

## This is the House We Built: The New Haven Rowing Club Fulfills a Dream

By Ellyssa Eror, Stuart Lathers and John Gorman

On a cold Saturday in March of 1992, the members of the New Haven Rowing Club began what was to be a long and exhaustive process of building a boathouse. Few of us understood the true magnitude of the project, and none of us were prepared for the 2½ years to follow. We all had our own ideas of the project's demands, but on that first day, the club seemed more than matched to the task. As we cleared the site of brush and trees to make way for the future boathouse, our spirits were undampened by the rain. We were on our way to realizing a dream.

For most members of the club, the weekend of the land clearing marked the beginning of the project. Yet, for a smaller group of members, the event marked the culmination of a difficult planning and design process which had started over 18 months earlier.

The decision to build a new boathouse is not made lightly by any club, but especially not by a club of our small size. Since its inception in 1974 the club had operated out of the Yale University boathouse in Derby, Conn. We had only limited access to the building and equally limited space for equipment. On the other hand, yearly dues were minimal; we had no mortgage, no property taxes, and no maintenance responsibilities. As the club increased in size, from the five founding members to over 50, the constraints of our arrangement began to be felt, and by the late '80s we were suffering from severe growing pains.

It was clear to everyone who could see past a single rowing season that our tenure at Yale was over, but it was not until the fall of 1990 that we began to consider other alternatives. At this time, the club as a whole was skeptical of any project more ambitious than securing another year in Derby. However, when an informal poll indicated we had enough capital to buy land, the club half-heartedly formed three committees to investigate the possibility of building our own boathouse.

As the club waited for interest in the project to wane, the financial and building committees examined our resources and design alternatives. The land committee investigated every body of water within a 20-mile radius of New Haven. To make the

Club members installed 20,000 cedar shingles, one by one.



project a reality to the club members, we had to find the perfect piece of land. The club did not want to sever its ties to Yale or leave the waters of the upper Housatonic. With this in mind, we chose the largest undeveloped plot on the river and began making plans to move four miles upstream.

We secured an option on the land and began making preliminary construction plans to see if we would be able to obtain the required building permits. Waterfront property is strictly regulated by a number of federal, state, and local agencies. We soon learned that the environmental and building codes for our property rivaled those for an active fault zone. Undaunted, we worked our way through the bureaucratic tangle, and six months later emptied the bank account for our own piece of the Housatonic riverbank.

Even after the land purchase, the club was far from unified in its support of the project. There were serious doubts about

moving out on our own, but we had no other alternatives. In response to the complexity of the task that lay ahead, the club gave the planning responsibilities to the management committee, a distillate of the initial three committees. Through the fall and winter of 1991, they worked on the construction plans for the building.

The club's limited financial resources made the construction of any type of building a challenge, a problem that was exaggerated by our 20-year history in an Ivy League boathouse. We were used to four boat bays and a 200-foot dock; anything less seemed unbearably small. Our cost analysis indicated we could double our construction dollar by using club labor for a bulk of the project instead of hiring professional contractors. After much deliberation, the club agreed, and the boathouse was designed to be built with our own volunteer labor. We had a handful of "skilled" members who had construction or



engineering experience, but the majority of us were of the “unskilled” variety.

Architecturally the building had to be simple. Yet, the environmental and building codes for waterfront construction demanded a rigorous design. To meet code, the structure had to withstand the severity of the “100-year flood” as well as conform to regulations of the Americans With Disabilities Act. Fortunately, we had an architect in the club.

The momentum of the project through these early planning phases was maintained

by the management committee. Once the club approved the land purchase, it depended on the committee to produce and execute a viable plan. The committee kept the club informed of the progress and direction of the project, and members’ opinions and ideas were integrated into the planning and design.

Fund raising began in earnest. Financing the land purchase had not been difficult, but we now needed to fund a major construction effort. To avoid the burden of a large mortgage, we wanted to raise most of the capital through private donations. Even though the project consisted of little more than overgrown property and a handful of building sketches, members began to make pledges. They were acts of faith.

Most of the construction details were finalized during the winter of 1992. Weekly club meetings were held to outline the building plans. We presented a one year calendar of events and asked club members to make work commitments. As we came closer and closer to the ground clearing, everyone began to feel excited about the project. Even the most skeptical members began to catch boat-house fever, and we moved toward the ground clearing in a unified and enthusiastic front.

