



# NEW YORK STATE CANAL SYSTEM HAND-LAUNCH FACILITY DESIGN GUIDE

Best practices for design on the New York State Canal System



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## HELP US IMPROVE THE HAND-LAUNCH EXPERIENCE

The NYS Canal System Hand-launch Facility Design Guide is a living document that will improve with feedback from paddlers and facility managers. If you have suggestions for improvement, we welcome you to contact us at [paddler@eriecanalway.org](mailto:paddler@eriecanalway.org). We will incorporate your suggestions into future editions.



## ERIE CANALWAY NATIONAL HERITAGE CORRIDOR

The New York State Canal System's exceptional scenery history, culture, and natural resources earned the 524-mile waterway and the communities along its shores Congressional designation as the Erie Canalway National Heritage Corridor in 2000. The waterway was designated a National Historic Landmark in 2016.

Many partners work together to preserve the best of the past, while ensuring a vibrant future along this legendary waterway.

The **Erie Canalway National Heritage Corridor and Erie Canalway Heritage Fund**, Inc. preserve our extraordinary canal heritage, promote the Corridor as a world-class tourism destination, and foster vibrant communities connected by more than 500 miles of historic waterway. These organizations work in partnership with the National Park Service, New York State agencies, non-profit organizations, local residents, and more than 200 communities across the full expanse of upstate New York.

**[eriecanalway.org](http://eriecanalway.org)**

### THE CORRIDOR ENCOMPASSES:

524

Continuous miles of  
navigable waterway

230

Municipalities

4,834

Square  
miles

23

Part of 23 counties  
home to  
3.2 million people





**Canal  
Corporation**

## NEW YORK STATE CANAL CORPORATION

The **New York State Canal Corporation** operates and maintains the New York State Canal System. A subsidiary of the New York Power Authority, the NYS Canal Corporation oversees tourism promotion; renewable power generation; public, agricultural and industrial water supplies; commercial shipping; and recreational activities along the canals. It also oversees management of the Erie Canalway Trail, a 365-mile multi-use trail from Buffalo to Albany that attracts more than 1.5 million pedestrians, bicyclists, and cross-country skiers annually. The NYS Canal Corporation also works collaboratively with community partners to improve waterway access and services, sponsor major events, and honor the historic legacy of the Erie Canal and connecting waterways.

[canals.ny.gov](https://canals.ny.gov)

**THE NYS CANAL SYSTEM SUPPORTS**

**\$7.5 BILLION +**

annually in economic activity, fostering sustainable economic development throughout the canal corridor.

**NEARLY**

**80%**

of Upstate New York's population lives within 25 miles of the Erie Canal.



New York State is celebrating the bicentennial of canal construction and opening from 2017 to 2025. Watch for special events, lectures, and tours marking significant anniversaries.



# NEW YORK STATE CANALWAY WATER TRAIL

The NYS Canalway Water Trail has 450 miles of canals and interconnected lakes and rivers with more than 150 public access points for paddlers. Paddlers navigate century old locks, pass stunning stone aqueducts used to carry boats over rivers and streams in the 1800s; paddle alongside tugboats and cruisers; experience narrow flatwater stretches and wider river segments.

The waterway flows through time and history, connecting magnificent scenery and remarkable communities, many of which have been welcoming canal travelers for 200 years.

## ***NYS Canalway Water Trail Guidebook and Navigational Map Set***

The NYS Canalway Water Trail Guidebook and Map Set are indispensable resources for paddlers. The mile-by-mile guide includes launch sites, paddler-friendly facilities and amenities, and places of interest along the NYS Canalway, including the Erie, Cayuga-Seneca, Oswego and Champlain canals.

## **FEATURES**

- Best bet paddling day trips with mileage charts
- Step-by-step instructions for passing through a lock
- How to plan and prepare for your trip
- Things to see and do on and off the water trail
- Maps and descriptions of more than 150 public access points

For more information and an interactive online map:

[www.eriecanalway.org/watertrail](http://www.eriecanalway.org/watertrail)

## ***Trip Planning***

Visit [www.NYcanalmap.com](http://www.NYcanalmap.com), a trip planning resource with information, amenities and itineraries to help plan a day trip or multi-day journey.

## ***Stewardship Program***

Iconic trails and waterways rely upon stewardship efforts to develop and maintain destination appeal. Erie Canalway National Heritage Corridor manages volunteer stewards who adopt approximately 10-mile stretches of the NYS Canalway Water Trail. Stewards clean and maintain launch sites—including parking areas, picnic tables, and other surrounding infrastructure—in addition to the Water Trail itself. Stewards have an ambassadorship role with the public and they are the “eyes and ears” on the trail.

Learn more at [www.eriecanalway.org/watertrail/stewardship](http://www.eriecanalway.org/watertrail/stewardship)

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# INTRODUCTION

The New York State Canal System totals 524 miles and has four main branches: Erie Canal – 340 miles long connecting the Niagara River at Tonawanda to the Hudson River at Waterford; Champlain Canal – 63 miles from Lake Champlain at Whitehall to the confluence with the Erie Canal at Waterford; Oswego Canal – 24 miles from the Erie Canal at Three Rivers Point to Lake Ontario at Oswego; and Cayuga-Seneca Canal and 100 miles along the Seneca and Cayuga lakes connecting with the Erie Canal near Montezuma.

In recent years, the Canal System has experienced a dramatic increase in use by human-powered hand-launched watercraft including canoes, kayaks, and stand-up paddleboards. Some amenities designed for commercial vessels and powerboats don't work well for these types of watercraft, which

sit lower on the water and are often transported by cartop and launched by hand. Canalside communities, businesses, and organizations are responding to this trend by building and upgrading launch sites and providing facilities for paddlers.

These guidelines are intended to help organizations and communities plan and design facilities for hand-launch watercraft. They are based on standards and guidelines previously developed for this and other waterways while focusing on structures, bank and channel features, and hydrologic characteristics that may be unique to New York's 524 miles of working canals.

While every launch site is distinctive, many on the Canal System share common features, structure types, and challenges. The goal of these guidelines



*Paddlers share today's canal with recreational, commercial, and maintenance vessels. (Erie Canal, Waterford, photo by Halldor Sigurdsson)*

is to provide a concise source of information for those looking to design, construct and operate hand-launch facilities on the Canal System. Desirable features are identified, along with pitfalls to avoid. A range of options is presented for each type of launch site – from minimum standards required for paddlers to move their watercraft and themselves between water and land – to design ideas for users of varying physical abilities to features, equipment, and amenities that could make a launch site exceptional.

Prior to starting any work or installation of any hand launch along the canal, a Work Permit and Use and Occupancy Permit from NYS Canal Corporation are required and conversation should be started early in the process. Strict adherence to these established design standards does not necessarily guarantee installation approval, as there are other factors being considered.

