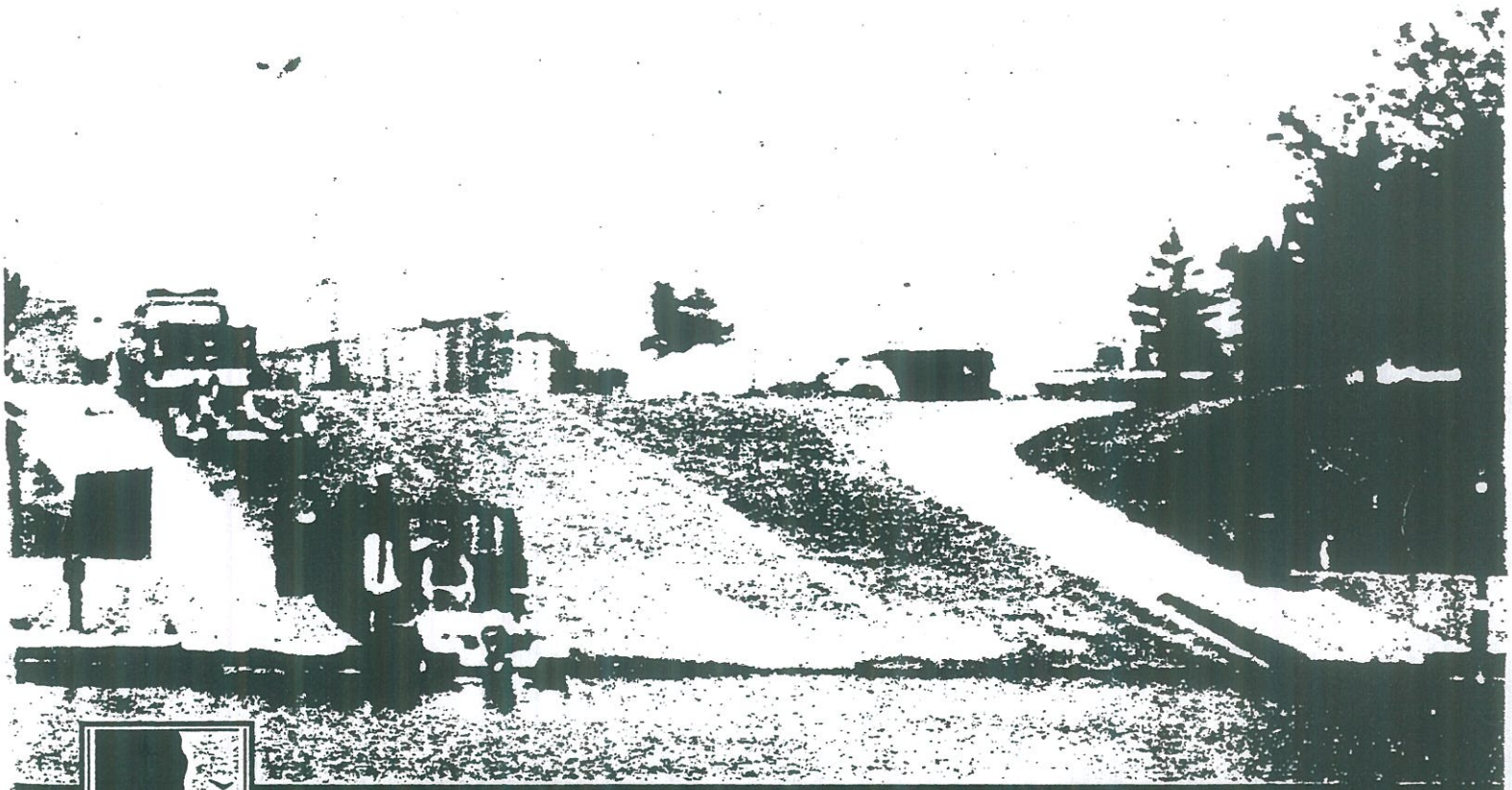
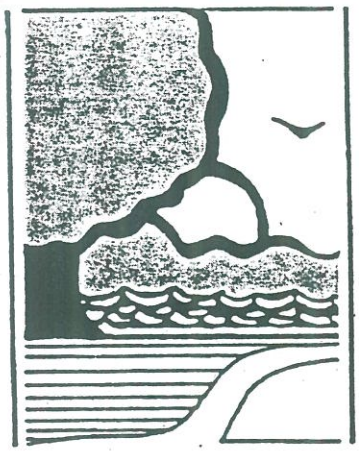
A Guide to **Boating and Canoe Access Development** in Illinois



Illinois Department of Natural Resources

A Guide To
Boating and Canoe Access Development
in
Illinois

ILLINOIS



DEPARTMENT OF
NATURAL
RESOURCES

Illinois Department of Natural Resources

June 1998

ACKNOWLEDGMENTS

The State of Illinois and the authors wish to acknowledge the cooperation of several organizations and consulting firms who granted permission to use materials from their publications and engineering designs for the development of this guide.

Clark Engineers MW, Inc.
Peoria, IL

Cumberland County Highway Department
Toledo, IL

Klingner and Associates, P.C.
Quincy, IL

States Organization for Boating Access
Washington, D.C.

Will County Forest Preserve District
Joliet, IL

Authors
Cary McDonald, Ph.D.
Jeff Wait
Spencer Ely
University of Illinois at Urbana-Champaign

Mick Rosendahl, Project Leader
Division of Grant Administration
Illinois Department of Natural Resources

In compliance with the Illinois Human Rights Act, Illinois Constitution, Title VI of the 1964 Civil Rights Acts, Section 504 of the Rehabilitation Act of 1973 as amended, the Americans with Disabilities Act of 1990, and the U.S. Constitution, the Illinois Department of Natural Resources does not discriminate on the basis of race, color, sex, national origin, age or disability. If you believe you have been discriminated against in any program, activity or facility please contact the Equal Employment Opportunity Officer, Department of Natural Resources, U.S. Fish & Wildlife Service, Washington, D.C. 20240. Telecommunication Device for Deaf and Hearing Impaired Conservation Information (for TDD only), (217)782-9175. Illinois Bell Relay Number 800-526-0844

Printed by Authority of the State of Illinois
500/6-98

TABLE OF CONTENTS

ACKNOWLEDGMENTS i

TABLE OF CONTENTS ii

INTRODUCTION 1

LOCATING AND ACQUIRING SITES 3
- Environmental Assessment 3
- Inventory Existing Sites 4
- Evaluating Potential Launch Sites 5
- Acquiring Property 7

DESIGNING AND CONSTRUCTING FACILITIES 9
- Basic Landside Facilities 9
- Basic Waterside Facilities 14
- Canoe Launch Area 19
- Accessibility 19
- Guidelines for Designing Facilities 20

OPERATIONS AND MAINTENANCE OF FACILITIES 22
- Legal and Public Responsibility 22
- Operations 22
- Maintenance Plan 23
- Safety Program 24

FINANCING PUBLIC BOAT LAUNCH FACILITIES 25

APPENDICES 27
- A Proposed Public Access Acquisition and Development Checklist 28
- B Boat Launch Classification 30
- C Single-Lane Launch Ramp: Cumberland County Highway Department 31
- D Multi-Lane Launch Ramp: East Peoria 32
- E Canoe Launch Ramp: Des Plaines River Canoe Access 33
- F Sample Maintenance Schedule 34
- G List of Figures and Tables 35
- H State Permit Requirements 36
- I Active Downstate Illinois Statewide Permits 38

BIBLIOGRAPHY 39

INTRODUCTION

This guide is provided primarily for small, local government agencies in Illinois that are considering the development of a boat or canoe access facility for their agency. As the State, through a program managed by the Illinois Department of Natural Resources, provides funding for many of these facilities, it was considered appropriate to develop this publication to improve the usefulness, safety, and cost efficiency of boat and canoe access facilities in Illinois.

Boat and canoe access facilities are not common structures in all areas and often a small community's ramp will serve boaters and canoers from a wide geographic area. Although a positive influence in terms of tourism, boating facilities can be very expensive to operate, maintain, and secure. Agencies planning new facilities are well advised to review this aspect as well as how to provide initial acquisition and construction costs.

For small agencies, the planning, design, and construction supervision of boat and canoe access facilities is typically done by outside engineering consultants. Larger agencies may be able to rely on in-house staff although outside assistance may be necessary to solve difficult design problems.

