

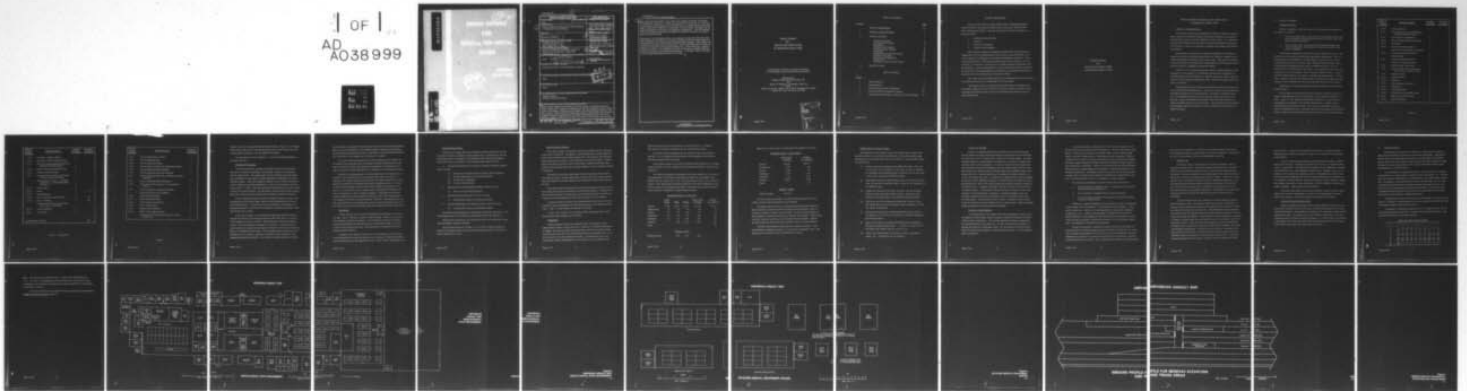
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FOR
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→ This technical report takes into account the existing equipment limitations and shipboard constraints. Using the present state-of-the-art as a baseline, an outline of an R&D program will be developed. Accomplishment of this program is expected to reduce or to eliminate, in future ships, the effects of the existing equipment limitations and shipboard constraints. This R&D program will be developed as the design criteria are worked out and will be incorporated in the final report.

Additionally, these design criteria are intended to assist the Naval Sea Systems Command in designing and building shipboard medical suites which will most efficiently and economically accomplish their purpose. They embody arrangements of modern types of equipment, which take advantage of recent advances in techniques and equipment design and, at the same time, require a minimum of space. It is expected that they will provide a rational basis for the usual structural and arrangement drawings. In so doing, they will effect a much-needed standardization for such suites.



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DESIGN CRITERIA
FOR
MEDICAL AND DENTAL SUITES
IN AMPHIBIOUS ASSAULT SHIPS

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PROJECT DESCRIPTION

Design criteria for four representative types of shipboard Medical and Dental Suites are being developed under Contract No. N00014-74-C-0404, Modification P00003. The work is being done in four increments, as indicated below:

1. Amphibious Assault Ships
2. Carriers
3. Tenders and Cruisers
4. Frigates and Destroyers

These design criteria are intended to provide the optimal functional configuration for each representative type of suite, giving due weight to the current equipment limitations and the existing shipboard constraints. Using these design criteria, and those developed under earlier contracts and modifications, as a baseline, an outline for a related corrective R&D program will be developed. Future accomplishment of this program will reduce or eliminate the effects of the existing shipboard constraints and equipment shortcomings detected during the development of the design criteria.

The framework for the R&D program will be developed as work progresses and will be presented as an attachment to the final report.

The design criteria for medical/dental suites being developed under the current modification will be based upon design criteria for discrete types of dental and medical spaces which were developed under earlier contracts and modifications.

DESIGN CRITERIA
FOR
MEDICAL AND DENTAL SUITES
IN AMPHIBIOUS ASSAULT SHIPS

March 1977

DESIGN CRITERIA FOR MEDICAL AND DENTAL SUITES
IN AMPHIBIOUS ASSAULT SHIPS

I. GENERAL CONSIDERATIONS

These design criteria are intended by the Bureau of Medicine and Surgery to assist the Naval Sea Systems Command in designing and building medical/dental suites for future amphibious assault ships. It is expected that they will provide a rational basis for the usual structural and arrangement drawings. There is no intention to abridge good design and shipbuilding practice.

The objective is to provide an optimal arrangement of the types and numbers of medical and dental spaces which are required to support the assumed medical/dental mission of this type of ship. The types and numbers of spaces included are derived from a consideration of the operational capabilities necessary to support the assumed mission.

Adherence to the general arrangement shown is highly important if the objective is to be attained. It is realized that structural constraints encountered during the development of a specific design may require some deviations from the general arrangement shown, but such deviations should be kept to a minimum.

The spaces and items included are confined to those that are peculiar to the medical/dental requirements. There is no attempt to include features routinely included such as access hatches, fan rooms, ventilation ducts, etc. The locations and sizes of such items are affected by several constraints, such as the designs of the decks above and below the deck on which the medical/dental suite is situated. To the maximum extent feasible such features should be arranged to avoid interference with the medical/dental functions.

II. SPECIFIC CRITERIA

Component Spaces

A basic assumption is that the ship is to be capable of functioning in two modes as follows:

- a. In the noncombat mode, to provide the best feasible medical and dental facilities for the routine treatment of all ship, staff, and troop personnel embarked.
- b. In the combat mode, to provide the best feasible medical and dental facilities for the reception, treatment, and care of 300 combat casualties.

A first step in determining the types of spaces required involves a consideration of the desired medical/dental operational capabilities. This is a basic process which applies to the development of design criteria for the medical/dental suite of any type of ship. General information with respect to operational capabilities may be found in OPNAV Instruction 3501.2D, dated 24 July 1974 (For Official Use Only). In this particular case, two lists of spaces have been developed, and are shown in Figures 1 and 2. Figure 1 lists the medical spaces, and Figure 2 concerns the dental spaces. In most cases, design criteria for the discrete types of spaces have already been developed, and are identified in the lists by the date when they were issued.

Dimensions for the various types of spaces are shown in the pertinent design criteria.

On the basis of the types and numbers of spaces which have been selected, three drawings have been developed, and are shown in Figures 3, 4, and 5. Figure 3, the "Medical/Dental Suite Arrangement," shows the desired general arrangement of the Medical/Dental Suite, together with its relationship to the Overflow Wards. The latter are troop berthing spaces which are earmarked for use as overflow wards after the troops have debarked. Figure 4 shows the detached Medical Department spaces, such as the triage

<u>DATE OF DESIGN CRITERIA</u>	<u>MEDICAL SPACES</u>	<u>NUMBER OF SPACES</u>	<u>NUMBER OF BERTHS</u>
8/76	Audiometry Room	1	
11/75	Aviation Examining and EENT Room (Auxiliary Operating Room)	1	
12/74	Bacteriological Laboratory	1	
10/74	Battle Dressing Station (Auxiliary)	4	
3/75	Blood Bank	1	
10/74	Casualty Receiving Space	1	
	Casualty Receiving Space Storeroom	1	
4/76	Eye Examination/Range Room	1	
	Gowning Room	2	
11/76	Medical Department Office	1	
	Medical and Training Library	1	
8/76	Medical Linen Issue Room	2	
4/76	Medical Office and Consultation Room (Minor Operating Room)	2	
7/75	Morgue Facility	1	
10/74	Operating Room	2	
3/75	Pharmacy	1	
7/75	Physiotherapy/Cast Room	1	
9/75	Quiet Room	2	8
11/76	Quiet Room Bath	2	
8/76	Scrub Room and Substerile Area	2	
11/76	Specimen Collection Area	1	
3/75	Sterilizing Room	2	

Figure 1.