Erie Canalway published the first edition of the *New York State Canal System Water Trail Guidebook and Map Sets* in March 2019. They identified more than 150 public access points along the four branches of New York’s Canal System with facilities ranging from a small highway pull-out with a place to scramble down the bank and launch a canoe to multi-lane ramps with ample parking areas for vehicles and boat trailers, roller docks for wheelchair users, and on-site restrooms, showers, laundry facilities, and food concessions. In addition, more than 70 commercial marinas and yacht clubs provide access and services for power boaters; some have facilities and rental fleets for human-powered craft. There are also many informal launch sites – not formally designated but clearly used by paddlers who know where to find them.



# HAND-LAUNCH BOATS ON NEW YORK CANALS



*A wide variety on hand-launch craft are being used and enjoyed on New York's Canal System. (Lock O7, Oswego)*

The Canal System serves a variety of human-powered craft. Providing good hand-launch facilities depends on the type of boat, capabilities of the paddler and the characteristics and facilities of the launching and landing environment. The primary types of hand-launch watercraft served by the Canal System are briefly described below.

A dizzying variety of human-powered watercraft have evolved over millennia. Some were very large (i.e. Roman galleys and Viking longships) but most are designed to be used by one or two people and many of those can be carried and launched by hand, without the need for trailer launching ramps, travel-lifts, marine railways, cranes, or other equipment needed to launch and retrieve larger vessels. There are a wide variety of “car-top boats.” Canoes, kayaks, and stand-up paddleboards are the most commonly seen hand-launch boats on the Canal System. New variants of these watercraft seem to appear every season.



*Canoes range in size from 10' solo pack canoes to 20' tripping models. (Cayuga-Seneca Canal, Seneca Falls)*



## Canoes

Canoes are open-hulled double-ended watercraft typically 12' to 19' long. Paddlers use single-blade paddles, face the direction of travel, and kneel or sit. Canoes can be paddled solo or tandem and can carry passengers and gear. Canoes are often transported on car-top carriers and carried to the water's edge, but can also be stored onsite on racks and in storage containers. Canoes are regularly used on overnight, multiple-stop, and multi-day excursions. Adaptive canoe seats are commercially available.

Pack canoes are ultra-light open solo boats, typically 10-12' long, that have Adirondack roots and are especially common on upstate waters. They are propelled by double-bladed paddles with the user sitting in the bottom of the boat, so their boarding requirements are similar to kayaks.

The best places to launch or land a canoe are beach landings or other shallow shorelines. This allows for walking the canoe out into the water and stepping into it while it's floating. Docks can also work well as long as they're no higher than the gunnels of the canoe.

## Kayaks

Kayaks are decked watercraft available in solo, tandem, or three-person configurations. Kayakers use double-blade paddles, and sit in or near the bottom of the hull facing the direction of travel.



*One and two person plastic recreational kayaks are one of the most common types of paddlecraft on the Canal System.*

There are many varieties, including long fast sea kayaks and touring boats, paddled with a water-repelling spray skirt that fits around the waist of the paddler and attaches to the cockpit rim to prevent waves and water from entering the hull.

Some sit-on-top kayaks have been adapted for fishing with rod holders live wells, and foot-powered propulsion systems. "Recreational" kayaks are short, beamy, plastic, comparatively cheap, and heavy. Folding and inflatable kayaks can be easy to store and transport. Some kayaks are suitable for multi-day trips.

Kayaks can be transported on car-top carriers and most paddlers carry their kayaks to the water's edge. Two-wheeled carts ("boat wheels")



*Tandem sea kayaks can be up to 24' long. (Lockport)*



are sometimes used to transfer the kayak from a vehicle to the water.

Kayaks can be launched from a variety of shoreline conditions, but low freeboard docks and beaches are the preferred. Kayaks are usually narrower and less stable than canoes. However, with the low center of gravity, once seated, the kayaker is more stable. Sliding into a cockpit and positioning legs under the forward deck require some agility. A firm handhold on a low dock or bracing a paddle between the cockpit rim and the beach make the transition between land and boat easier.

Adaptive kayak seats are commercially available. Adaptive docks are designed to facilitate transfer between wheelchairs and kayak seats. Various changes to seating systems, paddle grips, and leg position can create a more efficient and safe paddling environment for persons with disabilities.

### **Stand Up Paddleboards**

Stand up paddleboards (SUPs) consist of a board up to 34" wide and 10 to 14' long. A long single blade paddle is used to propel the board across the water. Inflatable models are available. Boards often have a fin on the bottom for better tracking.

Stand up paddleboarding is one of the fastest-growing paddle sports. The boards are quite stable and reasonably lightweight and easy to transport. Boards adapted for surf wheelchair use are available. Presently, SUPs are not allowed to use locks on the Canal System but are free to navigate the sections between locks.

The ideal condition for launching and landing is flat, calm water that is free of obstacles. SUP paddlers are accustomed to getting their feet wet so anything from a shallow water to a high freeboard dock will suffice.

### **Rowing Shells**

Several rowing clubs and college and high school crew programs operate on the Canal System. Their boats are very narrow and long (up to 76') and can hold one, two, four, or eight rowers with or without a coxswain. Adaptive paddling seats and stabilizing equipment such as pontoons are available.

Wide low-freeboard docks are required to launch rowing shells. Rowing sculls are typically launched and landed at a single location. Shells are fragile, expensive, and stored on land. While they are hand-launched craft, the design of docks and



*Stand-up paddleboards (SUPs) are gaining popularity on the Canal System. (Waterford)*

boathouses for rowing shells is specialized and beyond the scope of these guidelines.

### Canal Paddling Experiences

New York's canals are unique; it is important to consider how paddlers use and experience the system. While the navigation season for large vessels transiting the canal lasts from May to October, paddlers use the sections between locks from early spring until late fall. Many boat ramps,



*Recreational power boats use the canal's locks. While paddlers also use these facilities, portage routes with launches above and below allow paddlers to carry their boats around when locks are not operating and provide an alternative to sharing the chamber with large vessels. (Lock E20, Marcy)*

ladders, and other water access and egress features, designed to be used at normal navigation pool levels, end well above the water line during the “off-season.”

### Locks and Portages

Paddlers are free to utilize canal locks during normal operating hours throughout the navigation season, but there are sites where it is also possible to carry around. Hand launches above and below

the lock chamber, connected by an accessible portage route can facilitate extended use.

### Out-and-Back Trips

Many paddlers launch and retrieve their boats from one location – heading out for an hour or two or the whole day. This provides time on the water without the need for a car shuttle. When there is a noticeable current on the Canal System, it is a common practice to paddle upstream at the beginning of a day trip and coast back downstream at the end. Several canoe and kayak rental operators have facilities at popular “out-and-back” day-use launches.

### Amenities

Some communities have installed lockers or racks where residents can lock and store their hand-launch boats. In addition to a good launch with a safe unloading area, restrooms, and day-long parking nearby, it is desirable to have landing areas and/or low docks at points of interest, picnic spots, or canalside businesses along the way where paddlers can get out of their boats, stretch their legs, and explore.