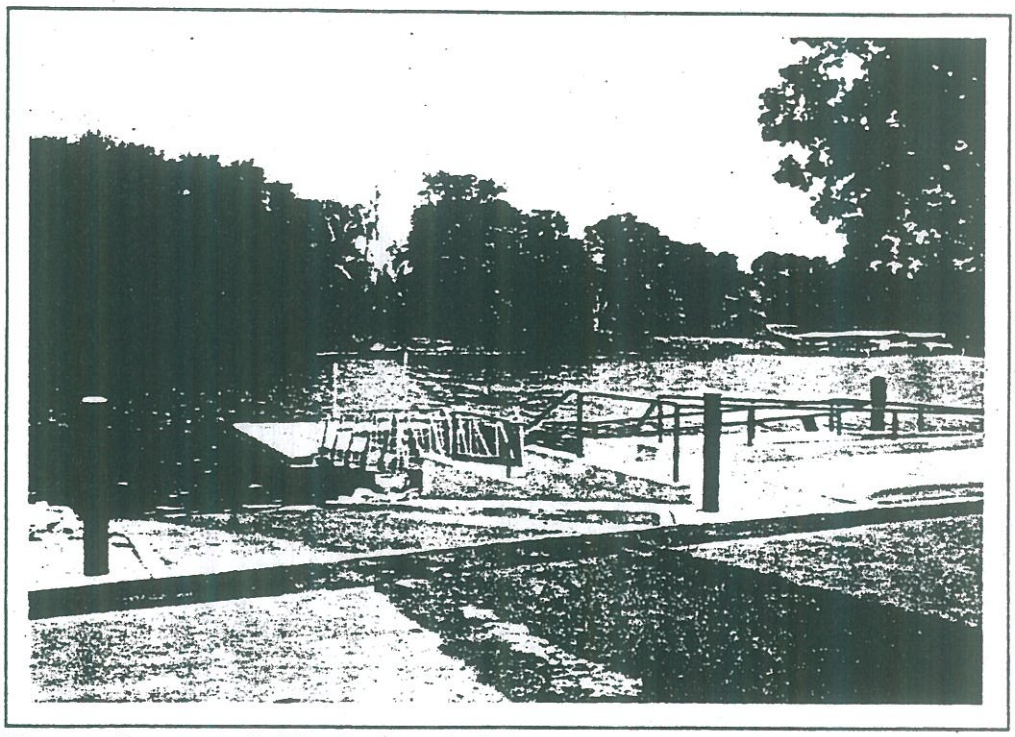


Figure 1. Boat access facility, Kesler Park, Quincy, IL

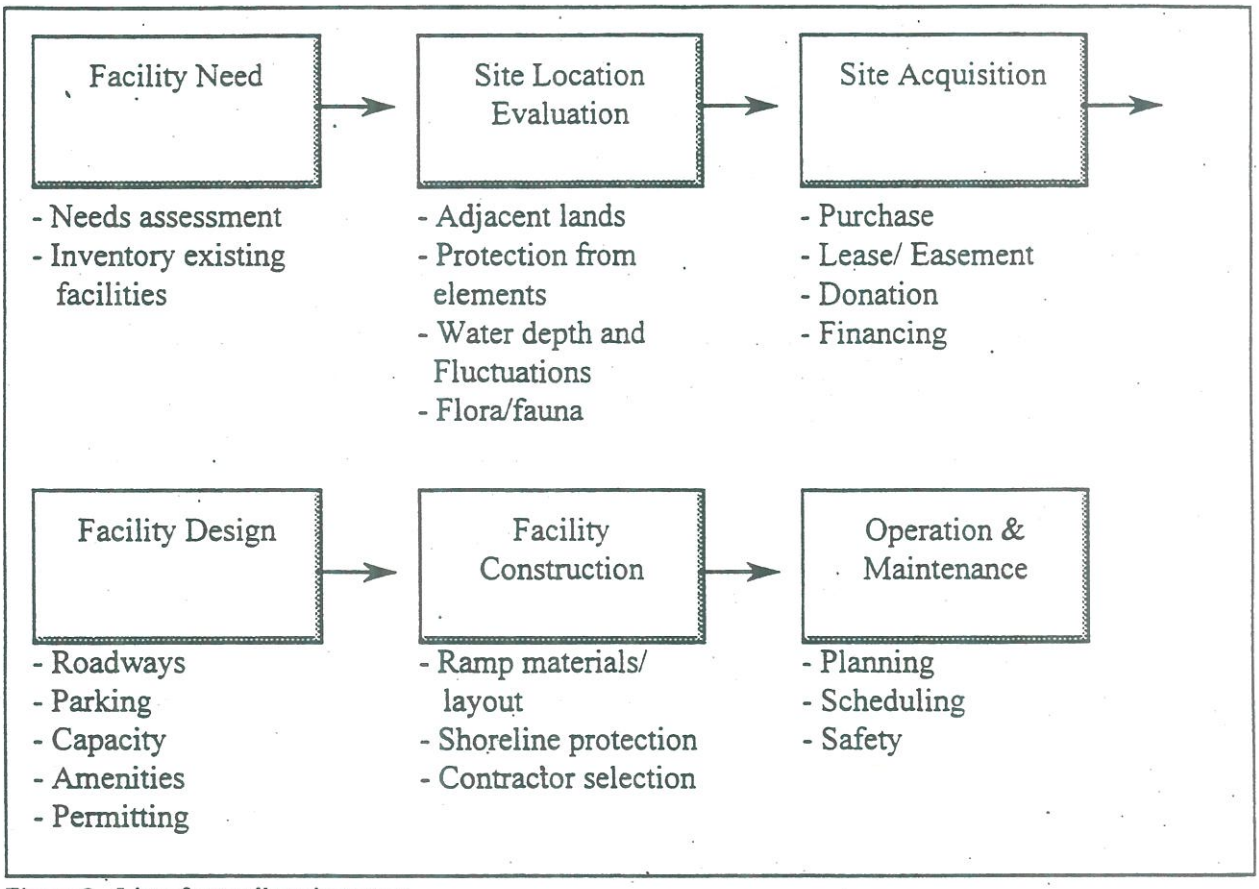


Figure 2. List of overall project steps

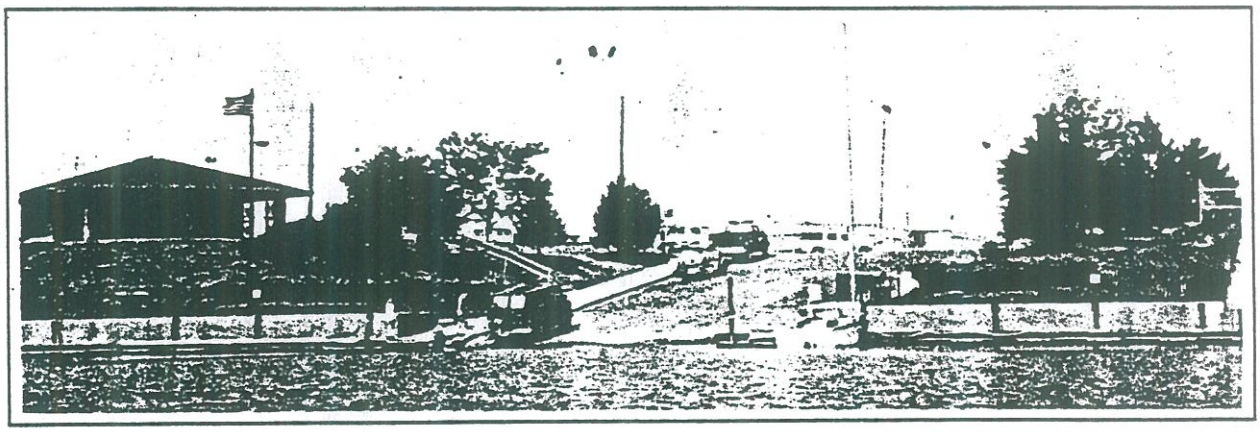


Figure 3. Boating facility, Cal-Sag Channel, Alsip, IL

LOCATING AND ACQUIRING SITES

Environmental Assessment

Former uses and the natural features of a specific site can enhance or detract from the utility of the site. Items to consider include:

- **Former Uses**

  Landfills. The proposed site should be inspected for obvious uses incompatible for a public use area. If possible, records of previous ownership and use should be examined.

  Petroleum Storage. As with landfills, records of previous ownership and use should be examined. Underground (or even above ground) gasoline storage tanks should be identified and removed.

  Historic/Archaeological Significance. The Illinois Historic Preservation Agency should be contacted for information on possible historic or archaeological significance of the site.

- **Natural Features**

  Protected Plants or Animals. The proposed launch site may be home to endangered or threatened plants and/or animals. In such a case, restrictions and regulations may prohibit development of the area. Biologists at the Illinois Department of Natural Resources should be contacted for this information.

  Wetlands. Wetlands are often protected under both federal and state law. Since boat and canoe access areas are built where water meets land, there is a good possibility that the potential launch site is located on or near a wetland. Every precaution must be taken to ensure that the project team does not acquire protected property that can not be developed.

  Drainage Tiling or Ditches. Many state and local laws prohibit altering the natural flow of water and drainage. Care should be taken to identify where drainage tile or culverts intersect the potential launch site and what engineering procedures will be followed to ensure legal compliance.

  Soil Type. The type of soil can affect the stability of shorelines and ramp foundations. Check with local experts (county soil and water conservation district office) about the potential implications of the soils at the particular launch type.

Topography. Consideration should be given to the topography of the proposed launch area. Areas with significant slope or rugged terrain may demand costly construction techniques and reduce the efficiency of launching and retrieval.

Inventory Existing Sites

Project administrators must take an inventory of existing and potentially competing boat and canoe launch sites in the immediate vicinity. If other sites exist, find out who uses them, how much they are used, and what facilities and amenities are offered. The question of need (demand) for an additional launch site must be answered early in the evaluation process.

- **Landside Location.** Several factors associated with the landside location need to be considered.

  Road Access. Roads to powered boat access sites should be suitable for large vehicles with trailers. If roads are not suitable, planners must determine the costs of upgrading or repair.

  Obstructions. Power lines, overhanging trees, railroad crossings, bridges, or other obstructions should be noted and planned for before acquisition.

  Easements. The site must be examined for existing utility crossings.

  Structures. Existing structures on the site should be modified for safety and utilized or removed.

  Natural Features. Topography, vegetation, rock formations, and soil-type are all important natural features to be considered. Unique natural resources must be identified and protected.

- **Waterside Location.** Several factors associated with the waterside location of the launch site must be considered.

  Rocks and Boulders. Fluctuating water levels may expose and hide rocks and boulders near the launch site creating a potential hazard.

  Excessive Vegetation. Algae blooms that have retreated for the winter may explode during the summer leading to a possible sign of polluted water and problems for the launch site.

Winter Icing Conditions. The presence of heavy icing during the winter should be considered when designing the launch ramp and dock.

Existing Uses. It is important to find out what activities normally take place in and around the proposed launch area. For example, barge/commercial traffic may influence location and design of launch facility.

Underwater Utilities. Planners should check for the presence of underwater cables or pipelines near the proposed launch site.

Currents. Prevailing wind direction can impact the wave and current action at the launch site. River launch sites should be located on the cutting side of the river away from the active cutting area (see Figure 5).

Dredging. An initial evaluation may uncover the need for some minor dredging or obstruction removal at the potential launch site.

Siltation Rate. Information should be gathered on the siltation rate of the water body as a whole and the specific location of the proposed launch site. Areas with heavy siltation problems may require more initial and on-going dredging.

Pool Rise and Fall. Many impounded water bodies fluctuate considerably. At impoundments associated with flood control, the water level change is gradual but usually continuous; the high water level generally occurs in late spring or early summer. Free-flowing rivers may fluctuate most during periods of excessive precipitation. It is recommended to obtain water depth records over a period of 5 to 10 years. These records can then be examined to obtain average water levels.

Evaluating Potential Launch Sites

The first step in selecting potential boat launch sites is to rank available sites according to demand and suitability. Demand can be determined through a process of local and/or regional needs assessment. This can be accomplished in a variety of ways: mail surveys, telephone interviews, on-site interviews, or even setting up a survey station at the local library or post office. Suitability should be looked at very broadly by examining an entire area, not simply the specific shoreline where a launch may be placed. Specific site plans will be considered later. It should be noted that when evaluating potential launch sites, different criteria must be considered when looking at launch sites on lakes and launch sites on rivers. For example, planners will be more concerned with wind and wave action at lake sites, while current and water-depth fluctuations will be more of a concern at river launch sites.

A well done pre-acquisition evaluation will avoid the purchase of unsuitable property. Furthermore, now is also the time to select and evaluate viable alternative sites. Consideration should also be given to any required permits or zoning changes needed to develop the site.

An evaluation of potential launch sites should include the following (see Appendix A for a Proposed Public Access Acquisition and Development Checklist):

- **Road Access.** Information should be obtained on the roads servicing the water body. Ideally, public access sites should be located close to an improved road.

- **Protection from the Elements.** Waves, wind, and current are natural elements that must be considered.

  Wind. Identification of local prevailing wind direction is important (see Figure 4).

  Waves. Natural or man-made breakwaters may be necessary to alleviate wave action caused by winds. Wakes from other watercraft or barges can also lead to problems associated with wave action.

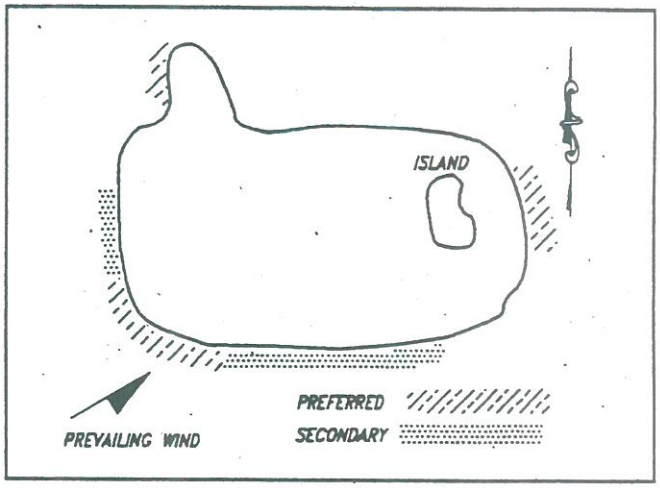


Figure 4. Prevailing wind direction and launch location (SOBA, 1996)

Current. In rivers and streams, boat launch sites should be placed on the cutting side, the side where current flows, as opposed to the depository side (see Figure 5). On the cutting side the water is deeper and currents reduce shoaling. However, the area where the cutting action is strongest must be avoided. A site located there could be eroded by the natural flow of the river.

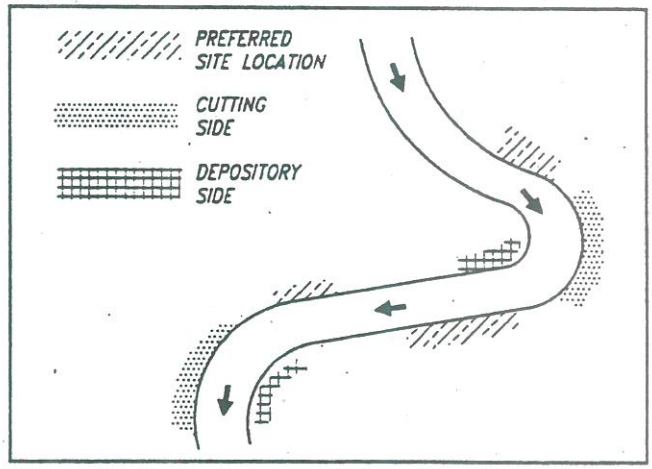


Figure 5. River and current characteristic (SOBA, 1996)

- **Water Depth and Fluctuations.** The minimum water depth at the end of a ramp should be 3 feet at design low water level. An otherwise preferred site that does not meet this

requirement can be altered by dredging. Man-made water bodies such as reservoirs may have significant but predictable water fluctuations. In such instances schedules and water fluctuation data can be obtained from the managing authorities. In general, natural water bodies are influenced by precipitation, evaporation, and other climatic conditions. Consequently, average high water and average low water data should be obtained for the proposed launch area. On lakes and rivers, water depth fluctuation and other important information about the water body can be obtained from governmental agencies such as the U.S. Geological Survey, U.S. Army Corps of Engineers, and the State Water Survey. Useful information can also be obtained from local experts such as property owners, marina operators, or other frequent users of the area.

