



Fisheries and Oceans
Canada

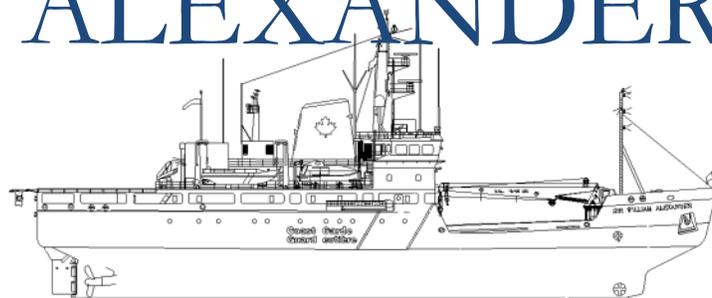
Canadian
Coast Guard

Pêches et Océans
Canada

Garde côtière
canadienne

COOLING WATER STRAINER RENEWALS STATEMENT OF WORK

CCGS SIR WILLIAM ALEXANDER



JANUARY 20th,
2020

ATLANTIC REGION

Revision No.: 0

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1 - GENERAL NOTES

1. **ON-SITE PROJECT OFFICER:** All the specified work, as well as all work arising's, must be completed to the satisfaction of the Coast Guard Technical Authority (CGTA). Upon completion of each item of the specification, the CGTA must be notified so that he/she may inspect the work prior to the complete closing up of any work. Failure to give notification does not absolve Contractor of the responsibility of providing CGTA the opportunity to inspect any item. Inspection of any item by the CGTA does not substitute for any required inspection by Transport Canada Marine Safety and Security (TCMSS), Classification Societies and Inspection Authority.
2. **SUB-CONTRACTORS:** All conditions, stipulations etc. listed in the General Notes apply to any Sub-Contractors employed by the Main Contractor to carry out work on any Specification item.
3. **WELDING:** All welding work must be performed in accordance with all of the requirements of the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014.

3.1 **CONTRACTOR REQUIREMENTS**

3.1.1 STEEL STRUCTURES

All welding contractors must be certified by the CWB to CSA Standard W47.1 Division 1 or 2 for new construction and work packages other than new construction.

3.1.2 ALUMINUM STRUCTURES

All welding contractors must be certified by the CWB to CSA Standard W47.2 Division 1 or 2 for new construction and work packages other than new construction.

3.1.3 WELDING PROCEDURES

All welding procedure specifications and/or welding procedure data sheets must be reviewed and approved by the CWB prior to use.

3.1.4 WELDING PERSONNEL

All welding personnel must be approved by the CWB prior to their commencing any welding work.

3.1.5 PERFORMANCE AND QUALIFICATION TESTING

All performance and procedure qualification testing must be fully witnessed and documented by the CWB.

1 - GENERAL NOTES (CONTINUED)

3.1.6 LIMITATIONS PRIOR TO COMMENCING WELDING WORK

All Contractors must submit their welding personnel qualification records and approved welding procedures to the Delegated Representative prior to commencing any welding work.

All welding procedures, including welding procedure specifications and welding procedure data sheets, must include an indication of acceptance by Contractor (by signature, seal or other appropriate means) and a stamp of acceptance by the CWB.

3.1.7 GOVERNING STANDARDS FOR WELDING

For structural steels > 3 mm in thickness, welding must meet the requirements of CSA Standards W47.1 and W59, except as modified by the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014.

For structural aluminum > 3 mm in thickness, welding must meet the requirements of CSA Standards W47.2 and W59.2, except as modified by the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014.

3.2 INSPECTION OF WELDS

The methods of inspection, extent, acceptance criterion and inspection personnel qualifications must be in accordance with all of the requirements of the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014.

4. **SERVICE CONDITIONS:** Unless specified otherwise, all components, materials and installations supplied by or carried out by Contractor must be adequate to meet the following service conditions:

In areas that are exposed to the elements:

- outside air temperature of minus (-) 40⁰ C to plus (+) 35⁰ C;
- wind velocity of 50 knots;
- water temperature of minus (-) 2⁰ C to plus (+) 30⁰ C;
- shock loading of 2.5g horizontal, 1.5g vertical.

All new components, materials and installations within the ship must be adequate to withstand the specified shock loading accelerations.

5. **INSPECTION:** Contractor is responsible for calling in the services of TCMSS and Inspection Services when and as required for survey and inspection items. All TCMSS surveyors called in by Contractor must sign-off the CGTA's Inspection Log Book for all items surveyed.

1 - GENERAL NOTES (CONTINUED)

6. **CORRESPONDENCE & REPORTS:** Unless otherwise agreed upon, all type written correspondence, reports, certificates and drawings presented to the CGTA must be in English. All reports must be computer generated and provided in English. Additional copies may be submitted in French.

All reports must be completed in a timely manner (with in a 24 hour period for small reports to a maximum of a week for detailed reports; timeline as identified by the CGTA) and provided to the CGTA immediately following their completion, and must continue as required throughout each specification item.

Upon delivery of the vessel, a compilation of all reports, drawings and correspondence must be provided on a USB to the CGTA.