### One-Way Trips

Paddlers can also make one-way trips on the Canal System. These can be day trips, one or two overnights, or an end-to-end adventure extending from Lake Erie to the Hudson or from the Hudson to Lake Champlain. One-way trips on most rivers require a car shuttle – leaving one vehicle at the take-out, driving to the put-in with boats, paddling, then driving back to collect the vehicle at the put in. Some paddlers have begun to use ride-share services to accomplish this. The synergy between the Erie Canal and the parallel Canalway Trail provide additional opportunities, such as hybrid paddling-biking trips. Paddlers on multi-day excursions need places to leave vehicles for the duration of the trip, campsites or nearby shoreside accommodations, lockers where they can secure boats and gear when visiting town.



## CHARACTERISTICS OF A GOOD HAND-LAUNCH

Launches are the places where land and water transportation meet. They are the locations where people, watercraft and gear are moved from land vehicles – roof racks and trailers, and on to the water. They may also be called put-ins or take-outs, depending on what part of a journey they are used for. Most serve both functions, in addition to being utilized as stopping points along the way. There is no one-size fits all solution to hand-launches. Paddlers have different preferences depending on their boat, level of experience, physical abilities, water conditions, and surrounding uses. There are site and facility characteristics that make a launch site desirable and usable by a variety of user and watercraft types. At a minimum, there should be a safe place to unload boats, people, and gear from vehicles; a clear, firm, and slip resistant path from the unloading area to the launch site; and enough space on the water for boats to be fully afloat before boarding. Each of these facility types will have different operation and maintenance requirements.

### General Design Considerations

“Prepare to Launch,” a design guide for canoe, kayak, and whitewater raft launches, was developed by River Management Society and provides a useful framework for general design considerations or hand-launch facilities. Another design guide, “Logical Lasting Launches” developed prior to “Prepare to Launch,” was created by National Park Service’s Rivers, Trails & Conservation Assistance Program. Both are useful for planning and designing launches. While most of the examples in “Prepare to Launch” are on free-flowing rivers, in the American West, some of the basic design principles are applicable to the Canal System.

Several are excerpted below, with some additional considerations that are unique to the Canal System.