- **Bottom Conditions.** Items to consider include snags, submerged structures, wrecks, springs, and type of bottom material (mud, sand, rock).

- **Flora and Fauna.** The presence of nesting sites, rookeries, or spawning areas may render a site unacceptable. Some areas may contain endangered species of mussels and fresh water clams known to exist in Illinois. Check with biologists at the Illinois Department of Natural Resources for assistance. Wetland areas should also be avoided.

- **Conflicts.** Local landowners with riparian rights to the water body may be the most vocal opponents to the development of a public boat or canoe launch facility. Common concerns raised by opponents include: (1) public use will overburden the area's capacity and diminish their enjoyment, (2) a belief that they have greater rights to the water body because they own adjacent land and pay taxes, (3) public abuse of the area will decrease property values, and (4) gasoline motors and garbage will pollute "their" water body. Local property owners may try to compete with the government agency for acquisition of the site, thereby halting public development. A positive and truthful exchange of information will help smooth out potentially hostile situations. The public has a legally protected right to boat on public bodies of water listed by the Department of Natural Resources (92 Ill. Adm. Code 704, Appendix H). Any interference with public rights should be referred to the DNR's Office of Water Resources.

Acquiring Property

When considering acquisition options, it is important to realize that different governmental entities may be faced with unique opportunities and challenges. Large cities, small villages, park districts, forest preserve districts, and private enterprises will all begin the process with different financial situations.

Points to consider when acquiring property include:

- **Local Ordinances & Zoning Codes**

- **Ownership**

  Purchase. Outright purchase, with no rights or reservations retained by the seller, is usually the best option for acquiring property. Title should be clear with no encumbrances on the property title that would preclude the proposed development.

  Gift/Donation. Donated property must be subject to the same scrutiny as purchase. An unsuitable piece of property is no bargain, even if it is free.

  Condemnation. Condemnation is usually unpopular and a last resort for both sides involved in a land transfer. It can be time consuming and very costly. There are, however, times when condemnation is the only, and even preferred option. For example, if the owners' title is clouded, condemnation may be the only avenue to a clear title.

  Transfer. Property exchange between public and private entities is a process frequently used in order to provide a diversity of outdoor recreation opportunities.

- **Use Without Ownership**

  Lease. If fee simple purchase is not possible, a lease for the proposed launch site may be acceptable. This arrangement is usually for a set period of time and for a specific purpose. For projects receiving development/construction grant assistance from the Illinois Department of Natural Resources, the following amoritization schedule is utilized; therefore, an appropriate lease term should be negotiated.

Total Grant Amount	Time Period After Receipt of Final Grant Payments
$0 - $25,000	7 years
$25,001 - $99,999	12 years
$100,000 - $250,000	17 years
Over $250,000	25 years

  Easements. Easements are rights sold or given to use land in a specified way. For example, a landowner may provide a right-of-way easement for an access road to the launch site.

DESIGNING AND CONSTRUCTING FACILITIES

This section is designed as an overview of the design and construction process. The details of each site must be worked out with a professional firm with experience in this area. Local and state requirements should be clarified early in the design process. Basic landside and waterside facilities are identified. A boat ramp classification system, including both landside and waterside facilities developed by SOBA and under review by the Illinois Department of Natural Resources, is located in Appendix B.

Basic Landside Facilities

In designing landside components, careful consideration should be given to the expected number of visitors to the launch site. Future expansion will be much easier if considered in the initial design. Basic facilities generally include the following: access road, interior road system, parking area, shoreline protection and stabilization, landscaping, utilities, security lighting, and fencing. Figure 6 displays many of these basic components.

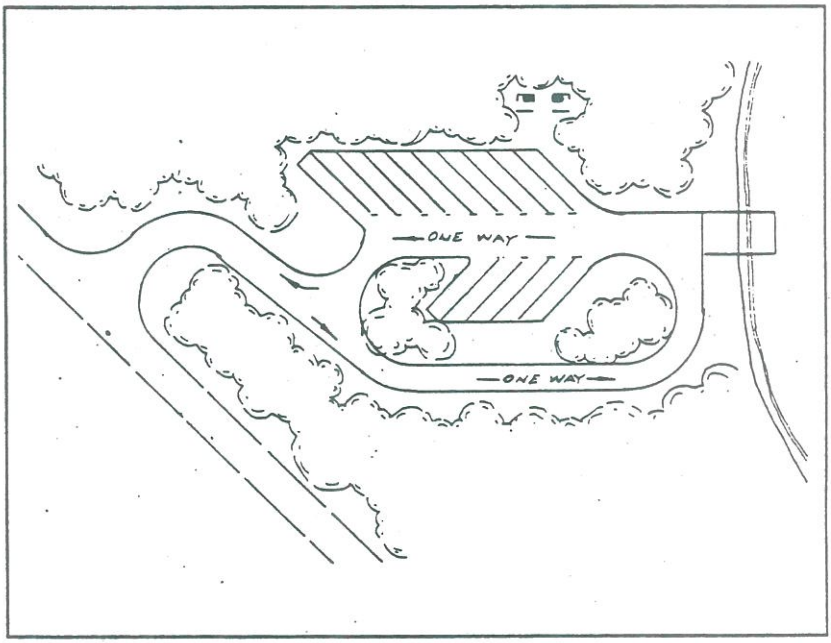


Figure 6. Basic facility components (SOBA, 1989)

Considerations in the design of landside components include:

- **Access Road**

  Location. State and/or local requirements should be checked regarding the safe distance specification for access roads intersecting public roads.

  Design. Typically, access roads are two-lanes totaling about 24 feet, with grades that do not exceed 10 percent. Depending on traffic and use patterns, a single-lane road may be adequate.

Materials. Paving is the preferred method. Pavement should be applied over a 3 to 12 inch base of gravel or crushed-rock. Asphalt concrete and portland cement concrete are two good surface materials. Both of these surface materials have their own situation-specific advantages. Consult with construction experts to decide which is best for a specific project. For smaller budgets, aggregate can be used as a suitable access road material.

Drainage. If necessary, culverts or bridges may be installed to prevent the road acting as a dam, interrupting the natural surface water flow. The road should be crowned a minimum of 2 percent to facilitate drainage. Drainage is a critically important and complicated aspect of overall site design. Project planners and engineers must ensure that all facets of site drainage are thought out and that all state and local laws are followed.

Signage. Signs should conform to Illinois Department of Transportation's uniform sign system. The traffic flow of the area should be clearly marked to avoid traffic congestion (smooth flow of traffic) and accommodate vehicles maneuvering with trailers. Warning signs should be placed on roads with direct access to ramps.

- **Interior Roadways**

One-Way Roads. One-way interior roads should be at least 15 feet wide.

One-Way Roads Within Parking Area. One-way interior roads within a parking area should be at least 20 feet wide.

Two-Way Roads. Two-way interior roads should be at least 20 to 24 feet wide.

Parking Rows. The roadway to trailered boat access sites should have a minimum outside turning radius of 30 feet at 90 degree corner to enable vehicle-trailer units to turn with ease and safety (see Figure 7).

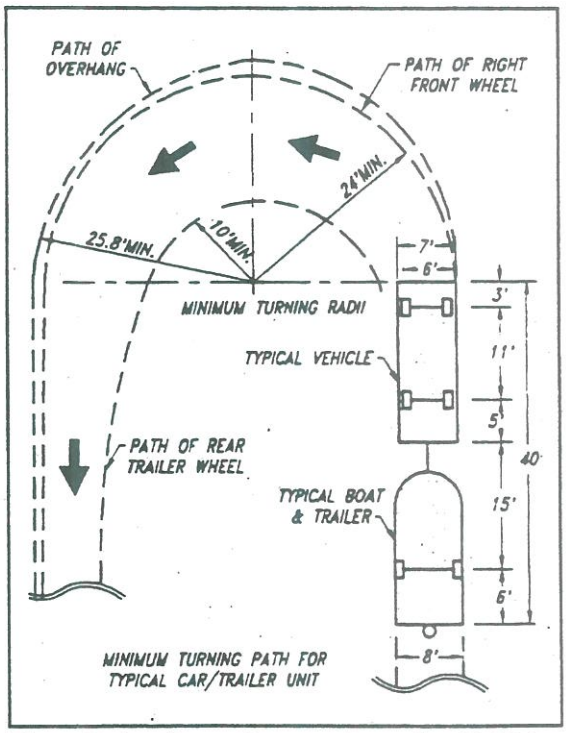


Figure 7. Interior roadway turning radius (SOBA, 1996)

- **Parking Areas**

Number of Spaces. High turnover areas (4 or more times daily) should have 20 to 30 spaces per launch lane. Low turnover areas (3 or less times daily) should have 30 to 50 spaces per launch lane.

Dimensions. The average parking space dimension for a vehicle with trailer is 10 feet by 40 feet; recreational vehicle spaces are 10 feet by 50 feet; and vehicle only spaces are 10 feet by 18 feet. Pull-through spaces are better than back-out spaces (see Figures 8 and 9).

Grading. Parking areas should have a minimum of 2% grade to allow for drainage.

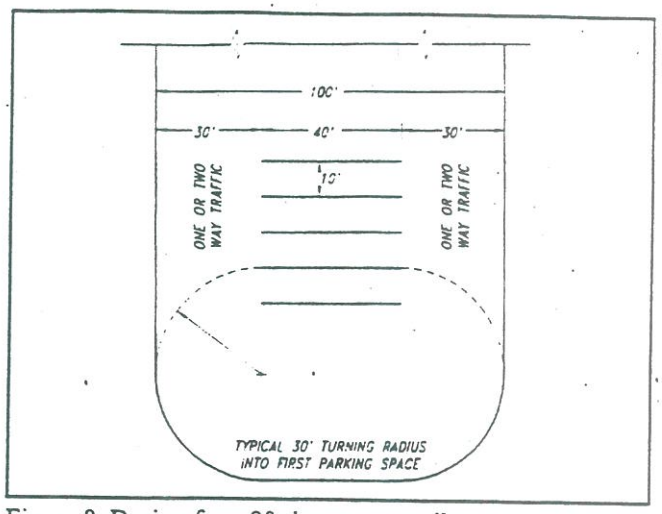


Figure 8. Design for a 90-degree car-trailer parking space (SOBA, 1996)

Handicapped Parking Spaces. Barrier-free parking should be located no more than 200 feet from the major components of the boat or canoe launch area. One of every 8 barrier-free spaces must be van accessible, that is 8 to 9 feet wide with an adjacent 8 foot wide aisle. Parking spaces for persons with disabilities using vehicle-trailers should be 10 feet by 40 feet with a 6 foot wide access aisle (an accessible parking space must be 16 feet wide, Illinois Vehicle Code, 1988). Other barrier-free parking spaces must be 8 feet wide with an adjacent 6 foot wide access aisle. Appropriate vertical signage is necessary to designate and control the use of accessible spaces. The ratio of total number of parking spaces to accessible spaces is displayed in Table 1.