7. **PAINTING:** Unless specified otherwise, replacement and/or disturbed steelwork must be given a minimum of two (2) coats of Intershield 300 Aluminum Pure Epoxy, each coat must be of contrasting colour. Lead-based paints must not be used. Prior to painting, all new and disturbed steelwork must be power tool cleaned as a minimum standard of surface preparation. Contractor must notified CGTA after the first coat of paint is fully cured so that it may be inspected prior to the application of the second coat. Failure to do so will result in an additional coat being applied at Contractor's expense.
8. **MATERIALS & TOOLS:** All materials, unless otherwise specified, must be supplied by Contractor. Contractor to supply all necessary tools and equipment to perform the specified work. Also referred to as Contractor Furnished Material (CFM). Special, ship-specific tools, as required, will be issued by and returned to CGTA. Contractor is responsible for removing the tools from their stored location aboard the vessel, and returning them and securing them in place when finished. Otherwise, ship's tools and equipment will not be available for Contractor's use.
9. **MEASUREMENTS:** All dimensional measurements must be taken and recorded in inches. Unless otherwise specified, the dimensions must be taken and reported in thousandths of an inch (0.000 inch). All measuring devices must be described on the submitted reporting sheets. All reported dimensions must be either typed or printed in a neat legible manner, and must include the name of the person who took the readings.

1 – MAIN COOLING WATER STRAINER RENEWALS

PART 1: SCOPE:

The intent of this Statement of Work (SOW) is for Contractor to fabricate 2 new central cooling system seawater suction strainer bodies and 2 new Stainless Steel strainer baskets.



Port Side Strainer



Starboard Side Strainer



Stainless Steel Strainer Basket

PART 2: TECHNICAL DESCRIPTION:

2.1 GENERAL

1. Contractor must fabricate (2) new strainer bodies as per the attached drawing #465-21 rev5 (provided in pages 4 through 10 of this SOW). Copy of the original drawing will be made available to Contractor. The bodies must be fabricated so that the covers and flange nuts are elevated above the deck plates for easy access as per existing – refer to Figure 1.1 and 1.4 below for reference.

Figure 1.1 Strainer Body and inner strainer basket

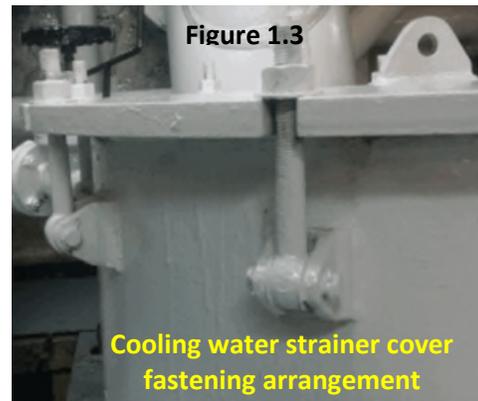
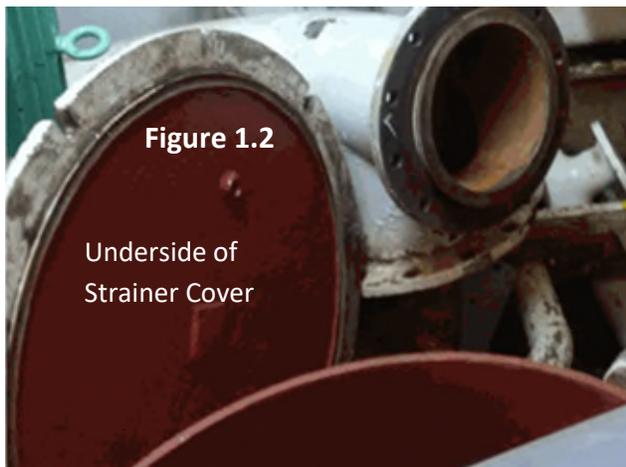


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1 – MAIN COOLING WATER STRAINER RENEWALS (CONTINUED)

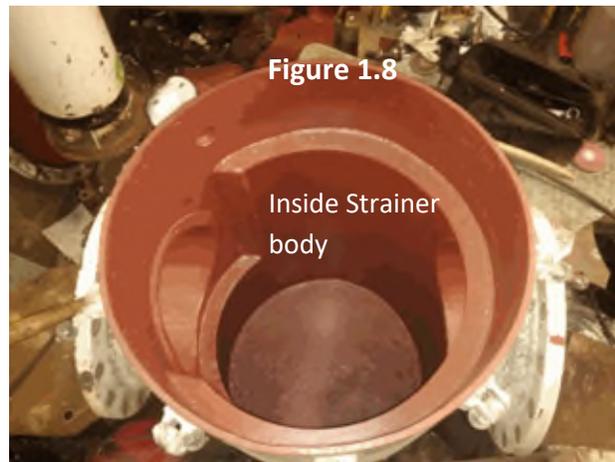
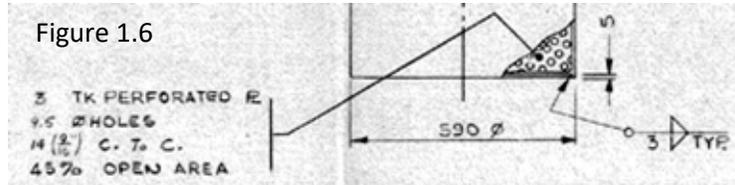
2. There are (2) changes noted in the list of materials (Page 14) that must be adhered to; the first being item #17 – changed to read ½ inch ball valve (Pet Cock removed) and item #27 – changed to read ¾ inch heavy hex nut (Eye Nuts removed).
3. Contractor must fabricate removable covers as illustrated in Figure 1.2, 1.4 and 1.5, for the new strainer bodies. The covers must be bolted in place using new CFM fasteners, refer to Figure 1.3 below. Prefab units of the same scantlings are acceptable as well, provided the materials are resistant to seawater.



