

PLANNING THE PUBLIC AQUARIUM (1)
Addendum to 1970 Special Edition

Wm. Hagen
National Fisheries Center and Aquarium (2)

(2002 Editors Note: The following pages were found attached to a second or third generation Xerox of "Aquarium Design Criteria" obtained from Suzanne M. Gendron, Ocean Park, Hong Kong, in April 2002. This undated section may have been added to later copies of the Special Edition, but was not part of the original copy I used to archive that document. The figures were originally done on graph paper and copied poorly. It is unknown if this is a complete document. -Pete Mohan, December, 2002)

A public aquarium may be much like a residence in interior arrangement, an attractive, uncluttered front entrance. Usually the area around the residence front entrance is nicely landscaped and parking is at the curb or in the driveway. At the back or side of the house are the trash cans, etc., not seen by the visitor. Inside, the kitchen is adjacent to the dining room, a central area contains heating and cooling equipment, and storage spaces (usually not enough) are placed conveniently.

The same features that make a home attractive and convenient should be included in aquarium planning. Entrance and exit of the visitor should be through attractive landscaping at the front of the structure, and not far from the parking area. The trash-can area, where a miscellaneous accumulation of operational materials may be ever present should be out of sight at the rear of the structure. The service core, inside the building, for food preparation and storage, shipping and receiving, some holding facilities and general storage, should be a compact grouping near the loading dock. The display tanks, in which are the specimens to be fed, should be as close as possible to the food preparation room, but this can seldom be satisfactorily accomplished.

We stress the operational features of an aquarium for, as Earl Herald says, "An aquarium is much like an iceberg, 7/8ths of which is hidden from view under the water."

The public area is important, of course. However, it can be simplicity itself. A route of travel of a adequate width to accommodate the expected visitors, rest rooms, soundproofing, and other optional features, are all that need be required. Comparatively, there are few complications in the design of the public area.

(1) Addendum to DRUM AND CROAKER Special Edition, "Aquarium Design Criteria," Wm. Hagen, Sept. 1970, U.S.D.I.

(2) Assistant Director - Operations

A Plan

Having received many requests for plans for an aquarium, a layout (Fig. 1) has been prepared to show the facilities required for the efficient operation of an aquarium. If a smaller aquarium is desired some of the space allotments may be reduced or eliminated and, conversely, if a larger aquarium is needed space may be increased and other facilities added.

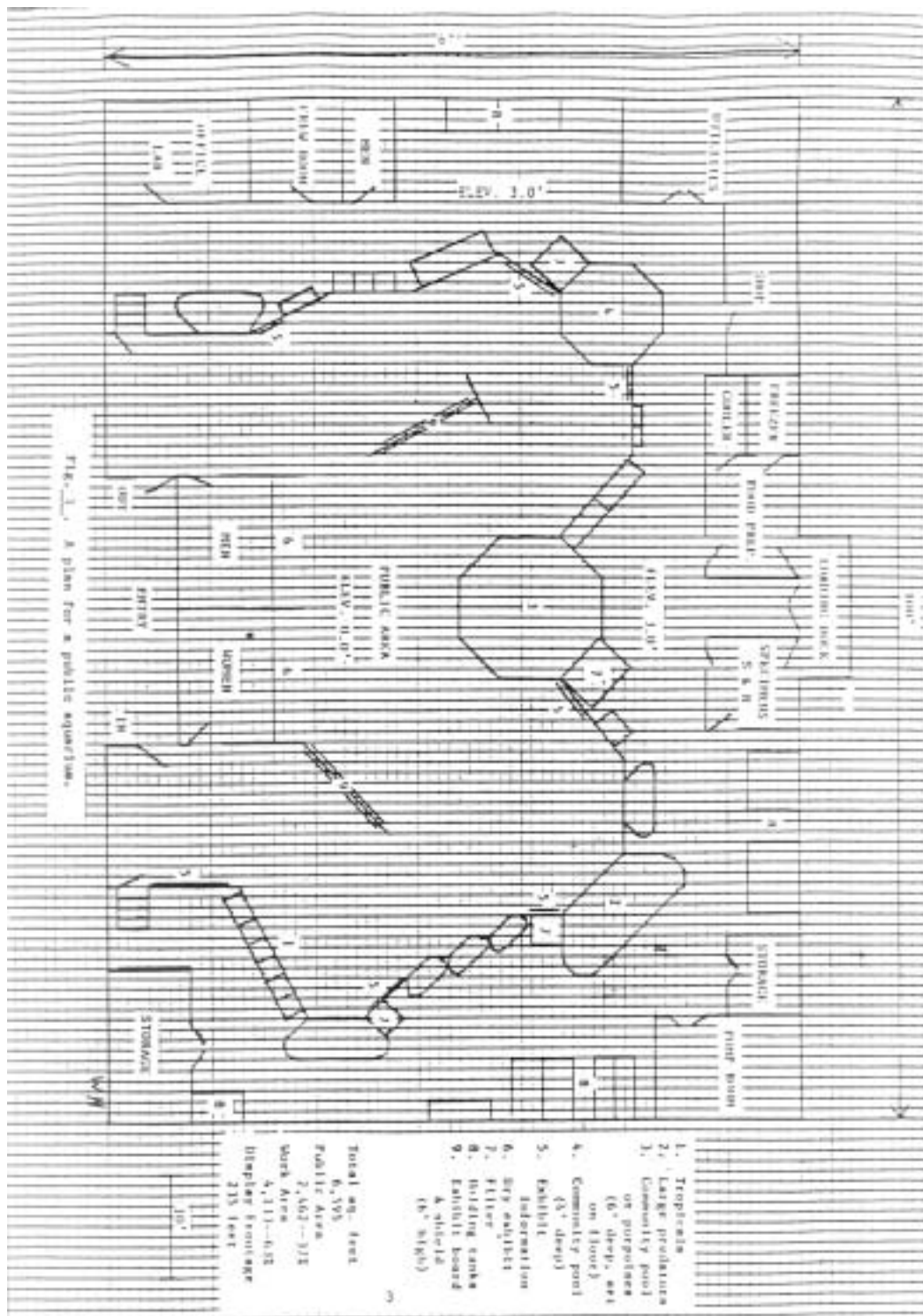
The alignment of display tanks is intended to provide variety and to lead the public along a routine pathway, and provides considerably more display frontage than would a rectangular straight-line arrangement, and it is much more interesting. However, this plan for display tanks is more expensive to install than a straight-line arrangement, because water lines, trough drains, and the raised service platform must follow the irregular route.