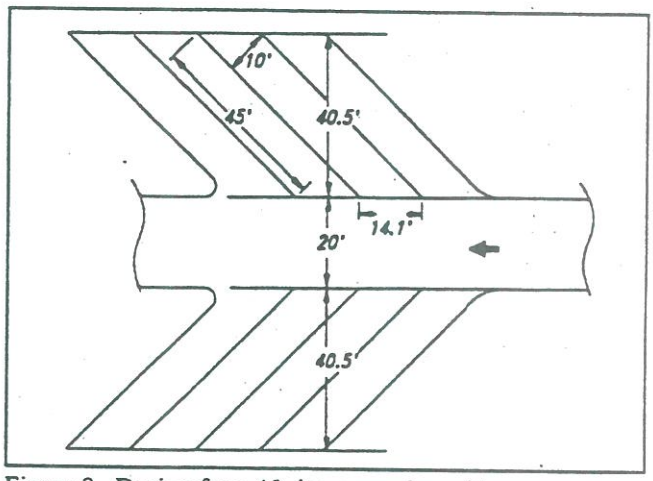


Figure 9. Design for a 45-degree angle parking space (SOBA, 1996)

Table 1. Accessible parking spaces.

Total Number of Parking Spaces	Number of Accessible Parking Spaces
1 - 25	1
26 - 50	2
51 - 75	3
76 - 100	4
101 - 150	5
151 - 200	6
201 - 300	7
301 - 400	8
401 - 500	9
501 - 1000	2% of total
over 1000	20 plus 1 for each 100 over 1000

An example of an accessible parking space is displayed in Figure 10.

Curbing. When designing parking areas, keep in mind that curbing is useful to help assure visitors park in designated areas, to facilitate smooth traffic flow, and used as medians and traffic islands.

Materials. Hard surface is preferred for parking areas. Asphalt concrete and portland cement concrete are two good surface materials.

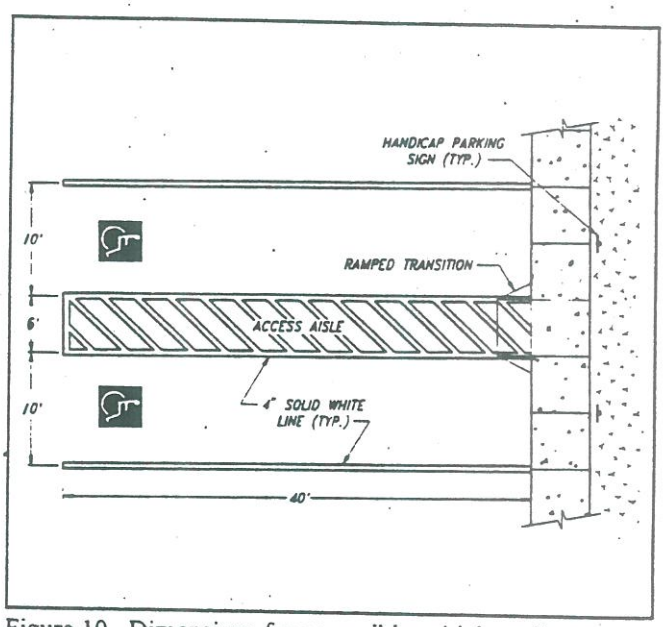


Figure 10. Dimensions for accessible vehicle-trailer parking spaces (SOBA, 1996)

- **Shoreline Protection and Stabilization**

Whether because of changes to the existing bank, or simply to prevent erosion, the shoreline must be protected from rain, runoff, current, and wake action. Tips on choosing shoreline protection materials include:

Sustaining Materials. Sustaining materials are used to protect the bank from the ravages of both natural and man-made elements such as rain and wake-action. A geotextile fabric is often used under most sustaining materials to allow for water

drainage. Common sustaining materials include concrete, riprap, commercial paving stones, sheet-piling, tri-lock interlocking stone, and gabions (rock filled wire containers).

Natural Cover. Natural cover is an inexpensive and effective form of shoreline protection, especially on gradual slopes within lakes or impoundments. Natural cover is most attractive and environmentally sound and when designed properly can be very effective.

Sea Walls/Wing Walls. Sea walls and wing walls, also known as bulkheads, are generally the most expensive form of shoreline protection. These should be used in the absence of a viable alternative.

- **Other Landside Design Considerations**

Utilities. For grant assisted projects it is required that utility lines be buried. Solar power may be used unless unusual site conditions prevent such action or make it cost prohibitive. If water is desired, arrangements must be made to tap into an existing public water supply or construct a well at the site.

Security Lights. Security lights are useful for boaters returning to the site after dark or preparing to leave prior to sunrise. Lighted facilities are less subject to vandalism.

Fencing. Busy launch sites located adjacent to residences should be fenced unless site is located within a floodway.

Landscaping. Landscaping is one means of constructing a buffer between the launch site and adjacent residences.

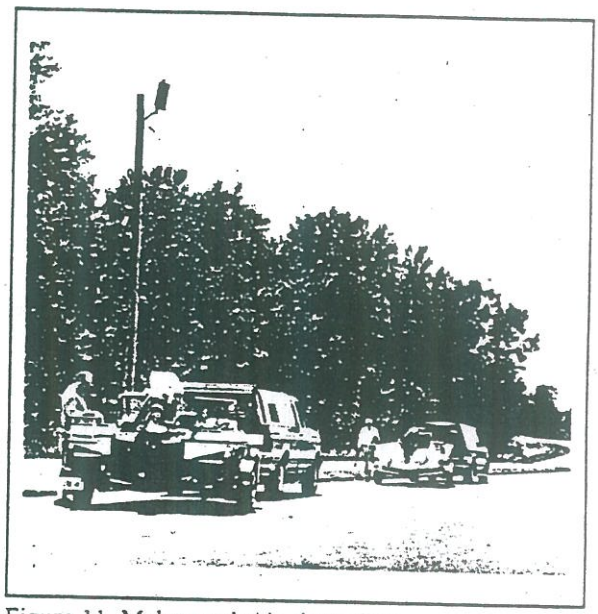


Figure 11. Make-ready/tie-down lane

- **Optional Site Amenities**

Make-Ready/Tie-Down Area. This is an area used to prepare watercraft prior to launching and to secure watercraft for travel from the site. Make-ready/tie-down areas can greatly enhance the efficiency of launching and retrieving watercraft (see Figure 11). A make-ready/tie-down area should be considered for heavily used sites and sites with 25 or more vehicle-trailer parking spaces.

Restrooms. Several different types of toilet facilities exist. These include flush toilets, vault toilets, composting toilets, and recirculating chemical toilets. Typically, toilets will not be funded in the first phase of a grant funded development.

Trash Receptacles. A wide variety of trash receptacles exist, depending on the trash load anticipated and the need to prevent vandalism.

Fish Cleaning Station. One location within the launch area, with adequate facilities, will encourage fishermen to clean their catch there, rather than spread fish remains around the launch area.

Concession Operation. Concession stands may be desirable at a boat launch facility; however, these are not funded under Illinois' current boat access grant program.

Rental Docks. Rental facilities, such as docks, are conveniences for users; however, they also are not funded under the Illinois grant program.

Public Telephones. Although not funded under Illinois' current grant program, telephone facilities allow immediate access to emergency services if needed.

Basic Waterside Facilities

Waterside components are designed to accommodate the primary function of a boat launch facility: boat launching and retrieval. Therefore, the launching ramp itself should be carefully designed to accomplish easy and safe use by the public. Basic waterside facilities include launching ramps and courtesy docks.

Considerations in the design and construction of waterside components include:

- **Boat Launching Ramps**

The dimensions (width and grade) of launch ramps, the surface material of the ramp, and the location/orientation of the launch ramp are important factors to consider. See Appendices C and D for an example of a single-lane and a multi-lane ramp.

Width and Grade of Ramp. Launch lanes are generally 12 to 20 feet wide. Typically, 1 lane will accommodate roughly 50 launchings and retrievals per day. The below water length and depth should be sufficient to handle the largest expected vehicle-trailer combinations. Barriers at the end of the launch ramp are not recommended. They can trap vehicles that back their trailers over the barrier which can block ramp access for other visitors.

For ease of launching and retrieval, boat launching ramps should have an above water grade of 12 to 15%. In general, the above water portion of the launching ramp should be 2 feet above the highest expected water level. It is recommended to have an apron on the upper portion of the ramp extending from the top of the launch ramp long enough so that the launch ramp and the apron will accommodate a vehicle and boat trailer. The below water portion of the ramp should be at least 2.5 to 3 feet below the lowest expected water level. The transition from water to land should be accomplished through the construction of a vertical curve, which is essentially a pivot point between the shallow above-water grade (12 to 15%) and the steeper below-water grade (see Figure 12). Because many vehicles cannot pull a boat and trailer up a grade of more than 20%, this figure is recommended as a maximum for the below-water grade.

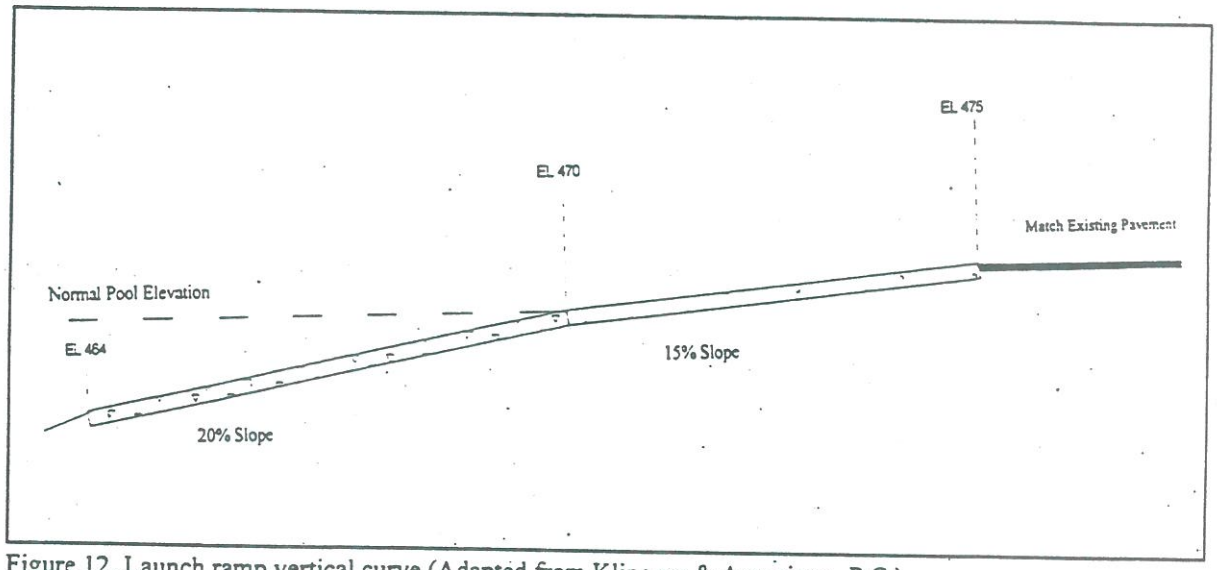


Figure 12. Launch ramp vertical curve (Adapted from Klingner & Associates, P.C.)

Surface Material. Concrete is the most popular surface material; although aggregate may be used for low volume areas as well as for canoe launch areas. Types of concrete ramps include cast-in-place concrete, pre-cast concrete planks and panels, and pre-cast slabs.

Cast-in-place concrete ramps are generally 6 to 8 inches thick with rebar reinforcement. For placing and finishing the concrete for any underwater portion of the ramp, the area usually must be cofferdammed and water free (see Figure 13).

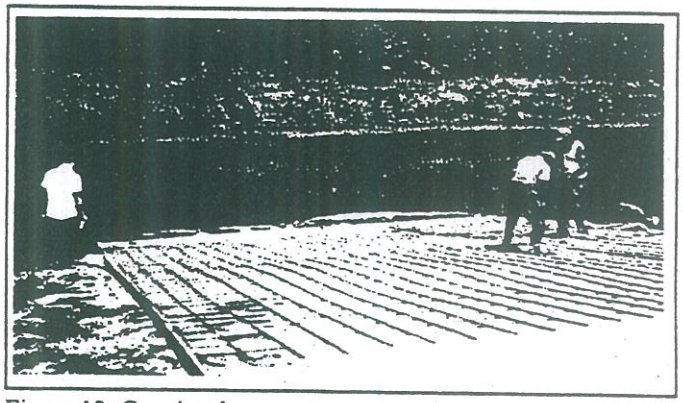


Figure 13. Cast-in-place concrete ramp (SOBA, 1989)

Precast concrete planks and panels should only be used in limited situations on lakes and noncurrent applications. See Figure 14 for an example of a pre-cast plank panel and Figure 15 for an example of a pre-cast plank ramp.

