

NOTES:

- SCANTLINGS CALCULATED IN ACCORDANCE WITH CLASS REQUIREMENTS.
- FOR ALL STRUCTURE, USE CLASS APPROVED MILD STEEL WITH A MINIMUM YIELD STRENGTH OF 235 N/mm² OR BETTER UNLESS NOTED OTHERWISE.
- SHIPYARD TO PROVIDE A WELDING PROCEDURE, MATERIALS, AND WORKMANSHIP IN ACCORDANCE WITH CLASS REQUIREMENTS AND APPROVED WELDING SCHEDULE.
- REFER TO THE ROBERT ALLAN LTD. DRAWING AND SPECIFICATION PACKAGE IN ITS ENTIRETY. PARTICULAR ATTENTION SHOULD BE PAID TO THE FOLLOWING:
 - 10130 TANK PLAN
 - 20161 WELDING SCHEDULE
 - 30000 GENERAL ARRANGEMENT
 - 52500 SHAFTING ARRANGEMENT

EQUIPMENT NUMBER CALCULATIONS:

RINA RULES FOR CLASSIFICATION OF SHIPS 2015.

1. EQUIPMENT NUMBER (EN):

- PART E, CHAPTER 14, SECTION 2, 2.7.1-EQUIPMENT NUMBER FOR TUGS WITH THE NAVIGATION NOTATION "UNRESTRICTED NAVIGATION".
- PART E, CHAPTER 14, SECTION 2, 2.7.3- ANCHORS, CHAIN CABLES AND ROPES
- PART B, CHAPTER 10, SECTION 4

2.7.1 EQUIPMENT NUMBER (EN): $EN = \Delta^{2/3} + 2 (aB + \sum bh) + 0.1A$

WHERE:	EN =	EQUIPMENT NUMBER	=	170.72
	Δ =	MOULDED DISPLACEMENT TO THE SUMMER LOAD WATERLINE	=	475.4 METRIC TONS
	B =	GREATEST MOULDED BREADTH	=	10.9 m
	a =	FREEBOARD AMIDSHIP, FROM SUMMER LOAD WATERLINE	=	1.3 m
	b =	BREADTH OF THE WIDEST SUPERSTRUCTURE OR DECKHOUSE OF EACH TIER HAVING A BREADTH GREATER THAN B/4		
		b ₁	=	7.0 m
		b ₂	=	4.0 m
		b ₃	=	0.0 m
		b ₄	=	0.0 m
	h =	THE HEIGHT, AT THE CENTERLINE OF EACH TIER OF SUPERSTRUCTURE OR DECKHOUSE HAVING A BREADTH OF B/4 OR GREATER.		
		h ₁	=	3.1 m
		h ₂	=	3.8 m
		h ₃	=	0.0 m
		h ₄	=	0.0 m
	A =	AREA, IN PROFILE VIEW, OF THE PARTS OF THE HULL, SUPERSTRUCTURES AND HOUSES ABOVE THE SUMMER LOAD WATERLINE, WHICH ARE WITHIN THE LENGTH L(E), AND ALSO HAVING A BREADTH GREATER THAN B/4	=	79.9 m ²
	L(E)	EQUIPMENT LENGTH EQUAL TO RULE LENGTH WITHOUT BEING TAKEN <96% OR >97% OF THE TOTAL LENGTH OF THE SUMMER LOAD WATERLINE.	=	20.98 m

EQUIPMENT

REQUIRED SELECTED

NUMBER OF ANCHORS	01	01	
MASS OF STOCKLESS ANCHOR	240	240	kg
TOTAL LENGTH OF CHAIN CABLE	275	275	m
STUD LINK CHAIN DIAMETER - MILD STEEL GRADE 1	22	--	mm
STUD LINK CHAIN DIAMETER - MILD STEEL GRADE 2	19	19	mm
STUD LINK CHAIN DIAMETER - MILD STEEL GRADE 3	--	--	mm
MOORING LINE NUMBER	03	03	
MINIMUM STRENGTH OF MOORING LINES	54	54	kN
MINIMUM LENGTH OF EACH MOORING LINE	120	120	m