<u>DATE OF DESIGN CRITERIA</u>	<u>MEDICAL SPACES</u>	<u>NUMBER OF SPACES</u>	<u>NUMBER OF BERTHS</u>
3/75	Storeroom, Medical (Main)	3	
3/75	Storeroom, Medical (Ready Issue)	2	
11/75	Surgical Dressing Room/Main B.D.S (Auxiliary Operating Room)	1	
8/76	Surgical Gas and Equipment Room	2	
8/76	Surgical Machinery Room	1	
4/76	Treatment Waiting Room and Medical Emergency Expansion Space	1	
	Triage Area (Fl. Deck - 1, Landing Craft Well - 1, and Hangar Deck Overflow - 1)	3	
9/75	Utility Room	4	
12/74	Ward	1	62
11/76	Ward Bathroom	1	
7/75	Ward, Intensive Care/Recovery	1	20
7/75	Ward, Overflow	2	240
	Washroom and Water Closet (Lava- tory, Toilet, and Urinal)	1	
12/74	X-Ray Darkroom	1	
12/74	X-Ray Room	2	
Total Number of Berths			330

Figure 1. (Continued)

<u>DATE OF DESIGN CRITERIA</u>	<u>DENTAL SPACES</u>	<u>NUMBER OF SPACES</u>
6/74	Dental Administrative Office	1
2/73	Dental Apparatus Room	1
6/74	Dental Linen Issue Room	1
6/74	Dental Officer's Office and Consultation Room	1
9/71	Dental Operating Room (General)	2
8/73	Dental Operating Room (Oral Surgery)	1
9/71	Dental Operating Room (Prev. Dentistry and Oral Hygiene)	1
9/71	Dental Operating Room (Prosthetic)	1
6/74	Dental Patient Waiting Room and Instruction Center	1
2/73	Dental Prosthetic Laboratory (Limited)	1
	Dental Scrub Room (Oral Surgery)	1
1/74	Dental Sterilizing Room	1
5/73	Dental Storeroom (Bulk)	1
5/73	Dental Storeroom (General)	1
1/74	Dental Utility Room	1
5/73	Dental X-Ray Darkroom	1
5/73	Dental X-Ray Exposure Room	1
	Washroom and Water Closet (Lavatory, Toilet, and Urinal)	1

Figure 2.

spaces, which are outside the Medical/Dental Suite. Figure 5 is an inboard profile which indicates the relationship among the several triage areas, the Casualty Receiving Space, and the Medevac elevators.

For convenience in use, Figures 3, 4, and 5 are grouped together at the end of the text.

Arrangement Principles

As mentioned earlier, the basic assumption has been made that the ship is to be capable of operating in two modes, namely, the noncombat, and the combat mode. The combat mode can be construed to include operations undertaken as the result of serious shipboard catastrophes or natural disasters ashore. Each mode imposes a different set of conflicting demands upon the Medical and Dental Departments, and each exercises an influence on the layout. Overall, there are constraints arising from the fact that a ship is long and relatively narrow, and the need to conserve space without jeopardizing the capability of the medical/dental complex to perform efficiently.

In the arrangement which has been developed, priority is given to the requirements of the combat mode, which are more demanding than those of the noncombat mode. In the former case, the facility is functioning as an emergency hospital, and time is of the essence in handling casualties, when life and limb are at stake.

In the combat mode, it is assumed that casualties resulting from the assault will arrive at the ship by helicopter to the Flight Deck, or by boat in the Landing Craft Well, or both. After preliminary triage at the point of arrival, and such emergency treatment as is required, casualties will be moved as quickly as possible by Medevac elevator to the Casualty Receiving Space in the Medical/Dental Suite, where decisions will be made as to the treatment of each casualty, priorities established, and resuscitative and preoperative measures initiated. The layout is intended to permit a smooth

and rapid flow of casualties from the point of arrival to the Casualty Receiving Space, to the X-Ray Rooms, to the Operating Rooms (dedicated or auxiliary), to the Intensive Care/Recovery Ward, to the Ward, and to the Overflow Wards. Any step which is not needed may be bypassed, of course.

In the event that casualties arrive in such numbers and so rapidly that the Flight Deck Triage Area and the Landing Craft Well Triage Area are saturated, an Overflow Triage Area should be established in the Hangar Deck to which casualties could be brought from the Flight Deck or Landing Craft Well.

Although the requirements of the combat mode have been deemed to be dominant, the requirements of the noncombat mode cannot be ignored. It should not be assumed that the ship will have the troops aboard for only short periods of embarkation immediately preceding a landing operation. In view of the shrinking number of secure land bases available in some parts of the world, it is conceivable that the troops might be embarked for months under some circumstances. Such a condition imposes a requirement for efficient routine medical and dental treatment of the ship, staff, and troop personnel. The requisite facilities have been provided. However, their arrangement has been subordinated to the requirements of the suite when operating in the combat mode, and may be less than ideal from the viewpoint of routine operations.

Redundancy

It must be borne in mind that the Amphibious Assault Ship is a combatant type, and is, therefore, subject to battle damage. While it is not feasible to provide complete redundancy, it is considered necessary to provide two Sterilizing Rooms and two Surgical Gas and Equipment Rooms, with one of each on each side of the ship. This duplication is justified by the vital nature of these facilities.

If feasible, two Medevac Elevators are to be provided, in the interest of availability and the rapid transportation of casualties. Both should extend from the Flight Deck to the Landing Craft Well, with a stop at the Hangar Deck.

Multifunctional Spaces

Certain of the spaces which are needed for routine health care can perform other functions in addition to their primary uses, particularly in the way of providing space for members of the Surgical Teams and Surgical Support Teams when they are embarked. Some multifunctional spaces follow:

a. Treatment Waiting Room and Medical Emergency Expansion Space, which can also:

- (1) Receive the overflow from the Casualty Receiving Space
- (2) Provide office space for the Surgical Teams
- (3) Function as a classroom
- (4) Act as a training center

b. Medical Office and Consultation Room, which can also:

- (1) Serve as a minor operating room

c. Medical and Training Library, which can also:

- (1) Provide office space for the Surgical Teams

d. Dental Waiting Room and Training Center, which can also:

- (1) Provide office space for the Surgical Teams

Two Ready Issue Storerooms are provided in order that some extra, ready issue stowage may be available when the Surgical Blocks are unpacked.

During routine operations, the Morgue can serve as a refrigerated storeroom for properly packaged supplies.

Two Gowning Rooms are included, so as to make available additional space for the Surgical Teams and to provide separate facilities if female doctors or nurses are on board.

Operating Room Complex

In the combat mode, the operating rooms will probably be the bottleneck in the flow of casualties. Accordingly, the operating room complex should afford the best feasible traffic pattern through the x-ray rooms to the operating rooms (dedicated or auxiliary) to the Intensive Care/Recovery Ward. Arrangement of the operating rooms in pairs offers space saving and permits supervision of two operating rooms by one senior surgeon, with the attendant saving in personnel.

Providing the necessary extra doors in the x-ray rooms and the operating rooms to permit a through traffic flow involves the loss of some bulkhead area which might be used for stowage, but the improved traffic flow justifies the loss.

Each scrub room and substerile area serves two operating rooms and has been designed to permit four persons to scrub simultaneously. Windows have been provided between the scrub rooms and the operating rooms to permit the surgeons to watch preparations in the operating rooms while scrubbing.

A recessed washer-sterilizer has been provided in each scrub room and substerile area for emergency use and for taking care of the "dropped instrument." Also, a limited amount of stowage is included.

