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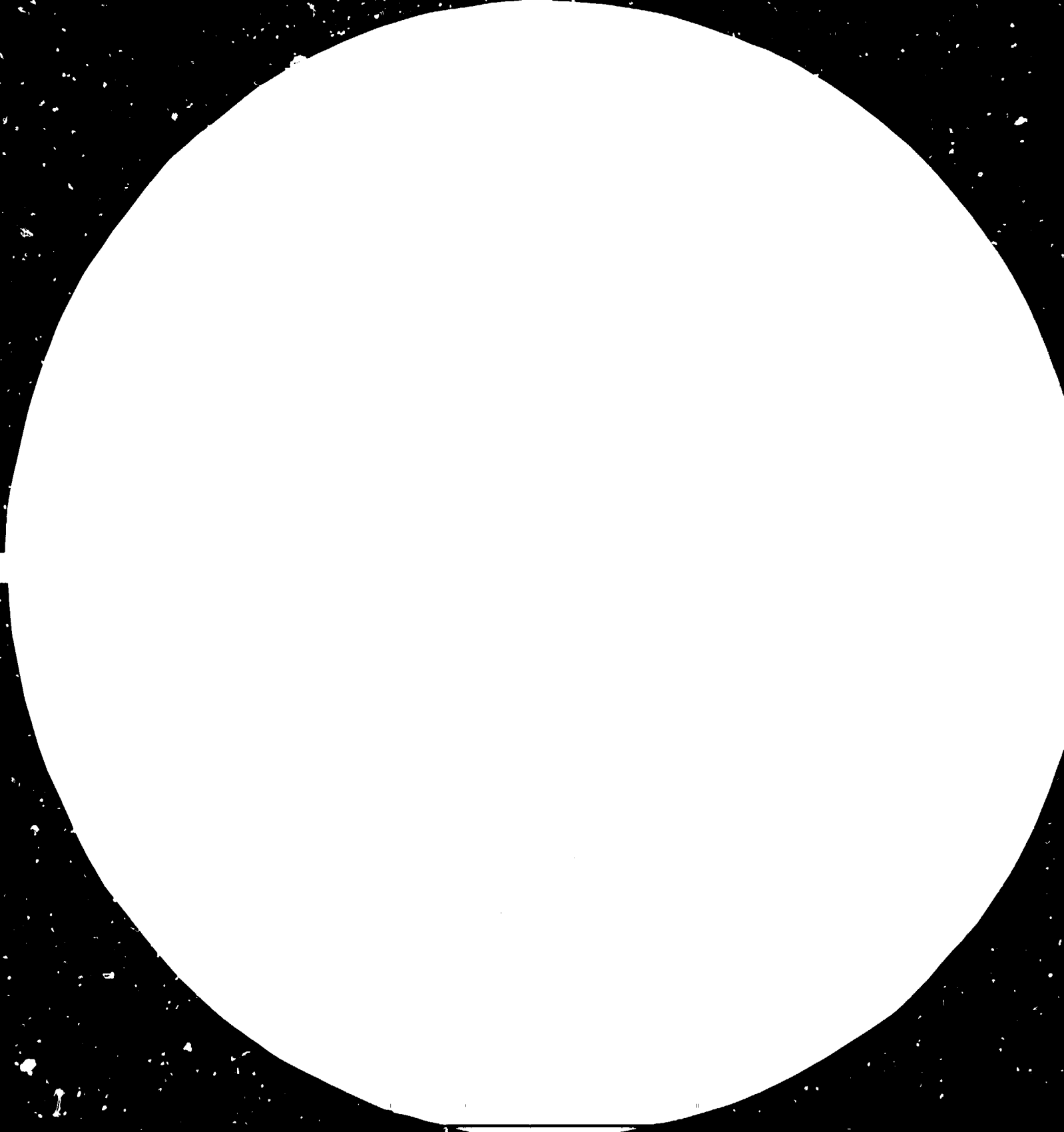
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)



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UPGRADING OF PRODUCTIVITY OF SHIPBUILDING IN IHI*

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2123

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1. Typical elements for upgrading of productivity of shipbuilding in IHI.