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1 – MAIN COOLING WATER STRAINER RENEWALS (CONTINUED)

4. Contractor must fabricate (2) new inner strainer baskets from 316L 1/8 inch thick Stainless Steel (SS) mesh plate with a similar hole configuration as per original (9.5 mm \varnothing holes at 14 mm center to center), refer to Figure 1.6 below. The baskets must be removable and fabricated to the same configuration as illustrated in Figure 1.7. The SS baskets must rest/seat onto landing inside the strainer housing, refer to Figure 1.8, to ensure that the basket strainers will not be bypassed when water is flowing through the strainer baskets.



5. Contractor must ensure that the orientation of the new strainer body flanged connections are such that the bolt holes match up with the vessel's existing pipe connection flange bolt holes, so that when installed the new strainer bodies are in the same orientation as per original.
6. Contractor must hydrostatically pressure test the two new strainer bodies to 10 Bar for at least 1 hour, Coast Guard Technical Authority (CGTA) must witness the test.
7. The (2) new strainer bodies and covers must be blasted to SSPC.SP10 and then treated/coated hot dip galvanizing process.

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1 – MAIN COOLING WATER STRAINER RENEWALS (CONTINUED)

8. The (2) new strainer bodies' internals, exterior and covers must be coated with (2) coats of International Interzinc® 22 or similar zinc based epoxy primer that is suitable for continuous water immersion. Contractor to apply (1) tie coat compatible with the zinc primer and the top coat. For the internals portions plus the covers waterside face, Contractor must apply (2) top coats of Interspeed 640 anti-fouling coating. Contractor must adhere to the paint manufacturer's recommendation.

The (2) strainer bodies' exterior portions including the covers must be coated with (1) tie coat of International Intergard 269. Coatings must be applied to yield 2-3 mils (ASTM S1640) DFT per coat and (2) top coats of CLB000/1 Interlac 665 Fire Retardant White, International Paint.

9. Contractor must fit each cover with a ½ inch NPT vent hole. Contractor must supply and install stainless fittings and a ½ inch ball valve. Figure 1.9 and 1.10 illustrates the existing arrangement.



Figure 1.9



Figure 1.10

10. Contractor must supply and install new seawater resistant gaskets such as Durlon 8500 for each flange connection (4 each) and Rectangular Ring Neoprene gaskets for the covers (2 each). Note the joint must be made with water resistant adhesive.
11. All work shall be to the satisfaction of the CGTA.

2.2 LOCATION

1. Main Engine room – forward of the engines

2.3 INTERFERENCES

N/A – INTENTIONALLY LEFT BLANK

PART 3: REFERENCES:

3.1 GUIDANCE DRAWINGS/NAMEPLATE DATA

1. Drawings #465-21 rev 5

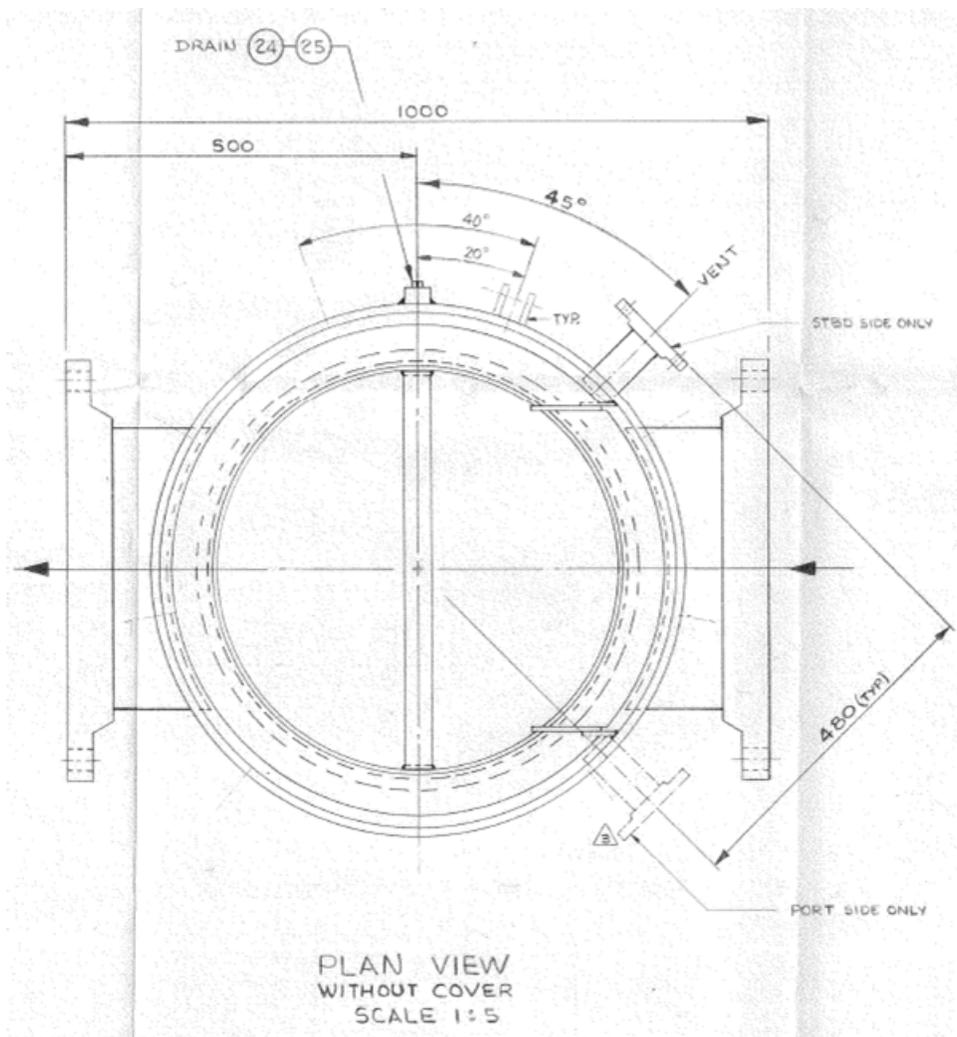
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Copy of the original drawing will be made available to Contractor.

Sections (denoted as page 1 through 7 below) of the original drawing are provided in this SOW for reference purposes, the drawings are snap shots of the original drawing.