Despite the cold, nearly everyone came to work that first day. After signing a liability waiver (this is the ‘90s), each member began to clear the heavily overgrown property with whatever tools had been brought from home. The site was prepped right on schedule, and we were under the naive impression that construction would proceed at the same heady pace.

Installing the foundation was our first hint of the project’s true magnitude. The size and depth of the excavated areas were enormous, as were the number and size of the concrete footings that would distribute the building’s weight from the columns above to the ground below. Although we made extensive use of heavy machinery, a large portion of the digging was still done by hand. As the work

continued, our initial distinction between “skilled” and “unskilled” workers did not apply. We all learned to read steel drawings, tie rebar (rebar is the ribbed, steel rod used to reinforce concrete), set up wall forms, and pour concrete. After 20 cement trucks of concrete and thousands of feet of rebar, few club members remained “unskilled.” We knew the foundation would be the most strenuous phase of construction, and members worked longer and longer hours as the work load increased. Those who had not known the difference between a footing pad and a gabion (gabions are wire cages filled with dry-laid stone), cheerfully quoted the construction adage, “once you’re out of the ground, you’re home free.” Even though we rapidly fell behind schedule, spirits remained high.

By August, we were finished with the foundation and ready to start on the building’s structural frame. We had decided on a frame of glued-laminated heavy timber. In addition to its inherent fire-resistance, it could be ordered to “spec” with all cutting, milling, and staining done at the factory. It arrived at the site, 165 pieces on four flatbed trailers, ready for assembly like a gigantic set of Lincoln Logs. Some members learned to read pages of detailed construction drawings, sorting through the puzzle of 6,000 bolts and steel connectors. Others determined the most efficient order of assembly.

Again, the terms “skilled” and “unskilled” had nothing to do with previous experience; they were a measure of the hours spent at the work site. Teams of club members moved the massive timber columns and beams, weighing 400 to 800 pounds each, to assembly areas just like eight-oared shells: “hands on ... ready... lift!” Columns, beams and trusses were hoisted into place using hand-powered mechanical lifts, ropes, and ratchets. We slowly and carefully set two-thirds of the heavy timbers (some 30 feet in length) by hand, only using a crane to place the final roof trusses. To the passer-by, our site

# Navigating the Bureaucratic Maze to a New Boathouse

By Bennett Jones

brought to mind an Amish barn-raising. Unlike the Amish, we were not finished in a day or two.

Initially, we had decided upon the "do-it-yourself" approach based on the large cost savings and the estimate the boathouse could be built in one year's worth of weekends. We doubled the value of the building by relying on club labor, but now we were doubling the construction time as well. The structural frame took as much time and effort as the foundation. Each new phase of work was as intensive as the last.

As the weather turned colder, we picked up our pace in an attempt to enclose the building before the first snow. To assemble the exterior walls, every member had to learn a new set of construction skills. Conventional carpentry became the focus, yet craftsmanship was the theme. Members worked in teams, cutting and assembling exterior walls in sections. Other teams lifted and fixed the wall sections into place. Anyone who didn't suffer from vertigo was sent to the roof. We worked as quickly as we could without compromising safety, but the first, second, and third snows still fell on and in our unclosed building.

As the temperature fell, so did the size of our volunteer labor force. We desperately needed to close the building from the ravages of winter, but club members were exhausted from nine months of hard labor and simply absent from the work site. We worked with a skeleton crew through the bitterly cold winter of '92-'93 to complete the enclosure and frame interior walls. With our single propane heater, the inside of the building was often colder than it was

outside. Wall studs split as we drove nails into frozen wood, and several of us contracted frostbite in our fingers and toes. Even in these miserable conditions a handful of members still volunteered to work; it was our only hope of rowing in the spring.

In the spring of '93, we were exactly one year behind schedule. As a club we had agreed to forfeit one full rowing season in order to build our boathouse. The imposed hiatus was over, but the building was at least another year from completion. We had exhausted our reserves over the winter, and the thought of not returning to the water was killing what was left of our morale. We had no running water, nor could we occupy the second floor, but we pushed to finish the

docks, a major project unto itself, so we could once again row. We rushed back to the water to find that our construction efforts had been at the expense of our rowing skills. We could all swing hammers, but there was no swing in our boats. In the '93 trip to the FISA Masters Regatta, our club returned without a single medal.