1.1 Management

TOTAL QUALITY CONTROL system for managing of company organization based on VOLUNTARY CONTROL and STANDARDIZATION.

1.2 Design

"How to build the ship" instead of "WHAT ship to be built".

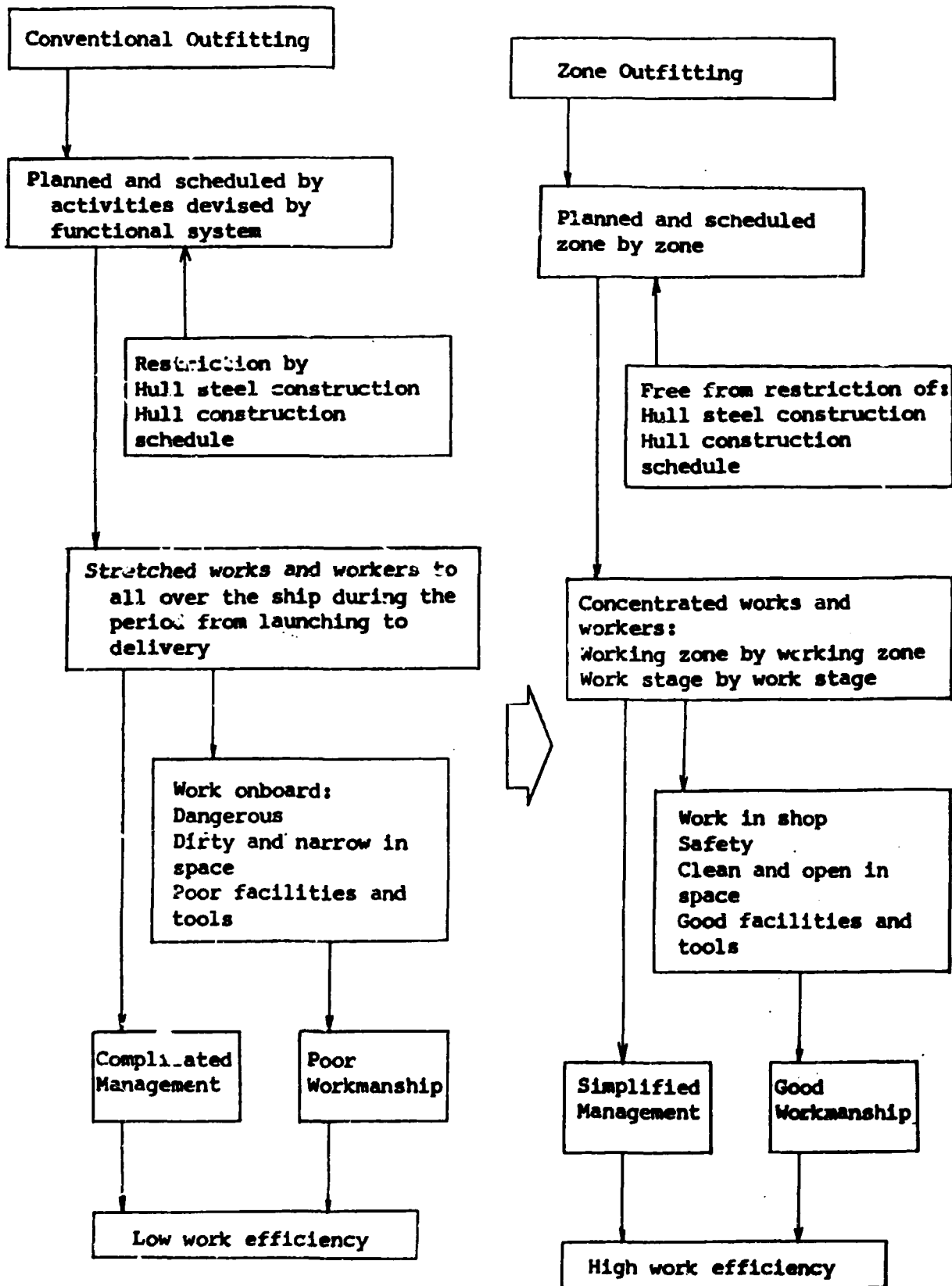
1.3 Hull Construction

