An Introduction to

Kayak & Canoe Launch Design

(a.k.a. Non-Motorized Boat Launches)

by

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Course 240
4 PDH (4 Hours)

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COURSE DESCRIPTION

This course is an introduction to the various design concepts for Non-Motorized Boat (NMB) launches. The course will discuss the various aspects of NMB launches including appropriate launch designs, site considerations, development and permitting, site amenities, and accessibility. As you will learn, the design considerations for Non-Motorized Boats are very different from power boats, and the two types of boating really don't mix well at the same location.

Non-Motorized Boats include kayaks, canoes, paddle boards, *small* sailboats, and even Crew Rowing boats. Of these, the popularity of kayaks probably exceeds all of the others combined. There are many reasons for this including kayaks are durable, lightweight, manageable in shallow water, quiet, beginner friendly, environmentally friendly, and they are relatively inexpensive to purchase and maintain.

Kayaking is popular worldwide including in Venice, Italy.

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If a potential client comes to you asking for a proposal to design a kayak launch and asks you to describe the launch you recommend, how do you respond? If you're not a kayak or canoe enthusiast or if you've never designed a kayak/canoe launch, then this course is for you.

Introduction…

To some… boats are boats. But to users, that's like saying cars are cars regardless of whether they are sports cars, sedans, vans, trucks, buses, or garbage trucks. Power boats require trailers, need deeper water, travel at higher speeds (as compared to NMBs) , carry multiple people, and require governmental registrations. Whereas, NMBs can be transported on top of cars, carried in the bed of a pickup truck, or loaded on a trailer. They can operate in shallow water, travel slowly and quietly, carry one or two people, and typically are unregistered. Obviously, the users of power boats and NMBs are looking for different experiences. Power boat users are fishing, water-skiing, partying, or travelling to a location. NMB users are experiencing nature, enjoying the wildlife and vegetation, just escaping the hustle and bustle of city life, or navigating white-water rapids.

Even a public beach can be used by kayakers without disturbing others

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Unfortunately, too many governmental entities focus their recreational budgets on developing water access facilities for power boats and fail to recognize the different needs and desires of NMB users. And many engineers design NMB facilities based on power boat designs, and then later, they and their clients wonder why the facilities aren't being used. There are many excellent launch sites that have been "ruined" by clients and engineers with *good-intentioned* designs. Often they mistake the low usage as an indicator of a lack of demand and/or interest by the community. As a result, governmental entities lose interest in opening new NMB facilities and divert future funding to motor boat facilities. What they fail to realize is that NMB facilities are in great demand if properly constructed and truly are much less expensive to construct. Often, two or three NMB launches may be constructed for the cost of just one power boat launch. It may be necessary for you to educate your client to these differences… which may provide you the edge you need over competing engineers for the project.

An asphalt paved ramp to a natural shore line for launching

The primary differences found in NMB launches as compared to motorboat launches are:

1. They require less land area for the parking needed to support the launch being installed since trailer parking is limited.
2. Some of the best launches are easily accessible natural areas with shallow water.

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3. Launches with a limited number of parking spaces are preferable… sounds odd doesn't it? But more parking means more users.
4. Parking should be primarily for cars and trailer parking limited to 2-3 spaces.
5. Few NMB launches provide bathroom facilities or even running water.

A small dedicated NMB launch with limited parking, picnic tables, area signage, and public restroom.

This course…

Ever noticed a parked car beside a bridge with no one fishing and no one around? Of course you have. It's probably because the car's driver is kayaking or canoeing. All they wanted was a place to park in close proximity to water with reasonable access to the water, whether it is a river or a slow meandering stream. It doesn't take much for someone to create a NMB launch. But, next to a public roadway with possibly high-speed traffic, is not the safest place for a public launch site…. And if the launch site becomes popular, there will be even more problems with traffic safety, parking, environmental issues, possible trespassing, etc.

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This course will cover the elements needed for the design and development of a successful Non-Motorized Boat launch. These elements are broken down into six topics:

1. Design Considerations
2. Parking
3. Access
4. Types of launches
5. Facilities
6. ADA accessibility

Designing a NMB launch sounds simple enough but speak with some users and they will quickly list what's wrong with many existing launch sites. So not addressing all of these essential elements during the project design can result in less than desirable outcomes which will reflect poorly on you and your company. All of these elements are equally important and need to be addressed satisfactorily to prevent the launch from becoming a waste of money.

Note:
For simplicity, this course will use the term "NMB" to include all Non-Motorized Boats such as kayaks, canoes, small sailboats, and other small personal craft. The term "kayak" will be used to describe both kayaks and canoes.

DESIGN CONSIDERATIONS

A NMB launch is of little value if the users can't easily access the water. This access includes ease of parking a vehicle, the route from the vehicle to the launch site, and the actual access to the water. So let's look at the design considerations required to address each of these three aspects. These design considerations include evaluating existing conditions at the site, minimizing the development costs, and researching the users.

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Evaluating Existing Conditions

As in any land development project, you will need to know the site before you even begin designing. Keep the questions below in mind when you make your inspection of the site. These are some of the basic… yet essential… questions you need answered before beginning a design for the launch:

1) What is the property size? You can't develop more than will fit on the property.
2) What is the usable area? Does the property have wetlands, steep bluffs, ravines, unsuitable soils, etc. preventing development in certain areas?
3) Is the site heavily vegetated, wooded, grass lands, rocky, sandy, etc.?
4) How will the public access the site? Can ADA access be provided? Is it an urban or rural location?
5) What type of water body is available? Is it a stream, river, lake, or beach?
6) What is the normal water level? Is it constant, fluctuating, seasonal, tidal?
7) Are there currents or waves that must be considered?

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8) What type of launch will be required? Will it be a natural launch, an improved ramp, a pier, or a floating dock?
9) What design elements can be used to minimize the environmental impact to the site?
10) What environmental issues exist on the site?

Once you've completed your site inspection and made your field report, the research phase begins. Some of the questions you will need to research are:

1) What regulatory restrictions will there be on the site? Regulations may include zoning, recreation, garbage, traffic and pedestrian circulation, and more. So check with the local regulatory entity about their specific requirements.
2) What will the design and construction budget allow?
3) Questions to ask the client:
    a. What prompted the client to install a launch at this site?
    b. What type of launch does the client envision? Are they open to suggestions?
    c. Does the client know who the primary users will be?
    d. Does the client have any contact info for users interested in this site?
4) Questions to ask the users:
    a. What type of launch do the users prefer?
    b. What boats will be used (canoe, kayak, sailboat, paddleboard, etc.)?
    c. Are there any user groups or clubs in the area?
    d. Are there any groups or clubs willing to partner with the client for the development and maintenance of the launch?

