THE RADBURN PLAN: AN ASSET IN COASTAL TOWN PLANNING

Replatting along shorelines, for lands which are not to be designated as parks after a severe catastrophe, such as coastal erosion resulting from hurricanes or unusual storm surges, should include the Radburn plan of New Jersey. According to this model, dwelling units abut cul-de-sacs and face a continuous park instead of fenced rear yards.

Successful applications of the Radburn plan are legion but some noteworthy examples include urban developments in Australia, New Zealand, and the United States. Villages of Australia’s capital city of Canberra include cul-de-sacs that reach toward wooded creek valleys. Homes abut these streets but face the mini-wilderness. In southern New Zealand, the town of Cromwell, which was partially inundated by a new lake covering its old business section, has a remarkable Radburn application. City hall, library, and consumer services are clustered along a small creek. Southward from this consumer services park, a collector curves westward, with school-park first, and then loop roads and cul-de-sacs serving single family homes. Children walk through the park to school. Most services here are pedestrian oriented, with ample parking between the school and civic center.

In the United States, Venetian isles and numerous keys of Fort Lauderdale, Florida, have dwellings that are water-related with autos and utilities conveyed by cul-de-sacs. This arrangement is uniquely Radburn. Ocean Village near Fort Pierce, Florida, has at its southern edge a road serving its utilities, ending in a bulb from which parkers walk over wooden ramps to the shore for swimming. All uses within the village have pathways to ramps over dunes to prevent erosion. Naples, Florida, has in places the old grid pattern with autos passing homes to reach the shore. If these dwellings faced their own little parks with meandering paths to the shore, the Radburn plan would be evidenced. Fencing toward streets and water would insure privacy.

Many coastal urban areas, however, lack public access to beaches. Such limited access is the rule rather than the exception. The Galt Ocean Mile, a condominium-lined shoreline in Fort Lauderdale, Florida, for example, is notorious for its lack of public access to seaside amenities. Use of the Radburn plan in such densely populated coastal segments would help ameliorate some of the disadvantages of intense development.

An alternative to “concrete jungles” along the shore might include Radburn-type redevelopment along shores adversely impacted by hurricanes. Should a Hugo-class hurricane strike the southeast Florida shoreline, one might picture redevelopment that features coastal highways with public access to water via bulbed cul-de-sacs for parking. Between these public ways and serviced by them, homes or apartments would face their gardens and pools, with serpentine paths to the ocean. Walls or fences with electronic gates, and a locked or guarded gate on the central pathway to the beach, would afford privacy. Similarly, public ways to the intracoastal waterway would provide marinas for the public, and for the Radburn-type gardens, private marinas. The Radburn plan could thus be employed to advantage should replatting become necessary due to catastrophic events in densely populated coastal sectors.

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professional papers are welcome in the area of coastal planning and management.]

**JAPANESE FOUNDATION AWARDS CHICAGO INSTITUTION TOP HONORS IN INTERNATIONAL DESIGN COMPETITION**

The next time you hear that premier-class design comes only from Europe, Japan, or one of the coasts, remember that this year, in the world's most competitive and prestigious open international design competition, a group of young designers from an established Chicago institution—and not from a professional design firm—took the Grand Prize for the second time in three such competitions.

The Japan Design Foundation in Osaka has announced that it will award the grand prize of 10 million yen (about $78,500 U.S.) in the Third International Design Competition to students at Illinois Institute of Technology's (IIT) Institute of Design (ID) for "Aquatecure." Aquatecure is a system of floating agricultural, manufacturing, transportation, and energy facilities designed in response to the theme of the competition and call-for-entries:

> Water, the source of all life, is deeply related to every aspect of mankind: existence itself, daily life, industry, culture, environment. We gladly welcome deep insights and fresh ideas for a new approach to various subjects related to water.

Working in teams, ID students entered the competition with four water-borne structures which explore using water environments for producing food; moving manufacturing onto the water; integrating rail, air, and sea-based shipping and transportation into floating multimodal interchanges; and harnessing solar, wind, wave, and thermal gradient energy into electrical energy. While many of the systems were designed for portability, they also offer interesting, permanent alternatives for locating factories, airports, etc. near major urban centers without displacing or disrupting residents.