A wide "clean corridor" is included in order to facilitate litter traffic and to provide some holding area if needed.

Storerooms

Dental storerooms have been included within the boundary of the Medical/Dental Suite, as they are small. However, the medical storerooms are larger, and only two Ready Issue Storerooms have been included within the suite itself; the three Main Medical Storerooms will probably have to be in the section of the ship devoted to storage. All storerooms must be so located that suitable temperatures can be provided, so as to preserve the

shelf life of drugs and other temperature-sensitive stores. In addition, they should be readily accessible from the medical/dental suite.

No space has been earmarked for the stowage of the intact Surgical Block(s), as it is assumed that provision for such supplies can be made in the general stores area of the ship.

As mentioned earlier, one of the two Ready Issue Storerooms is intended to provide space to receive supplies from the Surgical Block(s), when they are broken out.

The types and numbers of storerooms have been selected on the basis of the requirements of the Chief of the Bureau of Medicine and Surgery letter BUMED-49-dar, dated 8 Dec. 1970, for ships having 1,000 or more accommodations. The approximate volumes provided for the several categories of storage are shown in the following tabulation, which does not include the Ready Issue Storeroom earmarked for Surgical Block breakout.

Storeroom Volumes - Cubic Feet

	<u>Ready Issue</u>	<u>Main</u>	<u>3 Main</u>	<u>Ready Issue +3 Main</u>	<u>BUMED ltr. 12/8/70</u>
General	1,484	3,024	9,072	10,556	10,000
Refrigerated	21	21	63	84	50
Frozen	18	18	54	72	10
Flammable	13	29	87	100	50
Narcotics	18	54	162	180	150
Security	-	504	1,512	1,512	300
Acids	-	-	-	-	10

Volumes - Pints

Blood (in bags)	-	300	900	900	-
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Expressed in metric units, the foregoing table appears as follows:

Storeroom Volume - Cubic Metres

	<u>Ready Issue +3 Main</u>	<u>BUMED ltr. 12/8/70</u>
General	298.91	283.17
Refrigerated	2.38	1.42
Frozen	2.04	.28
Flammable	2.83	1.42
Narcotics	5.10	4.25
Security	42.82	8.50
Acids	-	.28

Volumes - Litres

Blood (in bags)	425.86	-
-----------------	--------	---

No acid storage is provided, as modern medical practice does not justify a special medical storage for such material.

The tabulations above do not include the small Casualty Receiving Space Storeroom located just off the Casualty Receiving Space, which is intended to provide, almost "at arm's length," a small, initial quantity of such supplies as will be needed for the casualty resuscitation, stabilization, and other functions carried on in the Casualty Receiving Space. Neither do they include the small storeroom included in the x-ray room complex.

The three Main Medical Storerooms are included in Figure 4, "Detached Medical Department Spaces," to show their approximate size. The drawing is not intended to show orientation or location.

Modifications of Design Criteria

The application of the design criteria for discrete spaces which were developed earlier to a layout for a specific type of ship has required some modification to the design criteria for certain spaces. Typical modifications are listed below:

- (1) Enlarge the Aviation Examining and EENT Room from 4.88m (16') x 6.10m (20') to 6.10m (20') x 6.10m (20'), in order to enhance its capability as an operating room, rearrange so as to mate with a scrub room, and provide additional doors.
- (2) Rearrange the Surgical Dressing Room so as to mate with a scrub room and provide an additional door, to enhance its capability as an operating room.
- (3) Enlarge the Intensive Care Ward, the Ward, and the Overflow Wards in order to provide greater capacity, instead of using multiples of smaller spaces, thus saving nursing personnel.
- (4) Reduce the size of the audiometry booth from 4-man to 2-man, and reduce the size of the Audiometry Room accordingly, to suit the number of personnel.
- (5) Enlarge the Surgical Gas and Equipment Room from 3.35m (11') x 4.88m (16') to 4.27m (14') x 4.88m (16') to provide additional gas stowage space.
- (6) Reduce the length of the Treatment Waiting Room and Medical Emergency Expansion Space from 7.01m (23') to 4.72m (15'-6"), and reduce the seating capacity from 30 to 18.
- (7) Make minor modifications to locations of doors, direction of swing, etc., to facilitate the arrangement.

Location in the Ship

Ideally, the Medical/Dental Suite should be so located in the ship that the operating rooms are near the midships section and near the fore-and-aft center line, so as to minimize the effects of the ship's motion. It is particularly important to avoid location near the stern, in order to minimize the vibratory effects of the propellers. For ease of access from the Flight Deck (for casualties arriving by helicopter), from the Landing Craft Well (for casualties arriving by boat) and from the Hangar Deck (for casualties taken to the Hangar Deck by an aircraft elevator in an emergency) the Suite should be on or near the Hangar Deck level. Location on the Hangar Deck itself is probably ruled out by higher priorities assigned to aircraft shops and related activities. Requirements for vehicle and other stowage will probably preclude location on the Second Deck. It appears, therefore, that the 01 Level, will be the best available location. If the design of the ship is such that direct access from the Suite to the Hangar Deck is feasible, a valuable emergency route for handling casualties would be available by way of an aircraft elevator from the Flight Deck. With the Suite on the 01 Level, casualties could be lifted to the access door by using a forklift truck or a power hoist. Medical supplies could be handled by the same means if desirable.

Personnel Considerations

Full exploitation of the medical and dental capabilities of the facility envisioned by these design criteria requires a substantial medical and dental staff for routine operations. The aviation capability imposes a requirement for specialized spaces and personnel, the Hearing Conservation Program indicates the need for an Audiometer Room, and the program of preventive dentistry and oral hygiene supports a specialized dental space. A Physiotherapy Room is provided.

As mentioned earlier, operation in the combat mode imposes an even heavier medical and dental personnel requirement. Because the ship is a combatant, it may have to function in the combat mode, with or without troops aboard, and with or without one or more Surgical Teams embarked. Without a Surgical Team aboard, the ship's personnel will have to provide the medical and dental support required to handle casualties inflicted by enemy action or major shipboard catastrophes. Under such circumstances the Battle Dressing Stations assume a major importance and impose a personnel requirement not mentioned heretofore. The design criteria for the latter type of space provide a facility that is intended to be capable of resuscitation, stabilization, treatment, and minor surgery, and, in an emergency, of major surgery.

The foregoing considerations indicate three major requirements:

- a. The availability of adequate numbers of personnel in the ship's Medical and Dental Departments.
- b. The availability of required skills in these personnel.
- c. A plan for cross-utilization of personnel of the ship's Medical and Dental Departments.

Adherence to these principles will be necessary if the full capabilities of the facility are to be realized. In the absence of such conditions, there will be pressure to "make do" by such expedients as using other categories of personnel, e.g., yeomen or storekeepers, to augment the medical and dental personnel. Such expedients have been tried in the past and have generally not been successful, usually as the result of lack of training, dedication, or availability of the substitute personnel.

While the necessity to augment the medical and dental personnel by Surgical Teams and Surgical Support Teams is generally recognized, the necessity to provide accommodations for such teams is often overlooked. Such augmentation may result in an increase of several fold in the numbers of medical and dental personnel on board. When considering the number of accommodations

required for such personnel, it will be very important to take into account the augmentation plans for both officers and enlisted personnel. The personnel can be flown aboard, but the accommodations cannot be.

