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Naval Architecture Fundamentals For مبنای معماری کشتی برای بازرس تضمین

Marine Warranty Surveyor- PART 2 عملیات - قسمت ۲

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All respectful ICS' Surveyors
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بپیوست اطلاعاتی در خصوص مبنای و اصول معماری کشتی برای بازرس تضمین عملیات، قسمت دوم، در قالب اطلاعیه فنی حضورتان ایفاد می گردد.

نسخه الکترونیکی اطلاعیه فنی مذکور در شبکه داخلی موسسه با آدرس ذیل قابل دسترسی می باشد:

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همچنین نسخه الکترونیکی این سند از طریق پست الکترونیکی به کلیه مشتریان و بازرسان محترم موسسه ارسال می گردد.

رضوان پناه

مدیر واحد کنوانسیون ها و مقررات دریایی

موسسه رده بندی ایران

ترک دعوی: اگرچه در گردآوری کلیه راهنماهای فنی ارائه شده توسط موسسه رده بندی ایران، تا حد ممکن تلاش در دقت و صحت محتوا صورت گرفته است، این موسسه متحمل مسئولیتی در قبال هرگونه اشتباهات، خسارت های احتمالی و جرائمی که ممکن است در ارتباط با بکار گیری مفاهیم و مطالب ارائه شده رخ دهد، نمیباشد.

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موسسه رده بندی ایران

نشانی دفتر مرکزی: تهران میدان هفت تیر، خیابان قائم مقام فراهانی، بالاتر از میدان شعاع، کوچه شبنم

Ship Construction

Preamble

The principles of naval architecture apply to all floating vessels from small dinghies to super tankers, through specialized work boats, cruise liners and warships. It is not possible to cover every type here so for particular vessels in which a student may be involved reference should be made to relevant written material or applicable web sites.

Governing Bodies

Workboats, yachts, cargo ships, passenger vessels and the majority of floating structures will be built in accordance with the rules and regulations of a classification society or national rules and regulations taking due account of international regulations laid down by the likes of the International Maritime Organization (IMO) or the International Standards Organization (ISO).