"Winning competitions is not new to the Institute of Design," says Charles Owen, professor of product design and director of the Design Processes Laboratory at ID. "But for our students to compete with top designers from around the world and win the most prestigious international competition two out of three times is a major accomplishment."

The ID teams competed against a field which included more than 2,000 individual and team entries from professional and student engineers and designers in 48 nations. All 4 of ID's entries were awarded semi-finalist status. In awarding the grand prize, contest officials in Osaka chose to consider the 4 ID projects as a single entry.

"We know that news of this accomplishment has traveled fast throughout the international design community and that as a result, work at ID is being explored seriously by those countries that regard design as a major factor in maintaining competitiveness, particularly Japan, West Germany and Italy," says Meyer Feldberg, president of IIT. "U.S. dominance of this competition should also be a source of pride and encouragement for all those in this country who are working to heighten awareness of design and integrate it as an important component of corporate strategies."

The International Design Competition, sponsored by the Japan Design Foundation, is open to every category of design in order to question anew what role design should play in clarifying specific visions of mankind as we near the 21st century. Continuing the example set by the first one in 1983, the competition is held under a specific theme every two years, and prizes are awarded to outstanding designs entered in the competition, for the purpose of deepening understanding of and interest in design on the part of industry and society as a whole by a public exhibition and publication of various works.

IIT's Institute of Design, the direct descendant of Germany's Bauhaus, the most celebrated art and design school of this century, approaches design education as a continuous experiment to find new ways to apply evolving information and technology to serious concerns in the social, economic or physical environments. Its program connects the general ideas of diverse fields to the design and production of specific products and communications and seeks to develop skills and knowledge useful in diverse disciplines such as marketing, product and communications planning, environmental design, and education.

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NEW METHODS OF COASTAL EROSION CONTROL AND CHANNEL MAINTENANCE

Two new systems presently offered by Coastal Stabilization, Inc. (Rockaway, New Jersey), are the STABEACH System, which is used for coastal erosion control, and the STADEEP System, which is used for channel maintenance. Both of these systems are claimed to be significant improvements over anything presently available by conventional erosion control or dredging methods.

The STABEACH System consists of a subsurface dewatering array that is buried in the beach below the normal water table. The pipes are connected to a central sump, and the water is pumped out of the pipes thus lowering the water table on the beach. The lowering of the water table on the beach sets two critical mechanisms in motion. First, the beach sand grains which previously sat in a soup of sand and water are now dry and resting against one another. The resultant decrease in the interstitial pore pressure greatly increases the strength of the sand and makes the beach harder. Obviously, the harder the beach, the more resistant to erosion. Second, water from the ocean begins to seep into the sands on the beach. The seepage occurs with each uprush of water driven by the waves. This water uprush is laden with sediment that would normally wash back into the ocean. But because the seawater is now able to seep into the beach sands, some of the sand is left behind on the beach. Each wave deposits a little more sand, and gradually the beach is able to build seaward.

At Sailfish Point near Stuart, Florida, the first U.S. installation of a STABEACH dewatering system (Photo 1) for stabilizing the beach has been turned on. Approximately one month after the construction of the dewatering system was turned on and two weeks after the system was installed, net accretion exceeded expectations, especially because this was accomplished during a period of fairly strong winds from the northeast which usually cause beach erosion.

STABEACH Systems have many advantages over conventional beach erosion control technologies such as groins, seawalls, and beach nourishment. There are no adverse impacts downdrift of the installations, as there are with groins and seawalls, because the STABEACH System does not substantially change the natural littoral transport of sand. Moreover, the beach in front of a STABEACH System installation will remain wide and useful for storm protection and recreation, whereas beaches in front of seawalls may narrow or disappear altogether.

Furthermore, the STABEACH System operates with the natural sand transport system and gradually stabilizes and builds a beach. This contrasts sharply with beach nourishment which can rapidly bury important benthic communities and substantially increase turbidity in the water column. However, the STABEACH System can be used in conjunction with other erosion control devices to mitigate potential adverse impacts, such as beach narrowing in front of seawalls, or to improve the efficiency of others, such as increasing the longevity of artificial beach nourishment.