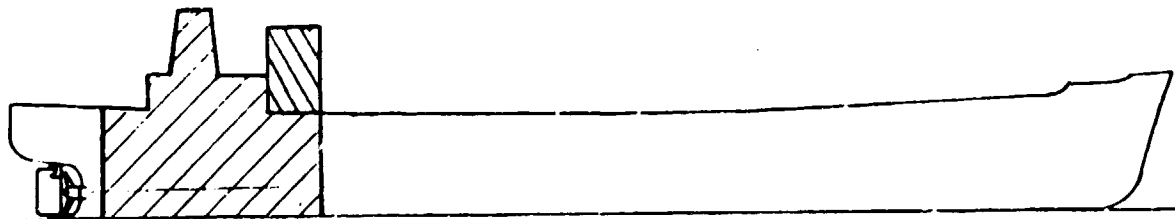
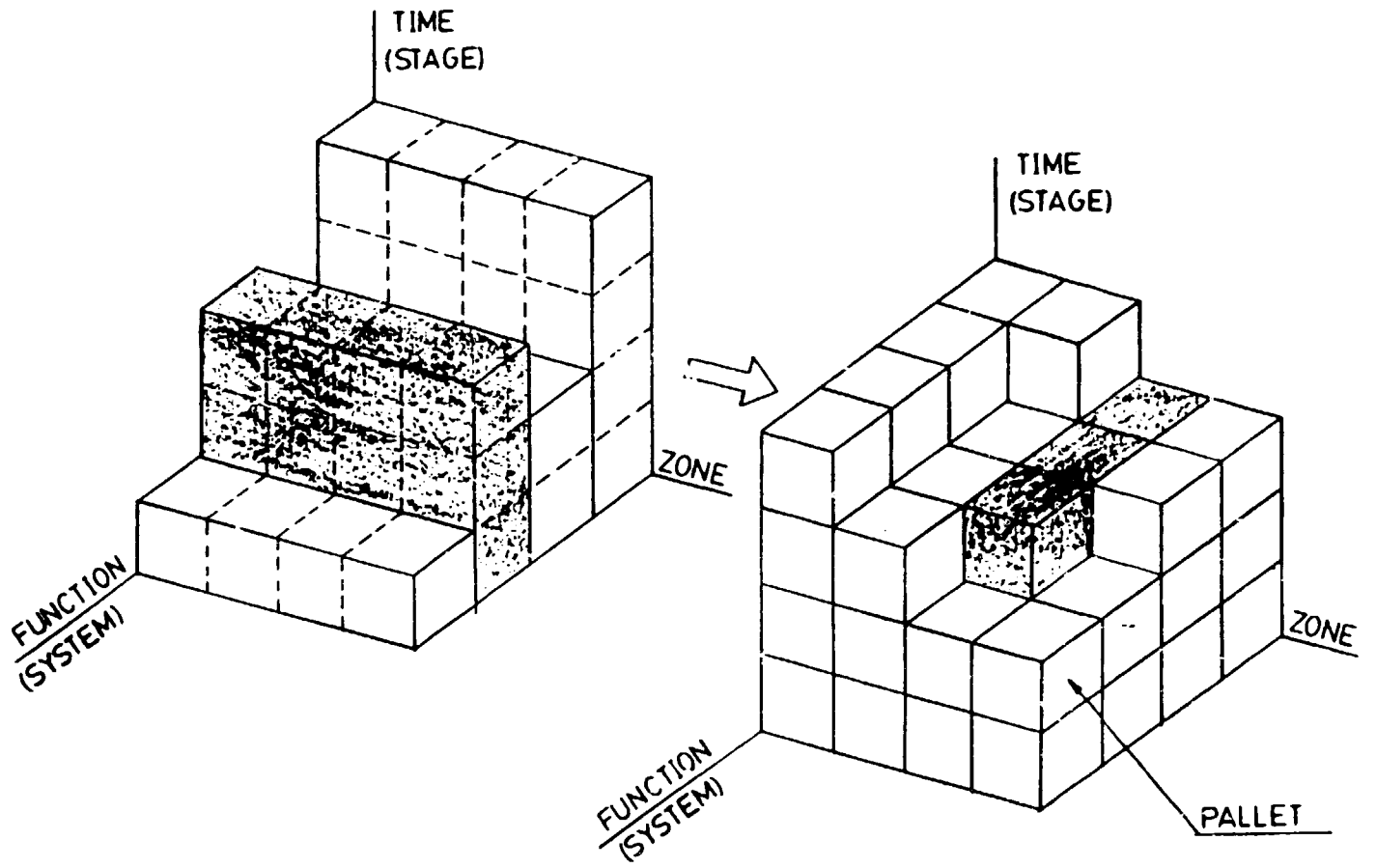
- ACCURACY Control System
- Establishment of definition of "STAGE" of work progress such as mould loft, fabrication, SUB ASSEMBLY, Assembly, (pre-erection), erection, test/inspection.