Drawings #465-21 rev 5

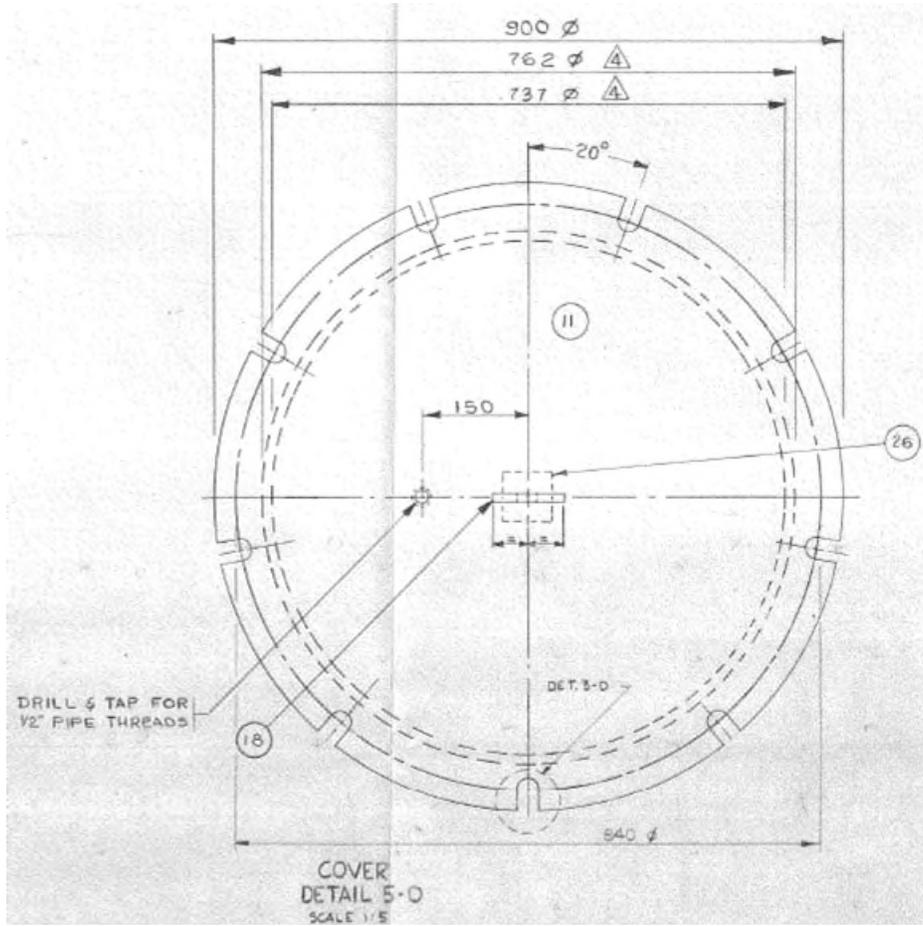
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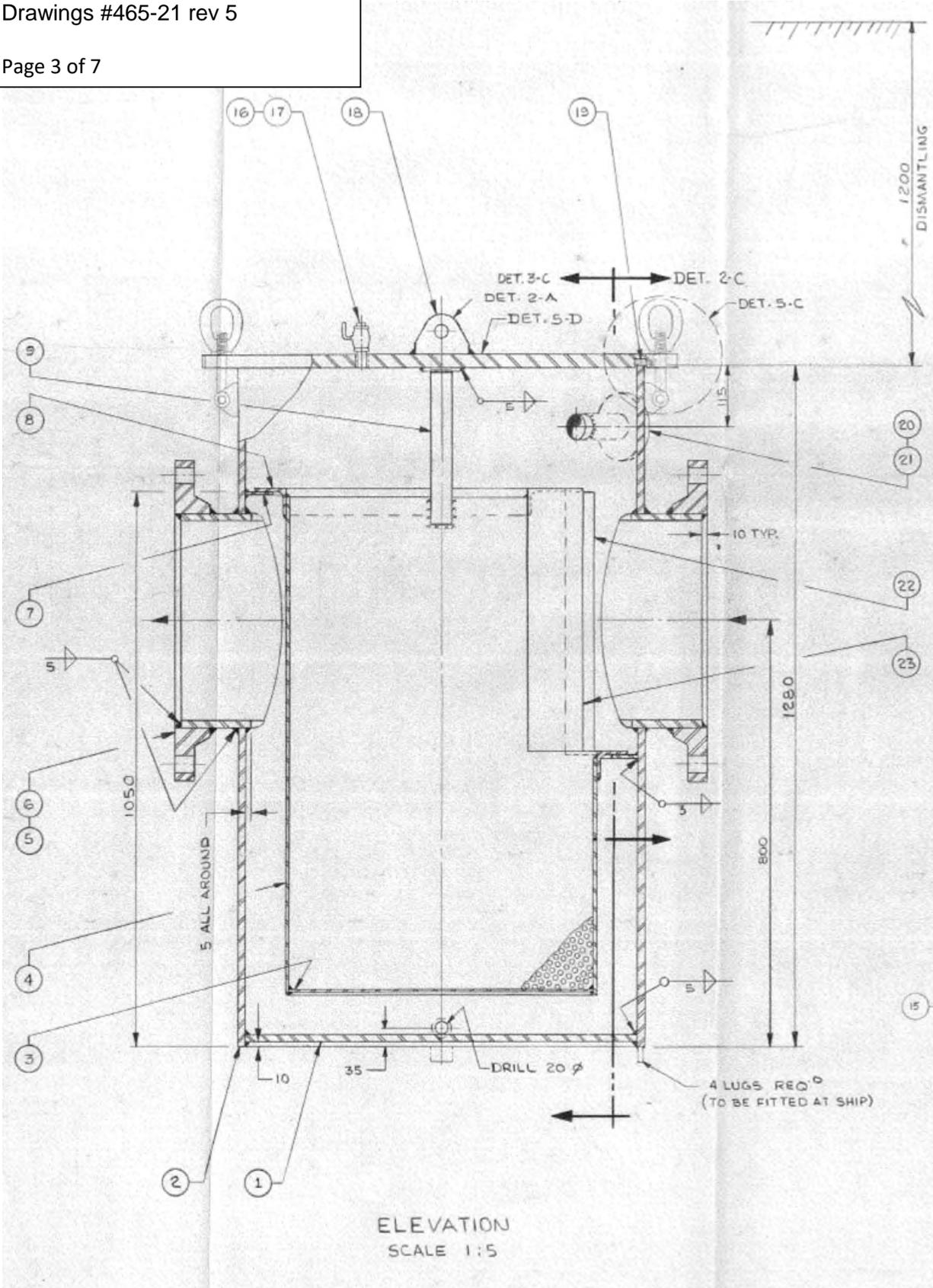