### Suitability

*A launch that is best-suited:*

- Is constructed in accordance with any applicable regulations (see NYS Canal



Figure 3.1 Typical bank launch components



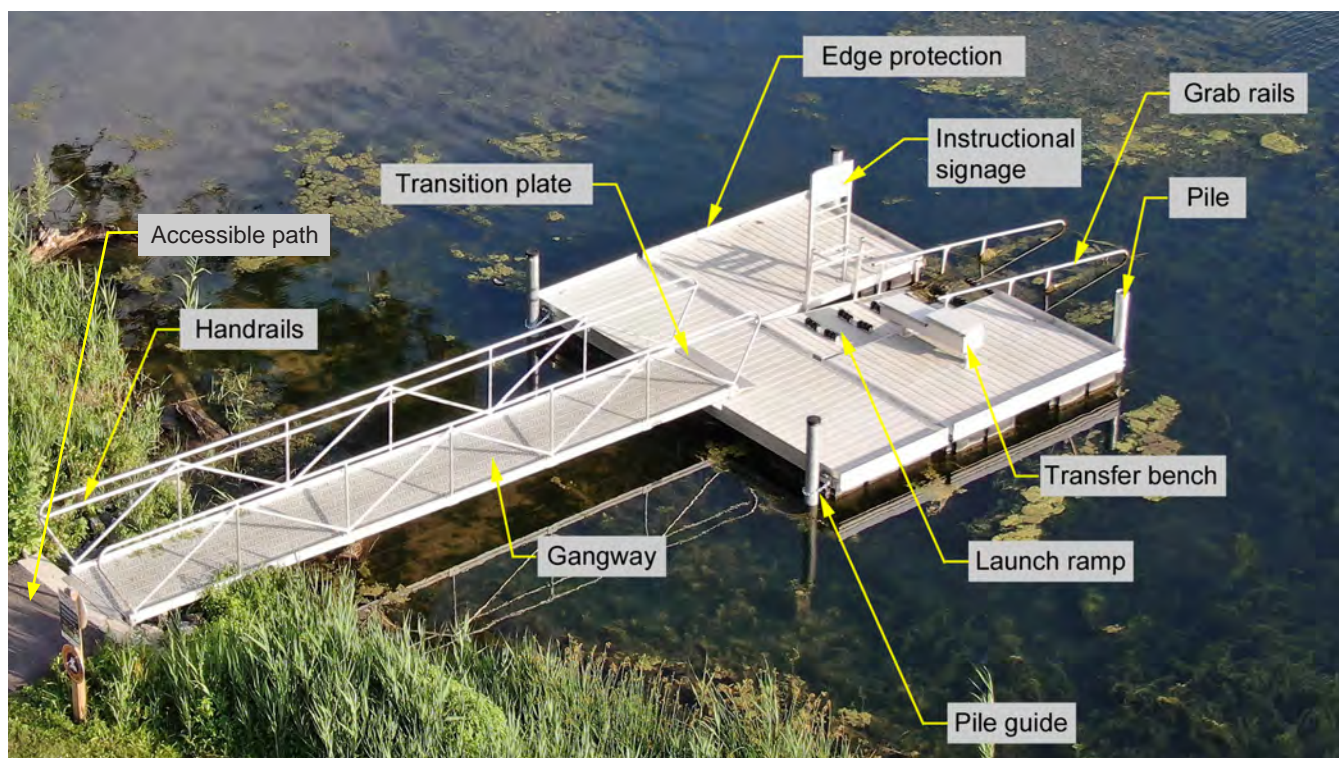


Figure 3.2 Accessible floating dock with pile launching slide

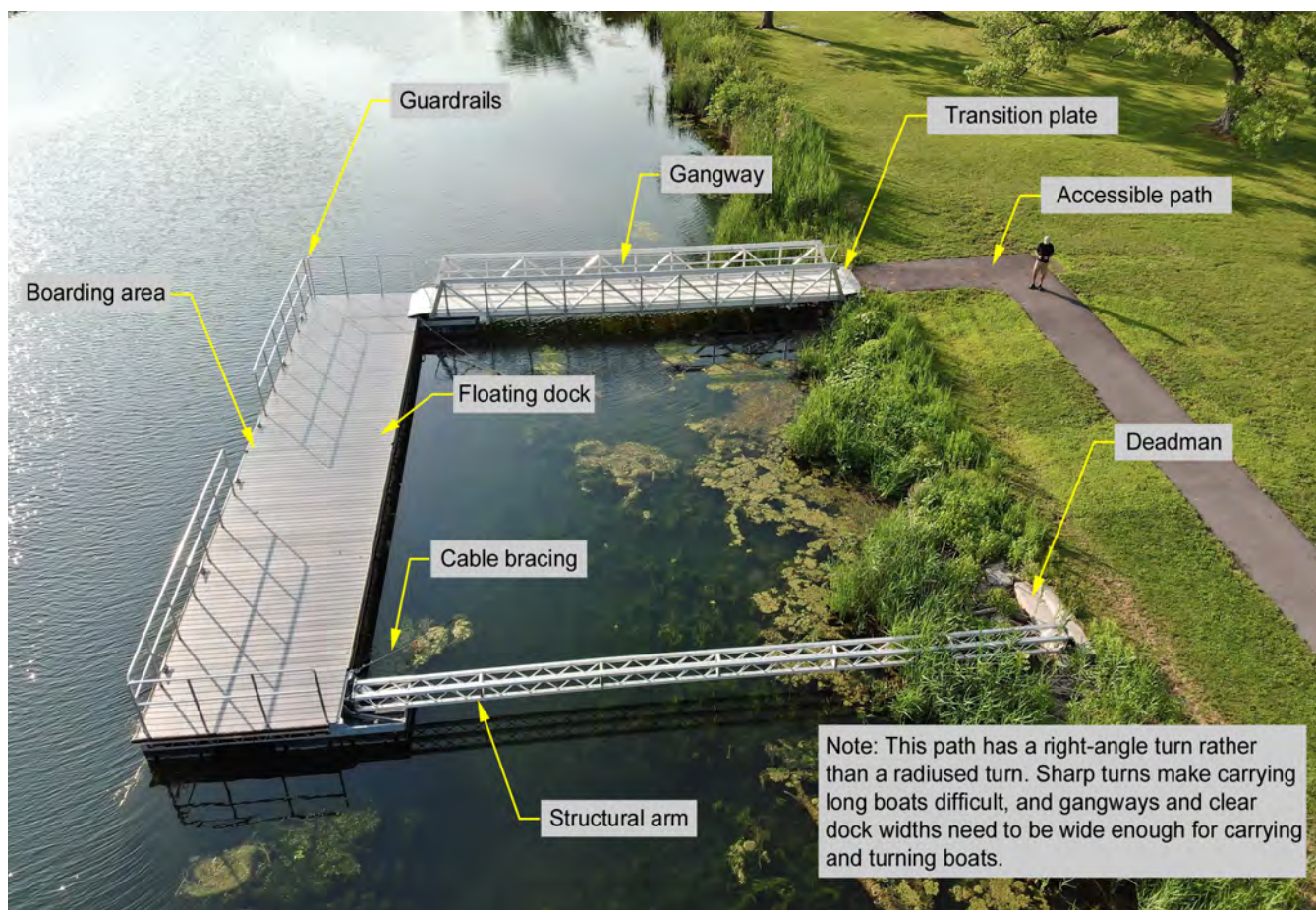
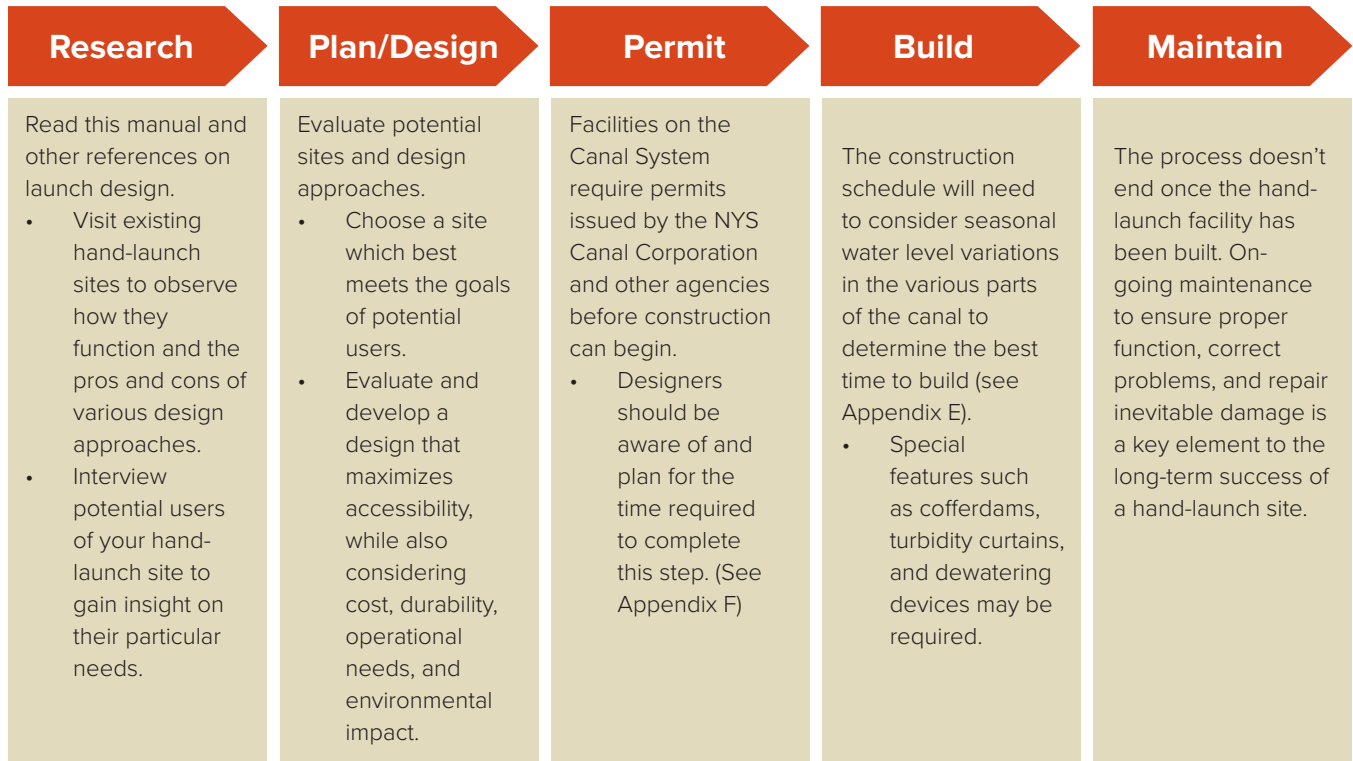


Figure 3.3 Typical floating dock with shore anchors



# HAND-LAUNCH DEVELOPMENT PROCESS



- Corporation Permit Requirements in Appendix F)
- Provides safe access, away from potential hazards, especially at different flow levels
- Can withstand flow levels, currents, and exposure to elements at a particular site
- Accommodates paddlers in varying water depths
- Provides a firm surface for launching in a variety of weather and water level conditions
- Will not be easily damaged due to climatic or seasonal conditions
- Does not cause damage to riparian habitats or vegetation during its construction and is unlikely to have environmental impacts over time and through usage
- Is not constructed in an area vulnerable to erosion
- Is constructed with consideration to its intended uses and frequency of use
- Encourage bank launch where appropriate

## Location

*Access is preferable in areas that have:*

- Separation from trailered launched when

- possible to avoid use conflict (see Fig. 3.2)
- Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
- No physical barriers, such as impassable sections, dams, or weirs
- Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas
- Water levels enabling year-round use. (This is not possible in some portions of the Canal System.)
- Good water quality
- Little lateral movement that could erode the riverbank
- Good visibility from both river and shore, allowing paddlers to locate the launch site easily
- Easy access to existing road networks and parking
- Clear of invasive vegetation
- Avoidance of low-head dams
- Encourage bank launch where appropriate

## Seasonal Water Level Considerations

Water levels differ greatly in different sections of the canal system, for example:

- Fully canalized and drained in winter (Canal west of Palmyra)
- River segments, controlled by movable dams and Taintor gates where water levels are lowered during the winter (Mohawk, Clyde, and portions of the Seneca and Hudson rivers)
- Canalized river segments controlled by fixed dams (Seneca and Cayuga rivers and, Cross and Oneida lakes)

### Stakeholder Involvement

There are numerous areas the public uses for access, often with significant environmental degradation. Perhaps a focus on converting these areas to sustainable launches would be useful.