Another advantage of the STABEACH System is that one of the products of the pumping is sand filtered seawater suitable for use in mariculture, commercial fishery processing, laboratory research, and improving water quality in poorly flushed lagoons and water basins.

The STADEEP System is a new product which can greatly reduce the long term cost of channel maintenance and provide a more stable and reliable navigation channel (Photo 2). The STADEEP System uses water pumped under high pressure to fluidize sediment in the channel area. Fluidization, which occurs when the sand and water mixture loses all strength and thus the ability to support weight, is achieved by pumping the water through a fluidization array designed to the dimensions of the desired channel. Once the sediment is fluidized, the material can be either removed by the natural current or pumped to a desired site. The result is a predictably straight navigation channel at a significantly lower cost.

Conventional dredging techniques provide only a temporary relief of channel shoaling at very high economic and environmental costs. Usually, the channel will begin to shoal and meander before the dredge has left the area. However, after initial installation of the STADEEP System, periodic maintenance is accomplished from a land based pump at significantly lower cost.
lower costs than conventional maintenance dredging. Moreover, the channel will return to the originally straight alignment after each maintenance pumping.

Moreover, if the fluidized material is pumped from the sump area and bypassed around the littoral obstruction, the sand can be used for erosion abatement on the downdrift side of the obstruction. In addition, the STADEEP System provides all of these benefits at significantly reduced environmental cost. First, the only area distributed by the STADEEP System is the area within the defined channel area. Second, the turbidity levels generated by the STADEEP System are below the environmentally acceptable thresholds, and drop to background levels almost immediately after pumping ceases. Finally, because STADEEP System operates in a gradual manner, there are no adverse impacts associated with abrupt changes typical of conventional dredging.

A STADEEP System installed in Lake La-
vista, Florida, in 1986, has provided a straight deep navigation channel at costs far below conventional dredging technology. The STADEEP System has resulted in improved fishing within Lake LaVista and allowed the marina there to reopen and expand.

BOOK REVIEWS

The journal and CERF board members may not necessarily agree with all of the statements contained in the following book reviews. These boards do not assume responsibility for the reviewer's assessments of the books that they evaluate.


Seawalls are one form of coastal protection. They may be used singularly or combined with other measures. When shore and upland areas are endangered by inundation or by a high erosion rate leading to high economical or ecological losses seawalls may become "A MUST." There is, however, much misunderstanding on the use of seawalls and their possible disadvantages related to their upsetting of natural beach processes and particularly to their contribution to beach erosion in general. Disagreements on the function of seawalls have caused problems for coastal managers. It is generally agreed that shore management must tend to adhere to natural processes. This is best accomplished by "soft measures" like beach and dune nourishment.

For various reasons, an optimal strategy is not always possible. It may often be decided to build a seawall just to protect shore property. The role of the coastal engineer then is to clarify the possible advantages and disadvantages of a decision on protection which may related not only to the local problem but to the neighboring shores as well.

The ASCE-sponsored technical conference "Coastal Sediments 1987," held in May, 1987, had as one of its themes "the effects of seawalls on the coast." Various points of views were presented in technical sessions and in one plenary meeting. It would be very time-consuming for readers of the proceedings to summarize the main points of general value. We shall, therefore, be thankful to The Journal of Coastal Research for the initiative taken in preparing an extensive summary useful for a special issue of the journal.

The index for the eight papers is:

The Effects of Seawalls on the Beach: An Extended Literature Review, by Nicholas C. Kraus, p. 1.
Seawalls: The Need for Research, Dimensional Considerations and a Suggested Classification, by Richard Wegge, p. 29.
Seawalls Versus Beaches, by Orrin H. Pilkey and Howard L. Wright III, p. 41.
Permitting Coastal Armoring Structures, by Aram V. Terchunian, p. 67.
The Effects of Coastal Protection Structures on Beaches Along Northern Monterey Bay, California, by Gary B. Griggs and James F. Tait, p. 95.

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