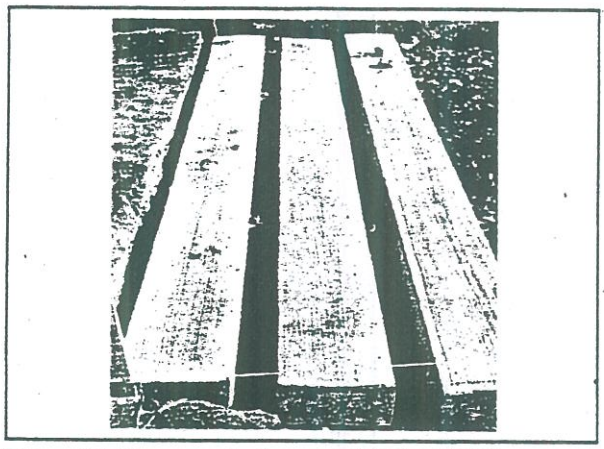


Figure 14. Pre-cast plank panel (SOBA, 1989)

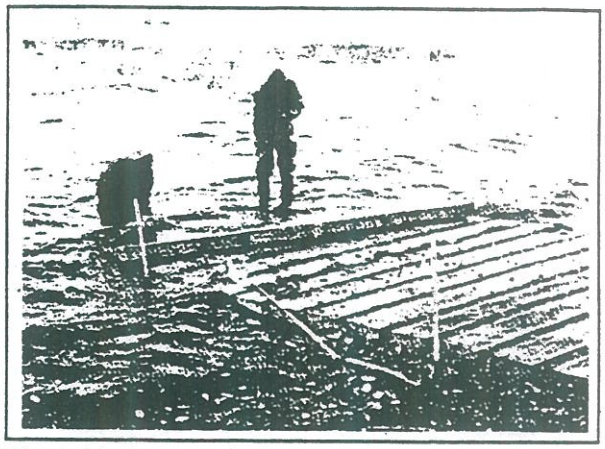


Figure 15. Pre-cast plank ramp (SOBA, 1989)

Pre-cast slabs are much larger than pre-cast planks and require heavy equipment to move the slab into place. The underwater portion of the ramp is constructed from reinforced concrete and pushed into place with a bulldozer (see Figure 16).

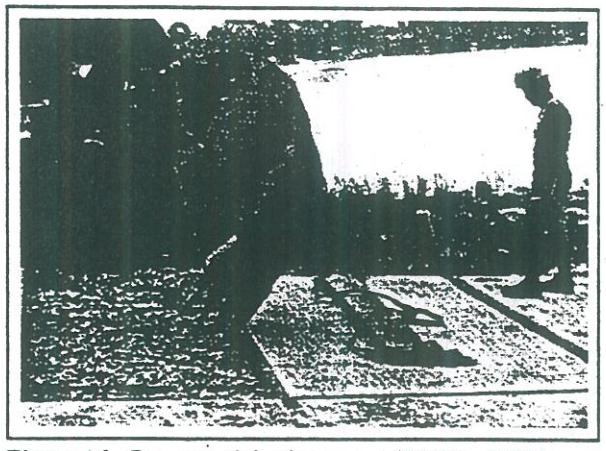


Figure 16. Pre-cast slab placement (SOBA, 1996)

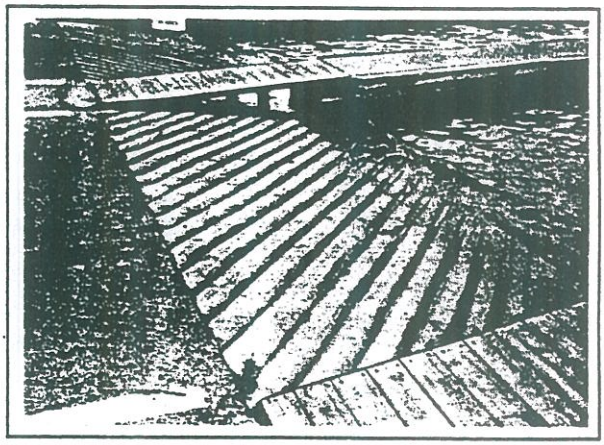


Figure 17. Surface finishing with V-groove design

Surface Finishing. The preferred finish for launching ramps has proven to be V-groove design, in which V-grooves 1 x 1 inch are formed into the wet concrete, at a 60-degree angle to the centerline. This finish provides excellent traction for vehicles, wears well over a long

period, and has an attractive appearance. V-grooves should not be formed into portions of the ramp used to access boarding docks, since they are difficult for people with disabilities to negotiate (see Figure 17).

Location and Orientation. It is desirable for launch ramps to be located in areas free from wave action and currents or there may be a need to construct breakwaters. Ramps should be located as far away from swimming areas and other recreation facilities as possible. Launch ramps should be located in a direct route from the entrance point. Signs that warn drivers of the approaching ramp should be placed along entrance route to prevent night time drive-ins. Speed-bumps may also be installed to warn drivers of approaching danger. One-way traffic both in and out of the ramp area is desirable. In general, river launch sites should be oriented perpendicular to the shoreline, or slightly angled toward downstream.

- **Boarding Docks**

Boarding docks make the launching and retrieval process more accessible and convenient, and can also be used to clearly separate launching lanes (for multi-lane ramps) without excess signage. Different types of boarding docks include:

Floating Docks. Floating docks are designed to raise and fall in response to fluctuating water levels (see Figure 18).

Bridges. Bridges are designed to bridge the distance between the shore and a floating boarding dock. One end of the bridge is hinged to a shore structure while the other end rests on the floating dock but is unattached, enabling it to adjust to changing water levels (see Figure 19).. A hinged metal plate "transfer plate" should be attached between the dock and bridge for a smooth transition.

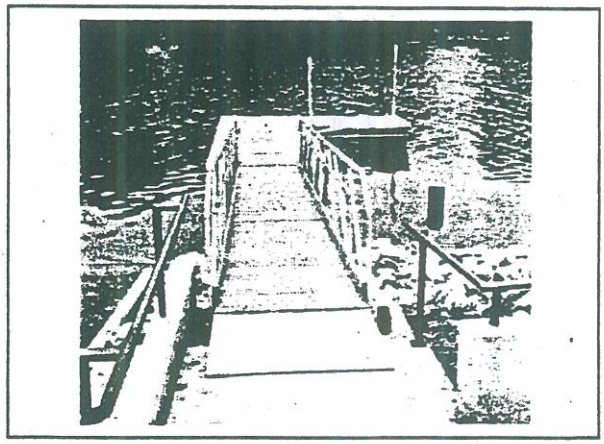


Figure 18. Floating dock

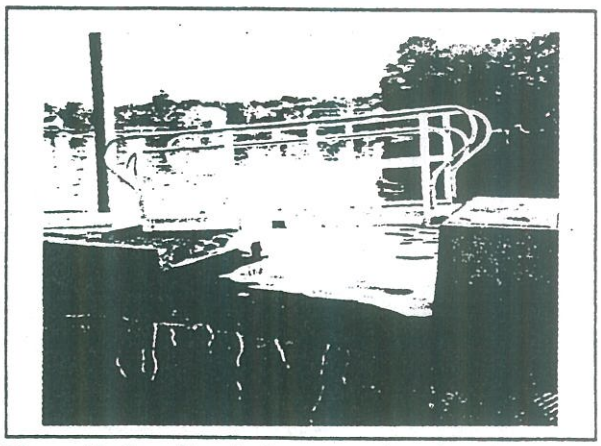


Figure 19. Boarding dock connected to shore by a bridge (SOBA, 1996)

Abutments. An abutment is a wedged-shaped structure commonly installed at the top of a launching ramp to anchor the shoreside end of a floating boarding dock (see Figure 20).

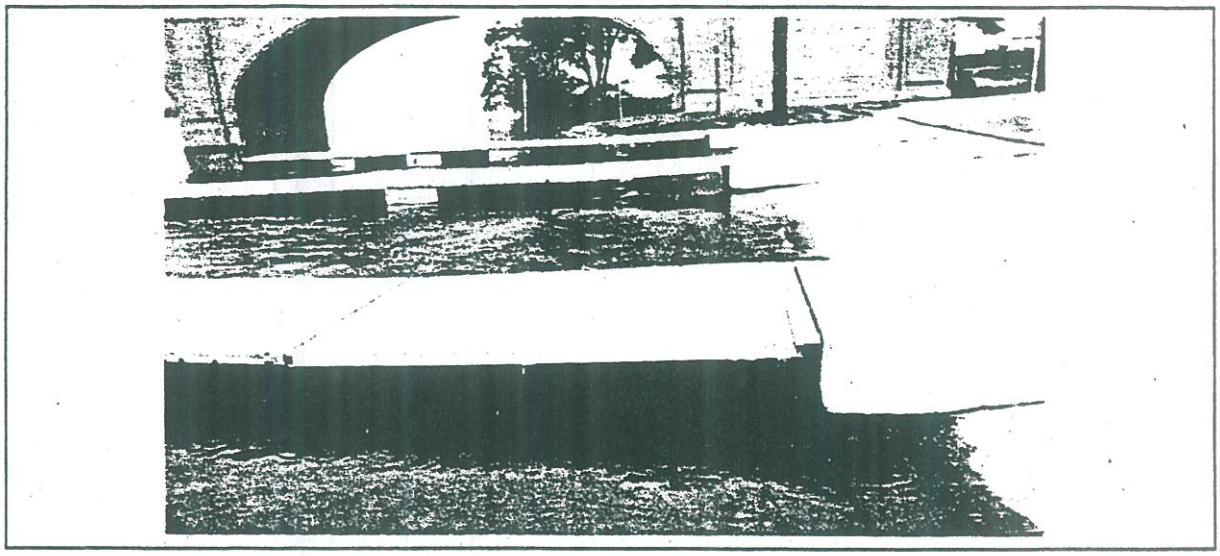


Figure 20. A dock abutment, Lake Springfield

Non-Floating Docks. Piers, bulkheads, skid piers and rock cribs are examples of non-floating docks. Non-floating units are effective only when water elevation fluctuations are minimal, because their deck height is permanently fixed. An example of a non-floating dock (skid-pier) is displayed in Figure 21.

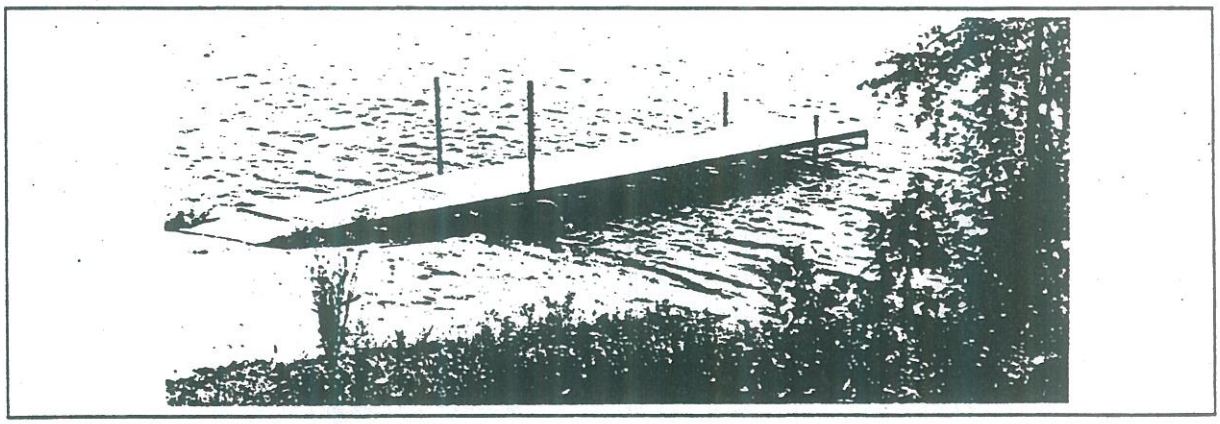


Figure 21. Non-floating dock (SOBA, 1996)

Canoe Launch Area

Canoe launch areas are becoming increasingly popular. An example of a canoe launch design is found in Appendix E. Important considerations in developing canoe access areas include:

Access. Unless a locality already owns property suitable for a canoe launch site along a public river or stream, gaining access should be the first priority.