- Involve paddlers of all abilities in early planning stages. They may have simple, cost-effective ideas to help create a successful access design
- Local paddling clubs are a good source of input and may be interested in helping to maintain access and raise funds
- NYS Canalway Water Trail Stewards are a great source of information regarding access, traffic, and use of amenities
- Boat rental concessions are a growing business and should also be included in planning
- Input from operations and maintenance staff

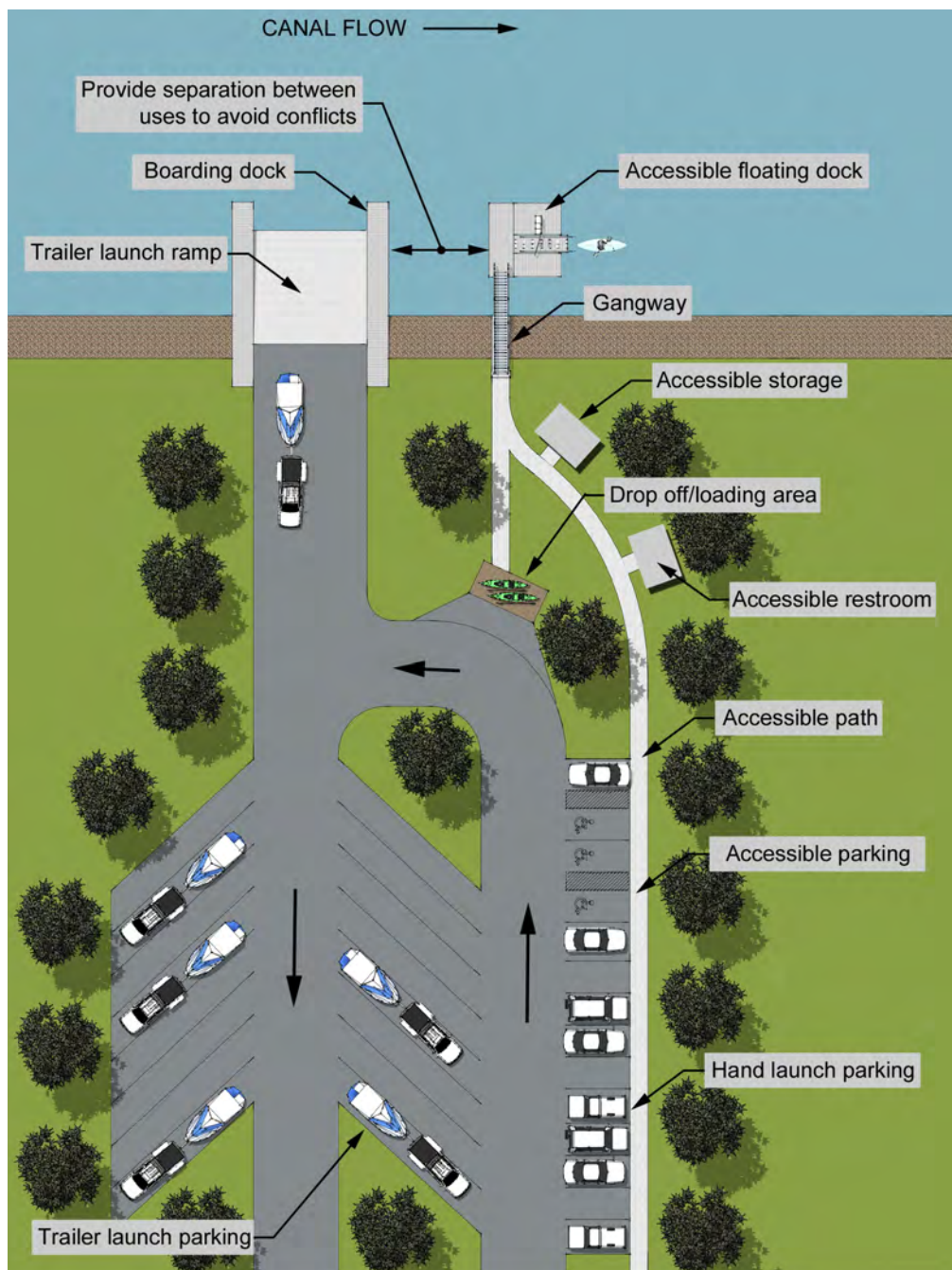


Figure 3.4 Prototype launch site plan

should be an integral part of conceptual design

A useful checklist developed by American Trails ([www.americantrails.org](http://www.americantrails.org)) to assist in evaluating existing or potential new hand-launch sites is included in Appendix D of this guidebook. This assessment tool can help guide launch designers as they consider what site to develop and what enhancements to include. More detailed design considerations will be discussed in later sections of this guide.

# SPECIAL CONDITIONS AND CHALLENGES ON THE NYS CANAL SYSTEM

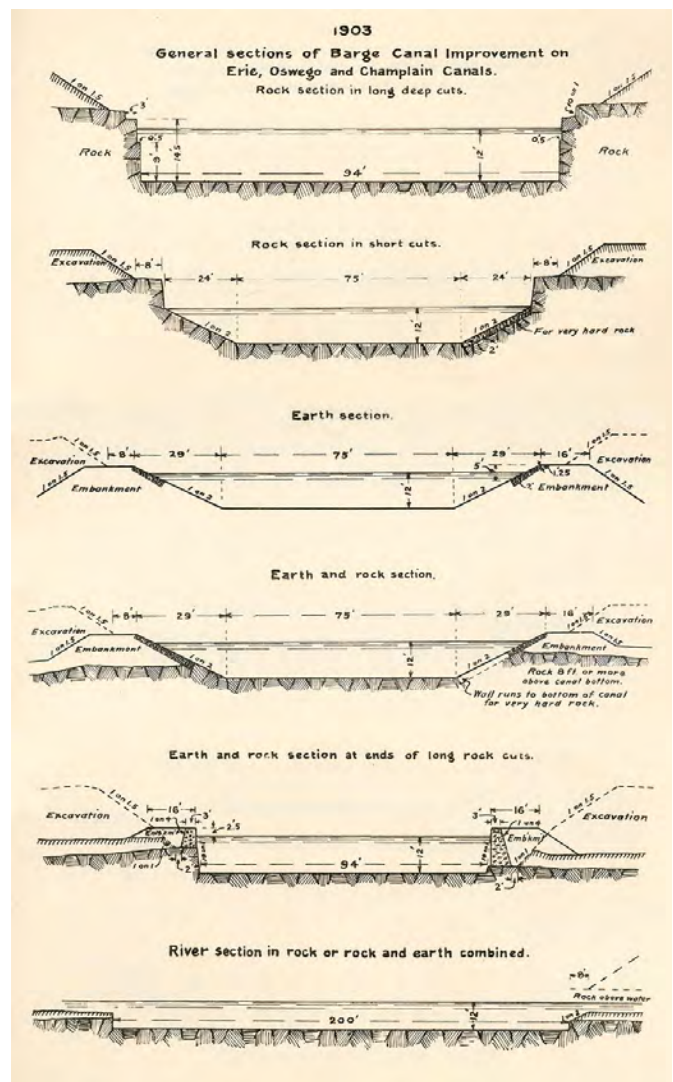


*Paddling on the Erie Canal is a pastime with a long history. (Canal Society of New York State)*

New Yorkers started digging the Erie Canal in 1817. The waterway opened from Buffalo to Albany in 1825 and has been in continuous operation ever since – more than 350 miles of navigation channel provided an all-water route between the upper Great Lakes and the Atlantic Ocean. The Erie Canal was an immediate success. It was soon enlarged to pass more and larger vessels and several connecting “lateral” canals were built to carry the products of upstate New York’s forests, farms, mines, and factories to markets along the Atlantic Coast.