If you and the client don't know of any local users or groups, try asking at marinas, ask users at other launch sites, check the internet for local clubs, ask at local retail sports stores, and check with local rental facilities. You can also check the website at this link to locate existing kayak launches in your area at http://www.paddling.net/launches/

PARKING DESIGN

Obviously, if a user can't find a place to park his vehicle, the NMB launch is of little value to him. The type of parking facility being provided will be dependent on the land available, the number of anticipated users, the maximum number of users the water

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body will support, the distance from the parking lot to the launch, night lighting (if needed) , security, and ADA issues.

The parking area should be appropriately sized for the number of users the water body can safely handle without detrimental impacts to the environment. If the water body is a large lake near a large population, the parking needs to be capable of handling a large number of vehicles and some trailers. If the water body is a relatively narrow stream, then the parking lot should have fewer spaces and limited trailer parking as seen in *Figure 1* below. Most sites should have no less than 2 trailers spaces unless the water body is severely restrictive. If the number of spaces is purposefully limited, the parking area should be restricted with bollards, trees, or thick vegetation to prevent users from damaging the environment by trying to create additional unimproved parking spaces.

Figure 1 – Limited vehicle and trailer parking for access to a small stream

Short Distance - The distance from the parking and/or unloading area may have a tremendous impact in the NMB launch usage. A general rule is the greater the distance, the fewer the users. Preferably, the distance from the parking lot to the launch should be the minimum practical (see *Figure 2* below). Most users prefer to park their vehicle, unload their kayak, lock the vehicle, and then transport everything to the launch. However, if the distance from the parking lot to the launch site is quite lengthy, an alternative is to provide a designated unloading/staging area at the launch site and then require the vehicle to be relocated to the parking lot.

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Figure 2 - A NMB launch site with paved parking close to water.

Parking Specs – Having designated trailer parking spaces allows more efficient use of available area for visitor parking and for the users that have their craft loaded on a trailer. Parking spaces for vehicles transporting NMBs need to be 10-12 ft in width (but no less than 10 ft) and 18-22 ft in length. Parking spaces for vehicles with trailers need to be 10-12 ft in width and 40-50 ft in length. The parking spaces for visitors without kayaks loaded on top of their vehicles can be as small as 9 ft x 18 ft, but when spaces are limited there will be vehicles with kayaks squeezing into these smaller spaces. Therefore, if no unloading/staging area is provided at the site, the parking spaces need to be 12 ft in width to allow sufficient area for kayaks to be unloaded from the top of a vehicle without damaging adjacent vehicles. So… depending on the number of parking spaces provided… an unloading/staging area may be a more efficient design for a site.

A large public use boat ramp with a kayak launch adjacent to a power boat launch.

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Unloading/Staging Area – NMB users will unload their craft on both sides of the vehicle or from the rear if they're driving a truck. Since many users will transport their kayaks on top of their vehicle, they will need access on both sides of the vehicle to unload and load even if they're using a trailer. That is why a 12-ft wide parking space is preferred. In unimproved parking areas with no delineated parking spaces, people tend to park about 4 feet apart because it provides plenty of room for unloading. Obviously, this will increase the area for the required number of spaces provided. If the parking is unpaved, the use of concrete or timber wheel stops can help to define the spaces and minimize the space between vehicles. See Figure 3 below. This technique, with the use of a designated unloading/staging area, can help to reduce the parking stall widths. See Figure 4 below.

Figure 3 – Grass parking adjacent to a kayak launch

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Figure 4 – A designated unloading and staging area

Security – Safety is everyone's concern and this applies to parking facilities. Keep the parking area open and easily visible. If the site is to be available for parking overnight, then security lighting should be employed… both at the launch site and in the parking lot. However, certain locations restrict the lighting because of animals (i.e. nocturnal animals or sea turtles) or adjoining land owner rights.

ADA Accessibility – Generally, if the site conditions don't restrict reasonable ADA access to a public facility, it should be provided and made available for all to enjoy. This includes providing ADA parking, accessible paths, and accessible launch facilities. We'll cover this in more depth later in the course.

Efficient Designing - Incorporating the above elements properly with the local regulatory requirements provides for the efficient use of a NMB site. The site plan below in Figure 5 depicts a NMB launch adjacent to a roadway bridge using a small footprint. Even though it encompasses a small area, it includes several amenities such as restrooms, site info, trailer parking, staging area, picnic tables, and ADA accessibility.

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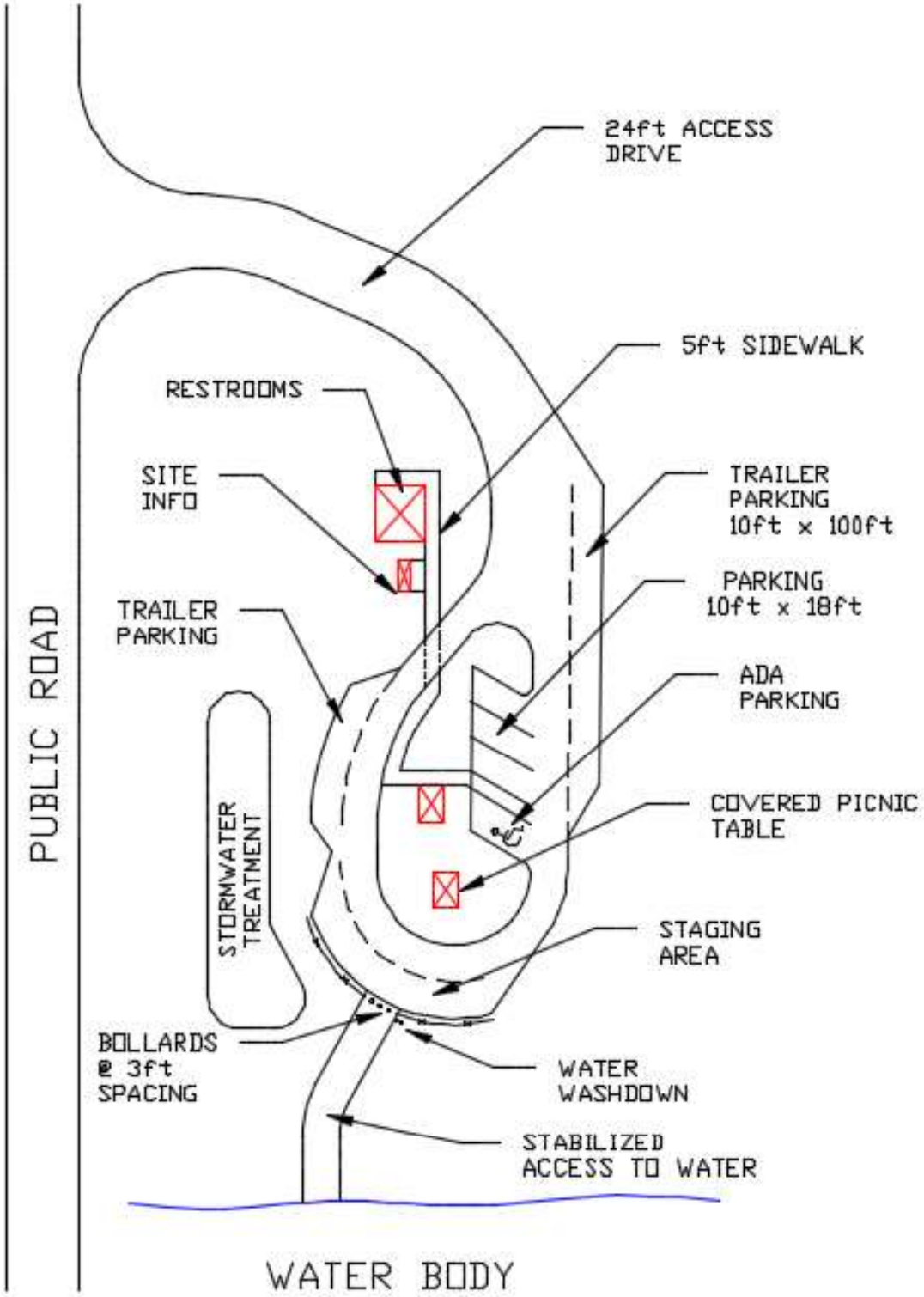