Despite our lack of prowess on the water, rowing gave a much needed boost to morale. Through our second summer of construction we covered the exterior with 20,000 cedar shingles, each hand-dipped in stain. On the inside of the building, teams of club members assisted professional sub-contractors with the plumbing and electrical work. When these phases of construction were complete, almost



**Upstream Boat Bay.**

Robert Perron

Rowing is an ancient sport, superficially unchanged for over a century. Boathouses are known by name like the cathedrals of Europe. They are the centers of our sport, one which is apparently at peace with the environment. However, the creation of a new boathouse can be an exercise in bureaucracy-induced frustration and exasperation. This is caused by boathouses' particular location at the water's edge. Careful long-range planning involving program, site selection and budget is required. One must develop an architectural part that works within the restrictions of the site early in the process so as to avoid unpleasant disruptions and expense.

The interrelationship between the budget, program and site cannot be underestimated. A good way to begin is with a visit to the local building inspector. He will probably be one of the most important people you will deal with, and you want him on your side. He should be able to inform you of the local, state and federal codes and restrictions that govern any proposed sites. The foremost of these is the FIRM or Flood Insurance Rate Map of the National Flood Insurance Program of the Federal Emergency Management Agency. These maps draw out in

considerable detail the 100-year flood plain. He might also know if a utility has the right to raise the water level. Sometimes water rights may belong to the owner of a mill building that has long since stopped using water power, but they can still impact what you may legally do on the riverbank. The Building Department should also know which conservation agencies have authority and what environmental impact statements are needed. Sometimes the first step in the process is to have a building permit denied in order to commence the review process by environmental authorities. It takes time, and you do not want to make major changes after some permits have already been approved.

If your proposed site is in a shaded area on the FIRM map, take council. A surveyor may be required to identify the exact location and elevation of the proposed structure. If it is an "A" zone, the building must be anchored against flotation, collapse or lateral movement. It must be constructed of materials resistant to flood damage. Under most circumstances the first floor of the building should be above the flood elevation called out on the map. However, at times that is impractical. Most local codes have incorporated federal restrictions, and will require

every internal wall was laced with electrical conduit, tubing, duct work, exhaust fans, water supply and waste pipes. The walls were then filled with insulation prior to the final round of finishes.

Work teams had clearly proven to be the most productive way of getting things done. This approach minimized time lost to the "learning curve" and gave members ownership concerning their particular task. Still the work was frustrating. As soon as we became proficient at a particular operation ... we completed it. As soon as we mastered a particular skill ... we no longer needed it. In this manner we installed windows, framed doors, put down hardwood floors, and tiled two commercial grade showers and bathrooms. For rowers, who spend years refining a single motion, it was a humbling experience.

By the fall of '93 the outside of the building was almost complete, and we turned our attention to the interior. This finish work continued through the winter and following spring. During this phase it was the club members who drove the project. Due to financial constraints, we originally planned to construct nothing more than a "functional"

building. Once the facility was operational, detail work could then be completed at a more leisurely pace. However, when the time came, club members would have no part of it. They pushed to complete the interior woodworking, from mouldings to flooring and window seats. They did not stop before there was a fully equipped kitchen.

Throughout the project, the club had consistently placed quality before speed and cost. This attitude was especially apparent during the finish work. When we designed the boat bay doors, pine was refused in favor of mahogany. It was a significant increase in cost but an even greater increase in labor. We were building something to be passed down to future generations, and the club was not about to compromise.

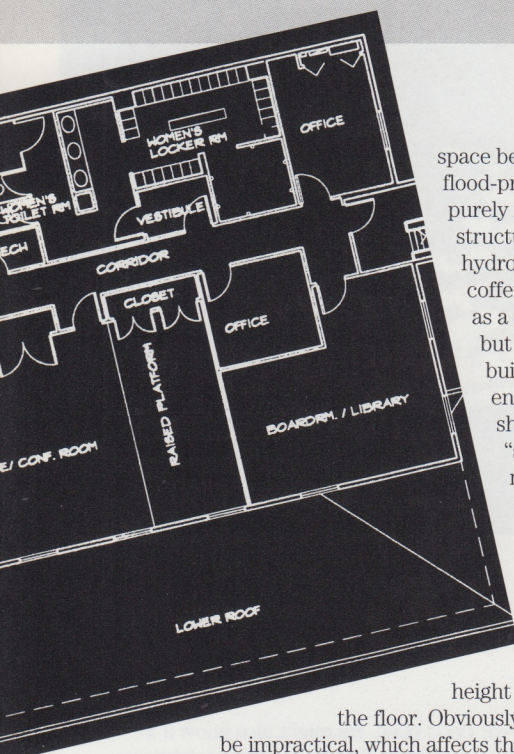
Our sense of legacy prompted us to give more to the project than we had ever anticipated. We gave our time, our labor, and yes; we gave our money. The financial challenge rivaled any feat of construction. Fund-raising efforts took place throughout the project and were essential to its success. Donations were truly altruistic; the only reward for giving was more work at the site.