1.4 Outfitting

Zone outfitting system with PALLETIZATION of materials.

2. Zone Outfitting



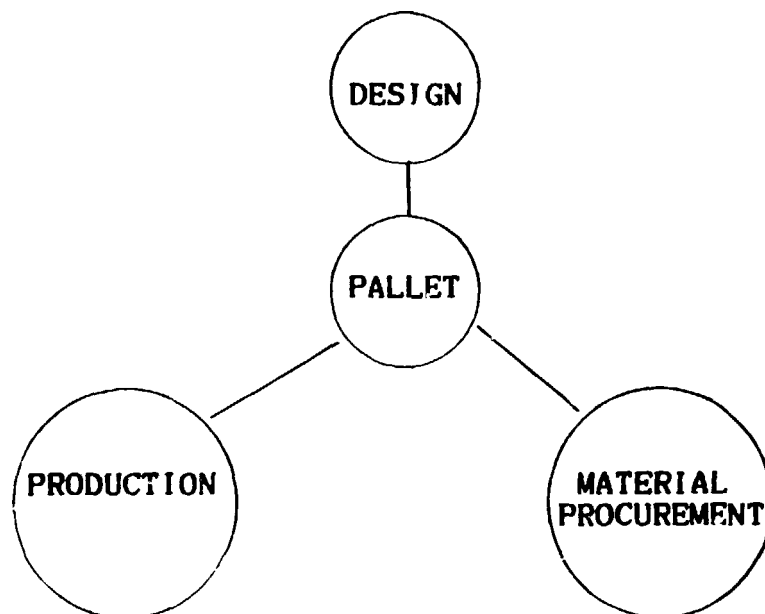


Pallet System

A pallet is a grouping of components as a work package to complete one work at specific stage and/or particular zone.

The concept of pallet system is to distribute the pallets packing the required materials to addressed work site at requirement date.

Thus, a pallet is the common link for integration of design, material procurement and production.



