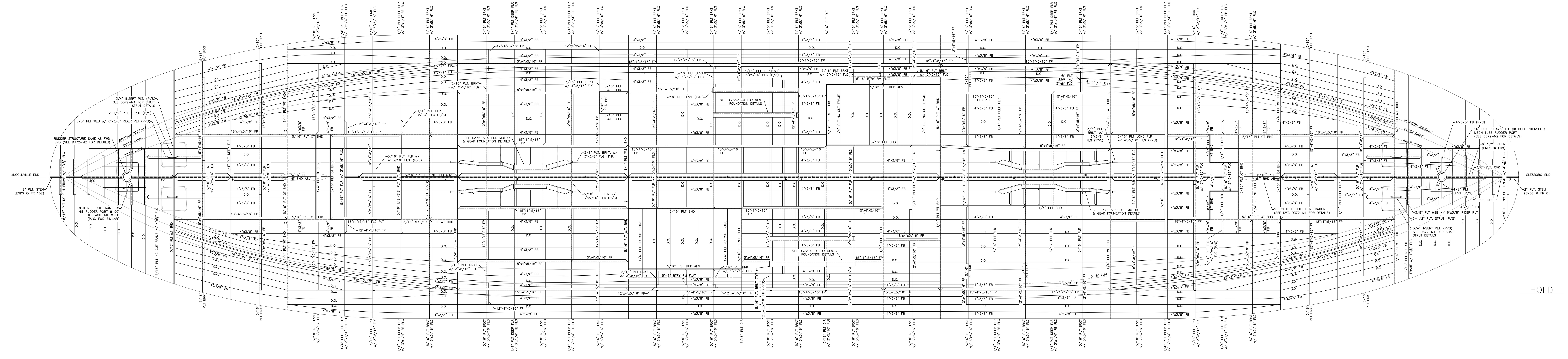
DRAWN BY KVC, MR DATE 02/26/24
CHECKED BY JG DATE 8/29/24
APPROVED BY DATE
SCALE 1/2" = 1'-0"
DWG. NO. D372-S-6 ALT. 0

SHEET 1 OF 1



SECTION 4-C

HOLD FLATS



HOLD

GENERAL NOTES:
1. THIS PLAN IS TO BE READ ALONG WITH GAI D372-S-3 CONSTRUCTION SECTIONS & GAI D372-S-6 SHELL EXPANSION

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/25/24	KVC

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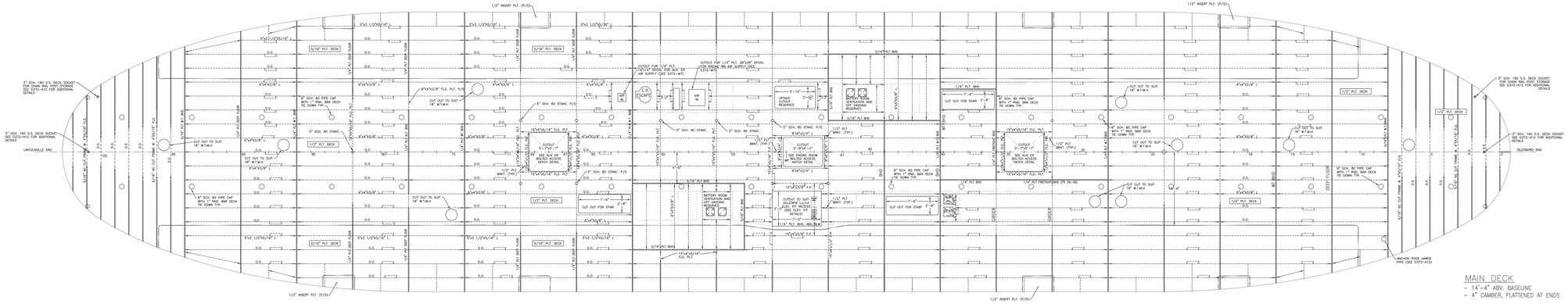
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

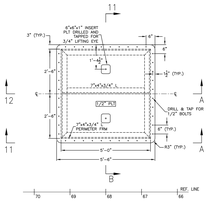
207 FT LOA FERRY VESSEL
MAINE DOT

DECK SCANTLINGS
HOLD & HOLD FLATS

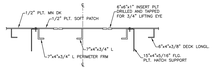
DRAWN BY KVC,JG,MR DATE 12/16/22
CHECKED BY JG DATE 8/20/24
APPROVED BY DATE
SCALE 1/4" = 1'-0" OR AS NOTED
DWG. NO. D372-S7-1 ALT. 0



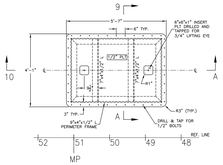
MAIN DECK
- 14'-4" ABV. BASELINE
- 4" CAMBER, FLATTENED AT ENDS