Triage Areas

The triage areas are the points of entry of the casualties into the casualty-handling system. Preliminary triage takes place here, and determines the order in which casualties will be selected for onward routing in the system. Accurate judgment in establishing priority for onward routing is vital to the chances of survival of the critically injured. "First-come, first-served" is not necessarily a valid criterion in establishing priorities, for if all operating rooms become clogged with first arrivals who could afford to wait, the chances of survival of a critically-injured casualty in the next helicopter to arrive are seriously jeopardized. Accordingly, the triage areas must afford facilities which will facilitate making and executing vital decisions.

The first requirement is the capability to unload casualties quickly from helicopter or boat. This implies ample space and the availability of litters to replace those taken from the helicopter or boat, so that the vehicle can return to the beach for another load. Immediately after being unloaded, the casualty must be searched and any potential explosives must be removed before he is taken any further. This generally involves stripping the casualty. A "bunker" of some kind must be at hand to receive "booby traps", and other explosive devices. Once the safety from explosion has been established, the patient can be moved on to a sheltered area where conditions exist which will facilitate examination. Preliminary cleansing may be necessary, adequate light will be required, and there must be sufficient space around the casualty to permit the surgeon to reach him and examine him. If immediate lifesaving measures are necessary, equipment must be available to permit

their initiation. Equipment and personnel must then be available to permit rapid onward movement of the patient, either to the Casualty Receiving Space or the Morgue.

Once the casualty has reached the Casualty Receiving Space, further triage will take place. Additional cleansing may be done, and additional life-saving, resuscitative, and stabilization measures may be undertaken, together with debridement and other preoperative procedures. Possibly, the use of a portable x-ray machine may expedite matters. The performance of these functions will require sufficient deck space to permit examination and treatment of the casualty, electrical outlets, cleansing facilities, surgical lighting, oxygen and suction connections, x-ray illuminators, and the immediate availability of medical supplies. Extra litters must be available.

The steps listed above are the bare essentials, stated in general terms. Other steps, such as identification, charting, and safeguarding of personal effects are necessary, but are secondary to the safety of the patient.

Alternate Casualty Transfer Paths

While the Medevac elevators are the primary means of transfer of casualties from the points of arrival and their associated triage areas to the Casualty Receiving Space, the possibility of failure of the elevators or battle damage thereto does exist. The importance of fast transfer of casualties is such that alternate avenues of transfer should be provided. If vehicle ramps are included in the design of the ship, they would offer one alternate path if this use were to be borne in mind during the ramp design and layout.

III. DRAWING NOTES

The arrangement sketch is an assembly of various discrete types of spaces for which design criteria have already been developed. Although the original size and arrangement of each space was intended to be generally usable, there were a few cases in which modifications were required to adapt the spaces to a particular layout. Such cases are mentioned earlier under "Modifications of Design Criteria."

It is infeasible in a generalized layout, such as this one, to include such features as access hatches, ventilation ducts, fan rooms, etc., because they are so greatly influenced by the arrangements of the decks above and below. Accordingly, no attempt has been made to include them, but it is realized that their inclusion will necessarily modify the proposed layout. The same is true for such features as structural bulkheads. For these reasons, no attempt has been made to fair the fore and aft boundaries of the arrangement sketch, which present a stepped appearance.

Dimensions have not been indicated on the sketches, in order to avoid clutter. In general, the dimensions of the various spaces can be derived from the separate design criteria for the spaces.

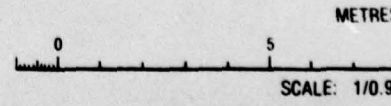
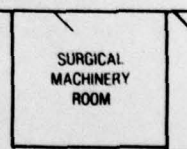
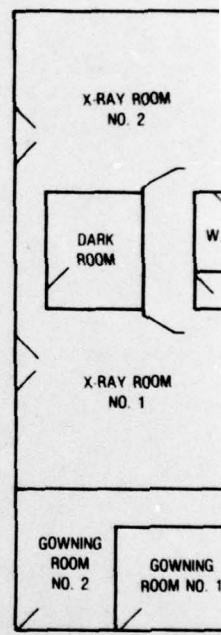
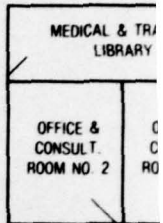
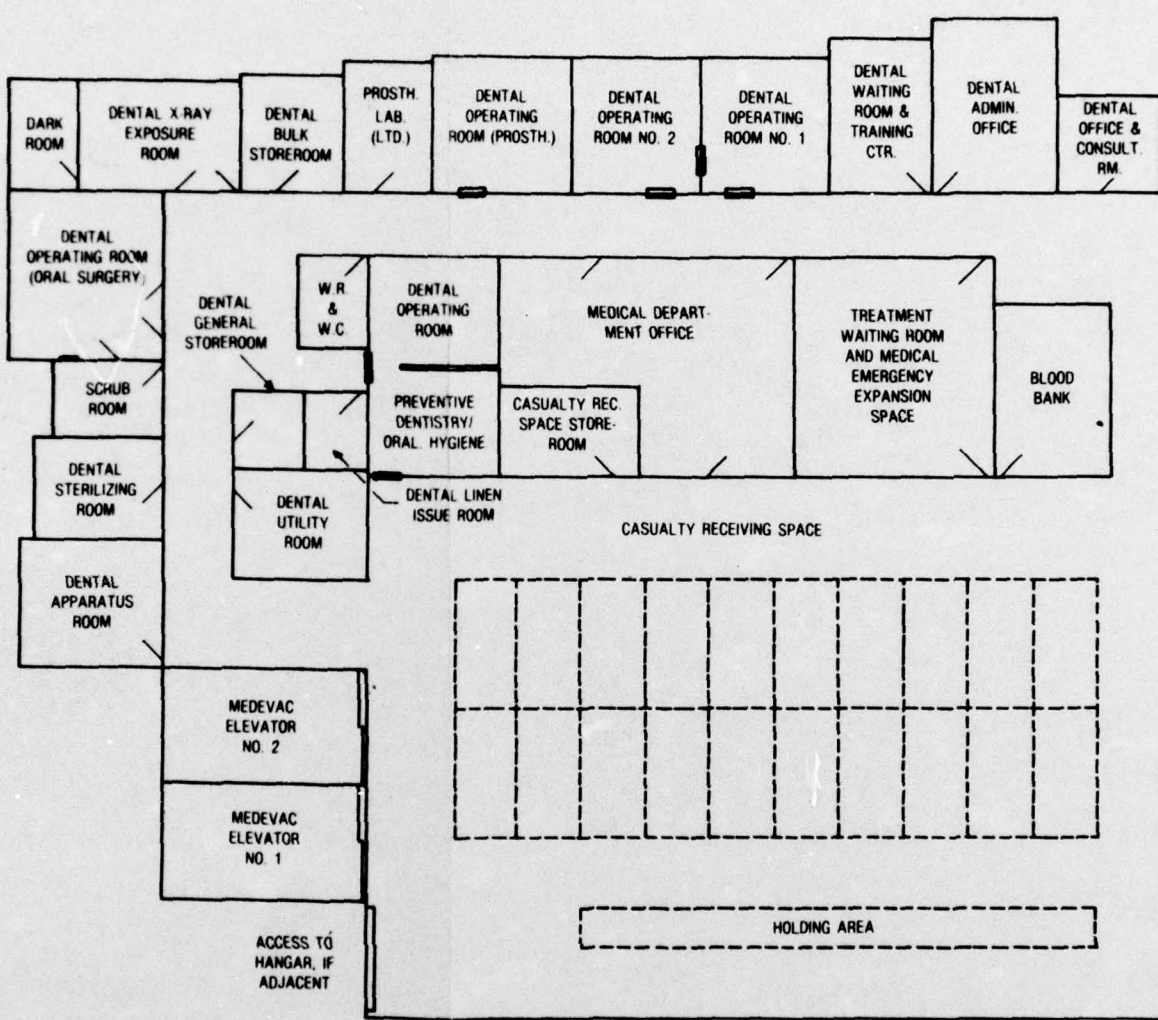
Conversion of dimensions between the U.S. Customary Units and the International System of Units (SI), commonly called the Metric System, may be made by reference to the following table.