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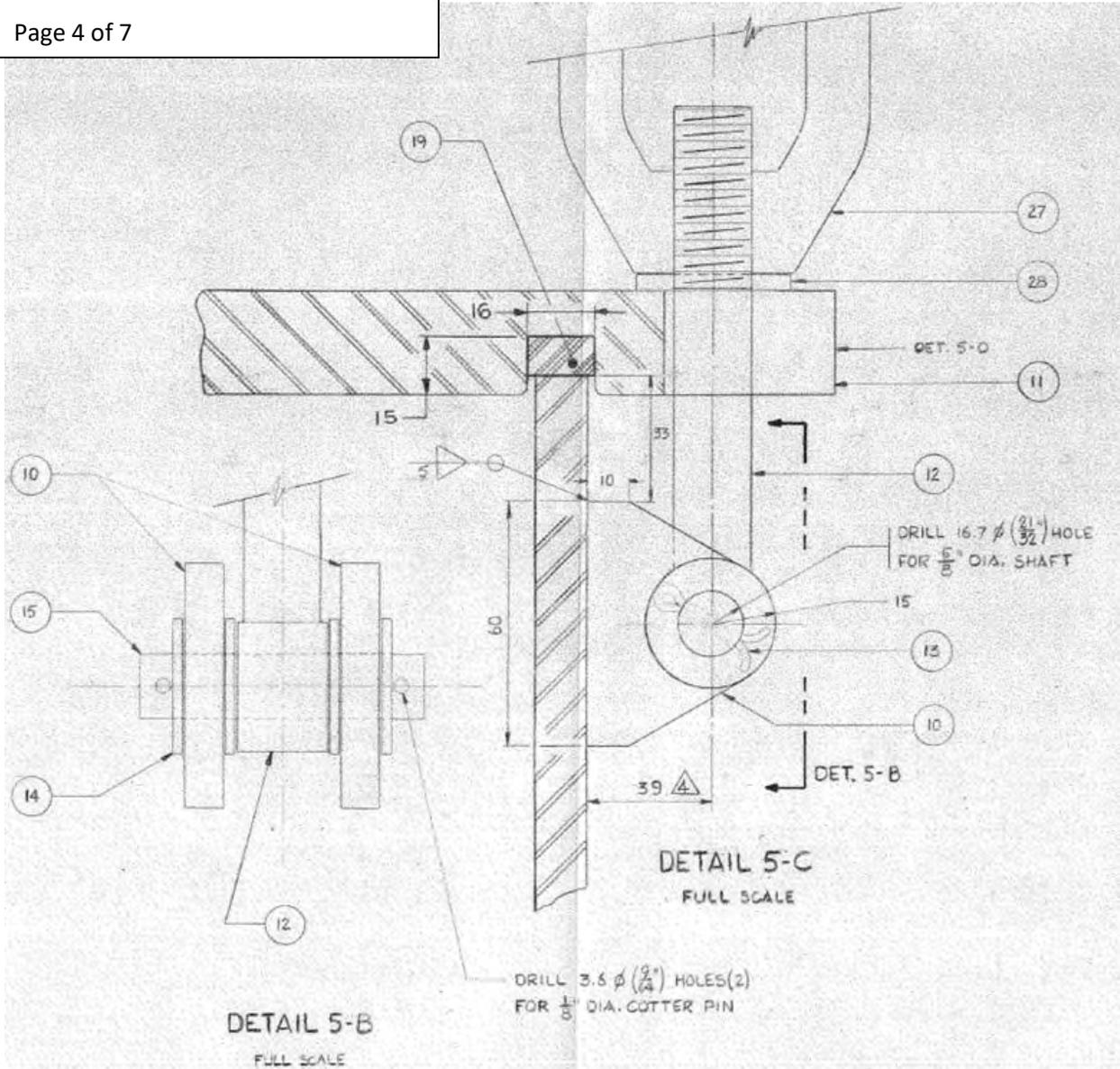
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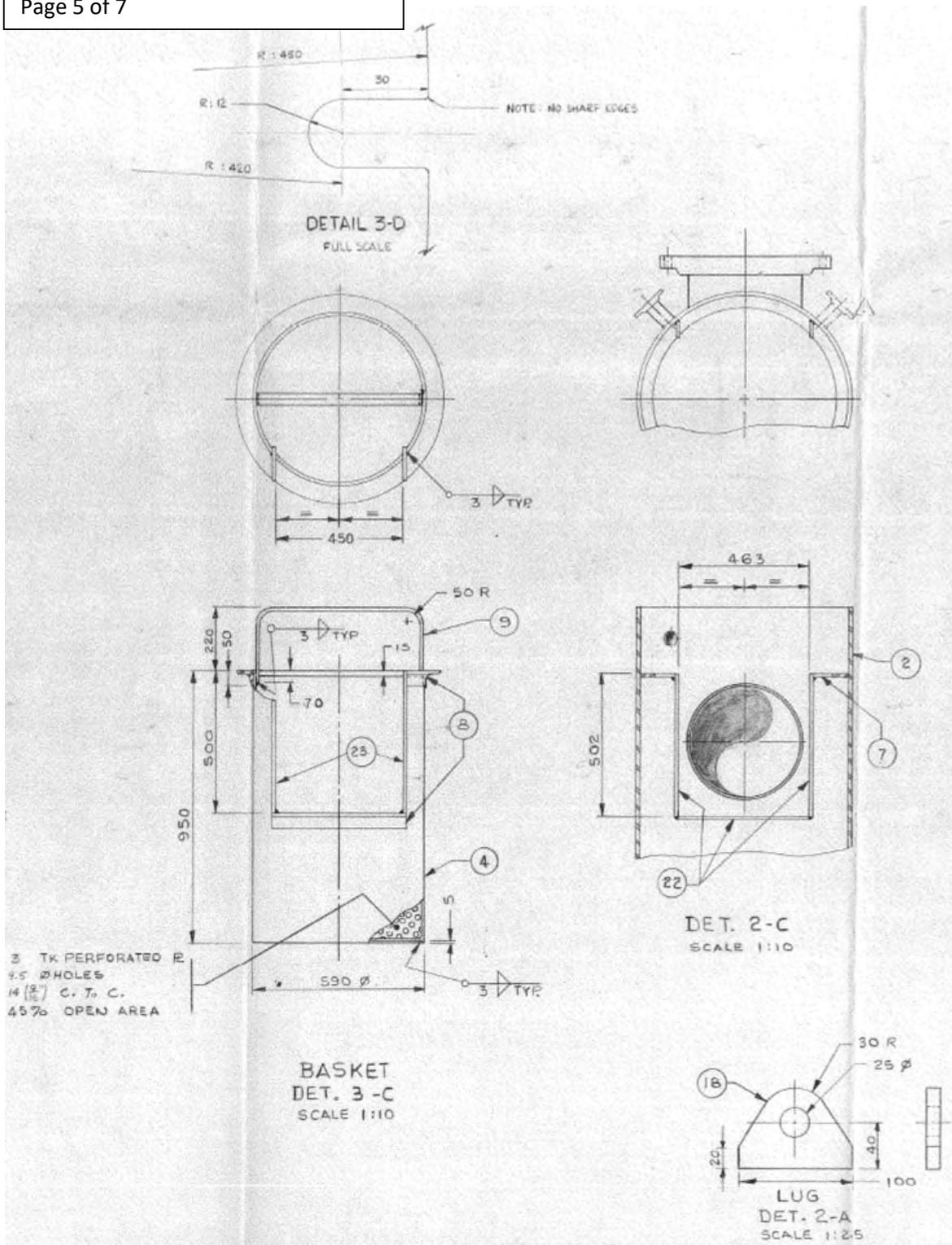