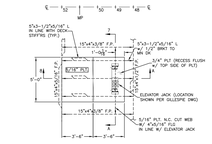
AUX. ENGINE ROOM
BOLTED ACCESS HATCH
AFT AUX ER HATCH SHOWN, FWD SIMILAR
SCALE: 1/2" = 1'-0"



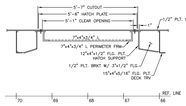
SECTION 11–B
AUX. ER ACCESS HATCH DETAIL
SCALE: 1/2" = 1'-0"



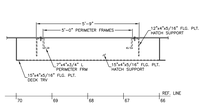
ENGINE ROOM
BOLTED ACCESS HATCH
SCALE: 1/2" = 1'-0"



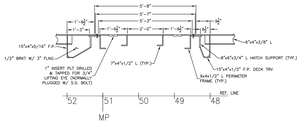
ELEVATOR PIT RECESS
RECESS PLT 13" 5-7/8" ABL
TO UPPER SIDE OF PLT
PER MFG. REQUIREMENTS



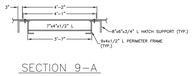
SECTION 12–A
AUX. ER ACCESS HATCH DETAIL
SCALE: 1/2" = 1'-0"



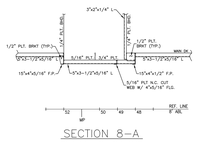
SECTION 11–A
AUX. ER ACCESS HATCH DETAIL
SCALE: 1/2" = 1'-0"



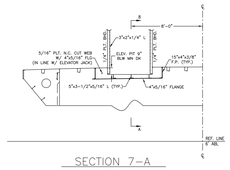
SECTION 10–A
ER ACCESS HATCH DETAIL
SCALE: 1/2" = 1'-0"



SECTION 9–A
ER ACCESS HATCH DETAIL
SCALE: 1/2" = 1'-0"



SECTION 8–A
ELEVATOR PIT DETAIL
AT 8' OCL



SECTION 7–A
THROUGH ELEV. JACK
FORWARD SIDE, LOOKING AFT

0	ISSUED FOR BID	8/29/24	KVC
ALT	DESCRIPTION	DATE	NAME

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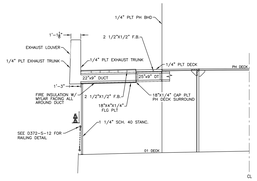
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

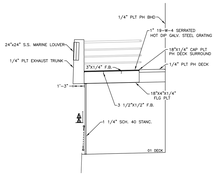
DECK SCANTLINGS
MAIN DECK

DRAWN BY KVC,JG,MR DATE 12/16/22
CHECKED BY JG DATE 8/20/24
APPROVED BY DATE
SCALE 1/4" = 1'-0" OR AS NOTED
DWG. NO. D372-S7-2 ALT. 0

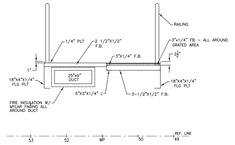
SHEET 2 OF 3



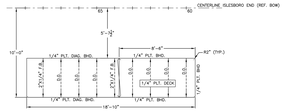
SECTION 18–D
BRIDGE WING DETAIL
SCALE: 1/4"=1' FT



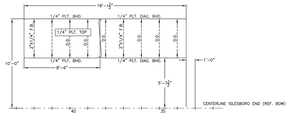
SECTION 18–C
BRIDGE WING DETAIL
SCALE: 1/4"=1' FT



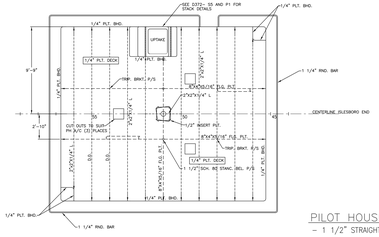
SECTION 17–C
BRIDGE WING PROFILE
SCALE: 1/2"=1' FT



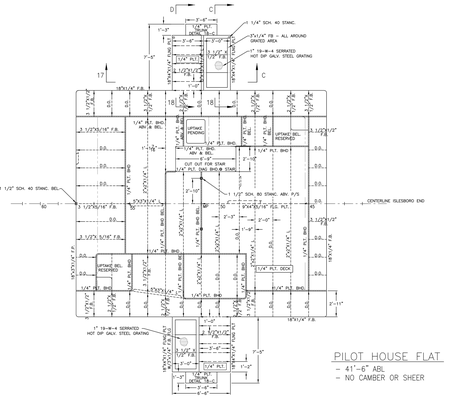
STBD. COMPANIONWAY TOP
- 39'–3" ABL
- NO CAMBER