The Champlain Canal was advocated for by General Philip Schuyler. It was constructed in 1823 as a way to bring goods to market, connecting Lake Champlain to the Hudson River. In 1825, a canal was begun to connect Seneca Lake with the newly constructed Erie Canal at Montezuma and the Cayuga–Seneca Canal was put into use in 1828 to transport people and goods. Finally, Oswego Canal construction was spurred by the Erie Canal’s early success. The waterway opened in 1828, and its original starting point was in the heart of downtown Syracuse. The most recent system-wide enlargement of all four canals happened between 1905 and 1918.

New York’s Canal System was conceived and built as a commercial waterway. Its current iteration has 57 locks that can pass vessels 300’ long with a 43.5’ beam, 12’ draft, and up to 3,000 ton displacement. While the Canal System remains an essential element of transportation infrastructure, carrying bulk cargoes and specialty shipments that are too large to ship by road or rail, commercial tonnage is far lower than the 1951 peak. The St.



*The Erie Canal was a monumental feat of engineering, requiring design solutions to deal with a variety of conditions along the route.*



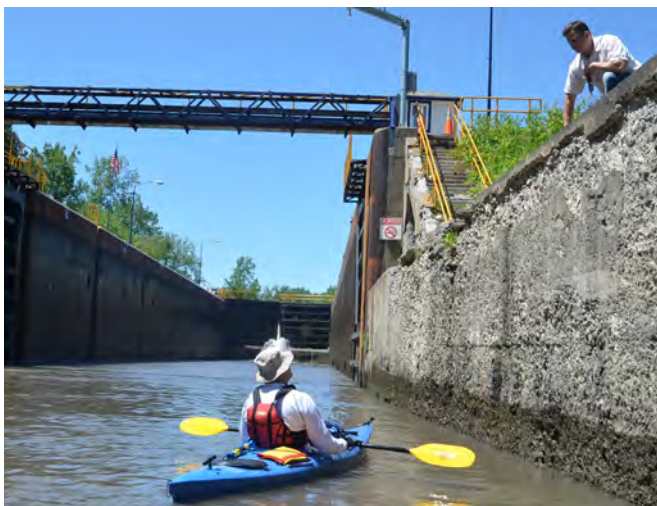


*Tall vertical canal walls can make launching impossible for most paddlers. (Lock E12, Tribes Hill, photo by Halldor Sigurdsson).*

Lawrence Seaway opened in 1959, providing a means for ocean-going ships to transit directly between the Great Lakes and the sea, and hastening the decline of commercial tug, barge, and motorship traffic on New York's canals. Recreational boaters have navigated canals since the 1800s. With the decline in commercial traffic, New York began actively promoting the system as a network of connecting recreational waterways during the 1960s. Initially, there were few facilities for recreational boaters but canalside communities and the state invested heavily in boater amenities after the New York State Canal Recreationway Plan

was published in 1995. Many communities installed docks with power and water hook-ups, shore-side restrooms and showers, picnic areas, and visitor centers to attract passing boaters and encourage them to stop, visit, and patron local businesses.

New York's Canal System poses some special challenges for the design of hand-launches. While their waters often appear placid, canals can be hard on docks and related equipment. Many portions are drained during the winter. Docks either need to be removed and stored on land during the off season or designed to allow up to 12' of vertical travel between normal pool elevation and the drained bed.



*Canal walls extend 4-6' or more from the water surface, creating a challenge for paddlers. (Lock E19, Schuyler).*

There are many examples of floating docks on the system with shorter than expected life spans because they were left hanging from short parallel arms or awkwardly stretched between piers when the canal was drained. Wakes from large vessels in narrow canal channels can also damage docks and their attachment hardware. Central and eastern portions of the Erie, the Oswego, and much of the Champlain Canal run through canalized river segments that are subject to dramatic floods, high flow events, winter ice, and floating debris that can be especially hard on docks and launch sites.

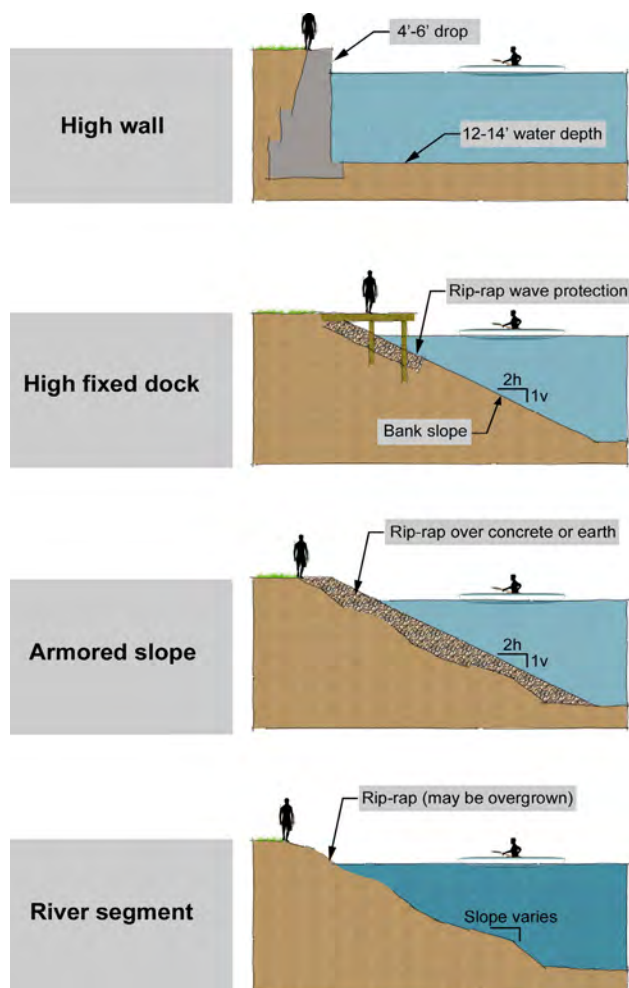


## 4.1 Walls

Every lock has upstream and downstream approach walls. Most are at least 600' long, above and below the 310' lock chamber. The channel through most towns and villages is lined with vertical concrete walls on one or both banks. Originally built to ease transfer of cargo between commercial vessels and the land, they are generally too tall for safe paddler access. Most walls extend at least 4' above the waterline during the navigation season but structures in river sections are even higher to accommodate fluctuating water levels and floods. Most walls have narrow steel ladders, recessed into the concrete to allow emergency egress. Acrobatic



*Even with a lower fixed dock and a re-purposed dredge float, launching paddlecraft at canal structures can be challenging. (Lock E35, Lockport)*



*Figure 4.1 Canal shorelines*

paddlers have used them, but it's not easy. These fixed ladders extend a few inches below the normal water level of the navigation pool. The bottom rungs are far too high to reach at low water levels during the off-season.