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Drawings #465-21 rev 5

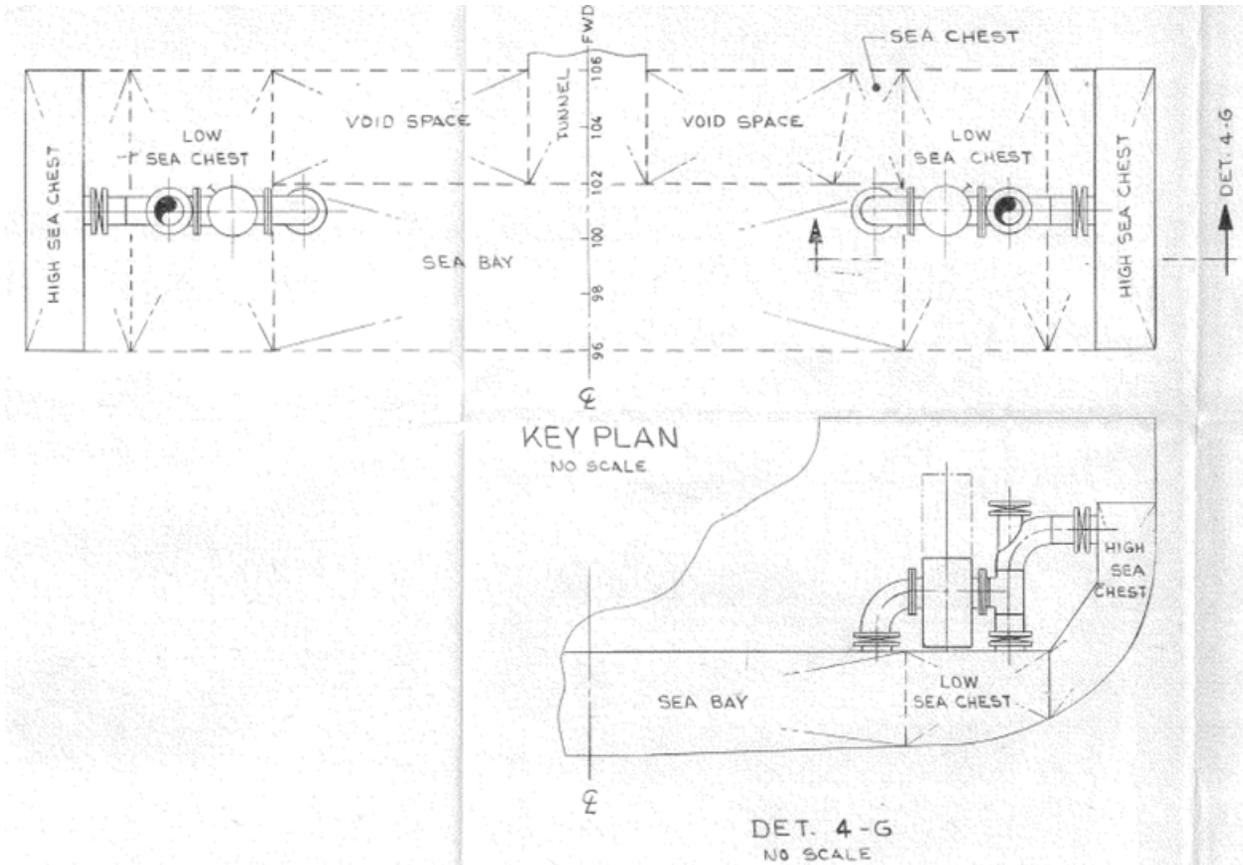
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Drawings #465-21 rev 5