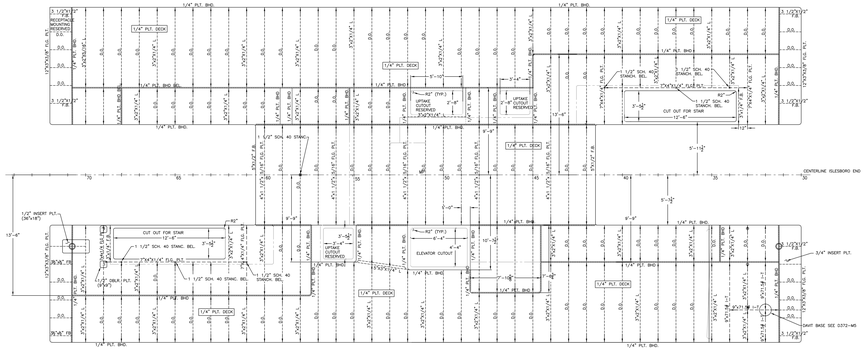
PORT COMPANIONWAY TOP
- 39–3" ABL
- NO CAMBER



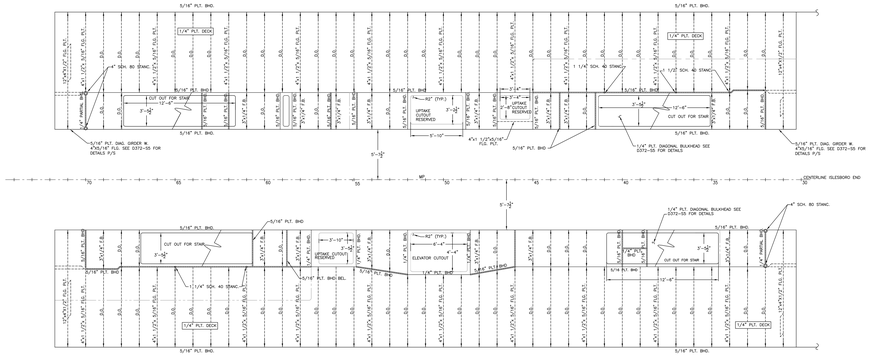
PILOT HOUSE TOP
- 1 1/2" STRAIGHT CAMBER



PILOT HOUSE FLAT
- 41'–6" ABL
- NO CAMBER OR SHEER



02 DECK
- 18'–0" ABV MAIN DECK
- SHEER + CAMBER TO MATCH MAIN DECK



01 DECK
- 23'–7 1/4" ABV. BASELINE
- NO SHEER OR CAMBER

0	ISSUED FOR BID	8/29/24	KVC
ALT	DESCRIPTION	DATE	NAME

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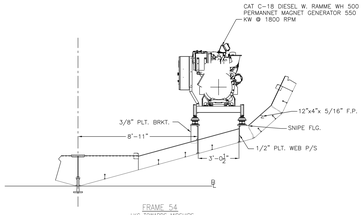
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

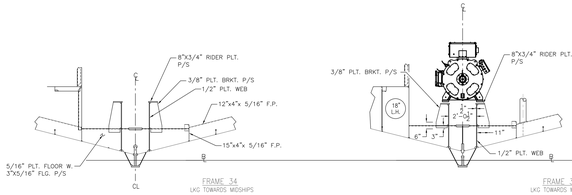
DECK SCANTLINGS 01, 02 DECK
PILOTHOUSE DECK AND TOP

DRAWN BY KVC,JG,MR DATE 12/16/22
CHECKED BY JG DATE 8/20/24
APPROVED BY DATE
SCALE 1/4" = 1'-0" OR AS NOTED
DWG. NO. D372-S7-3 ALT. 0

SHEET 3 OF 3

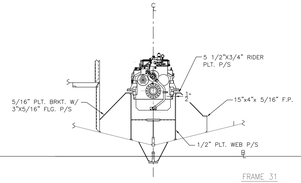


FRAME 54
LKG TOWARDS MIDSHIPS

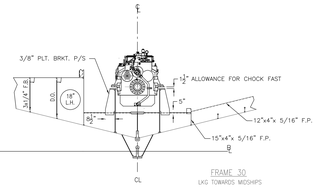


FRAME 54
LKG TOWARDS MIDSHIPS

FRAME 32
LKG TOWARDS MIDSHIPS



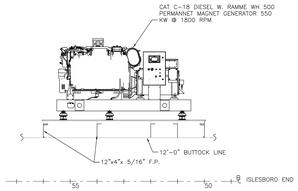
FRAME 31
LKG TOWARDS MIDSHIPS
FRAMES 29,33,35 SIMILAR



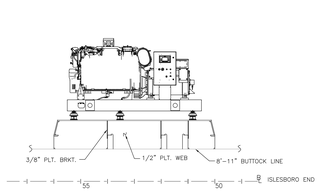
FRAME 30
LKG TOWARDS MIDSHIPS

NOTE:
THE FOLLOWING REFERENCES APPLY.
THE ISLESBORO END IS REFERRED TO AS BOW AND THE LINCOLNVILLE END IS REFERRED TO AS STERN.