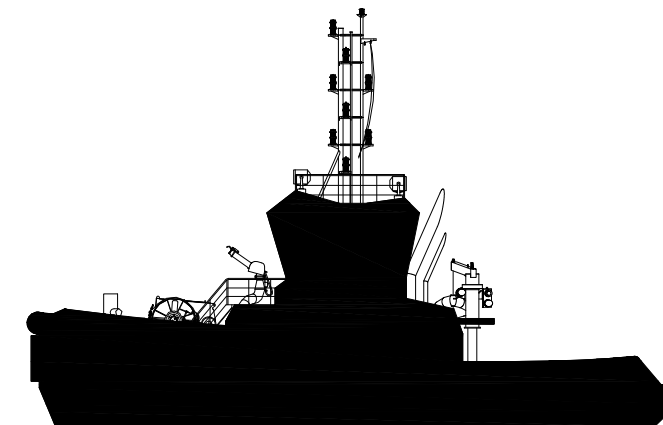
*ONE ANCHOR OF HALF OF THE TABULAR VALUE IN PART B, CH.10, SEC.4 TABLE 1, A<EN<=B AS PER PART E, CH.14, SEC.2, 2.7.3. UNRESTRICTED NAVIGATION.

LEGEND:

-----	BULKHEAD
-----	DOUBLE BOTTOM FLOOR, BRACKET
-----	GIRDER, WEB FRAME, TRANSVERSE
-----	STIFFENER, ORDINARY FRAME, BEAM
-----▶	GIRDER/STIFFENER WITH BRACKET END
-----▶	GIRDER/STIFFENER WITH WELDED END
-----▶	STIFFENER WITH SNIPED END

ABBREVIATIONS:

ABL	- ABOVE BASELINE	L	- ANGLE
B., BKT	- BRACKET	MH	- MANHOLE
BF	- BULB FLAT	NT	- NON-TIGHT
BL	- BASELINE	PL	- PLATE
BHD	- BULKHEAD	P, PORT	- PORT SIDE
CL	- CENTRELINE	RB	- ROUND BAR
CVK	- CENTER VERTICAL KEEL	SN	- SNIPED
DH	- DECKHOUSE	SC	- SEA CHEST
DWL	- DESIGN WATERLINE	S, STBD	- STARBOARD
ER	- ENGINE ROOM	STIFF.	- STIFFENER
ESC	- ESCAPE HATCH	TB	- TRIPPING BRACKET
FB	- FLAT BAR	TYP	- TYPICAL
FF	- FACE FLAT	TRANS	- TRANSVERSE
FLG	- FLANGE	UNO	- UNLESS NOTED OTHERWISE
FWD	- FORWARD	W.	- WELDED
GDR	- GIRDER	WH	- WHEELHOUSE
HOR	- HORIZONTAL	WT	- WATERTIGHT
IWO	- IN WAY OF		



APPROVAL/ACCEPTANCE

REVISION	CLIENT/APPROVAL AGENCY	DATE	INITIALS

ALL INFORMATION CONTAINED IN OR DISCLOSED BY THIS DOCUMENT IS CONFIDENTIAL AND PROPRIETARY, AND IS THE EXCLUSIVE INTELLECTUAL PROPERTY OF ROBERT ALLAN LTD. THIS DESIGN INFORMATION IS RESERVED FOR THE EXCLUSIVE USE OF THE CLIENT IDENTIFIED HEREON. ALL FURTHER DESIGN, USE, AND SALES RIGHTS ATTACHED THERETO ARE EXCLUSIVELY RESERVED BY ROBERT ALLAN LTD., AND ANY REPRODUCTION, COMMUNICATION OR DISTRIBUTION OF THIS INFORMATION IS PROHIBITED WITHOUT THE PRIOR WRITTEN CONSENT OF ROBERT ALLAN LTD. ABSOLUTELY NO MODIFICATIONS OR ALTERATIONS TO THIS DOCUMENT MAY BE MADE BY ANY PERSONS OR PARTY WITHOUT THE PRIOR WRITTEN CONSENT OF ROBERT ALLAN LTD.