Figure 5 – Example of small NMB launch with amenities.

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Eliminating the amenities and the trailer parking from Figure 5 will provide opportunities for an even smaller footprint as shown in Figure 6 below.

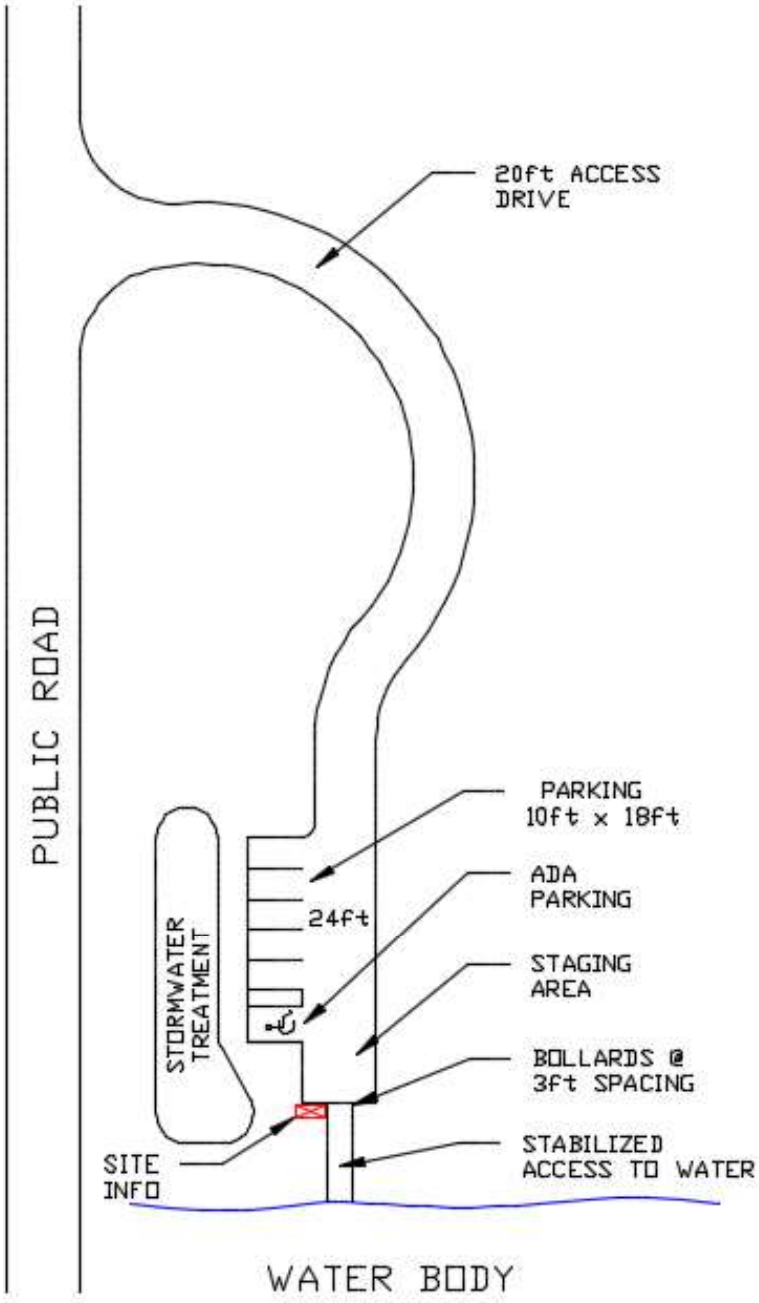

Figure 6 – Example of small NMB launch with no amenities.

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Removable bollards preventing motorboat launching as depicted in Figures 5 and 6

Signage – Signage should be kept to the minimum necessary for traffic circulation and public information. One-way traffic, cross-walks, and exits should be obvious and easily visible from a vehicle. Information signage (kiosks) should be prominently displayed and easily visible from the parking lot. See Figures 7, 8, and 9 below.

Figure 7 - Signage

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Figure 8 - Signage

DESIGN EXAMPLES

LAUNCH ACCESS

The launch access design includes those design elements needed to gain access to the launch site from the parking lot. If the launch site is not readily visible from the parking lot, signage needs to be provided stating where the route begins. The information should include operating hours, area maps, launch conditions, water conditions, and emergency contact numbers.

Signs - The *"To Launch"* sign needs to be readily apparent and recognizable from the parking lot. On the sign (Figures 9, 10, 11) should be a description of the route to the launch and include how long the route to the launch site is, the route conditions, and the facilities available at the launch. For example, the sign might read "Access to kayak launch begins here and runs 100 yards through rough terrain and steep inclines to a wooden launch. No restroom services are available."

Figure 9

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Figure 10

Figure 11

Surfaces - If the site can be made ADA accessible, choose the path that maintains acceptable grades and slopes, provides an approved accessible surface with hand rails when needed, and a width to allow two-way traffic. For other trails, existing soils, asphalt, or concrete may be acceptable. Or you may be able to provide acceptable surfaces using small gravel. Using crushed stone may also work. Some places may even require the use of steps made from landscape timbers, railroad ties, or concrete but these conditions will not meet ADA requirements and signage should be installed to warn visitors.

