



Changing Drystack Designs for Today's Boat Market

By Dale Gilbert

Design parameters for boat storage can be reduced to three categories, but changes are occurring very rapidly. Some changes can be adapted easily and economically. However, there are others, on the horizon which take specific knowledge and experience to resolve. We have outlined some items to consider in the planning and layout of new drystack structures.

1. THE BOAT (KNOW YOUR BOATS)

As boats become wider and weights more diversified, much of the design criteria for drystorage buildings are changing. In planning a dry storage installation, the boat specification information is absolutely the most important item for you to consider. If you can supply detailed information on the boats you plan to store, your storage system designer will be able to do a much better job for you.

There are a number of commercial listings of boat specifications, but a detailed review of such listings, finds needed information missing. Some information may have gross errors (and be as much as 15% off). There is no quick reference 'chart' of all boat models with appropriate storage information. Only a few boat manufacturers publish complete figures, but special attention must be given to the following data:

Hull length

This is an easy measurement and usually can be obtained from the boat manufacturer. Given the hull length, designers can reasonably estimate the load distribution length. But it does not take the place of accurate load distribution and load center data.

Load Distribution Length

Is a necessary length for accurate design of your dry storage system and boat handling equipment. This length is measured from the tip of the prow to the rear of the outdrive. Boat manufacturers frequently do not have this information, particularly on boats powered by outboard engines. As well, the load center (the center of balance) will vary even on boats of the same length, but must be determined for correct weight calculations.

Storage Length

This length also must be accurately determined, and it can vary considerably from the load distribution length. Rear platforms can add several inches to the I.D. length. Bow guard rails can slope project several inches beyond the top of prow. And bow pulpits can add several feet. Some common drystack tenants are off-shore racing boats. If these or similar boats are part of your

market, they are the best reminder that longer length does not necessarily mean heavier boats.

Beam

Usually no problem, as manufacturer's specifications clearly show this figure.

Height (Boat Profile)

This is a real toughie, as apparently no manufacturer states this information, the main problem being that there is no agreed upon point to which to make such measurements. For instance, the highest point on a windshield might sound like a reasonable point, but on many boats there are manufacturers items that exceed above that point, plus dealers and boat owners can add items that increase height. The recommendation is, on any boat you plan to place in dry storage, you actually measure the storage height of same. Include bridge and tower improvements, which are not removable.

Dry Weight

Is usually published by the boat manufacturer. However, you should be aware that such dry weight is only for the "standard" boat as supplied by the boat manufacturer, and there are endless items that can increase the dry weight, examples as follows:

- a. On smaller boats as powered by outboard engines, though the boat manufacturer will list the maximum horsepower engine to be used, the engine is usually not supplied by the boat manufacturer and this is not included in the dry weight listed by the boat manufacturer.
- b. On boats equipped with inboard-outboard engines, the boat manufacturers list the standard engines and this weight is included in the dry weight. But the manufacturer will also list from two to five engine alternatives, on which added weight of 200# to 500# could be involved.
- c. All boat manufacturers list numerous options that can be added to their standard boat. And some of these, such as generators, air conditioning units, can weigh from 100# to 200# each, and that weight is not included in the dry weight of the standard boat.
- d. Boat dealers and boat owners can, and usually will, make additions to the manufacturer's standard boat, also causing increases in the total dry weight. On medium sized boats powered by I.O.'s, it is not uncommon for the true dry weight to easily run 1000# heavier than the manufacturer's standard dry weight.

Storage Weight

The storage weight is always greater than the dry weight of the boat.

- a. Fuel tanks usually are full when the boat is stored. So you need to know the capacity of the fuel tank(s). For gasoline, multiply the fuel capacity by 6.3#/gal.
For diesel, multiply the fuel capacity by 6.9#/gal.
- b. Water tanks are frequently full when the boat is stored. So you need to know the capacity of the water tank(s) which you multiply by 8.3#/gal.
- c. Many of the medium to large sized boats are now equipped with sewage holding tanks. And on the possibility that these might be full when the boat is stored, you need to know the tank capacity and multiply by 8.3#/gal.

2. THE NEIGHBORHOOD

Residents of the local neighborhood may be very open and tolerant of a marina storage operation, or they may vigorously fight every move. The marine industry has made gains with both the public awareness and regulatory acceptance of boat drystack in the last several years. However, there are still boating areas with little or no knowledge of a boat on a forklift, nor boats in racks. Proposed drystack projects in "virgin" areas and boating savvy areas alike, require that developers reach beyond typical construction techniques and "get creative". Local communities want to be assured that the project "fits", and that it adds to the value of their area. The marriage of boats, buildings and neighborhood is a patient and many times a creative process. There is no substitute for good professional assistance and experience in this pursuit.