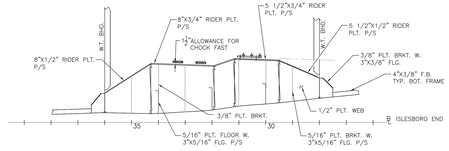
DRAWING REFERNCES:
D372-S3 CONSTRUCTION SECTION
D372-M1 SHAFTING ARRANGEMENTS AND DETAILS



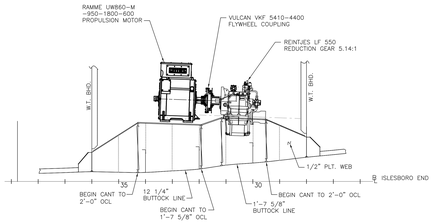
PROFILE VIEW OF OUTBOARD PORT GENERATOR FOUNDATION DETAILS
INBD. SIDE LKG. OUTBD.
GENERATOR FOUNDATION STBD. SIDE SIMILAR



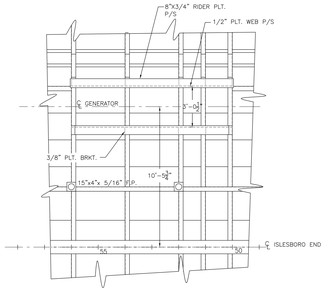
PROFILE VIEW OF INBOARD PORT GENERATOR FOUNDATION DETAILS
INBD. SIDE LKG. OUTBD.
GENERATOR FOUNDATION STBD. SIDE SIMILAR



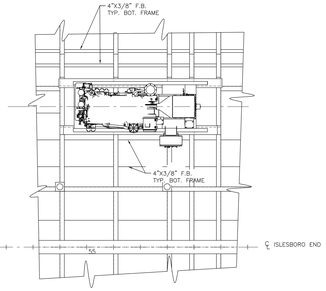
PROFILE VIEW OF MOTOR & GEAR FOUNDATION DETAILS



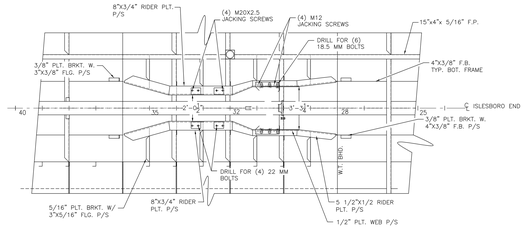
PROFILE VIEW OF MOTOR & GEAR FOUNDATION ARRANGEMENT



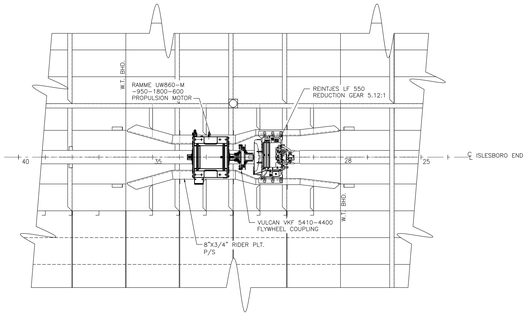
PLAN VIEW OF PORT GENERATOR FOUNDATION DETAILS
GENERATOR FOUNDATION STBD. SIDE SIMILAR



PLAN VIEW OF PORT GENERATOR FOUNDATION ARRANGEMENT
GENERATOR FOUNDATION STBD. SIDE SIMILAR



PLAN VIEW OF MOTOR & GEAR FOUNDATION DETAILS



PLAN VIEW OF MOTOR & GEAR FOUNDATION ARRANGEMENT

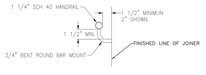
0	ISSUED FOR BID	8/29/24	JG
ALT	DESCRIPTION	DATE	NAME

GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

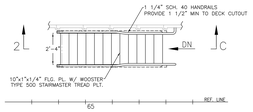
MACHINERY
FOUNDATIONS

DRAWN BY KVC DATE 03/27/24
CHECKED BY JG DATE 8/19/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
SHEET 1 OF 1 DWG. NO. D-372-S9 ALT. 0

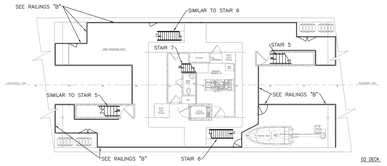


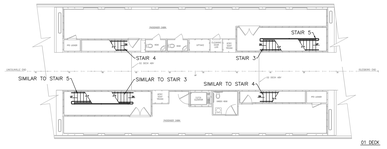
DETAIL 4–D
SCALE 1 1/2" = 1'–0"

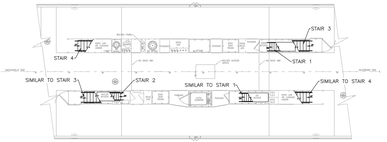
STAIR 4
PLAN VIEW
PORT MN. DK TO 01 DECK