Facilities. Canoe launch areas are generally much less developed than large boat launch areas. Basic facilities include an access road from a nearby public roadway, a parking lot that would accommodate a few vehicles, and usually a non-abrasive aggregate surface material at the water's edge such as grass, sand or wood (see Figure 22).

Figure 22. Basic canoe launch with gravel ramp, Fox River

Location. Topography and distance from an existing access road are two important considerations. Users should not be expected to portage their canoe further than a nearby parking lot to the launch site. As previously identified (see Figure 5), the location of the launch site should consider the natural current of the river.

Accessibility

Throughout the entire design process, attention must be given to accessibility by disabled users. State and federal laws necessitate that public areas such as boat and canoe launch facilities be accessible and safe for these special populations. New boat access sites must be designed and constructed so that they are barrier free and usable by persons with disabilities. This is an important consideration, and any persons evaluating a site should be familiar with federal and state accessibility standards. See the *1990 American With Disabilities Act (ADA), and the 1991 American With Disabilities Act Accessibility Guidelines for Buildings and Facilities* (ADAAG) and the 1996 Design Handbook for Recreational Boating and Fishing Facilities (SOBA, 1996) for information concerning barrier-free access for boat and canoe launch areas.

Guidelines for Designing Facilities

Except for large agencies with in-house design staff, the expertise and objectivity of outside planning and design consultants can be a great asset to any boat launch development project. A planning consultant may be hired as a permanent member of your design/planning staff or for just the time necessary to finish the project. Whatever the employment relationship, their experience and training will be invaluable to your success. A good consultant may even offer you the skills necessary to sell the plan to any overseeing governing bodies, such as boards of directors, executive committees, or the public.

Important steps to consider when hiring a planning consultant include:

- **Request for Consultant Qualifications**

  During the initial screening process to identify a suitable consultant an attempt should be made to match philosophies, obtain a list of the consultant's clients and references, and qualifications of the consultant including certifications, degrees, and publications. After the initial review of these materials, 2 or 3 consultant firms should be invited in for an interview. After that interview, a selection of a suitable consulting firm should be made.

- **Request for Proposal**

  A "request for proposal" is a document prepared by those individuals or agencies seeking services from a consulting firm. This document contains general information about your agency and information about a specific project for which services are being sought. The specific information should include your goals and desires for the project, the individual responsible for managing the project from the agency's perspective, the level of agency involvement, and specifics on how your agency will supervise the progress of the project. The "request for proposal" also includes information on the proposal format and guidelines, the criteria and procedures for the selection of a consulting firm, as well as the list of deliverables the agency expects to have completed by the consulting firm. Finally, the "request for proposal" may include a range of costs for the proposed project and the conditions of the contract.

- **The Proposal**

  After receiving the "request for proposal," a consulting firm will prepare their proposal following the guidelines and requirements contained in the "request for proposal." Their proposal should provide an overview of their consulting firm, clearly identify what they think you want, describe their plan with specific actions (including detailed flow charts, plans, specifications, and as-built drawings of the final product), include a time line for the proposed work, include information on construction supervision, and a clearly defined budget.

- **Permitting**

Various federal, state, or even local permits are usually required in the construction of a boating facility. The conditions necessary to satisfy various permits should be ascertained early and kept well in mind during the site evaluation and facility design processes. The responsibility for meeting permit requirements should be assigned early in the project. For example, permits may be required by the following agencies in the state of Illinois:

1. U.S. Department of the Army, Corps of Engineers.
2. IL Dept. Of Transportation (Div. Of Highways).
3. IL Environmental Protection Agency
4. IL Dept. of Natural Resources concerning "Interagency Wetlands Policy Act" (20 ILCS 830); "State Endangered Species Act" (520 ILCS 10/11); cultural resource impacts (20 ILCS 34/20, *coordinated with the IL Historic Preservation Agency*); and Rivers, Lakes and Streams Act (615 ILCS 5). Permit application is found in Appendix H and list of active statewide permits is found in Appendix I.
5. IL Dept. of Public Health (Campground Licensing & Recreational Area Act, 210 ILCS 95/1).
6. Local building or zoning agencies or boards, where applicable.

OPERATIONS AND MAINTENANCE OF FACILITIES

This section deals with the activities at a boat or canoe launch facility as well as the varied maintenance activities needed for the proper upkeep of the facility. Thoughtful design will greatly enhance the ability to efficiently administer both daily operations and ongoing maintenance. Having clearly defined goals for the finished product will facilitate the safe and effective maintenance and operations of the site.

Legal and Public Responsibility

- **Legal Responsibility**

  Certain legal responsibilities are inherent in administering a boat or canoe launch facility. For example, boat and canoe access facilities must be maintained in a safe condition. If there is any doubt about the legal obligations of operating and maintaining a facility, legal counsel should be secured. Legal advice is also needed when a recreational boating or canoeing program is being established or expanded; the legal responsibilities of the administrator must be clearly understood.

- **Public Responsibility**

  As a public recreation site, boat and canoe launch areas may attract the attention of a variety of users. For both efficiency and safety reasons, administrators must allow only the activities that do not deter from the site's major function of launching and retrieving boats and/or canoes. Only specific planned uses of the launch facility should be permitted. Competing uses and/or activities will impair these planned uses and possibly create unsafe conditions.

Operations

Facility size will limit the variety of uses. Small, low-use facilities are more common in rural areas. Medium-use facilities are nearer population centers, while large, high-use sites are in metropolitan or highly popular tourist areas.

Points to consider in the daily operation of a boat or canoe launch facility include:

- **User Fees**

  User fees can produce revenue for a site; however, by charging a fee, a boat or canoe launch site may be open to liability problems that are not present with not-for-profit operations. The

Illinois legal statutes should be consulted. User fees may be viewed negatively by users. Also, users expect more amenities (services and facilities) when fees are charged. On the other hand, user fees can control use by eliminating casual users. Individuals paying a user fee may also take on a greater responsibility of ownership and respect for the facility. User fees can supplement the revenues necessary to operate and maintain the launch facility; however, they will not provide a substantial source of revenue for these purposes.

- **Facility Rules**

In any public facility certain rules are necessary. For boat launch facilities, typical categories of rules concern pets, fires, storage of boats, commercial use, camping, swimming, waste disposal, parking, and penalties. Examples of typical rules may include: no swimming, no fishing from docks, no trespassing after normal hours of operation, no storing of water craft on site, no fires, no pets, or no commercial use. The public may be informed of some rules through brochures about the site. Signage may be used to inform the public of some rules and regulations at the site (see Figure 23).

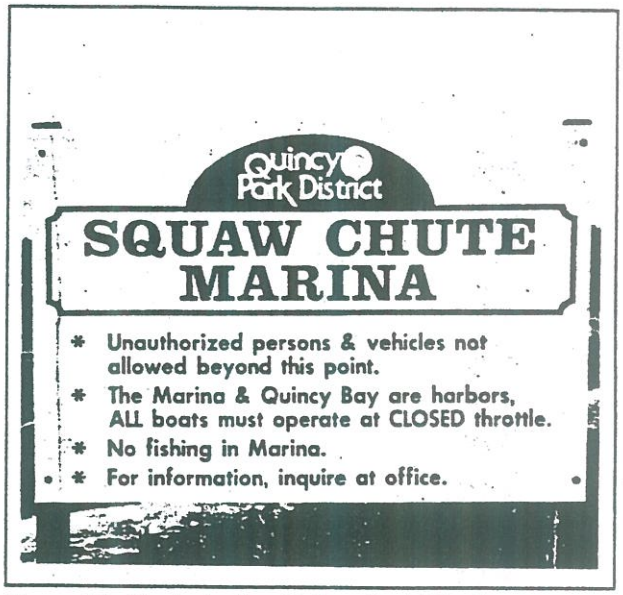


Figure 23. Typical rules, Quincy Park District

Maintenance Plan

Maintenance involves all activities required to keep a boat or canoe launch facility in a condition that will permit functional, convenient, and safe use. A good maintenance program will help employees efficiently, effectively, and thoroughly perform all responsibilities. Good maintenance is the foundation upon which a quality facility is operated. A thoughtful maintenance plan will help employees preserve the intended use, provide for safe use, prevent/deter vandalism, extend facility life, promote a positive image, and reduce litigation. See Appendix F for a sample maintenance schedule.

Maintenance factors to consider include:

- **Categories of Maintenance**

Maintenance falls into one of three categories: frequent, periodic, and special. Frequent maintenance (more often than once or twice per week) generally occurs only at large, high-

use facilities. Frequent maintenance activities involve emptying trash containers, cleaning and resupplying rest rooms, picking up litter, cleaning the ramp of debris, etc. Periodic maintenance (weekly or less frequent maintenance) is most appropriate for low-use facilities. Examples of periodic maintenance activities include mowing, repairing or replacing damaged or vandalized signs, posts, or guardrails, updating bulletin boards, etc. Special maintenance is work of significant nature and is often quite expensive. Major repairs to the ramp structure, road repairs, dock repairs, or even rebuilding or replacing a facility are examples of special maintenance activities. Other special maintenance activities could involve clean-up after flooding, silt removal and dredging.

- **Maintenance Scheduling**

  Maintenance details are determined by facility size and use level. Any facility must ultimately operate within the limits of available resources. Trash load, activity level, mowing needs, and time loads on maintenance crews are all important considerations when scheduling maintenance activities.

- **Planning for Maintenance**

  Whether for one site or multiple sites, it is important to develop an annual maintenance plan which outlines the types and frequency of maintenance tasks. Plans may be done daily, weekly,
  monthly, or even yearly depending upon specific maintenance tasks considered. A graphical representation of the site and its maintenance needs will help with the planning process.

- **Site Security**

  Site security is a primary concern of the agency and users. Sites recognized as unsafe will not be used by the public, thus, wasting a valuable public resource. Agencies should do as much as possible to ensure site security. Adequate signage, lighting, fencing, employee presence, and local police patrols will all help to reduce security and vandalism problems.

Safety Program

A comprehensive safety program will protect your employees and visitors, and can dramatically reduce insurance costs as well. Additionally, the passage of the Occupational Safety and Health Act (OSHA) makes it legally essential. Keys to a successful safety program involve well trained supervisors, hazard awareness, preventative maintenance, incentives/punishments, timely reporting of problems, inspections, and documentation.

FINANCING PUBLIC BOAT LAUNCH FACILITIES

Through state and federal grants and development projects, local authorities in Illinois can often find funding assistance for the development of boat and canoe launch facilities. Eligible agencies are those with statutory authority to acquire, develop, and maintain lands for public park and recreation purposes. This can include counties, townships, municipalities, park districts, forest/conservation districts, and port authorities. Items to consider when applying for this type of assistance include application procedures, contact people, application deadlines, agency eligibility, assistance formulas, matching funds, eligible project costs, and implementation procedures.

The primary funding sources for boat and canoe launch facilities in the state of Illinois include the Illinois Boat Access Area Development (BAAD) grant program, the state's Open Space Lands Acquisition and Development (OSLAD) grant program, the federal Land and Water Conservation Fund (LWCF) grant program, and the Clean Vessel Act grant program. Inquiries regarding these programs should be addressed to:

Illinois Department of Natural Resources
Division of Grant Administration
Lincoln Tower Plaza
524 South Second Street
Springfield, Illinois 62701-1787
Telephone: 217/782-7481
Internet address: grants@DNRmail.state.IL.US

- **Boat Access Area Development Grant Program (BAAD)**

  The Boat Access Area Development grant program is the primary local funding source in Illinois. The program, which is administered by the Illinois Department of Natural Resources, provides up to 90% funding for the acquisition and 100% funding for the development of approved public boat and canoe access areas in Illinois. This program is funded under the "State Boating Act Fund."