Planning Board Acceptance

Current research of various zoning and building regulations with reference to boat drystack results in the following:

As an inclusion in codes, boat drystack is a relatively new type of development. Few codes speak to the use specifically. Typical code applications treat boat drystack structures as marinas, parking garages, or warehouse steel buildings.

Major concerns of most jurisdictions are: 1) aesthetics 2) height 3) fire protection 4) parking 5) environmental compliance

In general, experience (especially recently) indicates less reluctance by city officials to approve development packages, once they are assured that the question of neighborhood acceptance is answered. The structures can be designed to be successful business operations, and still gain local and regulatory acceptance.

Aesthetics

In today's development market, it is a rare project which is not required to submit details of all aesthetic and architectural treatment on buildings. City fathers are not only demanding architectural renderings and concepts of proposed projects, but proof that the end result will be as planned (i.e. experience, portfolios). Boat drystack developments can be developed in predominately residential and highly visible locations with great success.

Today's boat drystack may be 65' high and still fit aesthetically into any neighborhood.

3. REGULATORY REQUIREMENTS

For any given area there are a number of environmental and permit agencies which must give approval to marina projects. Although permits are nothing new to developments, there are some unique problems which arise when developing boat drystack.

Environmental Requirements - In most cases the local planning departments will insure you adhere to all environmental restrictions. Keep a record of all regulations which may affect your project. A watchful eye on legislation which impacts your project, may produce an additional benefit. In many areas money is allocated by agencies to solve environmental problems.

Matching and full grant funds may help offset construction expenses.

Fire Suppression / Fire Safety

Fire suppression systems (usually sprinklers) are required in all enclosed drystack structures and many outside rack structures. Plan with contractors and designers who are familiar with boat storage (not just steel buildings). The system should be as adjustable as the rack system to accommodate future adjustments. As an extra fire safety precaution, included in the boat owner lease agreement can be provisions for inboard and outboard boats to be equipped with automatic fire suppression systems, and to require the battery be disconnected before storage. Designs should adequately provide for pumps, valves, floor drains and stand pipes. All designs should maximize the clear space within the boat rack, not the efficiency of contractor's installation. This will give the most storage space, and reduce boat damage.

Safety elements take on additional design and planning concerns which differ from standard steel buildings. Fire suppression systems, for instance, are in much debate at the present time. Of the current codes used across the country, few distinguish between a standard steel building and those housing boats in racks. Some typical problems result:

- a. Overhead sprinklers installed to fire code specifications perform properly but fill boats at the top of the structure with water. Water never reaches the fire. As a disastrous sideeffect, upper boats may fill with water and create loads which cause structural failure.
- b. It is still unclear if specified material (i.e. sprinkler heads) work properly, especially in saltwater environments.
- c. Using water on what may be a gas fire is obviously in question.

Even revised codes, which include provisions for boat racks, still do not permit systems to be easily adjusted; and usually require unnecessary costs to the owner. Proper expertise and products exist to solve these concerns; but, as yet, there is reluctance from local officials to implement them.

Parking Requirements

Because most regulatory agencies are unfamiliar with drystack boat storage, many planning elements are not sufficiently addressed in local codes. Parking requirements are a typical example. Using statistics of ongoing operations, and zoning codes which specifically include drystack operations, the following is a summary of parking requirements for boat storage:

History & Rationale

- Boat storage operations are similar in activity to a parking garage.
- Self-storage and mini-storage operations have similar activity.
- Approximately 10% of local codes (USA) have sections which address parking for drystack boat storage specifically.
- Many local codes which include parking sections for drystack boat storage have been amended to accommodate more realistic ratios.
- Boat storage operations (typically) have no more than 25% of the total storage out of the building on any given use day.

The 25% average includes peak usage times (i.e. Memorial Day, July 4th, Labor Day)

Parking summary

- The most used parking ratio for drystack boat storage is 1:5
- Based upon actual use and similar activity a 1:5 ratio is satisfactory for peak usage at boat storage facilities.
- Parking areas which include other activity (i.e. retail stores, restaurants) must be calculated

separate from boat storage activity.

Noise Abatement

To date, we are aware of no drystorage buildings which have problems with noise levels. We have been installing drystorage systems since 1978 and have many in residential areas. The facilities have never required added soundproofing or other noise abatement.

Without knowing the facts, questions about noise and forklift maneuvering are common. The facts are, marine forklift engines have become quieter over the years. Recent conversations with the major suppliers of marine lifts reveal noise levels have been reduced by over 30% in the last 3 years alone. Drystorage facilities historically do not have noise problems. Now, with improved equipment, drystack operations are even of less concern.

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