Stabilization - Non-ADA accessible routes are more difficult to deal with in that they are normally too steep and/or too rough for accessibility. And if they are too steep, then you have erosion issues to address. You may even need lengthy boardwalks and ramps to gain access to the water (Figure 12). Or the terrain may be too rough (exposed tree roots, rock outcroppings, soft soils, muddy/swampy conditions, sudden drops, etc.) to meet accessibility requirements. Hopefully, that won't be the case, but there are many NMB sites that are difficult to access. Obviously, these conditions don't work well for power boat launches, but don't pass up these opportunities for NMB launches.

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Figure 12 - Bonita Springs boardwalk to kayak launch

NMB LAUNCH DESIGN

Water Access – Access to the water is the ultimate goal without having to cross boulders, broken concrete, rip-rap, or a shoreline strewn with trash and broken glass. Think about it… regardless of whether you're a novice or an experienced paddler… if you have a nice kayak, are you really wanting to drag it across a shoreline that's going to rip and gouge the sides and bottoms? Of course not. So, think about what you would expect for a new launch site.

Keeping the above in mind, the type of launch design will be determined by the site conditions. Will the access be from a sandy beach, a sloping ramp, a pier, a floating dock, or a custom structure? How steep is it from the shore to the water? How steep are the underwater slopes? Do you have to deal with tides, seasonally fluctuating water levels, swift currents, or other issues? What is required to transport and launch a kayak from the access trail to the water? What is the length of the accessible shoreline?

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What type of launch structures are needed, if any? Will the launch be shared with power boats?

Depending on the answers to the above questions, the type of launch needed may be a natural launch, an improved ramp, a pier, a floating dock or a multi-use ramp. Choose the design that best meets the existing environment, the users' needs, and is affordable.

Natural Launches – Using what nature has provided is a great way to be environmentally friendly as long as it is accessible, usable, and sustainable (Figure 13) . A natural launch needs to have a firm approach surface and bottom surface to be usable and be sustainable. The underwater slope needs to be gradual enough to allow easy entry into the canoe or kayak with about 6-18 inches of water depth at the launch area. The width of the launch needs to be about 8-10 feet in width to provide sufficient width to use a kayak paddle.

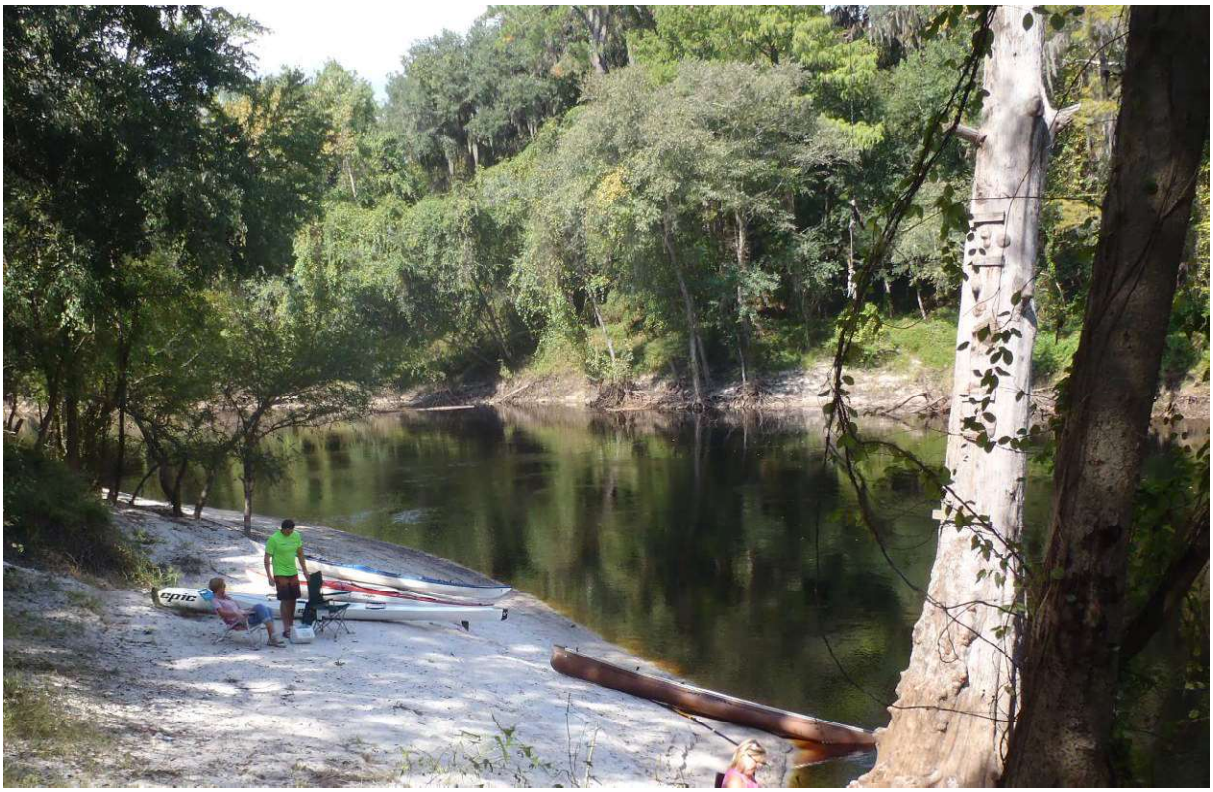

Figure 13 - A natural launch with no improvements needed at the water.

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A **sandy beach** with a gentle slope is the ideal launch site only requiring easy access from the parking area to the beach as shown in Figure 14. The width of the beach will determine the number of users that can launch simultaneously or in a reasonable amount of time. If the site is located on a stream or river with a fast current, likely it will be either a launch site or a landing site since the users will be going downstream to a landing site and a waiting vehicle.

Figure 14 – A dedicated sandy beach NMB launch at Barefoot Beach in Naples, FL.

Ramps – A ramp is needed anytime nature does not provide an easily accessible entry point into the water. The ramp needs to be accessible in height, width, length, and slope for the craft being launched. The ramp height should be clear of obstructions from tree limbs, power lines, signage, etc. to provide a safe launch or recovery from the water. If possible, it should be wide enough to provide two or more simultaneous launches to avoid lengthy wait times. The length of the ramp should be sufficient to provide launches during low tides or low water levels. And the ramp should ideally be

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no steeper than 10 – 20%. Steeper slopes are more difficult for inexperienced kayakers to feel comfortable with.