  The Illinois Department of Natural Resources publishes a local government participation manual which details how local units of government may apply for grant-in-aid assistance under the state's Boat Area Access Development (BAAD) and other grant programs. Consult these documents for detailed information about the grant program.

- **Open Space Lands Acquisition and Development Grant Program (OSLAD)**

  The purpose of the state's Open Space Lands Acquisition and development (OSLAD) grant program is to assist local units of government in the acquisition and/or development of

public park and open space areas. This program, which is administered by the Illinois Department of Natural Resources, provides 50% reimbursement to meet the growing outdoor recreation needs of the state. It is financed through the State's Real Estate Transfer Tax.

- **Land and Water Conservation Fund Grant Program (LWCF)**

The federal Land and Water Conservation Fund (LCWF) grant program provides up to 50% reimbursement for public outdoor recreation land acquisition and/or development. The purpose of the LWCF grant program is to assist state agencies and local units of government in meeting the country's present and future outdoor recreation needs. Funds for this program come from a portion of the revenues obtained from off-shore mineral deposit receipts, user fees from designated federal recreation areas, federal tax on motor boat fuels, and net proceeds from surplus federal real estate property sales.

- **Clean Vessel Act**

The Clean Vessel Act is a limited-scope program which can provide up to 75% of the cost for installing sewage pump-out and disposal facilities.

APPENDICES

A. Checklist of Possible Items to Consider for Boat/Canoe Access Development

B. Boat Launch Classification

C. Single-Lane Launch Ramp

D. Multi-Lane Launch Ramp

E. Canoe Launch Ramp

F. Sample Maintenance Schedule

G. List of Figures and Tables

H. State Permit Requirements

I. Active Downstate Illinois Statewide Permits

APPENDIX A
Checklist of Possible Items to Consider for Boat/Canoe Access Development

Water Body

Name_____ Water Body ID Code_____

Location: County_____ Twp,Range, Section_____

Lake Water Area:_____Acres River Water Miles _____Miles

Existing Access_____

Distance to Nearest Population Center(s)_____

Site

Known Historic/Archaeologic Features_____

Soil Suitability: Landside_____ Waterside_____

Vegetative Cover_____

Site Terrain Slope: Parking Areas_____ Ramp Area_____

On-Site Improvements_____

_____

Access to Unique Features_____

Restrictive Title Covenants_____

Land Survey Needed_____

Zoning_____

Local Opposition_____

Buffering to Nearest Development_____

Adjacent Land Use_____

Proposed Development

Access Type: Walk-In_____ Car Top_____ Car/Trailer_____

Amenities_____

Parking Units_____ Parking Lot Dimensions_____

Estimated Development Costs — $_____

Road Suitability_____

Need for Additional Land_____

Disabled Access Considered_____ Possible_____

Anticipated Date of Development_____

Management

Maintenance Agreement Possible_____

Local Input_____

Funding

Potential Source(s) and Amount_____

Recommendation

Approve_____ Disapprove_____

Comments

_____

_____

Reviewer_____ ***Date***_____

APPENDIX B
Boat Launch Classification

The States Organization for Boating Access (SOBA) has developed a boat ramp classification system. This system is under review by state agencies throughout the United States, including Illinois. Each launch ramp facility will have a 6 digit code corresponding to type of facility, single or multiple launch lanes, ramp surface, presence of courtesy dock, parking surface, and parking lot capacity.

Type of Facility

Type A	Facility will accommodate any trailerable recreational boat.
Type B	Facility will accommodate any trailerable light recreational boat (bass boats, john boats, pontoons, runabouts, ski boats, etc.)
Type C	Carry down watercraft.

Boat Ramp and Dock

Launch Lanes

s	Single Lane
m	Multiple Lanes

Ramp Surface

P	Paved (any hard surface)
U	Unpaved (dirt, gravel, etc.)

Courtesy Dock

Y	Yes (present)
N	No (not present)

Parking Area

Parking Surface

p	Paved (any hard surface)
u	Unpaved (dirt, gravel, etc.)

Parking Lot Capacity

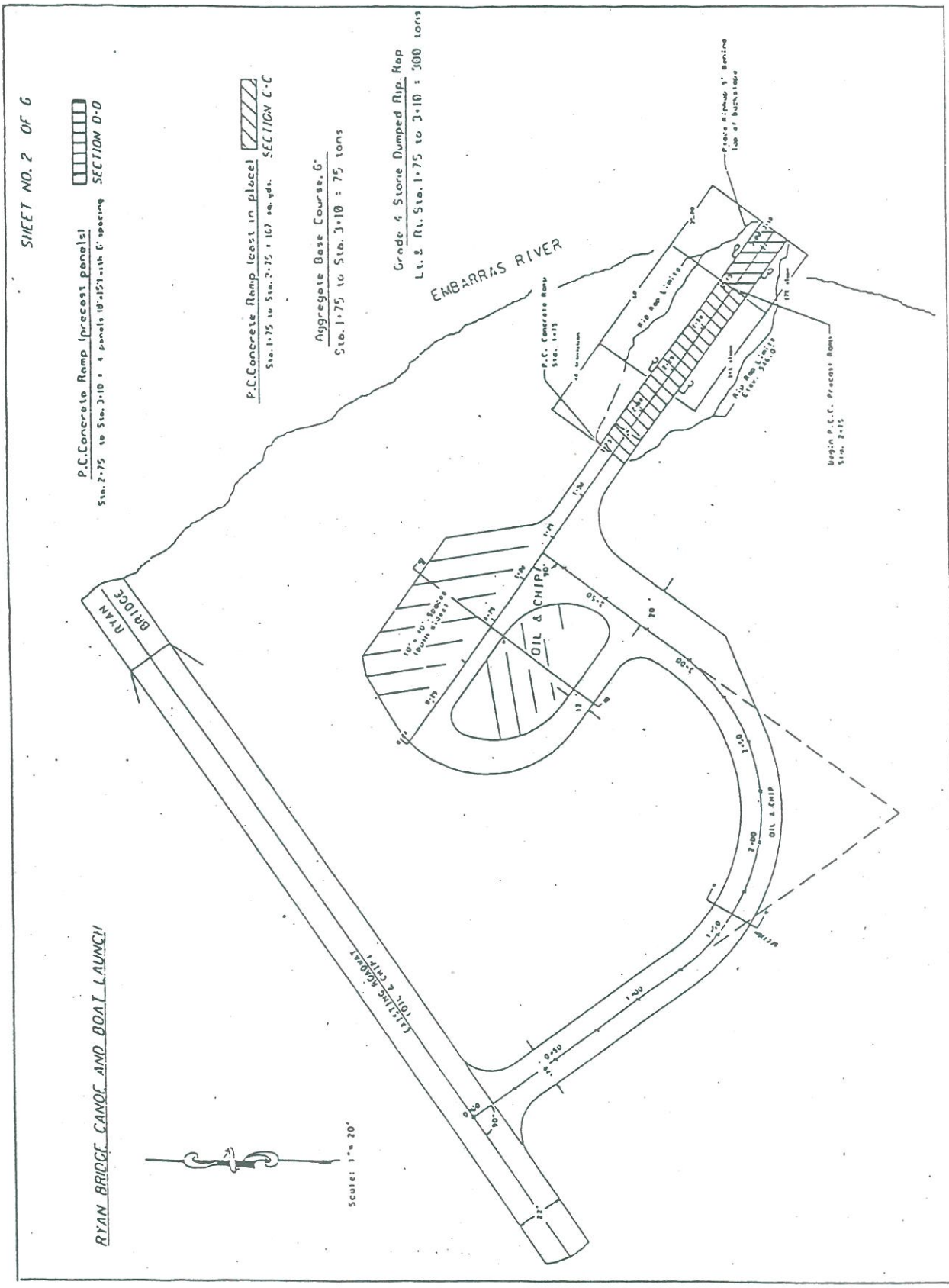
1	51 or more (vehicle/trailer spaces)
2	26 to 50 (vehicle/trailer spaces)
3	25 or less (vehicle/trailer spaces)

For example, a boat launch facility with the code **A m P Y p 2** would be described as follows:

This facility is a Type A with multiple ramp lanes which are paved, with a courtesy dock and a paved parking area with a capacity of 26 to 50 vehicle /trailer spaces.