Construction Materials

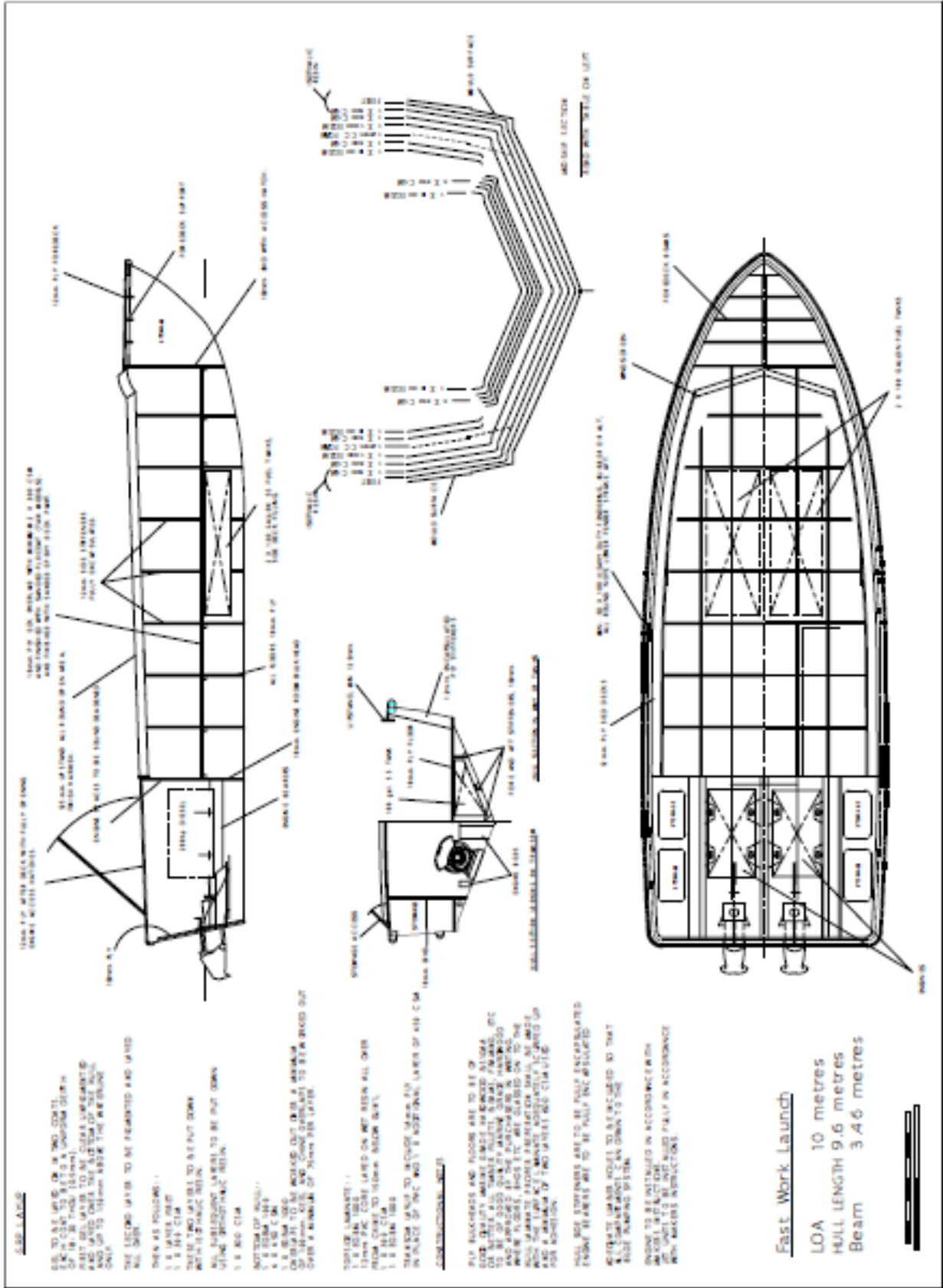
Most merchant and working vessels tend to be constructed in steel, however, the use of aluminum, fiber reinforced plastics (FRP) and composites are becoming more widely used. For the purposes of this work the emphasis has been placed on steel; for students involved with other materials the study of relevant documentation, in particular classification rules, is recommended. Of particular interest may be the Lloyd's Register of Shipping, Design Details from the Guidance Notes for the Classification of Special Service Craft which shows varied examples of construction details for steel, aluminum and composite vessels.