The ramp should be constructed of a durable material but try to avoid using concrete or asphalt since those surfaces will damage the hulls. If a concrete or asphalt ramp is unavoidable, consider covering it with an industrial carpet, an indoor-outdoor carpet anchored in place, an artificial turf, or provide running boards. See Figure 15.

Figure 15 – Another reason to avoid the use of concrete ramps….

An advantage to using a sloping ramp when the launch site has high banks or steep side slopes to the water is that the ramp may be cut into the side bank which helps keep the launch out of fast currents or wave action. The ramp needs to have a slip-resistant surface from the top of bank to a water depth of about 18 inches. The ramp also needs to be constructed with a stabilized material resistant to erosion either naturally or artificially. At times, it may be necessary to provide a concrete or asphalt ramp if erosion is an issue but don't forget to address the abrasive properties of the concrete or asphalt. A soil ramp covered with an anchored outdoor carpet can provide a good ramp as seen in Figure 16 below. Even wood timbers have made a usable ramp as shown in Figure 17.

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Figure 16 – Graveled approach to a NMB launch with a carpeted ramp at Silver River State Park

Figure 17 - A wooden ramp used for hand launching canoes & kayaks

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A **concrete ramp** can be made NMB-friendly by adding wood strips to keep the hulls off of the abrasive surfaces. One option is to have the boards run horizontally as shown in Figure 18 below. When using boards in this manner, the stainless steel nails or bolts need to be recessed to prevent damaging the hulls. When using horizontal boards, the boards should be slightly angled to one side to allow water to drain and keep sediment from building up along the boards, or slots may be used as well. The boards also aid users by providing a series of non-slip 'foot-holds' when launching.

Figure 18 – A concrete NMB ramp with wood runners in Burano, Italy

Piers – A pier may be needed where there is no beach and a ramp will not work. Depending on the water body, the pier could be perpendicular to the shoreline or run parallel with the shoreline. However, the launching area of the pier should be no higher than 9-12 inches above the water. See *Figures 19 and 20* below. Remember, kayaks and canoes are narrow, making them very unstable when trying to enter them from a pier 2-3 feet above the water. Another option is to provide a wide series of steps into the water allowing the users to get level with the kayak before entering. The steps used

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for launching should be 14-20 ft in length to allow for easy access. Think of a normal flight of stairs but with wider treads.

Figure 19 – A long pier to a stepped canoe/kayak launch for fluctuating water levels

Figure 20 – Another stepped canoe/kayak launch at JD State Park

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Floating Docks – A floating dock is a good alternative ***if*** the deck is no more than 9-12 inches above the water. A floating dock can be connected to a pier or boardwalk as shown in Figure 21. When possible, the ramp from the pier to the floating dock should be long enough to keep the slopes within ADA accessibility guidelines at high and low water levels. If the floating dock uses piles to maintain the position of the dock, they should be spaced a minimum of 20 feet apart or be placed on only one side of the dock. Again, avoid potential dock conflicts with kayak launching activities whenever possible.

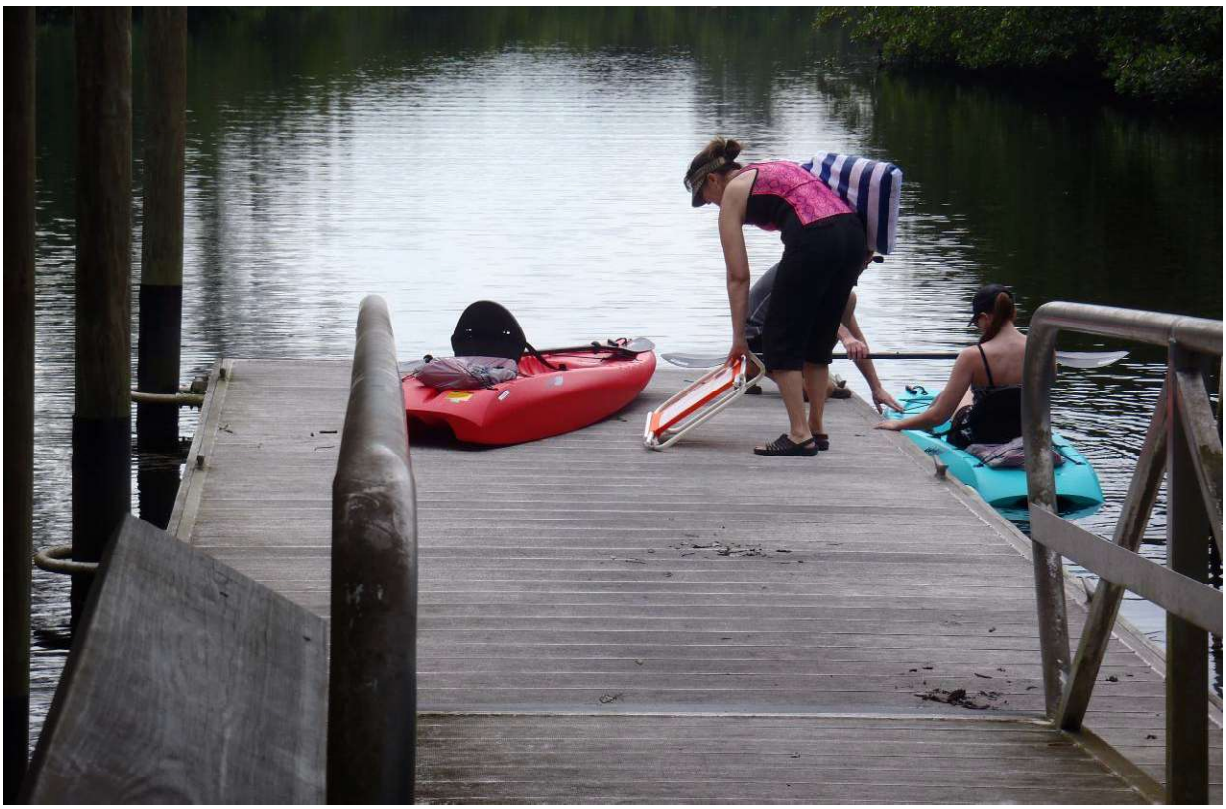

Figure 21 – A floating dock with a ramp from the pier to the dock makes for easy launching of kayaks and canoes

Also, there are kayak launches made specifically for floating docks as shown in Figures 22 and 23. Visit a manufacturer's website at http://www.accudock.com/ada-compliant-docks/ and at http://kay-akcess.com/ for some of these products. For a video of one of the products in use, visit https://youtu.be/PmxpVX5B1oU. Also, check out some of the other videos on YouTube.com for ADA compliant kayak launches.