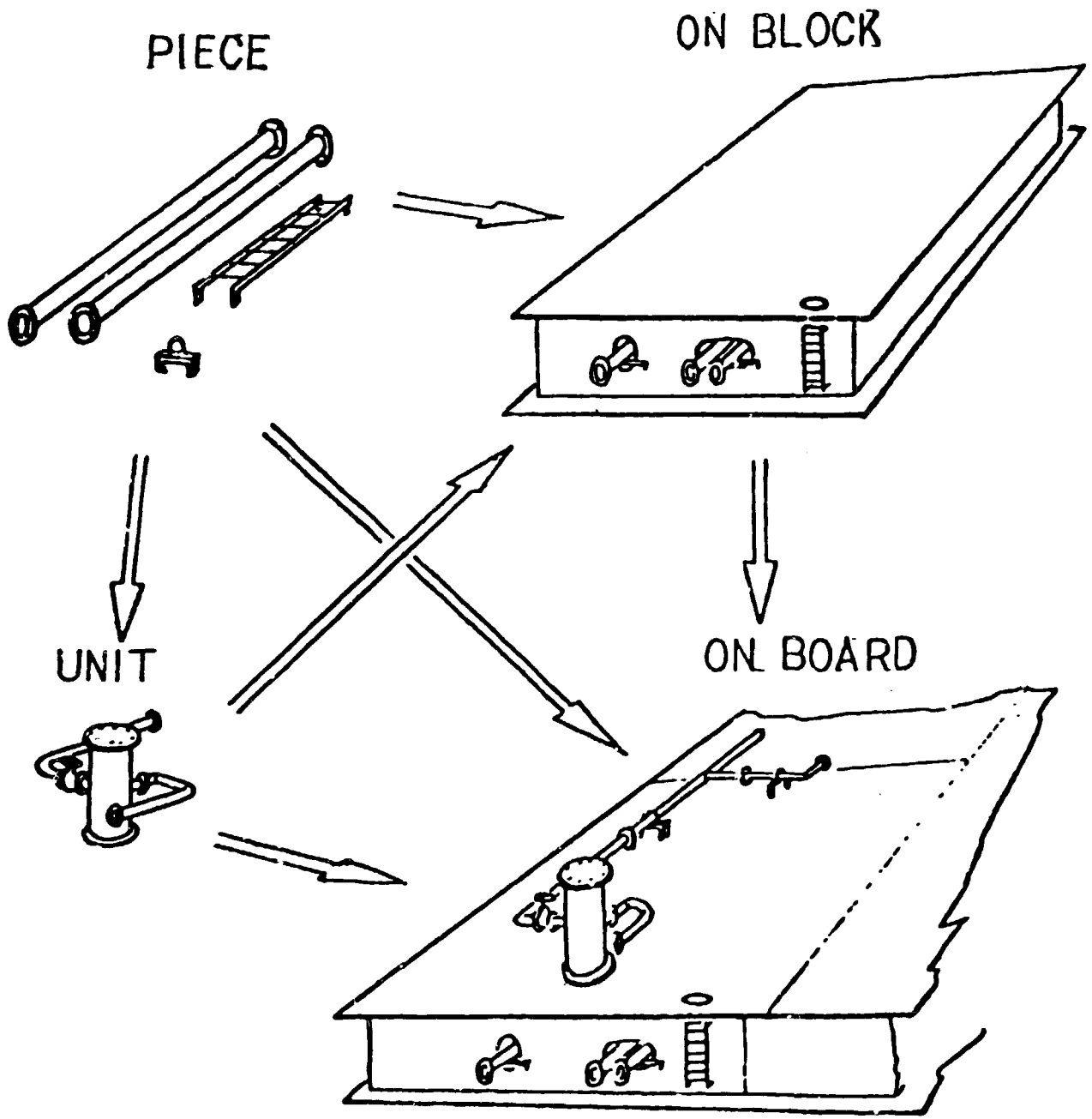
Design Engineering Department make the working drawing and material list pallet by pallet in accordance with the drawing schedule.