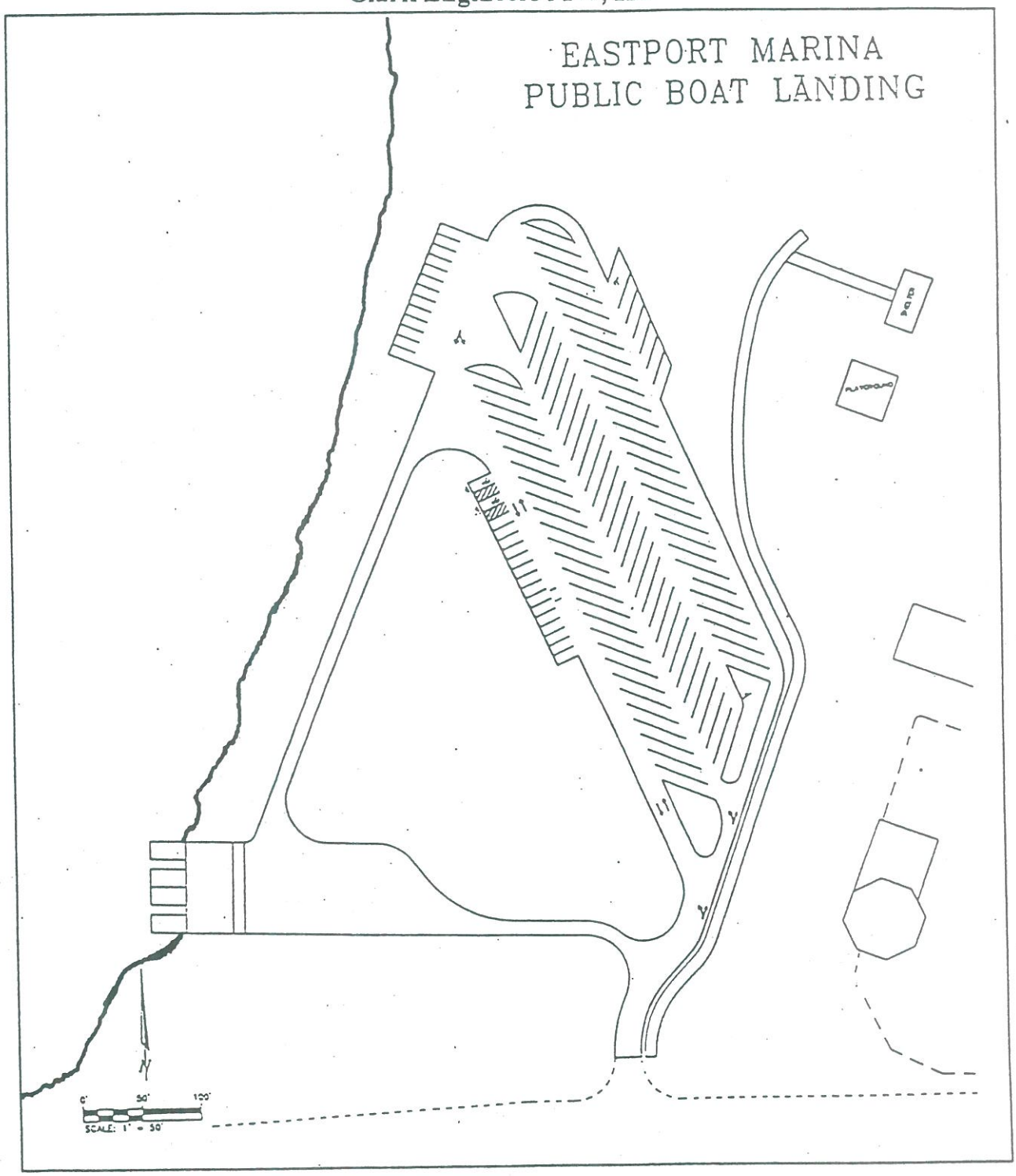
Single-Lane Launch Ramp

Cumberland County
Cumberland County Highway Department



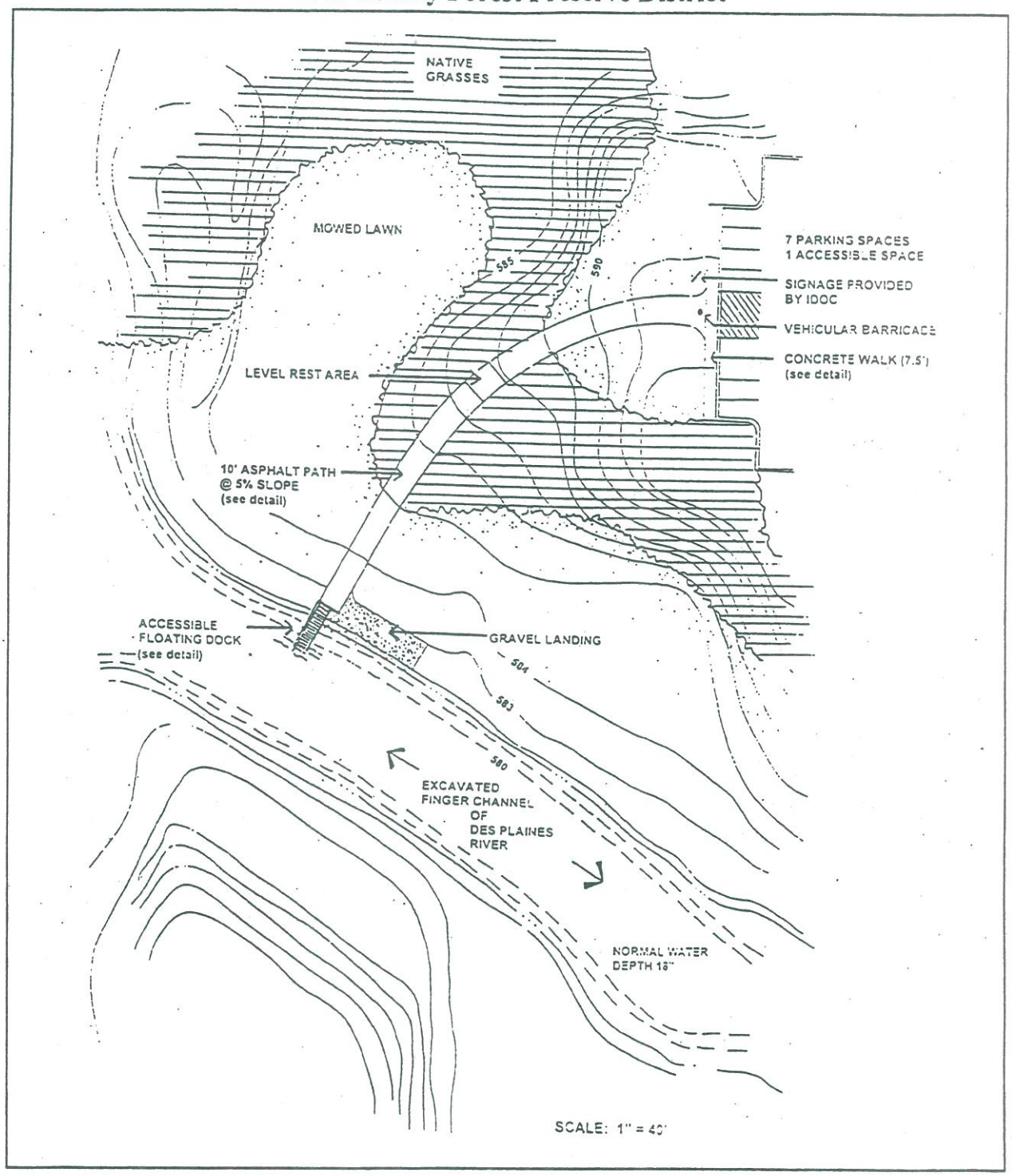
APPENDIX D
Multi-Lane Launch Ramp

East Peoria
Clark Engineers MW, Inc



APPENDIX E
Canoe Launch Ramp

Will County Forest Preserve District



APPENDIX F
Sample Maintenance Schedule

This sample maintenance schedule is intended as a general guide to maintaining boat and cahoe access areas. Depending on the public demand placed on the site, the need for and frequency of the maintenance tasks listed below will vary yearly, monthly, and even weekly. Some of these tasks may not be applicable to every boat or canoe access area, while others have been omitted that may be appropriate for a particular site.

Frequent Maintenance (daily or weekly)

- Trash removal
- Cleaning and restocking of restrooms
- Cleaning debris from launch ramp
- General safety inspection of launch ramp and site facilities

Periodic Maintenance (weekly or monthly)

- Mowing and trimming
- Leveling gravel at ramps or parking areas
- Replacing brochures and other informational material
- Replacing worn skid-pier fenders
- Replacing worn deck boards
- General inspection of equipment and facilities

Special Maintenance

- Repairing launch ramp
- Replacing shoreline protection materials
- Dredging immediate launch area and silt removal
- Painting buildings and facilities
- Renovating and improving site
- Landscaping
- Other large, deferred maintenance projects

Seasonal

- Take in and paint trash receptacles over the winter
- Debris pick-up in spring
- Pruning trees in fall or spring
- Major ramp work during slow season
- Thorough overhauls of maintenance equipment over the winter
- Removal of floating docks in winter months

APPENDIX G
List of Figures and Tables

List of Figures

Figure 1: Boat Access Facility, Kesler Park, Quincy IL....1
Figure 2: List of Overall Project Steps....2
Figure 3: Boating Facility, Cal-Sag Channel, Alsip, IL....2
Figure 4: Prevailing Wind Direction and Launch Location....6
Figure 5: River and Current Characteristics....6
Figure 6: Basic Facility Components....9
Figure 7: Interior Roadway Turning Radius....10
Figure 8: Design for a 90-Degree Car-Trailer Parking Space....11
Figure 9: Design for a 45-Degree Angle Parking Space....11
Figure 10: Dimensions for Accessible Vehicle-Trailer Parking Space....12
Figure 11: Make-Ready/Tie-Down Lane....13
Figure 12: Launch Ramp Vertical Curve....15
Figure 13: Cast-In Place Concrete Ramp....15
Figure 14: Pre-Cast Plank Panel....16
Figure 15: Pre-Cast Plank Ramp....16
Figure 16: Pre-Cast Slab Placement....16
Figure 17: Surface Finishing with V-Groove Design....16
Figure 18: Floating Dock....17
Figure 19: Boarding Dock Connected to Shore by Bridge....17
Figure 20: A Dock Abutment....18
Figure 21: Non-Floating Dock....18
Figure 22: Basic Canoe Launch With Gravel Ramp....19
Figure 23: Typical Rules, Quincy Park District....23

List of Tables

Table 1: Accessible Parking Spaces....12

APPENDIX H
State Permit Requirements

The following material was taken from the document "Protecting Illinois Waters, A Cooperative Effort: by You and the Illinois Environmental Protection Agency, Illinois Department of Natural Resources, and the U.S. Army Corps of Engineers." A copy of the document can be obtained by contacting the Illinois Department of Natural Resources, Office of Water Resources.

Construction projects in Illinois waterways, floodplains and wetlands often require both State and Federal authorization. In order to facilitate such permit applications, a joint application form has been developed to expedite the application and approval process (an example of a form is attached). The application process is designed to simplify the approval process for the applicant seeking project authorization from the U.S. Army Corps of Engineers, the Illinois Department of Natural Resources, Office of Water Resources, and the Illinois Environmental Protection Agency. Each agency has specific responsibilities associated with water resources in the state of Illinois. These specific responsibilities are stated in the document identified above. If questions arise, the Illinois Department of Natural Resources, Office of Water Resources should be contacted.

APPENDIX H

JOINT APPLICATION FORM

1. Application Number (to be assigned by Agency)	2. Date Day Month Year	3. For agency use only (Date Received)

4. Name and address of applicant	5. Name, address, and title of authorized agent
Telephone no. during business hours A/C ( ) _____ A/C ( ) _____	Telephone no. during business hours A/C ( ) _____ A/C ( ) _____

6. Project Description and Remarks. Describe in detail the proposed activity, its purpose, and intended use. Also indicate the drainage area at the watershed to the downstream limit. Use attachments if needed.

7. Names, addresses, and telephone numbers of all adjoining and potentially affected property owners, including the owner of the subject property if different from applicant.

8. Location of activity

Legal Description:

_____ ____ ____ ____ ____ ____
Name of waterway at location of the activity 1/4 Sec. Twp. Rge. P.M.

Address:

_____
Street, road, or other descriptive location

_____ _____
In or near city or town Name of Local Governing Community

_____
County State Zip Code

9. Date activity is proposed to commence _____ Estimated Time of Construction _____

10. Is any portion of the activity for which authorization is sought now complete? _____ Yes _____ No If answer is "Yes" give reasons in Item 6.

Month and Year the activity was completed _____ Indicate the existing work on drawings.

11. List all approvals or certifications required by other federal, interstate, state, or local agencies for any structures, construction, discharges, deposits, or other activities described in this application. If this form is being used for concurrent application to the Corps of Engineers, Illinois Department of Natural Resources, and Illinois Environmental Protection Agency, these agencies need not be listed.

Issuing Agency	Type Approval	Identification No.	Date of Application	Date of Approval

12. Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein? _____ Yes _____ No (If "Yes", explain in Item 6.)

13. Application is hereby made for authorization of the activities described herein. I certify that I am familiar with information contained in the application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

_____
Signature of Applicant or Authorized Agent

_____
Typed or Printed Name of Applicant or Authorized Agent

NCR FORM 426
10 AUG 95

APPENDIX I
Active Downstate Illinois Statewide Permits

The following list contains a number of active preauthorized statewide permits. If work is being considered in one or more of these areas, contact the Illinois Department of Natural Resources for further information.

Statewide Permit #1	Section 65(f) Fringe Construction (only applicable to Rock River in Rock Island County)
Statewide Permit #2	Rural Bridges (over streams with drainage areas of less than 25 square miles)
Statewide Permit #3	Barge Fleeting Facilities
Statewide Permit #4	Aerial Utility Crossings
Statewide Permit #5	Minor Boat Docks
Statewide Permit #6	Minor Floodway Construction
Statewide Permit #7	Outfalls
Statewide Permit #8	Underground Pipeline & Utility Crossings
Statewide Permit #9	Minor Shoreline and Streambank Protection Activities
Statewide Permit #10	Accessory Structures and Additions to Existing Residential Buildings
Statewide Permit #11	Minor Maintenance Dredging Activities
Statewide Permit #12	State and County Bridge and Culvert Replacement Structures

BIBLIOGRAPHY

Illinois Department of Natural Resources. (July 1997). *Boat Access Area Development Program: Local Government Participation Manual.* Springfield, IL: Illinois Department of Natural Resources.

Illinois Department of Natural Resources. (April 1997). *OSLAD/LWCF Outdoor Recreation Grant Programs: Local Participation Manual.* Springfield, IL: Illinois Department of Natural Resources.

States Organization for Boating Access. (1989). *Handbook for the Location, Design, Construction, Operation, and Maintenance of Boat Launching Facilities.* Lansing, MI: Waterways Development Public Sector Consultants, Inc.

States Organization for Boating Access. (1992). *Guidelines for the Design of Barrier-Free Recreational Boating and Fishing Facilities.* Lansing, MI: Waterways Development Public Sector Consultants, Inc.

States Organization for Boating Access. (1996). *Design Handbook for Recreational Boating and Fishing Facilities.* Lansing, MI: Waterways Development Public Sector Consultants, Inc.