CONTRACT DESIGN

THIS DOCUMENT IS FOR GUIDANCE ONLY, INDICATING THE KEY CHARACTERISTICS OF THE DESIGN'S CONFIGURATION, PERFORMANCE, MATERIALS, AND STANDARDS OF CONSTRUCTION BASED ON PRELIMINARY EQUIPMENT SELECTION. IT IS NOT INTENDED TO BE THE SOLE BASIS FOR CONSTRUCTION. THE BUILDER, OR ANY OTHER PARTY THAT USES OR RELIES ON OR MAKES DECISIONS BASED ON THIS DOCUMENT, ASSUMES FULL RESPONSIBILITY TO COMPLETE DETAILED ENGINEERING DESIGN AND FINALIZE EQUIPMENT SELECTION TO A POINT SUITABLE FOR CONSTRUCTION AND IMPLEMENTATION.



ROBERT ALLAN LTD.

NAVAL ARCHITECTS AND MARINE ENGINEERS
 230-1639 West 2nd Avenue web www.ral.ca
 Vancouver, B.C. V6J 1H3 email info@ral.ca
 Canada phone 604-736-9466

VESSEL
RAmparts 2300MM CLASS TUGBOAT

CLIENT
MED MARINE A.S.

TITLE
**MIDSHIP SECTION
 50&60TBP**

DRAWN BY SPS	ENG. HPR	DATE DEC. 15/16	PLOT SIZE ANSI B	SHEET 1 OF 2
-----------------	-------------	--------------------	---------------------	-----------------

PROJECT No. 216-063	DRAWING No. 21000-AB	REV. 2
------------------------	-------------------------	-----------

RINA Turkey Engineering Centre

**Approvato
Approved**

In conformità ai vigenti Regolamenti del RINA
(In compliance with RINA Rules in force)