## 4.2 Shoreline

Land-cut sections have steep (1:2 vertical: horizontal) banks with loose rock rip-rap to reduce erosion from boat wakes. The stones are irregular and can be unsteady underfoot. Segments that are vulnerable to wash-outs have sloping concrete bank armor. Many river banks are also protected by laid stone or loose rip-rap extending a few feet above and below the normal navigation pool level. Much of that stonework is now overgrown and inconspicuous, but it does present some construction challenges.





*Designers need to consider what happens to docks during low (or no) water conditions. This floating dock rests on a flat shallow bottom during the winter, but that is not the case in all locations. (Herkimer)*



*High water can render launch facilities like this ramp and floating dock unusable at times. Designs should take into account the increased frequency of flooding events. (Waterford)*





*High water events put extreme stress on canal facilities. This floating dock was pushed to its limits during floods in 2006, 2008 and 2011. (Canajoharie, Photo by J. Bayne Young)*



*Many areas of the western canal are completely drained during the winter. (Medina)*





*Winter drawdowns can strain and break floating dock components. (Macedon)*

### 4.3 Seasonal Water Level Fluctuations

Water levels in many portions of the Canal System are lowered during the winter to allow maintenance, protect structures from ice damage, and reduce the effects of seasonal flooding. Draw-downs typically last from late November until late April. More than 132 miles of land-cut channel are drained. Taintor gates (radial arm floodgate) and movable dams are opened during the winter, lowering water levels in some river sections 7-14 feet. All river segments experience floods. Seasonal draw-downs and the risk of ice damage require most floating docks to be removed and stored on shore during the winter. Those left in place need sturdy mounting apparatus with a wide range of movement.

### 4.4 Floating Debris

Water chestnuts, aquatic weeds and grasses dislodged by powerboats, trees and branches

A variety of permits are required for the construction and operation of hand-launch facilities on the Canal System. All projects require permits from the Canal Corporation; permits from other agencies may also be needed, depending on the location of the project and the type of facility. See Appendix F.



*Floating debris can affect the functioning of launch components.*

dislodged by storms, floating debris from upstream floods, dead fish after seasonal spawning runs, ordinary litter, and ice all accumulate at docks and other canal structures.

### 4.5 Operations

The canal is a commercial waterway. Floating docks, gangways, and launching equipment must not encroach on lock approach walls or terminal walls used by commercial and canal maintenance vessels. Narrow channels can reflect and amplify the wakes from large powerboats.



# HAND-LAUNCH FACILITIES AND EQUIPMENT

Launches can be simple or complex. The goal in choosing among launch designs and construction approaches is to match launch design with the conditions at each location. Large, hard-surface launches and associated structures and equipment are sometimes necessary. However, in some areas, a simpler approach using natural materials, or minor modifications to existing facilities are feasible and can be a less expensive and lower-impact solution to providing access for paddlers.

Launch design should also balance the needs of paddlers with other users of the Canal System, including recreational powerboats and commercial vessels. While all launches require maintenance, good design and construction can help some facilities last longer with less upkeep.



*Bank launches provide a simple way to launch paddlecraft but may restrict access for paddlers with limited mobility. (Bellamy Harbor Park, Rome)*

Launch designers need to consider the entire sequence that paddlers must follow, from arrival at the site: unloading and staging watercraft, parking, moving boats and gear to the launch area, as well as boarding and launching. The reverse sequence also needs to be considered with special attention

to the needs of paddlers when getting out of their vessel and getting the boat out of the water. Usability can be affected by water level variations. Some launch sites provide safe entry during the canals' normal operating season, but may have unstable or dangerous footing, extensive muddy exposed bottom areas, be out of the water, or have other obstacles at lower water levels.

There are a variety of launch components that meet the needs of different site conditions and user groups. Some facilities include more than one.



*Wide steps made of stone or concrete can ease the grade transition for bank launches and reduce erosion. (Wellesley, MA)*

## 5.1 Bank Launches

There are both designed and informal bank launches along the canal. The most common are earthen or gravel surface trails that lead directly into the water. Stairs and other paved surfaces that are submerged during higher water levels may become slippery with mud and vegetation (algae) growth. Bank launch paths typically require higher levels of fitness and mobility than the other launches, and are usually limited to lighter-weight hand-launch watercraft. Railings are usually not present.

Depending on site conditions and the abilities of the individual boater, bank launches may be



*Simple bank launch sites can be highly effective, but designers should be careful to specify a surface type that is durable, stable, and erosion resistant. Fine stone may become washed away if not stabilized in some way. (Fort Miller)*



*Concrete ramps designed for trailer launching can be used by paddlers, but often are slippery and/or abrasive to the hulls of paddlecraft. (Battery Park, Waterford)*

suitable for canoes, kayaks, and stand up paddle boards. Graded banks are preferable, a minimum of 12' wide at water line; 16'-18' is better. Length will depend on water levels and shoreline stability. Some bank launch considerations are:

- Launch area should be wider in areas that serve multiple uses or higher volume of users
- Preferred slopes should meet ADA accessibility standards of 8.33% (or 1:12); slopes should not exceed 15%
- Water level should be deep enough to enable launching without damaging boat (preferably at least 2')

- Material used in these launches needs to be relatively uniform, firm and stable, as well as resistant to washout and undermining

## 5.2 Boat Ramps

Boat ramps are concrete surfaces designed to launch larger boats from trailers, but they can also be used by hand-launch paddlers or they may be elements of a dual purpose launch site. Concrete boat ramps vary in slope, but are typically relatively steep (8-12 degrees) to provide sufficient water under the trailer to launch the boat while the towing vehicle remains out of the water. The lower portion



*Boarding or high-freeboard docks at boat ramps are often too far above the water to be of use to paddlers, but enhancements such low-level boarding planks or floating dock extensions can be added to improve the situation.*



*Fixed docks are more stable than floating docks, but may have higher freeboard, or be flooded by high water levels. This one works for canoes and stand-up paddleboards but may be more difficult for kayaks. At lower water levels, they may become unusable. (SUNY Brockport)*



## Freeboard

“Freeboard” - the distance from a dock’s deck to the water, is one of the most important factors affecting the usability of a dock by paddlecraft. For the purposes of this guide, we will divide docks into two categories, high freeboard and low freeboard. These docks can be either fixed or floating, or a combination.