INCH-MILLIMETRE EQUIVALENTS

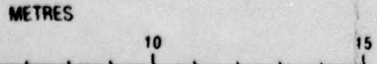
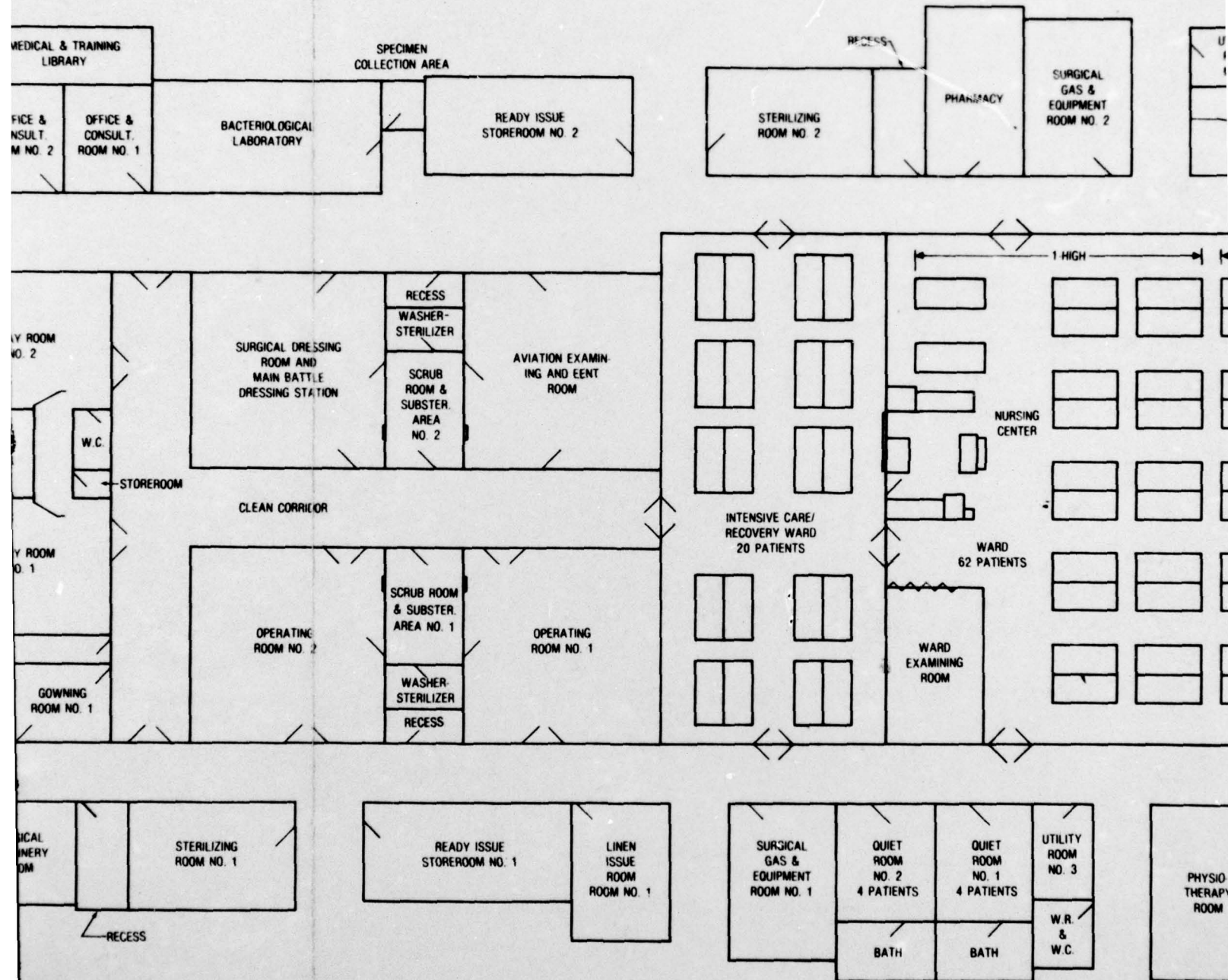
in.	0	1	2	3	4	5	6	7	8	9
	mm									
0		25.4	50.8	76.2	101.6	127.0	152.4	177.8	203.2	228.6
10	254.0	279.4	304.8	330.2	355.6	381.0	406.4	431.8	457.2	482.6
20	508.0	533.4	558.8	584.2	609.6	635.0	660.4	685.8	711.2	736.6
30	762.0	787.4	812.8	838.2	863.6	889.0	914.4	939.8	965.2	990.6
40	1016.0	1041.4	1066.8	1092.2	1117.6	1143.0	1168.4	1193.8	1219.2	1244.6
50	1270.0	1295.4	1320.8	1346.2	1371.6	1397.0	1422.4	1447.8	1473.2	1498.6
60	1524.0	1549.4	1574.8	1600.2	1625.6	1651.0	1676.4	1701.8	1727.2	1752.6
70	1778.0	1803.4	1828.8	1854.2	1879.6	1905.0	1930.4	1955.8	1981.2	2006.6
80	2032.0	2057.4	2082.8	2108.2	2133.6	2159.0	2184.4	2209.8	2235.2	2260.6
90	2286.0	2311.4	2336.8	2362.2	2387.6	2413.0	2438.4	2463.8	2489.2	2514.6
100	2540.0									

Note: All values in this table are exact, based on the relationship that $1 \text{ in} = 25.4 \text{ mm}$. By manipulation of the decimal point, any decimal value or multiple of an inch may be converted to its exact equivalent in millimetres, centimetres, or metres.

This table is taken from the American Society for Testing and Materials Standard for Metric Practice, E380-76.

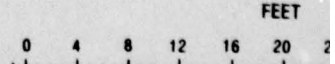


AMPHIBIOUS ASSAULT SHIP



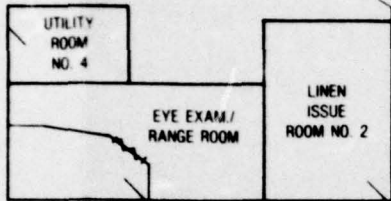
SCALE: 1/0.96cm = 1 m

MEDICAL/DENTAL SUITE ARRANGEMENT



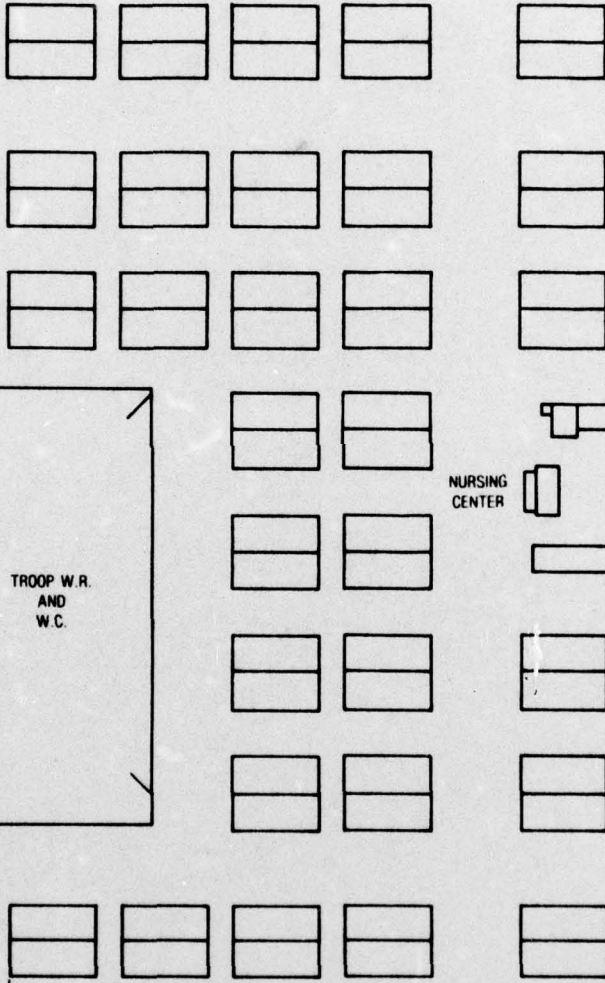
SCALE: 1/8" = 1'-0"