It will be noted that of the total square footage of the plan, approximately 37% is the area to which the public has access while the work area is about 63%, including display tanks and loading dock. It will be found that an aquarium designed for efficient operation and adequate space for the public will approximate 60% work area (including display tanks) and 40% public area.

This plan (Fig. 1) includes the desirable features for an aqua aquarium. The visitor enters and exits at the front and is immediately aware of where he is upon leaving. The back yard is out of sight and most of the essential service facilities are near the loading dock. Most of the larger tanks are near the food preparation room, and holding tanks are conveniently located, as are storage areas.

Comments hereafter are concerned with individual aspects of the various facilities:

Public area - it is intended that the visiting public proceed in a counterclockwise pattern. To assist in this desire item 9 is placed to shield the large community tank from the view of the entering public.



Display tanks - An attempt should be made to arrange exhibits in an interesting manner, avoiding the monotony of straight lines of square panes of glass. The sizes of the tanks shown are really not pertinent but it is desirable to have at least one large tank such as No. 3 in which a large community of local fishes or reef fishes, or a few porpoises can be displayed. Tanks should be arranged to avoid reflections in tank fronts.

Work area - The entire work area should be elevated 3 feet higher than the public area. Thus the display tanks are more readily placed at eye level for the visitor and the tanks can be easily serviced from the rear.

Service area - At the rear of the display tanks there must be adequate space for servicing these tanks. Thus it will be noted that the passageway around the rear of the tank is a minimum of 6 feet in width. Also, some desirable extra open space is available for various activities.

Loading dock - After an aquarium is in operation, the principal items being received are fish foods and specimens, with occasional materials for the shop, and sand, gravel, shells, etc. for filters and exhibits. Thus, the facilities to which these will be delivered are located centrally for best access to all displays.

Food preparation - The foods to be prepared for the specimens on display or in holding tanks may consist of a dozen or more items, including live food from brine shrimp to minnows or larger, cut fish of various kinds, meats and dry foods. Therefore, the food preparation room usually need not have very large grinders and mixers but should have adequate space for the preparation of a number of diets in relatively small batches. The freezer and cooler should be fitted with shelves for the storage of necessary quantities of the various foods. In a larger aquarium or even one of this size, it may be desirable to have 2 or 3 small temperature controlled rooms in which brine shrimp, worms and other living foods may be reared.

Specimen shipping and receiving - Usually specimens of living fish received should be held for a time in quarantine. This room should be equipped with a number of moderate-size tanks and water supply(s) in common with, but separate from, the supply to the display tanks. Large incoming specimens may be held in the adjoining holding tanks.