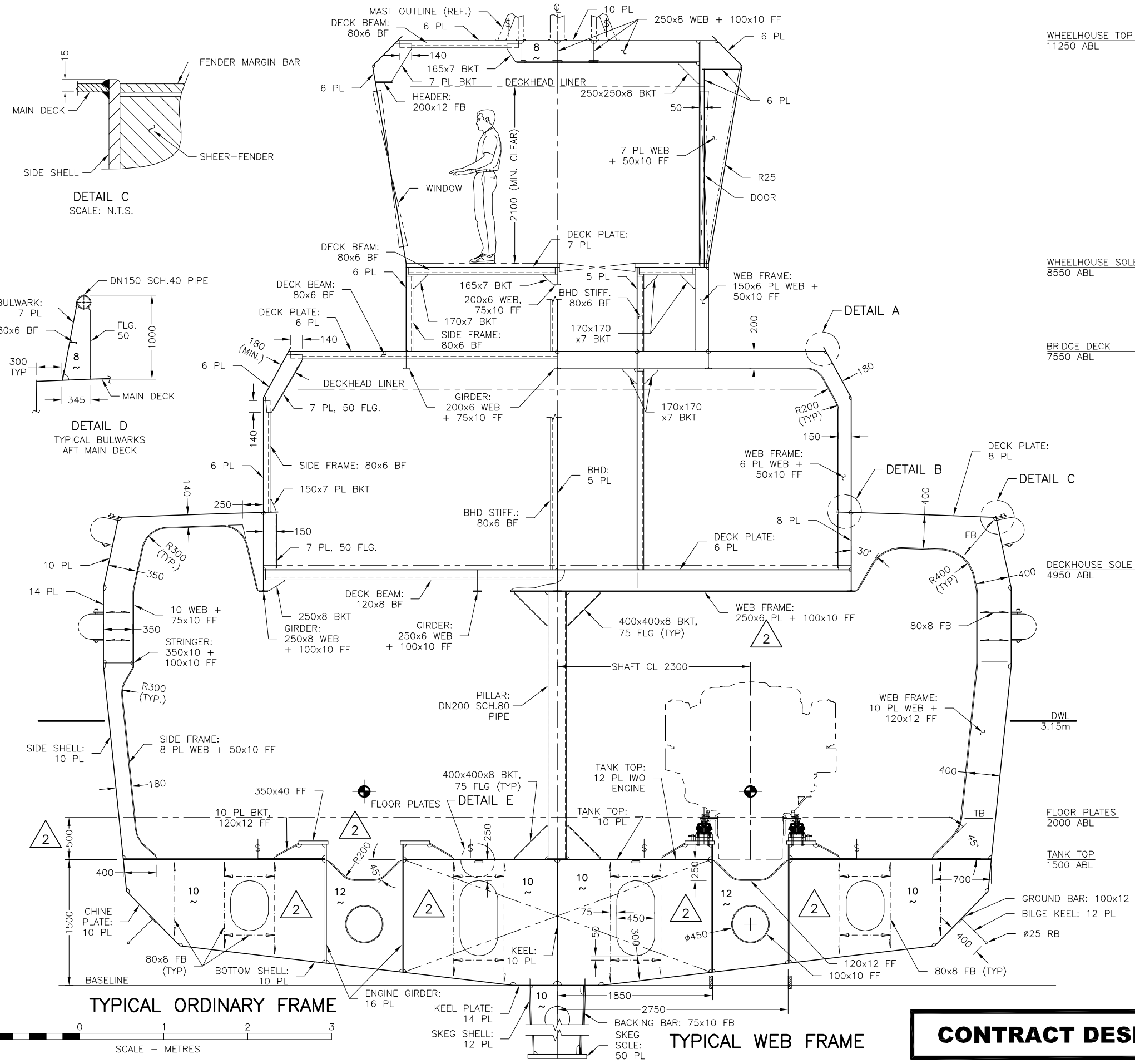
N. ISST0000008219

23 MAR 2017

Istanbul

See letter: ISST/2017/00073/OCY

2	UPDATE FOR CONTRACT DESIGN AND STRUCTURE I.W.O. ENGINE FOUNDATION PER YARD COMMENTS, LOWER FLOOR PLATES TO 500 ABOVE TANK TOP	MAR. 08/17	SPS	FL	HPR
1	FIRST ISSUE	JAN. 13/17	SPS	JZ	HPR
REV.	REVISIONS	DATE	DWN	CHK	APP.



DETAIL C
SCALE: N.T.S.

DETAIL D
TYPICAL BULWARKS
AFT MAIN DECK

DETAIL A
SCALE: N.T.S.

DETAIL E
SCALE: N.T.S.

DETAIL B
SCALE: N.T.S.

TYPICAL ORDINARY FRAME

TYPICAL WEB FRAME

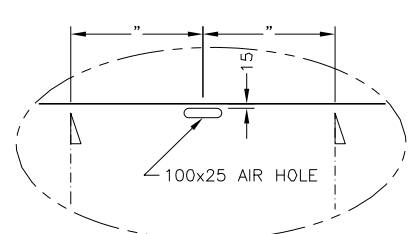
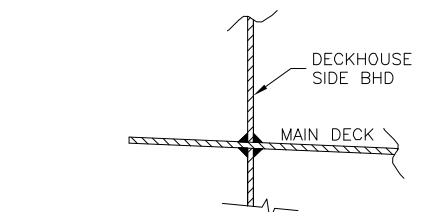
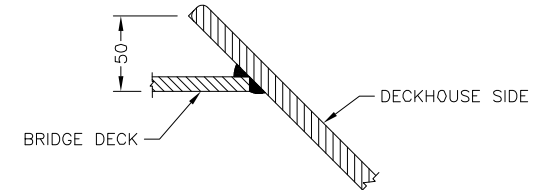
CONTRACT DESIGN


VESSEL PARTICULARS

	50T VERSION	60T VERSION	
LENGTH, OVERALL	23.00	23.00	m
LENGTH, RULE	21.119	21.119	m
BEAM, MOULDED	10.90	10.90	m
DEPTH, MOULDED	4.40	4.40	m
DRAFT, DESIGN	3.15	3.15	m
DRAFT, MAXIMUM DESIGN	4.80	5.05	m
DRAFT, SCANTLING	3.74	3.74	m
FRAME SPACING	600	600	mm
COMPLEMENT	6	6	PERSONS
BOLLARD PULL, AHEAD	50	60	TONNES
POWER	2x 1380	2x 1765	kW
FREE RUNNING SPEED (APPROX.)	11.2	11.6	KNOTS

CLASS NOTATION:

RINA C *TUG, AUT-UMS, FIREFIGHTING SHIP E WITH WATERSPRAY, UNRESTRICTED NAVIGATION, MLC DESIGN, GREEN STAR 3



 ROBERT ALLAN LTD. NAVAL ARCHITECTS AND MARINE ENGINEERS			
TITLE: MIDSHIP SECTION 50&60TBP			
SCALE: 1:50	DATE: DEC. 15/16	PLOT SIZE: ANSI B	SHEET: 2 OF 2
PROJECT No. 216-063	DRAWING No. 21000-AB	REV. 2	