Scantling Sections

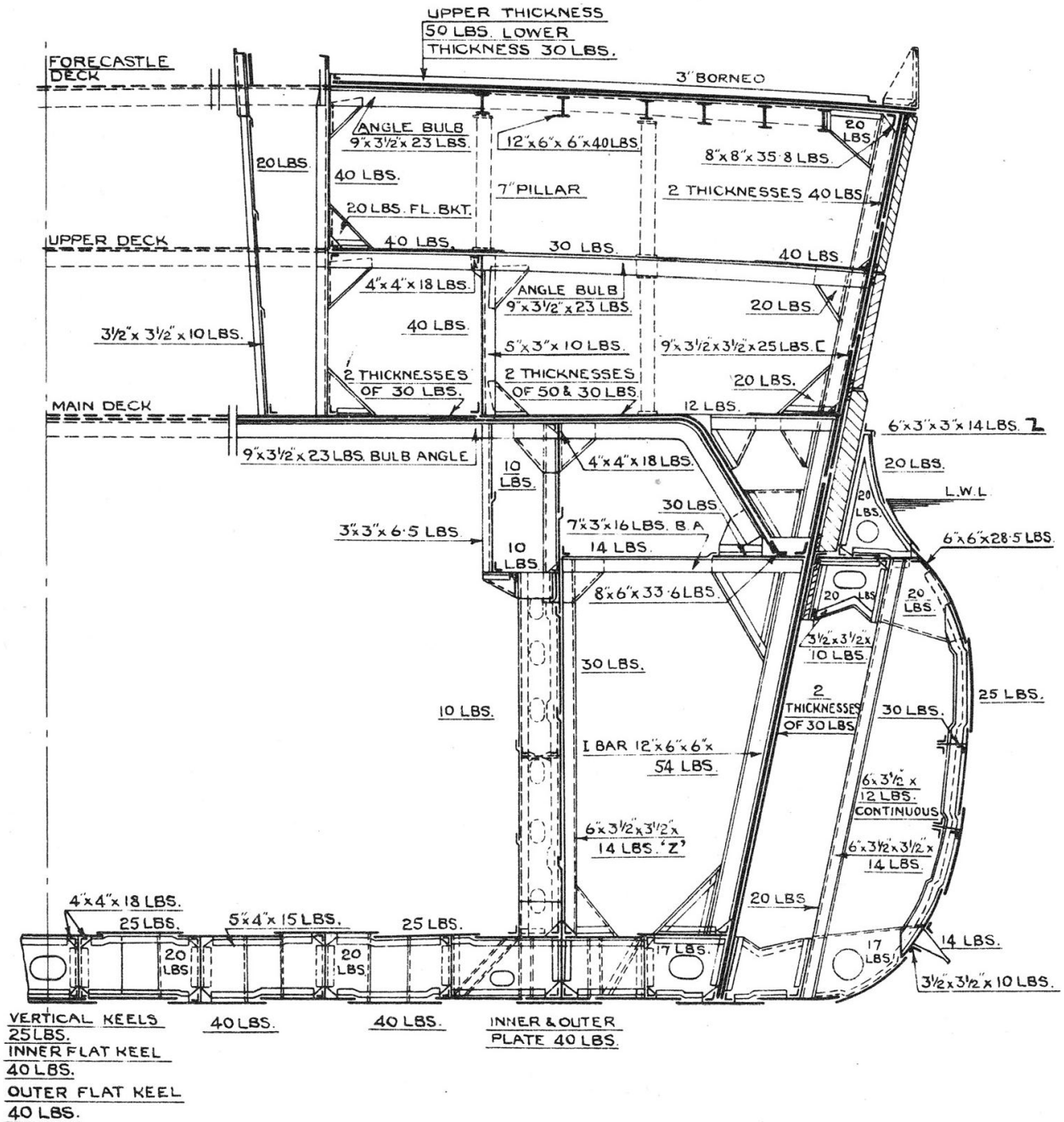
Scantlings are described as the dimensions of the structural elements making up the structure of a floating structure.

The structure of most vessels comprises steel plate, sections, formed sections and built up girders interconnected in various ways to provide sufficient strength in all parts to withstand the forces acting on the structure when floating in still water and operating in a seaway.

During the initial design stage of any vessel the scantlings will be calculated in accordance with the operating requirements of the craft and the relevant rules and regulations. A scantling section drawing, or 'midship' section drawing, will be produced depicting the major items of structure before the detailed construction drawings are produced. This may be in 2D or 3D format and to illustrate the extremes of ship building two drawings are reproduced overleaf.