2

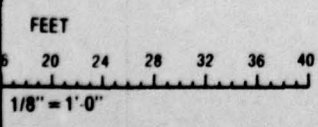
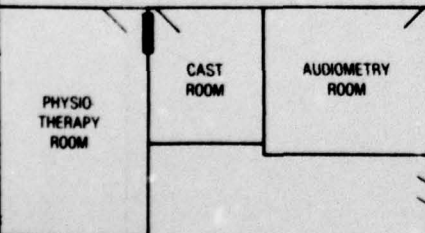
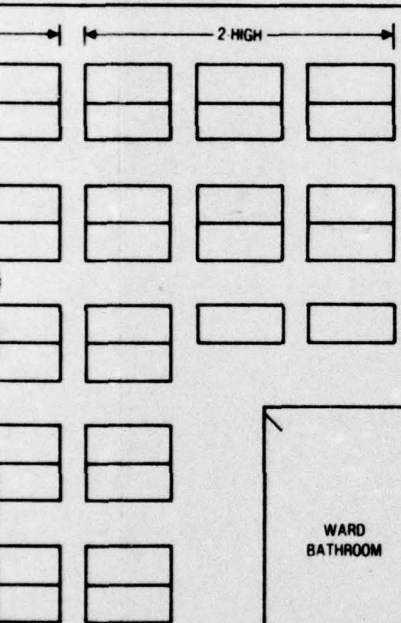


OVERFLOW WARD NO. 2
120 PATIENTS
(TROOP BERTHING)

UTILITY ROOM NO. 2



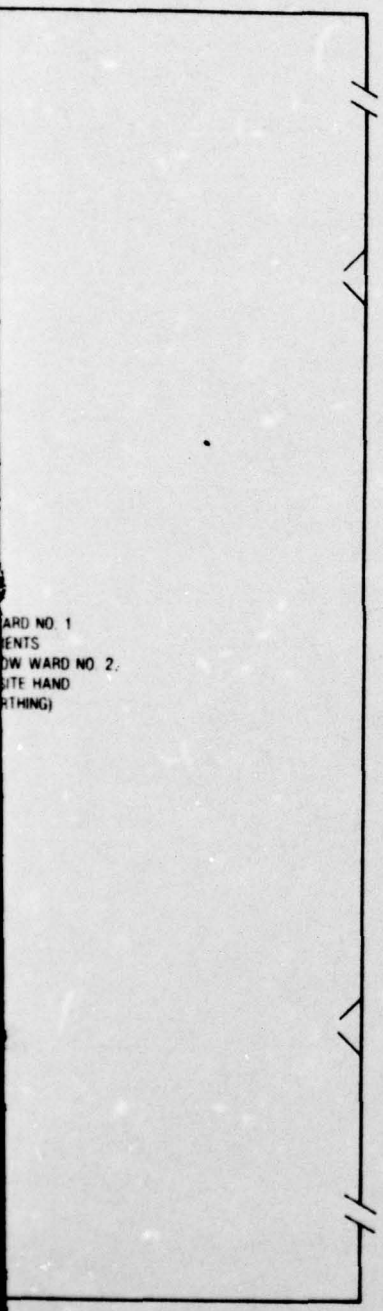
OVERFLOW WARD NO. 1
120 PATIENTS
SIMILAR TO OVERFLOW WARD NO. 2
BUT TO OPPOSITE HAND
(TROOP BERTHING)



3

**AMPHIBIOUS
ASSAULT SHIP
MEDICAL/DENTAL
SUITE ARRANGEMENT**

WARD NO. 1
PATIENTS
DOWN WARD NO. 2.
(SITE HAND
ARRANGING)



MEDIC

4

**AMPHIBIOUS
ASSAULT SHIP
MEDICAL/DENTAL
SUITE ARRANGEMENT**

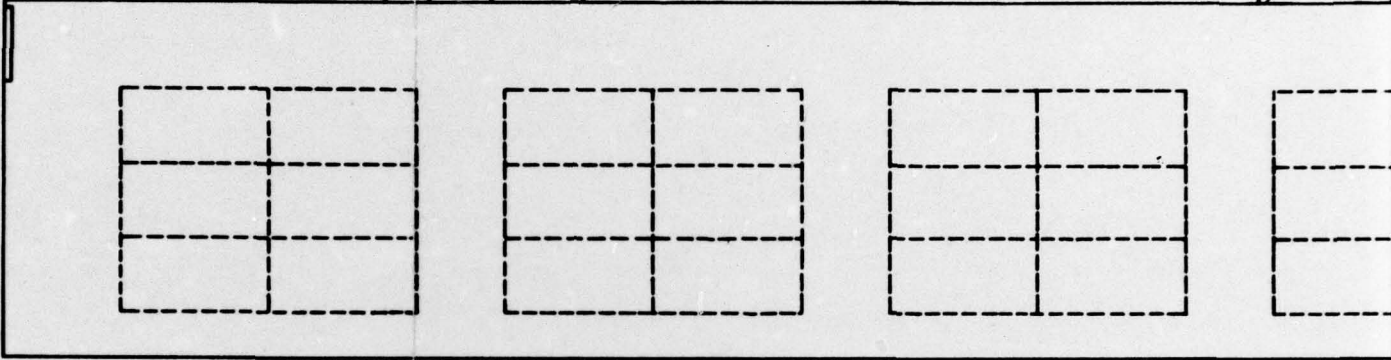
**Figure 3
AMPHIBIOUS ASSAULT SHIP
MEDICAL/DENTAL SUITE ARRANGEMENT**