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Figure 22 – A floating Kayak dock attached to a pier in Islamorada, FL

Another option for floating docks is one with a launch ramp that slopes into the water as shown in Figure 23 below. This works great in areas with currents or waves since it allows the user to exit the current or waves into a 'protected' slip for egress.

Figure 23 – Floating docks with sloping ramps into the water for launching

Multi-use Ramps – When the use of a boat ramp by NMBs and power boats is unavoidable, you have what is called a Multi-Use Ramp. This is the least desirable

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NMB ramp because of the dissimilarity between the boats and the users as we discussed previously. However, a power boat launch can be modified for use by NMBs.

One method of modifying a Multi-Use concrete ramp is to place 2 longitudinal (or vertically) ‘ running’ boards placed in the center of the ramp 2-3 inches apart. Referencing the ramp in Figure 18 on page 23 above, rotate the running boards 90 degrees, and then use only 2 running boards that are pressure-treated 2x6s with recessed nails or bolts to prevent damaging the NMB hulls. This allows the users to place their NMBs on the boards and simply slide them into the water without damaging the hulls. The advantage of this type of construction is that it will allow the ramp to be used by boat trailers since the running boards are not obstructing the wheels. Remember, the design shown in Figure 18 is used when it is desired to discourage the ramp’s use by motorboats.

Again, whenever possible, provide one ramp for NMBs and a separate ramp for power boats. This increases the ramp appeal of both users and decreases the potential for conflicts between different users as well.

FACILITIES

While most public and commercial properties require public restrooms, not all NMB launches provide them. Small kayak launch sites in remote areas may have no facilities of any kind: no restrooms, water, signage, trash cans, or picnic tables. However, if a site becomes popular, some of these facilities may be added when desired. So keep future amenities in mind when designing the launch site so they can be added later. You might even include them in your design plans and simply label them as “Future”.

Restrooms – There are many types of restrooms being used at NMB launches depending on whether electricity and/or water is available at the site. If potable water and public sewer is available, the site is probably located in an urban area and you can expect a larger number of users at the site.

If the site has electricity but no public sewer or public water, the size of the restroom and its septic system will be dependent on the maximum number of anticipated users.

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The water, if provided, will likely be from a well. If the water is not potable, don't forget that signs must be posted indicating that it is not for drinking.

If the site has no electricity, water, or sewer, the restroom is probably not provided or is a restroom with a sewage holding tank that requires regular servicing. See Figure 24 below. CXT provides some excellent precast concrete restroom structures, with and without utilities, and can endure high winds, snow, and floods. Visit cxt.com for more information on these.

Figure 24 – A CXT restroom facility without public water or sewer services available

Sites without electricity may wish to incorporate solar power for lighting and to power a water pump. This option could provide restroom lighting and water for equipment rinsing.

Maintenance – A maintenance building may be needed for sites with high usage. Keeping an environmentally friendly design, use of Xeriscape designs for landscaping, and eliminating the need for irrigation can make a tremendous impact on the need for site maintenance. Most remote NMB launches use the "Keep it Simple" approach in their site design and don't require any maintenance structures.

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Water – Regardless of the location, the biggest request by NMB users is having fresh water to rinse off equipment before loading everything into their vehicles. The water doesn't need to be potable as long as it has sufficient pressure to wash away dirt, mud, saltwater, etc. The water can be provided from a well, stream, river, or lake. If the water is not potable, remember to post signage at the faucet informing everyone to not drink the water.

Miscellaneous amenities – This includes picnic tables (Figure 25) , animal resistant trash cans (Figure 26) , sidewalks, shade trees, secure storage lockers, etc. The trash cans will go a long way to minimizing maintenance crews as long as they're animal resistant to raccoons, bears, dogs, etc. And if provided, they should be in sufficient numbers to prevent them from being stuffed so full as to be overflowing. Overflowing trash cans will attract insects, rodents, snakes, and larger animals. Picnic tables should be secured against floods and theft. In urban areas, shade trees and landscaping are welcome amenities as compared to asphalt and concrete.

Figure 25 – A small picnic shelter

Figure 26 – Animal resistant garbage cans

Security – Security can many times be addressed with good visibility and signage. Avoid creating hiding places with vegetation or unnecessary structures. Utilize open areas to provide natural lighting. And wireless security cameras that are solar powered can be an added benefit, if desired.

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ADA ACCESSBILITY

With the rising popularity of kayaking today, every increasing numbers of mobility impaired enthusiasts are taking to the waterways. And to assist them, there are many innovative and effective products on the market to assist them with entering and exiting kayaks. There are also State and Federal requirements for accessibility to public facilities. Obviously, everyone is familiar with ADA parking spaces and accessible routes found in commercial and governmental facilities. However, few are familiar with the products available to make the waterways accessible. Most sites provide ADA accessible routes from the parking lot to the water. But what happens when they get to the end of a pier or dock? How do they actually get into a kayak?

Some boat docks may be modified or easily improved to make them more paddler friendly; for example, simply lowering, lengthening, or widening them may be all that is needed. Additionally, new products are being developed to provide ADA accessibility to this increasing popular sport. Unfortunately, few public kayak launches have installed these products.

Beach Access – If the site has an existing NMB launch at a lake or coastal beach currently in use, adding accessible parking and a stabilized route may be all that is required. See Figure 27 below.

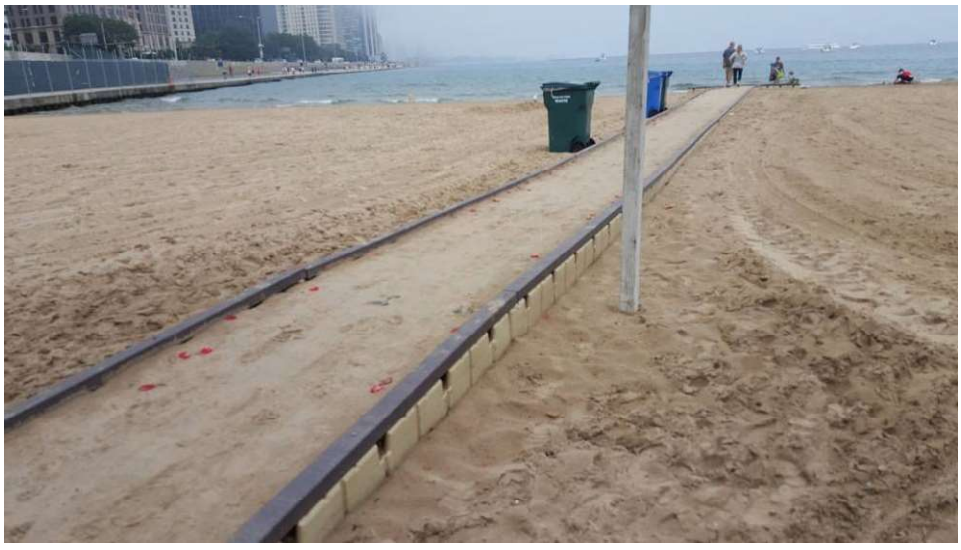

Figure 27 – An ADA accessible beach route in Chicago

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Bluff Access – If your launch site is well above the water level, gaining access may be challenging requiring extensive grading or lengthy ramps. If the water level is significantly below the parking area, a long ramp with switchbacks may be required as shown below in Figures 28 and 29 below. Keep the ramp slopes limited to a maximum slope of 5%, provide guardrails for safety, and handrails for support.