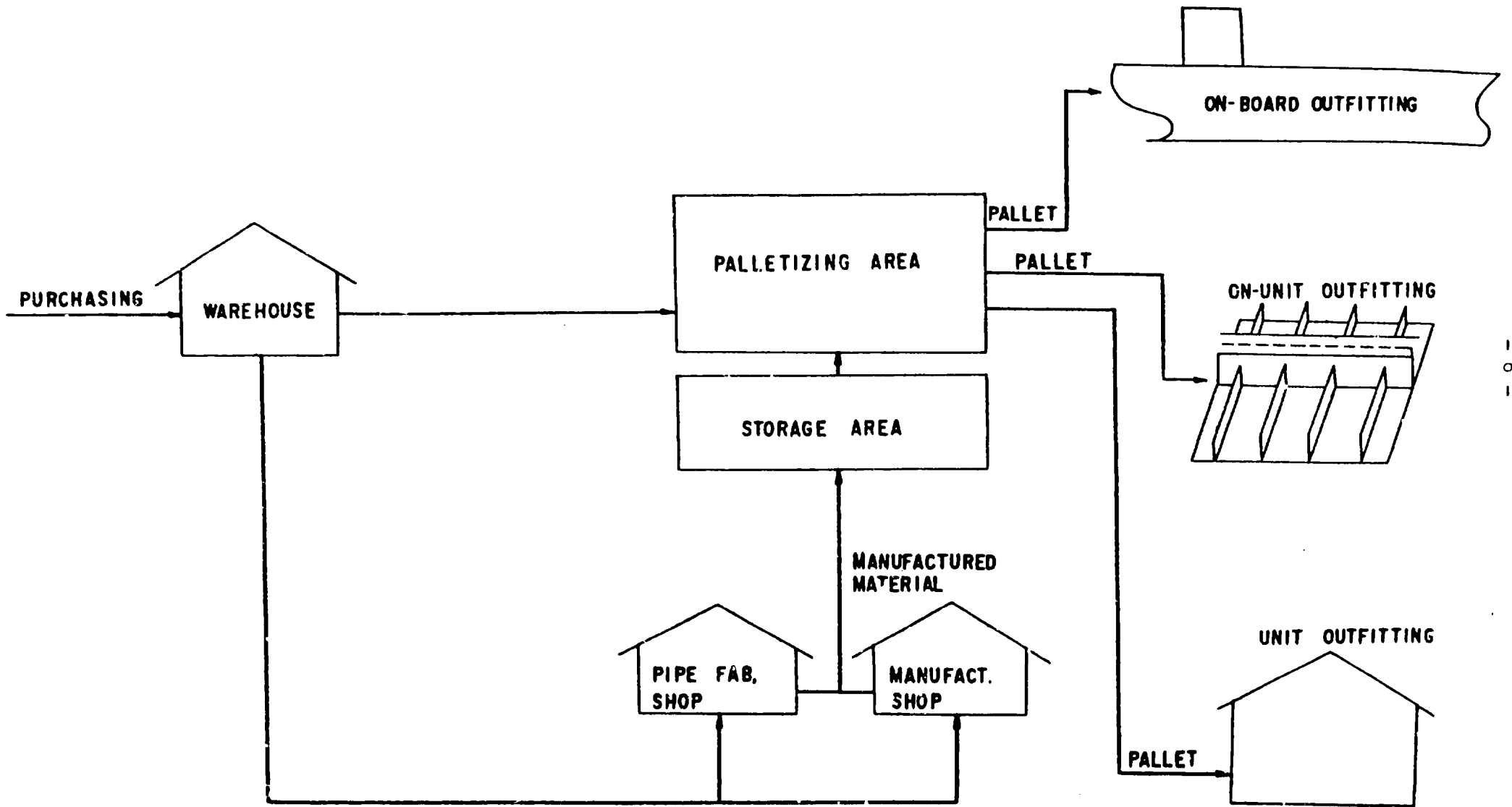
After issuing the working drawing and material list for a pallet, each department concerned utilize this material list as a common key to various jobs.

Production Planning Department makes the schedule of pallets and decides the requirement date of each pallets.

Purchasing Department procures the materials in time along with the schedule of pallets.

WORK FLOW OF PALLETED MATERIALS



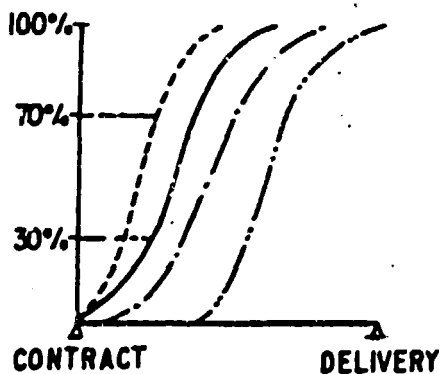
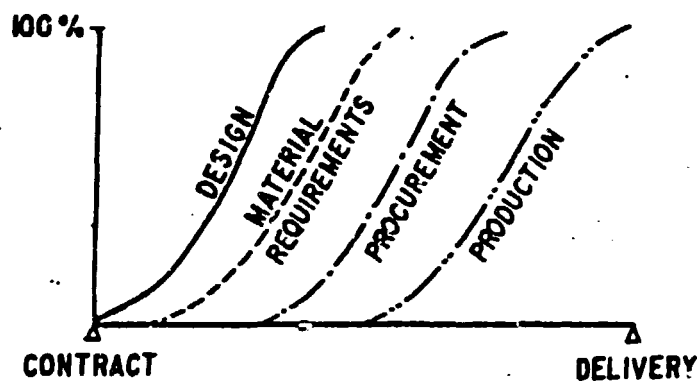