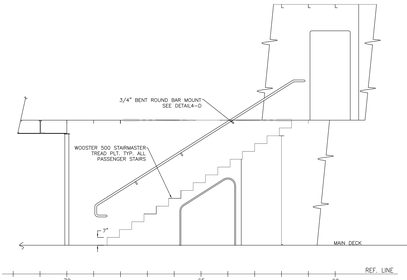
STAIR 2
PLAN VIEW
STBD HOLD TO MN DECK



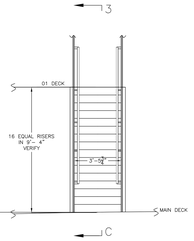




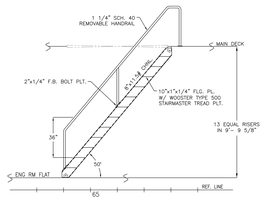
KEY PLAN
NO SCALE



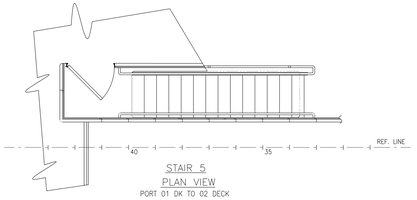
STAIR 4
SECTION 3–C



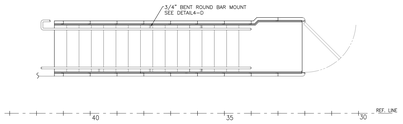
STAIR 4
SECTION VIEW



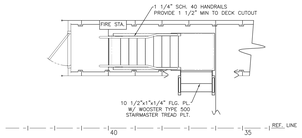
STAIR 2
SECTION VIEW 2–C



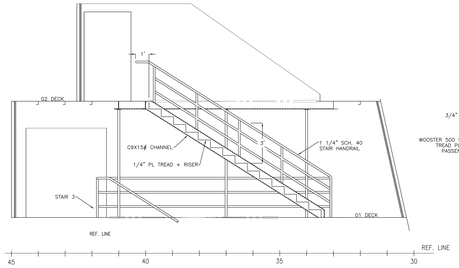
STAIR 5
PLAN VIEW
PORT 01 DK TO 02 DECK



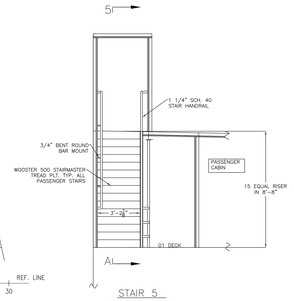
STAIR 3
PLAN VIEW
PORT MN. DK TO 01 DECK



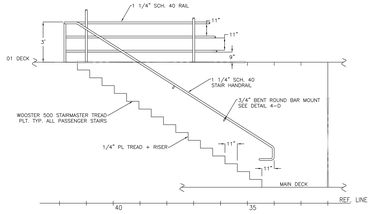
STAIR 1
PLAN VIEW
CREW SPACE HOLD TO MAIN DECK



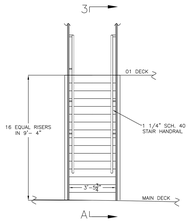
STAIR 5
SECTION 5–A



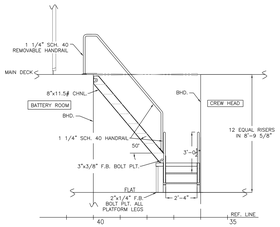
STAIR 5
SECTION VIEW



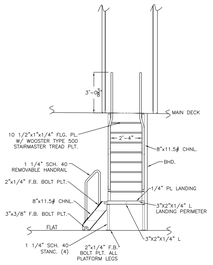
STAIR 3
SECTION 3–A



STAIR 3
SECTION VIEW



STAIR 1
PROFILE VIEW



STAIR 1
SECTION VIEW

0	ISSUED FOR BID	8/29/24	JWG
ALT	DESCRIPTION	DATE	NAME

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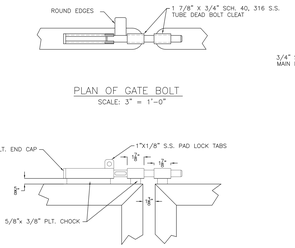
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL
MAINE DOT

STAIRWAY LADDERS AND RAIL DETAILS AND ARRANGEMENTS

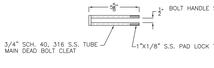
DRAWN BY GN DATE 02/08/2024
CHECKED BY JG DATE 8/4/24
APPROVED BY JWG DATE 8/29/24
SCALE 3/8" = 1'–0" OR AS NOTED
DWG. NO. D37Z–S12–1 ALT. 0

SHEET 1 OF 2



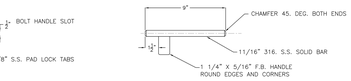
PLAN OF GATE BOLT
SCALE: 3" = 1'-0"

PROFILE VIEW OF GATE BOLT
SCALE: 3" = 1'-0"

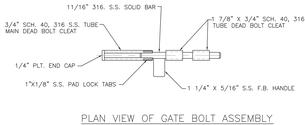


BOLT MAIN CLEAT DETAIL
SCALE: 3" = 1'-0"

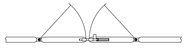
DETAIL 9-D



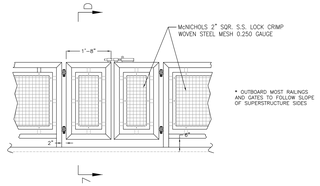
GATE DEAD BOLT DETAIL
SCALE: 3" = 1'-0"