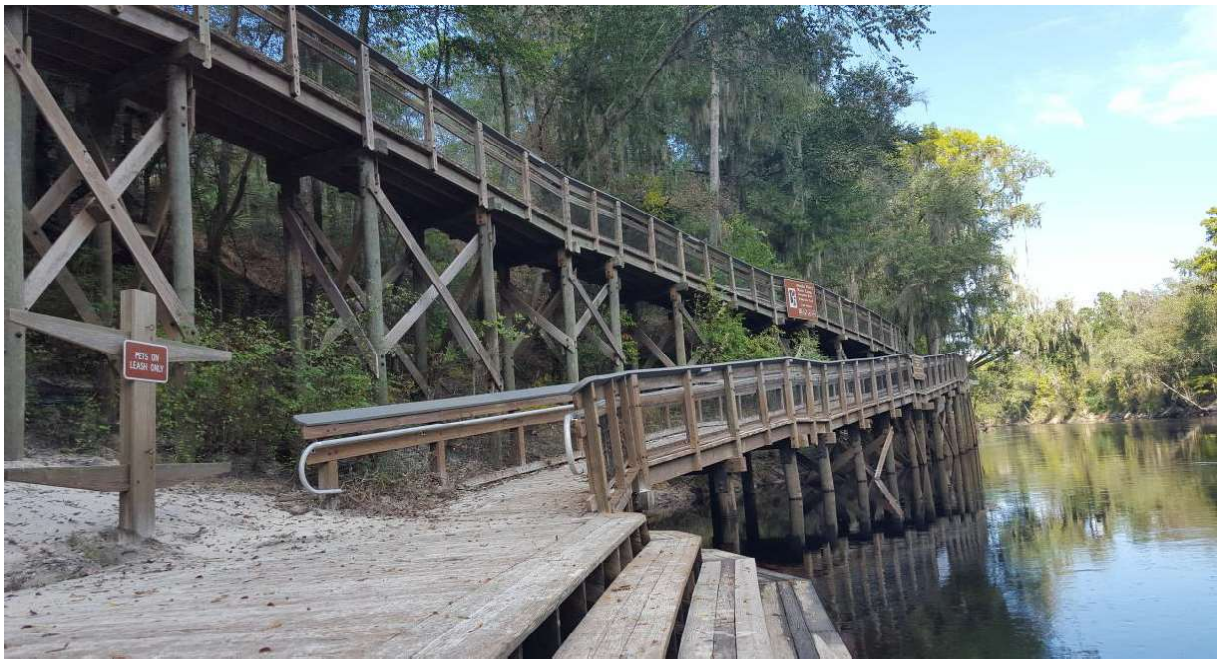

Figure 28 – Though ADA accessibility is provided to the launch point, the stairs become an impediment for users with handicaps

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Figure 29 – ADA accessible ramp from a high bluff that needs three switchbacks to get access to the water on the Suwannee River.

Dock Access – Docks should be modified such that the deck is no more than 9-12 inches above the water level to provide a stable access to the kayak or canoe. Entering a canoe or kayak from a deck located 2-3 feet above the water is challenging even for an experienced paddler. Though challenging, it can be entertaining to watch someone attempting to keep from tipping a kayak when entering/exiting or loading/unloading a kayak with supplies when there's more than a foot of height separation. If you're going to design a kayak dock 2-3 feet above the water anyway, consider providing a sign that reads… "Designed by *enter your name*. Entertainment by users."

Though docks can be modified to add wide steps (12-18 inches wide x 12 feet or more in length) going down into the water to accommodate fluctuating water levels (See Figure 30 below), the steps are an impediment to users with mobility handicaps requiring the assistance of others to reach the water and the kayak. Some boat docks may be modified or easily improved to make them more user friendly… for example, they can be lowered by adding a floating dock, lengthened to get to deeper waters, or widened to provide more maneuvering room.

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Figure 30 – A fixed dock with steps descending into the water for launching is difficult for users with mobility handicaps

A better solution is a floating dock with a kayak slip built into the dock allowing those with mobility handicaps to independently enter and exit their kayak. Visit the website at http://www.accudock.com/ada-compliant-docks/ for some of these products.

Another alternative is to add a sloping kayak ramp which makes easy ADA access to the water as shown in Figure 31 below. Visit http://kay-akcess.com/ for more information on this product.

You can also search YouTube.com for videos of these products in use. For example, https://www.youtube.com/watch?v=PmxpVX5B1oU&feature=youtu.be has a good example of a man easily transferring from a wheel chair to a kayak without any assistance.

Then https://www.youtube.com/watch?v=1_n2jpfL7dQ is another independent launching video.

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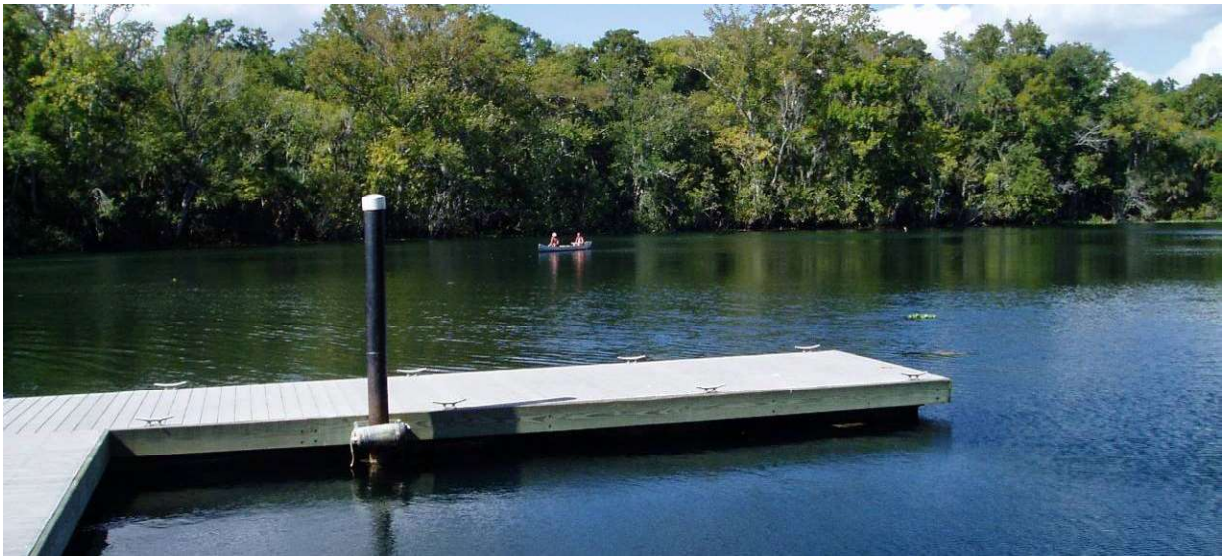
Again, remember to avoid the use of steps, steep slopes, and narrow widths if the launch is to be ADA accessible. See Figure 31 below.