Shop - A place for the preparation of exhibits and the repair of equipment is essential.

Pump room - This space is devoted to all of the water-handling equipment, such as heat exchangers, sterilization and pumps. It is assumed, in this plan, that the storage reservoirs are located below and that filtration of the incoming water would be accomplished in facilities below the work area.

Storage - Space for the storage of exhibit material, spare Pumps, glass, small display tanks, etc. must be provided. Too often such space is limited.

Utilities - I; this area are located the building heating and cooling equipment, electrical panels, and water softeners for the domestic supply, etc.

Crew room - This is a desirable facility for an aquarium of almost any size, where the crew may have a coffee maker and hot plate, plus lockers. It adjoins a shower and toilet.

Office - The office is planned to serve also as a small laboratory. It is desirable to have a buzzer in the public area at the stairs near the office so that persons who desire to talk with the Director may press this buzzer for attention. The buzzer should be located about 7 feet above the floor to discourage indiscriminate use.

This plan does not lend itself to future expansion

Schematic Plans

The following two schematic plans exhibit possible variations. Each has a central service core and both have acceptable public areas.

Generally, the public viewing area has a width of about 18'. This width should be a maximum and probably will be less, depending upon the expected visitor load. The public area utilizes approximately 40 to 50 percent of the total square footage of the one-floor structure. Note that in these schematics space has not been allotted for public rest rooms, curio sales and ticketing.

Display space is shown in straight-line, but displays in reality should rarely be in this-monotonous form. The width of display space has been arbitrarily set at 6'. Obviously, many exhibits will have much greater depth from front to rear, and others will be much less.

The service aisle, a necessary access to the rear of all display tanks, is six feet wide. This permits use of 4-wheel trucks to move tanks and materials. This width may be reduced in certain areas, but is not recommended. Note that space has not been allotted for holding tanks. When display tanks are arranged irregularly, rather than straight-line, space will be available for holding tanks.

The service core should be concentrated in a block near the loading dock. If total facilities are to be provided, as in Fig. 1, some may be located distant from the loading dock.

Fig. 1 illustrates a basic ideal plan for operations. The service core is in close proximity to all facilities to be serviced.

This plan also serves the public well except the entrance and exit are on opposite sides of the building. This placement of the exit is not convenient for the public as parking may be on the other side of the building and the visitor may be confused. Also, the visitor is almost at the back door trash-can area.

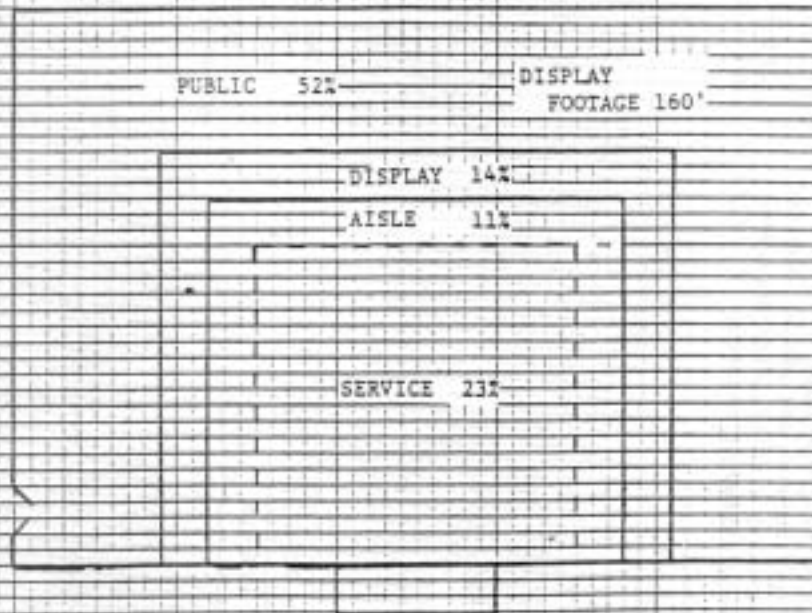


Fig. 2 Schematic aquarium floor plan with percentages of total square footage (7000) allotted to activities. Plan ideal for operations but not for public.