Advanced Material Ordering

While Bill of Material (B/M) is completed at the planning stage in Make to Stock Industries, B/M is not completed at earlier stage in shipbuilding.

If materials were ordered after the completion of design, ship's construction period will be longer.

For achieving the short construction period, overlap of the activities such as design, material definition and procurement will be essential.

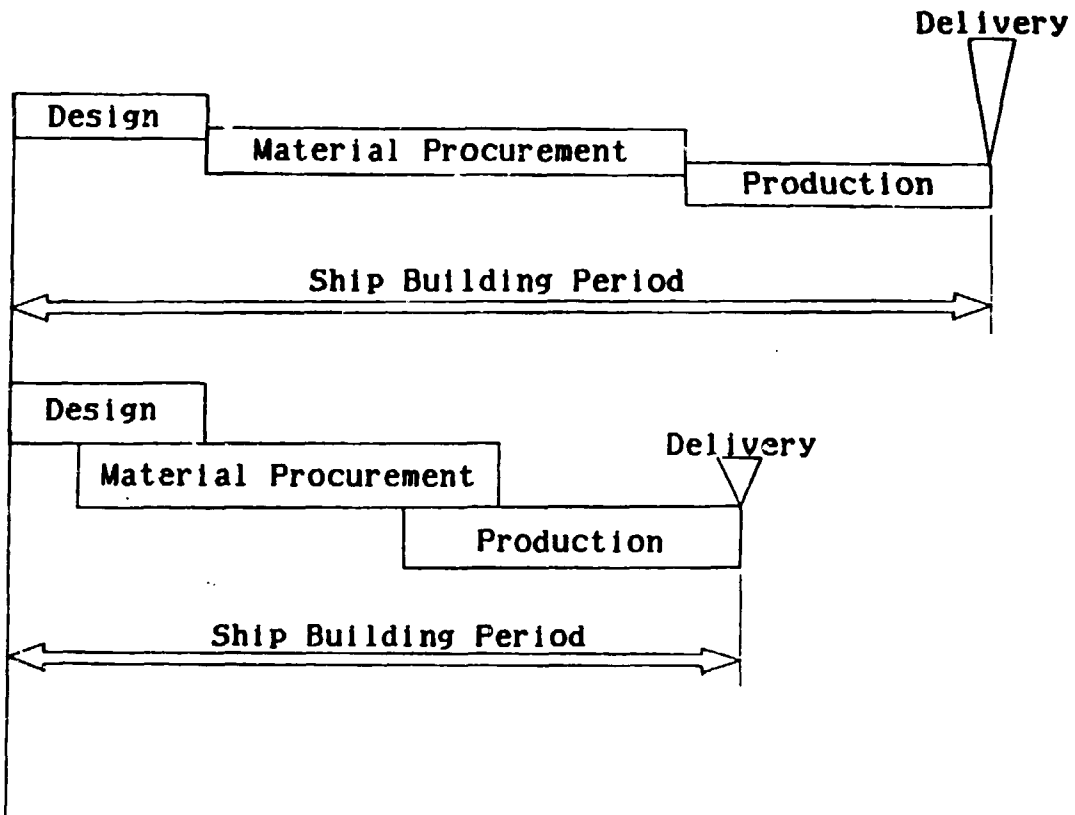


Short Construction Period and Punctual Ship Delivery

Economic ship construction

can be approached by the effort to shorten the construction period and to keep delivery time.

Parallel running of 3 activities



To shorten the construction period and to keep delivery time requires inevitably parallel run of 3 principal activities in shipyard , - design, material procurement and production.