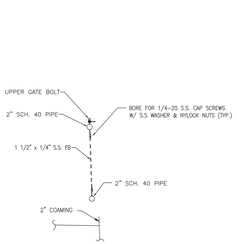
PLAN VIEW OF GATE BOLT ASSEMBLY
SCALE: 3" = 1'-0"



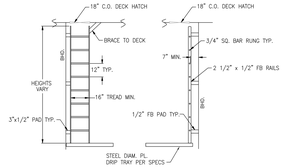
PLAN VIEW OF UPPER DECK STBD. CREW ACCESS GATE



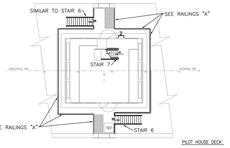
PROFILE VIEW OF UPPER DECK STBD. CREW GANGWAY GATE & EXPANDED METAL SCREEN ARRANGEMENTS
INBD. SIDE LKG. OUTBD.
SCALE: 3/4" = 1'-0"



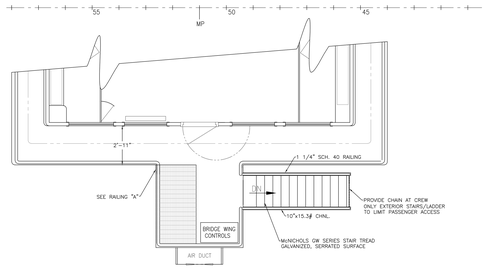
SECTION VIEW 7-D
SCALE: 3/4" = 1'-0"



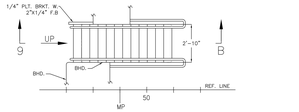
TYPICAL VERTICAL LADDERS



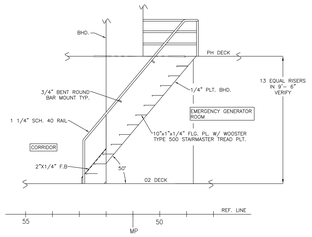
KEY PLAN



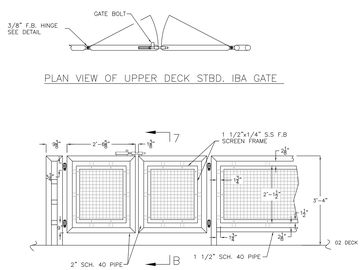
STAIR 6
PLAN VIEW
STBD 02 TO PH DECK
STBD STAIRWAY SHOWN, PORT. STAIR SIMILAR



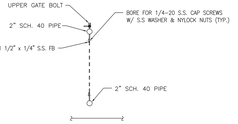
STAIR 7
PLAN VIEW
02 TO PH DECK



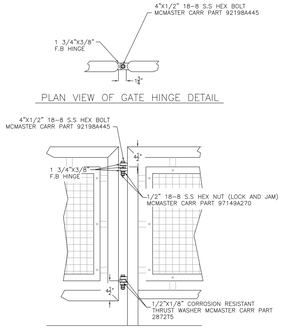
STAIR 7
SECTION 9-B
02 TO PH DECK
INBOARD LOOKING OUTBOARD



PROFILE VIEW OF UPPER DECK PORT IBA GATE AND EXPANDED METAL SCREEN ARRANGEMENTS
INBD. SIDE LKG. OUTBD STBD. SIDE SIMILAR.
SCALE: 3/4" = 1'-0"

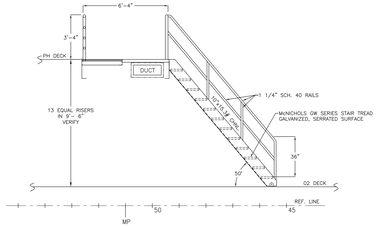


SECTION VIEW 7-B
SCALE: 3/4" = 1'-0"

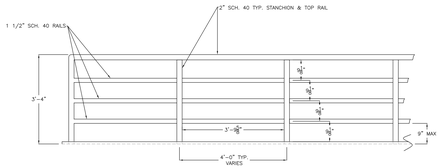


PLAN VIEW OF GATE HINGE DETAIL

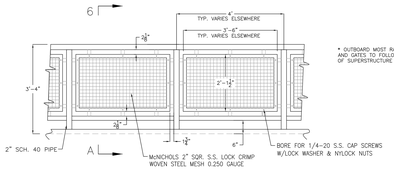
PROFILE OF GATE HINGE DETAIL
SCALE: 1 1/2" = 1'-0"



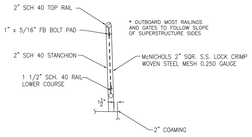
STAIR 6
PROFILE VIEW
STBD 02 TO PH DECK
STBD LOOKING INBOARD
PORT. STAIR SIMILAR



DETAIL ELEVATION OF RAILING "A"
SCALE 3/4" = 1'-0"



DETAIL ELEVATION OF RAILING "B" SCREEN
SCALE 3/4" = 1'-0"