Figure 31 – A floating kayak launch that gets a lot of use



A floating dock with the deck close to the water for easy loading / unloading

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SPECIAL CASES

Then there are those special cases like CREW or Rowers and small sailboats. These are not common, but in some areas of the country there will be a desire to meet these needs.

CREW boats or Rowers need at least a 45-foot dock and, preferably, a low deck about 5-6 inches above the water is preferred. You also want to avoid any dock posts on the water side that will interfere with launching the boat. And the parking lot needs to provide maneuverability and parking for a combined 76-foot vehicle/trailer length… so you need a greater turning radius for the drive lanes.

Small Sailboat: These launches are easier to design but many designers forget about the overhead clearance required for the sailboat mast. Even the topographic survey needs to include locations and heights of overhead limbs and power lines that may interfere with launching a sailboat. Fortunately, the parking considerations are similar to the other NMB trailer parking requirements.

EXAMPLES OF BAD DESIGNS

And then there are the bad designs…. Everyone has seen bad designs and thought "How could that have happened?" Let's now look at a few of these "bad designs" that started with good intentions.

Once again, each picture is worth a thousand words….

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Example 1 – A roadside launch

Figure 32 - Roadside parking for a canoe/kayak launch

Originally, this site was only used by a couple of vehicles but it quickly became a popular site with more than a dozen vehicles parking just feet from a busy highway. Sight distance is an issue because of an elevated bridge immediately adjacent to the parking area. As you can see in Figure 32 above, with no room to maneuver, vehicles are backing into the travel lanes to exit the site. Obviously, this is not a good engineering practice.

Example 2 – A concrete launch with walls

A custom structure can be designed to be user-friendly, but many existing ones are not for one reason or another. What do you think about the kayak launch shown in Figure 33 below? What would you do differently? What would you do to correct this launch structures?

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Figure 33 – A custom kayak launch structure

First, what's right is…

1. The kayak is protected from the current.
2. A sloping ramp and stairs are provided into the launch.
3. Hand rails are provided for the user to exit the launch.

Now, for what's wrong…

1. The ramp is too narrow with concrete stairs immediately adjacent to it which creates a trip hazard.
2. The launch walls are too high. The walls start high and remain high the entire length making it difficult for anyone on the wall to reach down to the kayak.
3. The hand rails are too wide apart. When using hand rails, the launch should be no more than 4-feet wide to allow a user to grasp both rails to exit.
4. Alternatively, the launch could be a minimum of 10-feet wide to allow the kayaker to use his paddle to exit.

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Because of these issues, guess how many people use this structure? Correct, none. Not even those launching canoes. So, where do they launch? Actually, located between this structure and a nearby motorboat launch is a gently sloping sandy beach. That's where everyone launches. See Figure 34 below. This is another example of money wasted because of a poor design by an engineer or client who didn't understand how to correctly design a NMB launch. Don't be that guy….

Figure 34 – Where the users <u>really</u> launch… on the sandy beach between the boat ramp and the concrete kayak launch.

Example 3 - A Concrete Ramp With Steps

The ramp below in Figure 35 is an attempt to incorporate multiple design concepts into one launch. This site experiences significant fluctuating water levels and the design has wide launch steps for use in high water levels. A concrete ramp on the left side was

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added to provide easier access to the concrete ramp below the steps. However, the ramp is slippery due to mud and algae. The ramp then terminates with a muddy bottom to the water. All of these "improvements" prevent it from being ADA accessible. Additionally, the site is experiencing erosion on the side banks as users attempt to stay off of the slippery concrete and out of the mud.

Figure 35 – A concrete ramp with steps

Example 4 - An Unused Concrete Ramp

The ramp below in Figure 36 is an older NMB launch. The problem with this launch is that no one uses the concrete ramp. Instead, they are using the natural shore just to the left of the concrete ramp. While the environmental impacts have been minimal at this location, other sites may experience significant impacts as people try to make a more user-friendly launch site. Doing so can impact vegetation, cause erosion, and potentially have a negative impact to the water body.

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Figure 36 – Which is preferred… a sandy launch or a concrete launch?

Choose your designs carefully so you don't end up being a case study for future courses.

SUMMARY

As we have seen, there are many differences between power boat launches and Non-Motorized Boat (NMB) launches. While both have parking areas and water access, and sometimes bathrooms or other amenities, the launches are considerably different in design and function.

The design considerations are different as well since the site usage and launch types are different than for motor boat launches. The preferred NMB launch is hard-packed sand beach, separated from motor boat launches, accessible by all, nearby parking with spaces for passenger vehicles, and a limited number of trailer parking spaces. But before you can design the NMB launch, you need to perform an assessment of the

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proposed site, check local development regulations, contact local NMB enthusiasts, and work closely with the client… educating him if necessary.

The parking design is focused more on vehicular traffic than trailer traffic which substantially changes the parking configuration. Traffic circulation and safety are aspects that need to be carefully planned and implemented. This includes vehicles, pedestrians, and ADA considerations. Not all launches will be ADA accessible but make every effort to comply with ADA standards even if you can't meet every requirement.

When designing the launch itself, consider multiple alternatives and settle on the design that is environmentally friendly, cost effective, easily accessible, and the most functional. Meeting these requirements really isn't that difficult and if you are unsure of what design to use, visit some of the other NMB launches in the area, speak with local user groups, or visit a local NMB launch and speak with the users about their likes and dislikes.

Support facilities are nice but not necessarily required. And when provided, they can be significantly reduced in size which, in turn, reduces the maintenance required. Fresh water (for rinsing off equipment) and restrooms top the list of the users preferred priorities.

Hopefully, this course provides you the information you need for a successful project and… a good reputation. If you have any photos or examples you would like to share, please forward them to me.

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