In the spring we set the date for the boathouse dedication, and on June 25, 1994,

120 weekends after the ground clearing, we popped the champagne. Our building is now complete. It was a difficult 2½ years that none of us would repeat, but none of us would take back. We suffered from splinters, blisters, hammered fingers, bloodied knuckles, frostbite, and heat exhaustion. Yet, when we look at our boathouse now, the unpleasant memories fade, and what we feel is pride. This is the house that we built.

*The New Haven Rowing Club is located on the banks of the Housatonic River in Oxford, Connecticut. Membership is open to all ages and abilities. For information call (203) 734-0125.*

*Ellyssa Eror worked as a volunteer through much of the construction process. Stuart Lathers designed the boathouse in 1991 and acted as general contractor throughout the construction process from 1992-'94. He was affiliated with Architecture and Design Inc. Gardner Architects until 1993 and now practices independently in New Haven. John Gorman chaired the management committee and worked as a volunteer.* —■



space below that level to be either of flood-proof construction or used purely for storage. A flood-proof structure is watertight under hydrostatic loading, basically a cofferdam, and might be feasible as a container for rowing tanks, but is highly impractical for a building with doors wide enough for shells. However, shell storage is an accepted "storage use," but the space must be designed so as to automatically equalize hydrostatic flood forces by allowing the entry and exit of flood waters. Openings equal to 1 square inch for every square foot of floor space are required at a

height of not more than 12" above the floor. Obviously heating such a space may be impractical, which affects the design of plumbing and

sprinkler systems. It is a good idea to have temporary storage on higher ground and evacuation plans for emergencies. In fact, there are some storage sheds that are designed to be flooded every winter.

If your site falls within a "V" zone or velocity zone, it must be designed to withstand wave impact. One may not use fill to raise the building, and there must be minimal impediment to water action below the designated elevation. Those walls should be of breakaway design such as lattice work. The rest of the structure must be built according to rigid hurricane specifications including bracing and tie-downs.

Many states have wetland policies. These vary, but can be quite restrictive, affecting the design and budget in unexpected ways. Some local communities have maps designating "bordering vegetated

wetlands," that identify your proposed site specifically. It may be that you will be required to commission a wildlife biologist to identify the plant and animal species present and outline procedures for preserving their habitat. Perhaps you want to build your structure on the higher ground of a gravel bank, but ramps will cross a strip of marsh. The local Conservation Commission could attach conditions to the granting of approval, requiring the re-creation of an area of marsh equal in square footage to that affected by your construction. This would require the excavation of some of the higher land to the level of the marsh, and landscaping it to match. Your building permit could depend on it, so tread lightly and circumspectly.

Soil conditions along the shore of bodies of water can be tricky. A small, temporary shed might be designed to rest lightly on the bank to move with the soil. Doors should be carefully detailed to allow the building to settle without interrupting their function. It is important the whole building moves as much as possible as a unit, and thus it should not straddle soils of different bearing capacity. However, expect a structure long enough to shelter an eight to twist, and to prevent boat damage, ensure that all the supports for a boat stay in the same plane. Any substantial building must have good foundations. Peat and highly organic clays might call for building on piles, whereas on gravel one could use concrete footings and piers. These conditions affect the building costs.

Mechanical systems designs are also affected by site selection. The availability of municipal water and sewer is an important consideration. Lack of them could create a major expense for a full-function boathouse. Plumbing fixtures, electrical panels, and heating units should be above the FIRM elevation. Oil, propane and gasoline tanks must be dealt with correctly so they do not wash downstream. Leaching fields do not work in clay soil and are subject to restrictions on a flood plain or a water shed. Sewage can be pumped, but may need easements to cross property.

There are other requirements, outside of building codes and environmental regulations, that can shape a boathouse. Just as Title IX, that calls for equal facilities for men and women in academic institutions receiving federal funds, has generated a whole new wave of boathouse remodeling and construction, so too the Americans with Disabilities Act affects boathouse design.