SECTION VIEW 6-A
SCALE: 3/4" = 1'-0"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	5/29/24	JWG

THIS PLAN IS THE PROPERTY OF GILBERT ASSOCIATES, INC., AND IS LOANED ON THE CONDITION THAT IT WILL NOT BE USED AGAINST THEIR BEST INTERESTS, NEITHER WILL IT BE REPRODUCED IN WHOLE OR IN PART THEREOF, AND IT WILL BE RETURNED IMMEDIATELY UPON DEMAND

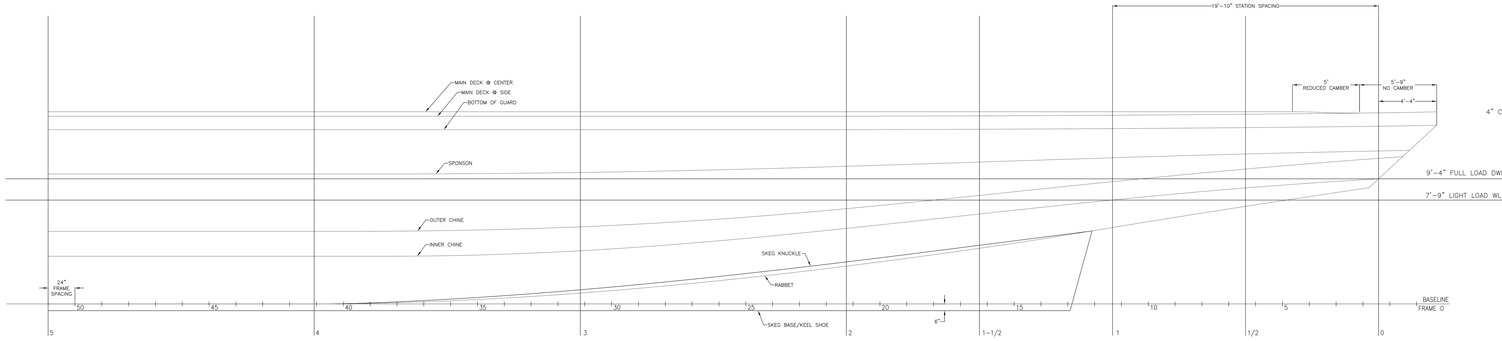
GILBERT ASSOCIATES, INC.
NAVAL ARCHITECTS
MARINE ENGINEERS
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

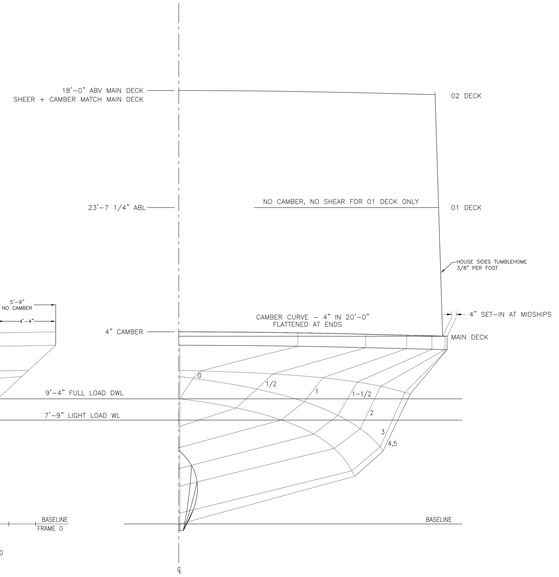
207 FT LOA FERRY VESSEL
MAINE DOT

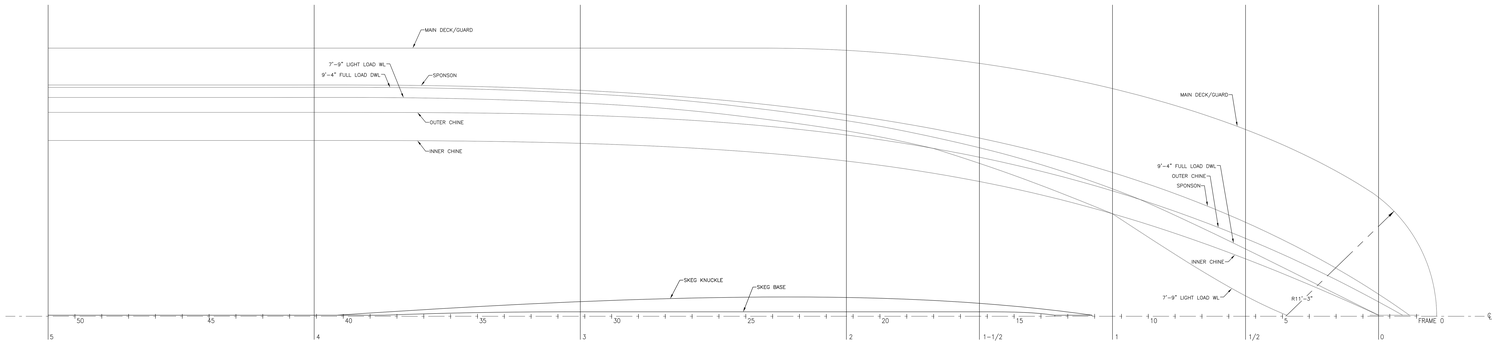
STAIRWAY LADDERS AND RAIL DETAILS AND ARRANGEMENTS

DRAWN BY GN DATE 02/08/2024
CHECKED BY JG DATE 8/4/24
APPROVED BY JWG DATE 8/28/24
SCALE 3/8" = 1'-0" OR AS NOTED
DWG. NO. D37Z-S12 ALT: 0