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LIST OF MATERIAL				
ITEM	QTY	DESCRIPTION	MATERIAL	REQ. N ^o
1	1	BOTTOM 12 R x 733 O.D.	STEEL	465-4-16
2	1	BODY 30" Ø PIPE SCH. 20		
3	1	1/8" TK. PERFORATED R x 580 O.D.	STAINLESS ST.	
4	1	1/8" TK. PERFORATED R x 935 x 1855 LG.	STAINLESS ST.	
5	2	1G" SLIP-ON WELDING FLG. F.F. 150#	STEEL	
6	2	1G" PIPE SCH. 40 x 190 LG.		
7	1	FLAT BAR 5 TK x 50 WIDE x 1645 LG.		
8	1	ANGLE 2 1/2" x 2" x 1/8" TK x. 2255 LG.	STAINLESS ST.	
9	1	HANDLE F.B. 6 TK. x 40 W x 1160 LG.	"	
10	18	9.5 Ø x 46 H. x 60 LG	STEEL	
11	1	COVER 25 TK. x 900 OD		
12	9	THREADED SWING BOLTS 3/4" Ø x 127 LG	STAINLESS ST.	
13	18	COTTER PINS STANDARD 1/8" Ø x 25 LG	STAINLESS ST.	
14	36	FLAT WASHERS 5/8" Ø "NARROW" (S.A.E.)		
15	9	SHAFTS 5/8" Ø x 70 LG		
16	1	1/2" Ø CLOSE NIPPLE	GALV. STEEL	
17	1	PET COCK 1/2" Ø (SIM. TO CRANE # 702)	BRASS	
18	1	LUG 12 R x 70 H. x 100 LG.	STEEL	
19	1	NEOPRENE PACKING 1/2" x 5/8" x 2420 LG.	NEOPRENE	
20	1	1 1/2" SLIP-ON WELDING FLG. F.F. 150#	STEEL	
21	1	1 1/2" PIPE SCH. 80 x 110 LG.		
22	1	FLAT BAR 5 TK x 50 WIDE x 1675 LG.		
23	1	FLAT BAR 5 TK x 100 WIDE x 1000 LG	STAINLESS ST.	
24	1	3/4" HALF COUPLING SCRIP	STEEL	
25	1	3/4" SQUARE HEAD PIPE PLUG	BRASS	
26	1	10 R x 70 x 70	STEEL	
27	9	EYE NUTS 3/4" Ø THREADED	STAINLESS ST.	
28	9	FLAT WASHERS 3/4" Ø "NARROW" (S.A.E.)	STAINLESS ST.	

1/2 inch ball valve

3/4 inch Heavy Hex Nut

POUR MATERIEL VOIR/FOR MATERIAL REFER TO:

NOTES:

- 1- QUANTITIES GIVEN IS FOR 1 (ONE) STRAINER, 2 (TWO) ARE REQUIRED.
- 2- ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT AS NOTED.
- 3- STRAINER TO BE GALVANIZED AFTER FABRICATION.
- 4- BASKET RATIO : 6-4 : 1
- 5- WEIGHT : 780 KG
- 6- PRESSURE TEST 1000 KPA

NO	ZN	CODE	DESCRIPTION	PAR/BY	DATE
5			AS FITTED FOR C-451	R.B.	01-03-11
	S-D		AS FITTED UP TO 450	DB	04/7/11
	S-D		DIM. 722 WAS 766		
	S-C		DIM. 737 WAS 734	DB	06/7-11
4			DIM. 33 WAS 31		
3			CONNECTION FOR VENT MODIFIED	MN	04/02/11
			NOTE 6 ADDED	DB	04-1-84
2			MATERIAL FOR ITEMS 3, 12 AND 27 MODIFIED	MN	23/12/83
1			COVER ATTACHMENT AND MATERIAL FOR THE BASKET MODIFIED	MN	5/12/83

REVISIONS

APPROBATIONS/APPROVALS

CLASS	SOU/SUB	APP	REV 1	REV 2	REV 3	REV 4	REV 5
CC/CCG	03-16-91	03-17-91					
PRO/OWN	03-17-91	03-17-91					

MARINE INDUSTRIE LIMITEE
SOREL, P.Q., CANADA

TYPE 1100 NAVAIS TENDER / LIGHT ICEBREAKER

SEA SUCTION STRAINER

PAR/BY DENIS B.	APP <i>[Signature]</i>	CONT NO 450	DESSIN DWG 465-21
VERICK	ECHSC AS SHOWN DATE 13-9-83	451	REV 5 FISH

1 – MAIN COOLING WATER STRAINER RENEWALS (CONTINUED)

3.2 STANDARDS AND REGULATIONS

N/A – INTENTIONALLY LEFT BLANK

3.3 OWNER FURNISHED EQUIPMENT

N/A – INTENTIONALLY LEFT BLANK

PART 4: PROOF OF PERFORMANCE:

4.1 INSPECTION

N/A – INTENTIONALLY LEFT BLANK

4.2 TESTING

1. Contractor must hydrostatically pressure test the two new strainer bodies to 10 Bar for at least 1 hour, Coast Guard Technical Authority (CGTA) must witness the test.

4.3 CERTIFICATION

Contractor to supply mill certificates for all metals used in the fabrication of the strainers and baskets.

PART 5: DELIVERABLES:

5.1 REPORTS, DRAWINGS, AND MANUALS

N/A – INTENTIONALLY LEFT BLANK

5.2 SPARES

N/A – INTENTIONALLY LEFT BLANK

5.3 TRAINING

N/A – INTENTIONALLY LEFT BLANK