19

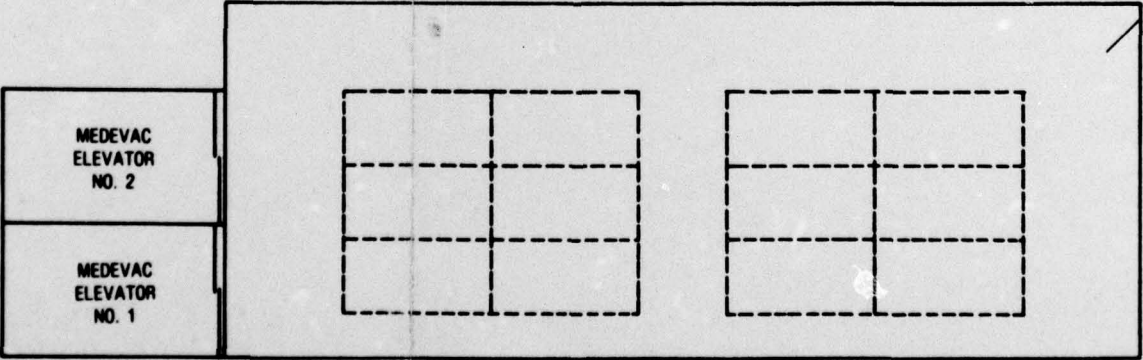
5

AUXILIARY
BATTLE
DRESSING
STATION

AUTOPSY
ROOM



FLIGHT DECK TRIAGE AREA

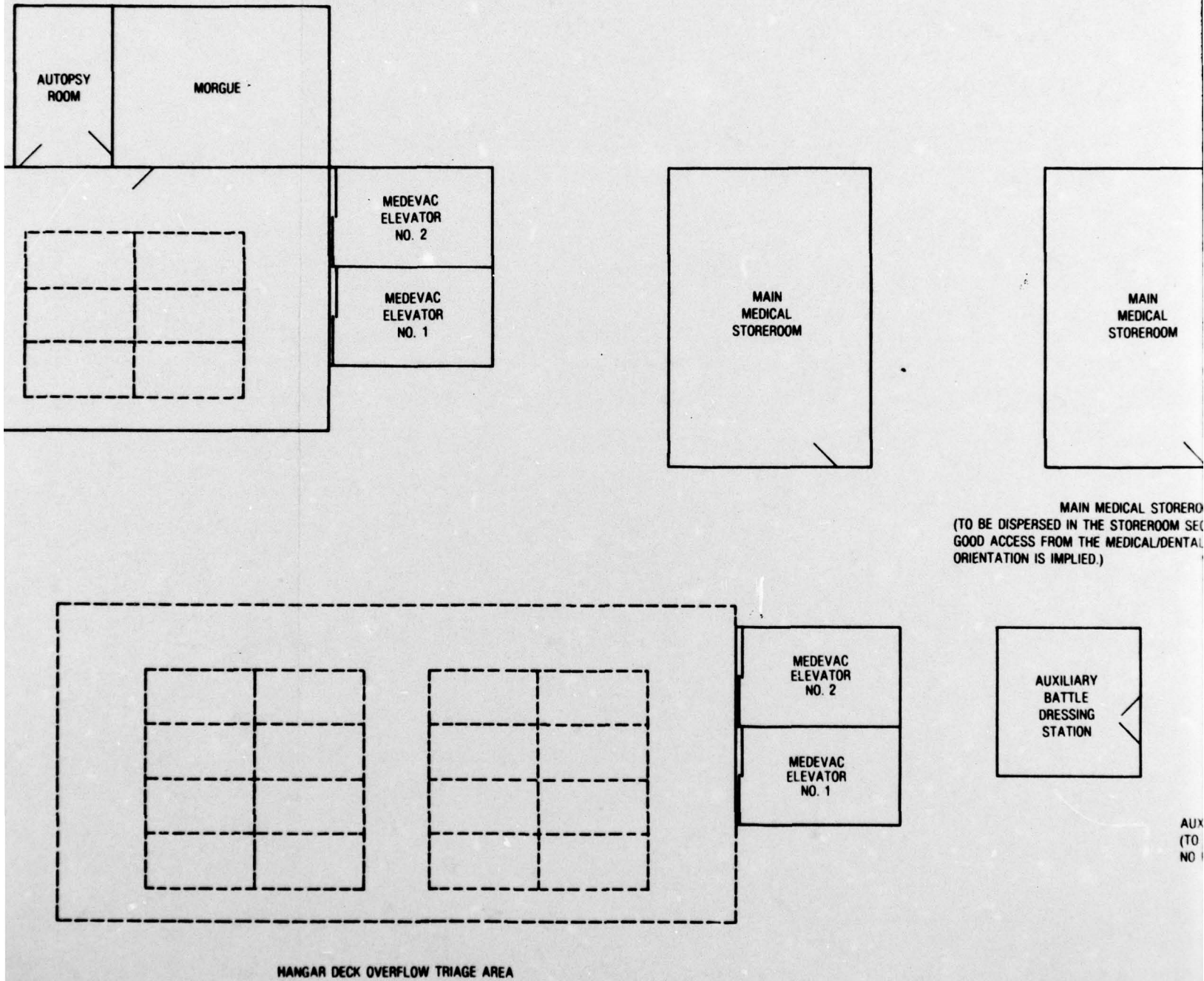


LANDING CRAFT WELL TRIAGE AREA

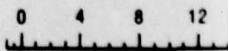


SCALE: 1/0.96cm = 1m

AMPHIBIOUS ASSAULT SHIP



DETACHED MEDICAL DEPARTMENT SPACES



2

IN
CAL
ROOM

MAIN
MEDICAL
STOREROOM

STOREROOMS
ROOM SECTION OF THE SHIP, WITH
AL/DENTAL SUITE. NO PARTICULAR

AUXILIARY
BATTLE
DRESSING
STATION

AUXILIARY
BATTLE
DRESSING
STATION

AUXILIARY BATTLE DRESSING STATIONS
(TO BE DISPERSED THROUGHOUT THE SHIP.
NO PARTICULAR ORIENTATION IS IMPLIED.)

FEET

12 16 20 24 28 32 36 40

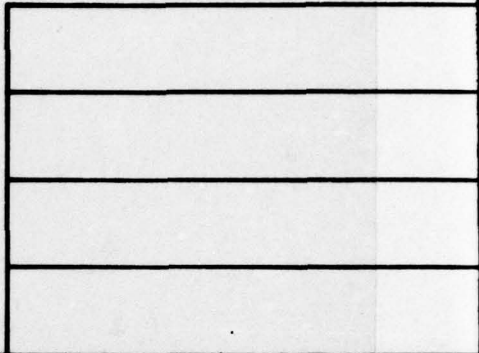
SCALE: 1/8" = 1'-0"

3

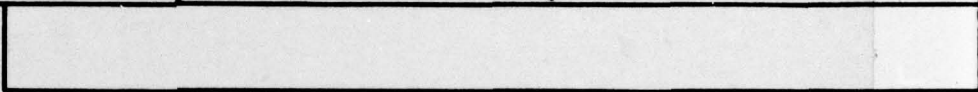
Figure 4
DETACHED MEDICAL DEPARTMENT
SPACES
20