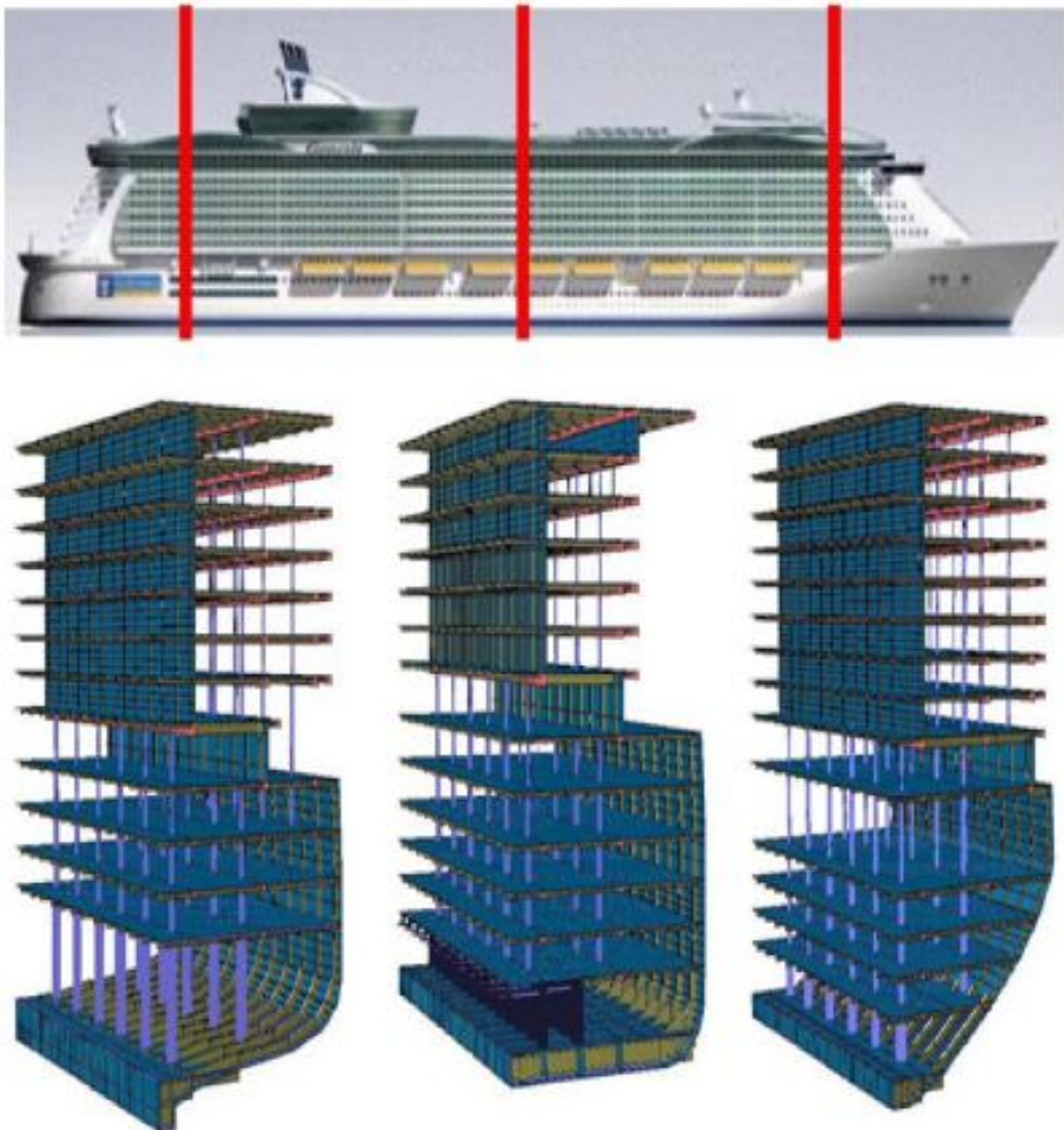


Below figure is the scantling section for a battleship circa. 1950 showing how the general principles of ship building have not changed but the methods of construction have.



Vessel Types and Design Features

There are far too many types of craft to be detailed here but the following illustrations and notes are intended to give a broad outline of some specific craft that may be encountered. Again the student is reminded that extensive research is necessary to gain the total picture; a useful web site for general photographs of numerous types of vessel is www.shipphotos.co.uk that is acknowledged as the source of many of the photographs shown overleaf.



A large cruise liner with the sections shown in 3D.



'CMA CGM Thalassa' - Container Ship 2008 - 128600 gt.



'Nordic Torinita' – Tanker 1992 - 58959 gt.



'Cassiopeia Leader' - Vehicle Carrier
1999 - 57455 gt.



'Gas Sincerity' - LPG Tanker
2000 - 3818 gt.



'HMS Illustrious' - Aircraft Carrier
1987 - 4700 Tonnes displ.



'HMS Torbay' - Submarine
1982 - 19500 Tonnes displ.



'Fjorddrott' - Fast Passenger Ferry 2007 226 gt.



'Queen Victoria' - Passenger Liner
2007 - 90049 gt.



'Sea Cloud' - Sailing Cruise Ship
2000 - 3489



'Ajax' - Ship Handling Tug
2000 - 1032 gt.



'Megan M' - Multi-Purpose Work Vessel
2007 - 172 dwt.



'Antaries' - Fishing Vessel
2001 - 106 gt.



The preceding photographs illustrate the vast range of vessel types and some of the characteristics necessary for them to efficiently carry out their design functions. As with any other engineering project, a marine craft or ship must be fit for purpose and with the plethora of types, sizes and duties each brings about peculiar requirements for the naval architect to overcome. However, the basic principles of hydrostatics, stability, hull resistance and powering will still need to be applied.