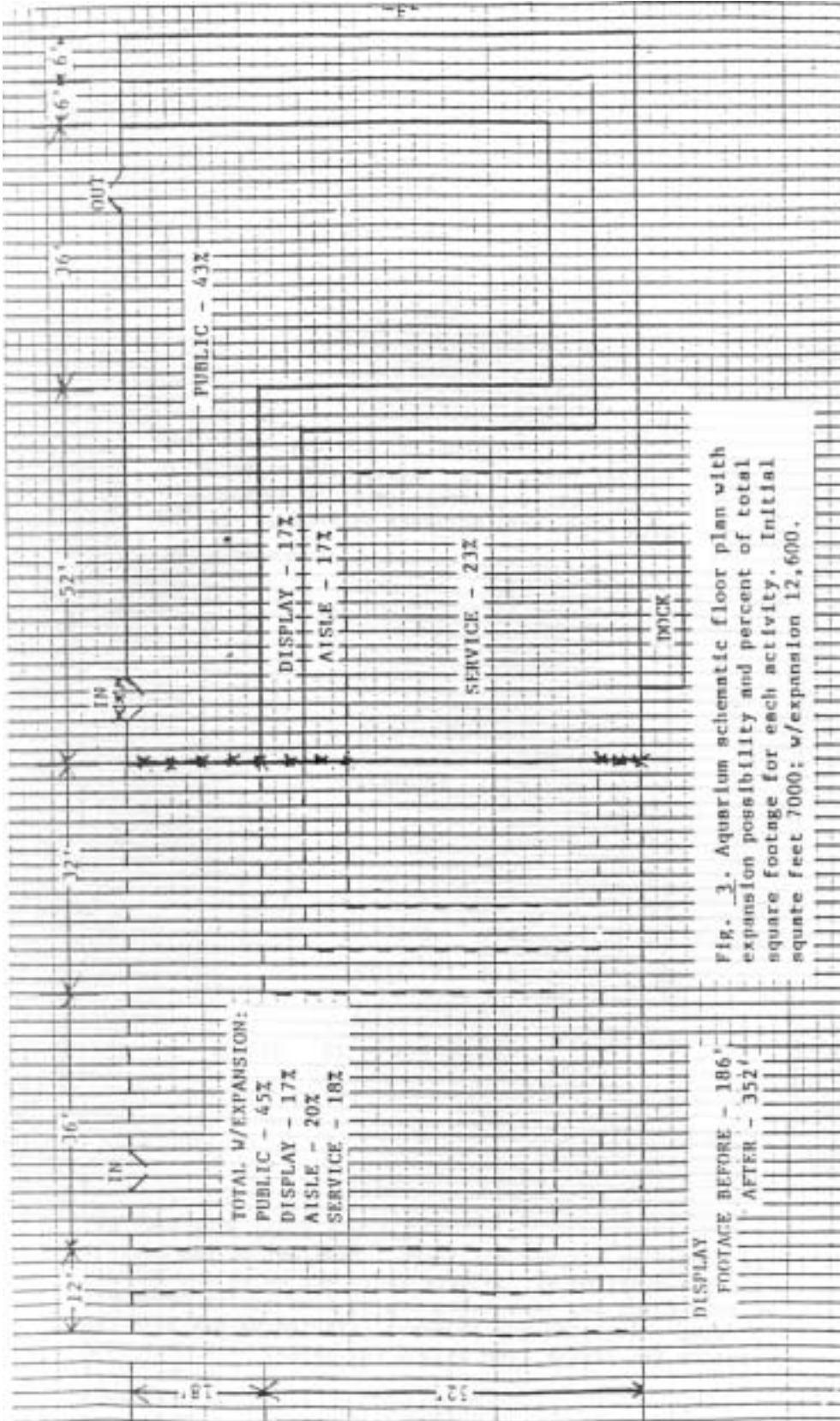


Fig. 3. Aquarium schematic floor plan with expansion possibility and percent of total square footage for each activity. Initial square feet 7000; w/expansion 12,600.

Fig. 3 is planned for expansion with the removal of portions of a wall (XXX). An addition can be erected with a minimum of disturbance to the existing operation.

This schematic plan provides the central service area, but places many display tanks at some distance. Public entrance and exit, in either case, is satisfactory.

Some service facilities are essential, regardless of the size of the aquarium, but the space allotted may vary. Following are listed service areas and suggested minimum space allotments for an aquarium of approximately 5,500 7,500 total square footage.

<u>Essential</u>	<u>Sq. ft.</u>
Food preparation	200
Freezer and cool rooms (If these are not provided the food preparation room must be enlarged for upright refrigerator and freezer).	75
Shipping and receiving	100
Shop	155
Pump room	150
Utilities	170
Storage	200
Office-laboratory	150
Holding tanks	200
Service aisle	min. 6' wide