4

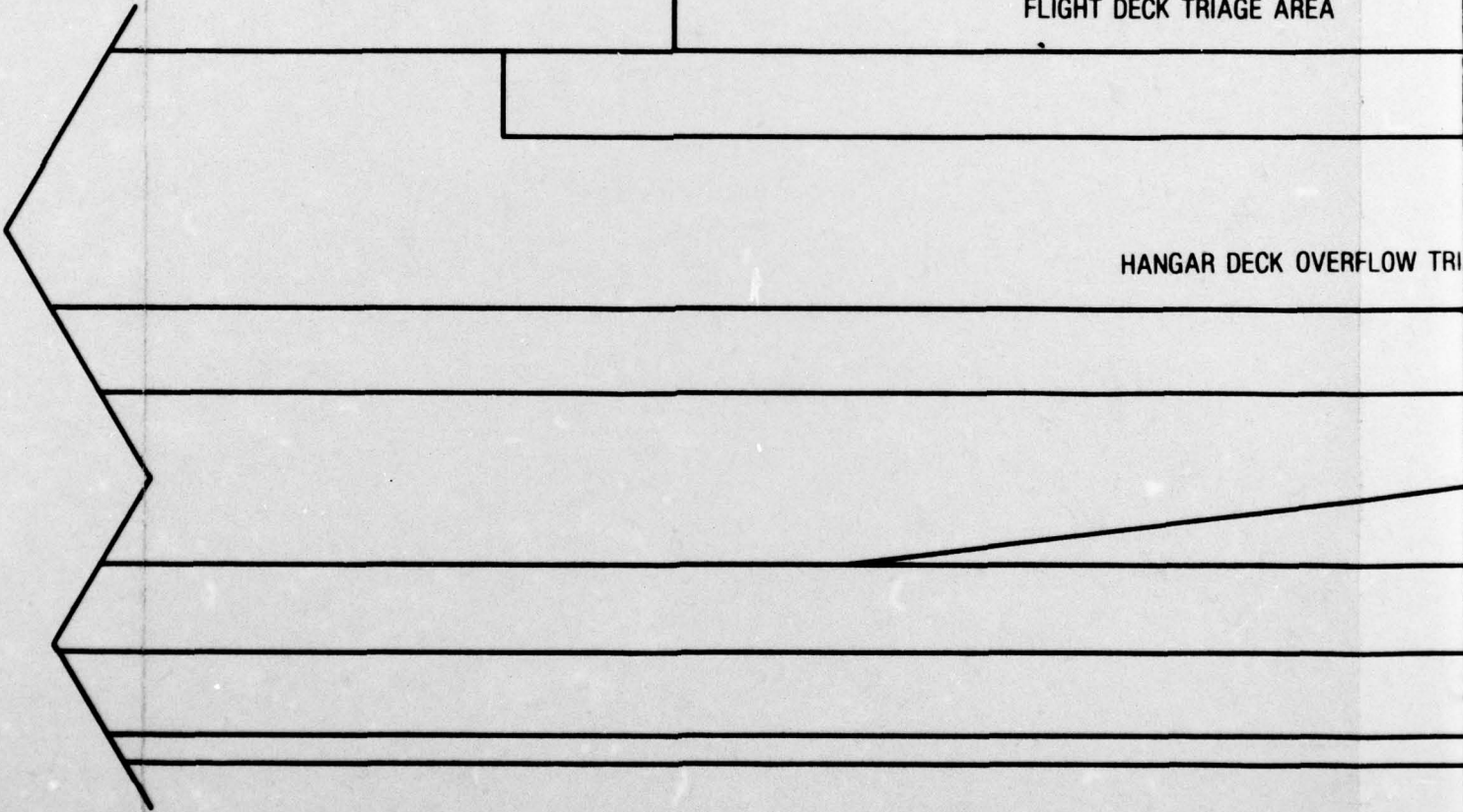
AMPHIB



FLIGHT DECK TRIAGE AREA



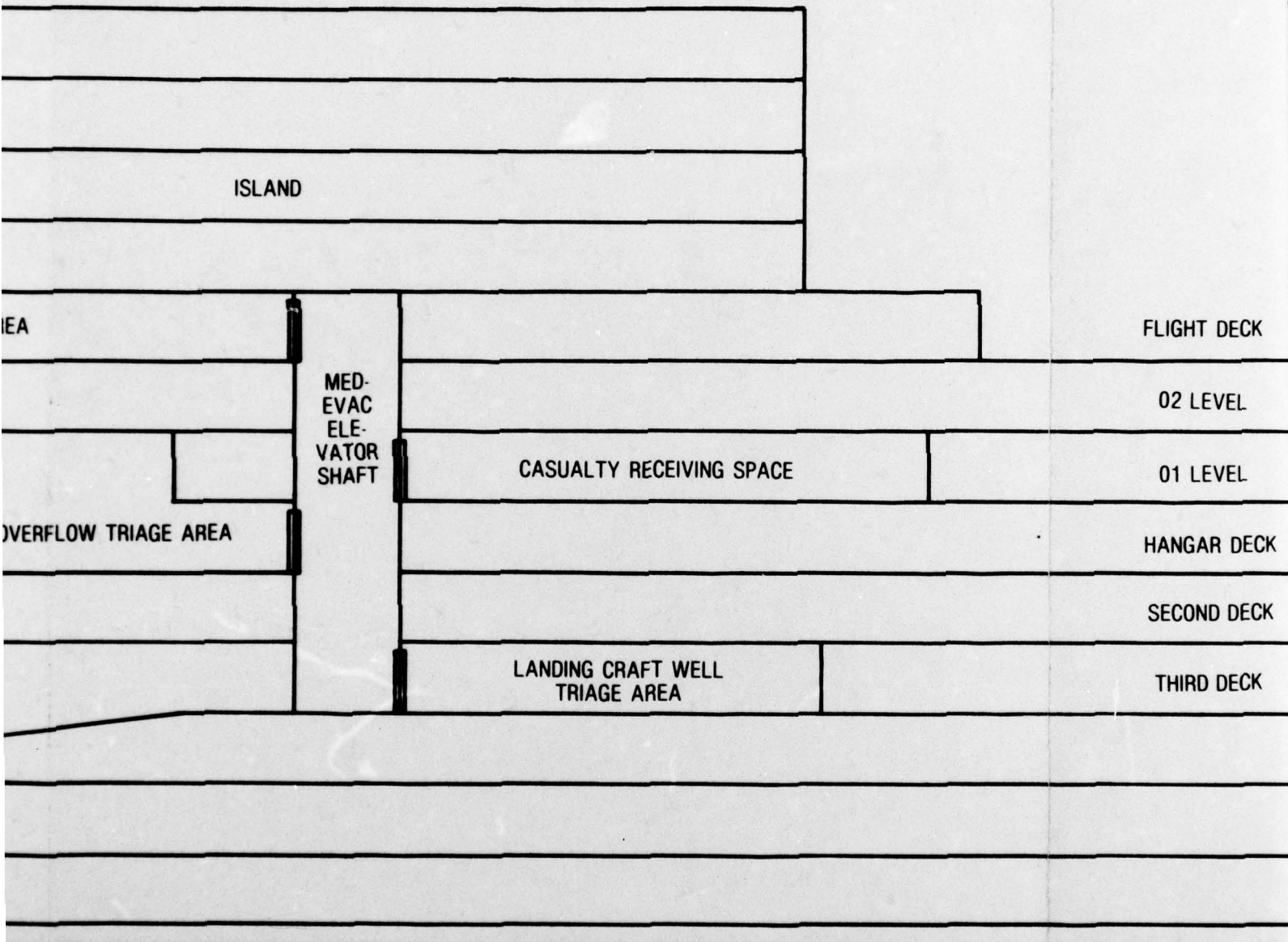
HANGAR DECK OVERFLOW TRI



**INBOARD PROFILE F
AND TR**

1

AMPHIBIOUS ASSAULT SHIP

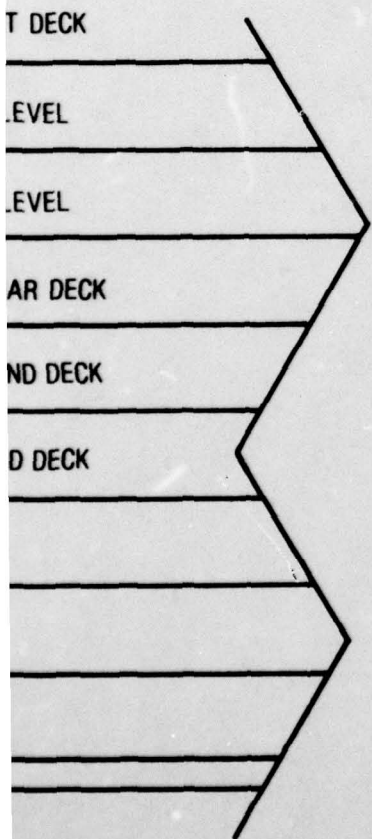


FILE FOR MEDEVAC ELEVATORS AND TRIAGE AREAS

NOT TO SCALE

FORW

2



INBO
ELE

3

Figure 5
INBOARD PROFILE FOR MEDEVAC
ELEVATORS AND TRIAGE AREAS

21

4