SHEET 2 OF 2







PRINCIPAL CHARACTERISTICS

LENGTH BET. PERP.	198'-4"
LENGTH ON DECK	207'-0"
MOLDED BEAM	42'-0"
MOLDED DEPTH	14'-0"
MOLDED DRAFT @DWL	9'-4"

ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/11/24	KVC

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

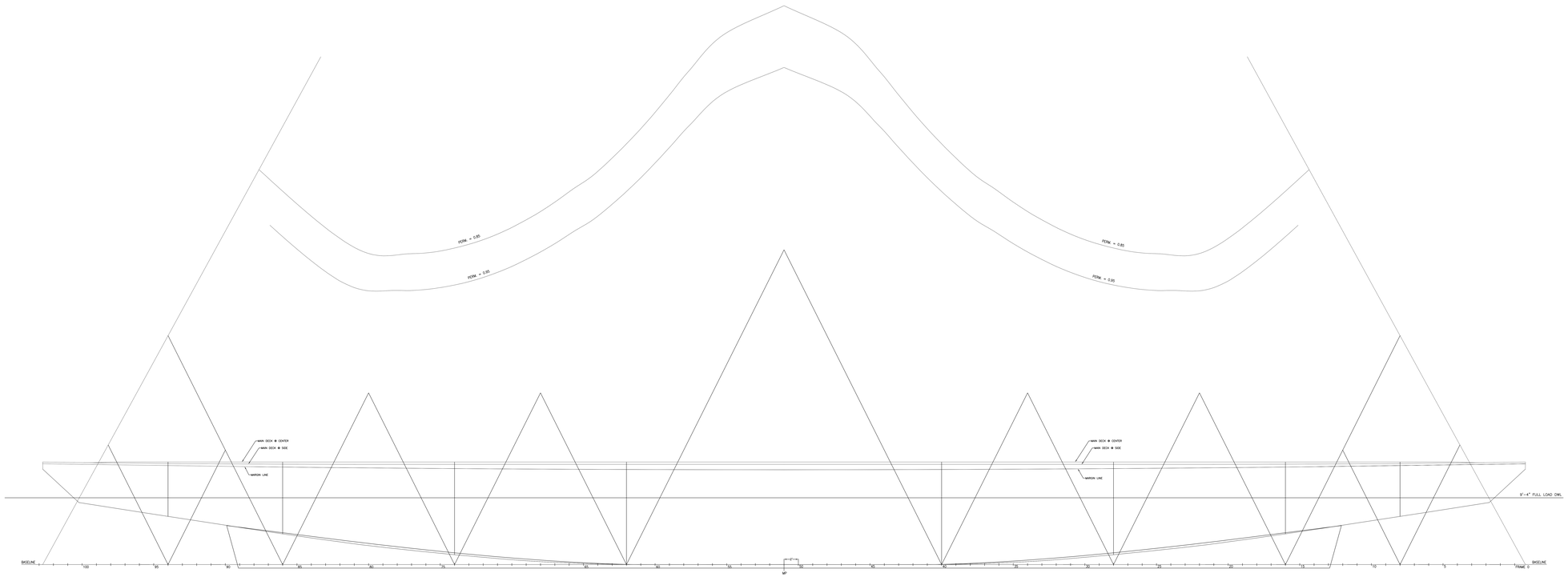
100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA DOUBLE ENDED PASSENGER/VEHICLE FERRY

LINES PLAN

DRAWN BY KVC DATE 1/1/23
CHECKED BY JEG DATE 7/29/24
APPROVED BY DATE
SCALE 3/8" = 1'-0"
DWG. NO. D372-T1 ALT. 0

SHEET 1 OF 1



ALT	DESCRIPTION	DATE	NAME
0	ISSUED FOR BID	9/25/24	KVC

GILBERT ASSOCIATES, INC.

NAVAL ARCHITECTS
MARINE ENGINEERS

100 GROSSMAN DRIVE
BRAINTREE, MA 02184

207 FT LOA FERRY VESSEL

FLOODABLE LENGTH
CURVES

DRAWN BY KVC DATE 01/19/23
CHECKED BY JEG DATE 9/11/23
APPROVED BY DATE
SCALE 1/4" = 1'-0"
DWG. NO. D372-T1 ALT. 0

SHEET 1 OF 1