### High-Freeboard Docks

High-freeboard docks have more than 9” vertical distance between the surface of the water and the dock surface. High-freeboard docks may be connected to the shoreline by a gangway or by a boarding pier. With a floating dock, the steepness of the gangway or boarding pier changes as the canal water level changes. High-freeboard docks can be equipped with hoists or other adaptive equipment designed to help persons with mobility limitations enter a boat from the dock. High-freeboard docks are typically designed for motorboats rather than hand-launch watercraft.

### Low-Freeboard Docks

Low-freeboard docks are docks with less than 9” vertical distance between the surface of the water and the dock surface. As with high freeboard floating docks, the steepness of the gangway varies with the canal water level. Low-freeboard docks may be attached to high-freeboard docks. Some low-freeboard docks are designed to allow paddlers to transfer their boats onto the dock before exiting via a built-in launching slide. Transfer steps can help a person move between a wheelchair to the dock and their boat. Low-freeboard docks are more suitable for most types of hand-launch watercraft.

of boat ramps is typically submerged during higher water levels, and frequently becomes slippery due to vegetation (algae) growth. Boat ramps also need to be long enough to provide adequate support to trailer tires when launching watercraft when the water level is at the lower end of seasonal fluctuations.

The steep slopes required for trailer launching, and the abrasive yet sometimes slippery surface of concrete boat ramps makes them less than ideal for hand-launching. Paddler docks should be placed in

such a way as not to impede motor boat users, who these docks were designed to serve.

Boarding piers where boats can be secured while loading and unloading, are usually installed at ramps. Boarding piers are typically high-freeboard docks, standing high above the water, designed for powerboats. For hand-launch purposes, concrete ramps may be used by themselves or in combination with floating launches or fixed docks.

Often paddlers don’t know the etiquette of a ramp launch and power boaters don’t know the needs of paddlers.



*Where possible, separate trailer-launch ramps and hand-launch sites to avoid conflicts between users who operate at different paces as this boat launch “traffic jam” demonstrates. (Muck Road Boat Launch, Rome)*

Ramps are typically constructed of poured in place or precast concrete;

- Poured in place concrete must be installed in dry conditions, therefore the area must be totally clear of water where any portion of the ramp extends beneath the surface of the water. The underwater area may need to be enclosed with a cofferdam; a water-tight enclosure that is temporarily used to pump water out of an area during construction. Uncured concrete is highly alkaline and must be managed carefully so as not to enter the water where it can pose a danger to riparian species
- Pre-cast, reinforced concrete planks and panels can be placed without dewatering the area. They are expensive but eliminating the need for cofferdams can offset some of the cost. Pre-cast

slabs are extremely heavy and must be placed using lifting equipment

- Both precast and cast-in-place concrete ramps require a well constructed sub-base to reduce differential settling

### 5.3 Fixed Docks

Fixed dock structures consist of a wood or metal frame with wood, metal or synthetic decking, supported on wood, metal or concrete piles. Fixed docks can be used independently as launches or in combination with other structures such as ramps and floating launches. They can span shallow areas to enable launching in water of sufficient depth. Water level should be lower than the level of the deck at all times. Pile legs typically need cross bracing and bracketing to the frames for reinforcement and stabilization in all but the shallowest water depths. Piles can be set permanently in the ground, or seasonally on pads set on the canal bottom.



*A trailer launch with a fixed boarding pier is typical of ramps found on land-cut portions of the Canal System. (Albion)*

Fixed docks do have some positive attributes for paddlers. They are more stable in areas of strong current, which is an advantage for launching. They are easily visible from the water, so they provide a good landmark. Some pile systems allow for height adjustments and seasonal removal. When combined with gangways and floating docks, they can be a component of an accessible launch system.

Fixed docks also have some drawbacks. They don't allow for extreme variations in water level, and they generally require some sort of grading or alteration at the shoreline to provide a transition. Most fixed docks on the Canal System will require removal and storage during the winter. It is difficult to provide full accessibility with a fixed dock alone.

### 5.4 Floating Docks

Floating docks are typically composed of a deck and frame, supported by floats. Some combined designs incorporate the float and deck in modular plastic units. Floating docks are anchored to shore



*Floating docks may require long gangways, depending on the elevation of the shoreline and the amount of water level fluctuation during the navigation season. Designers should consider land grading to reduce the required length of gangway. (Lighthouse Park, Champlain Canal/Hudson River, Halfmoon)*



*Gangways and floating docks are also used as boarding ramps at trailer launch sites. They are usually designed with higher freeboard to allow boarding of powerboats. (Seneca Falls Boat Ramp, Cayuga- Seneca Canal)*







*Floating docks can have a narrow protrusion in to the waterway when fitted with a landing and gangway parallel to the shore. (Papermill Island, Baldwinsville)*

heavy docks can be harder to deploy and retrieve at the beginning and end of the navigation season.

Anchoring devices hold the floating dock in position. These can include structural arms (sometimes called “strong arms” or “stiff arms”) anchored to the shoreline by concrete deadmen or abutments; submerged concrete deadmen attached by cable or chains to the floating docks. Alternatively, driven piles with pile guides mounted to the dock are also often used, permitting launches to adjust to changing water levels while keeping their decks horizontal and steady. When floating launches attach to connecting structures with varying heights (e.g., gangways), pile guides can help to maintain a relatively small cross slope, making launches more likely to be accessible to paddlers with disabilities. Underwater anchor systems are required when piles are used. Anchoring systems are subject to extreme loads and should be designed by an engineering professional experienced in marine construction.

Components to enhance accessibility can be incorporated on floating docks, including launch slides with rollers or low friction skids, grab rails, transfer benches, and edge protection. More detail about these enhancements is provided in Section 7.

Floating docks can provide a high level of accessibility for paddlers, and a consistent launch height, regardless of water level. However, they do

come with some additional considerations. Floating dock systems generally need to be disassembled and moved to a safe location on shore during the winter, which requires planning and resources by the facility.

Floating docks have more components that will need inspection and maintenance, particularly accessibility enhancements. If these items fail, access for paddlers with disabilities will be compromised. Floating docks have different levels of durability depending on their materials and methods of construction. Weighing cost versus lifespan is an important consideration for designers and facility operators.

## 5.5 Dock Construction Materials

A variety of materials may be used for the components of fixed and floating docks:

### 5.5.1 Decks

- Wood is simple, relatively inexpensive, and easy to repair, but is subject to rot. Choosing a rot resistant variety of wood and/or treatment with an environmentally-safe preservative can extend its service life
- Aluminum or galvanized steel decking are commonly used for gangways or larger docks that also serve motorized watercraft; metal grating provides effective drainage and traction
- Metal docks and especially edges can be hard on boat hulls. Wood or plastic edging or





*Designers should specify rigid or semi-rigid connectors between dock sections to provide stability underfoot with hinged or rolling connections on gangways to accommodate fluctuating water levels. (Freeman's Bridge, Glenville)*



*Gangways and structural arms that connect floating docks to land require firm shore-side abutments, deadmen, or piers. These are large, heavy structures that should be sized and designed by a professional. (Onondaga Lake Outlet, Liverpool)*



*Pile guides are essential hardware that allow pile anchored floating docks to move up and down with water level changes. They are offered in several styles.*



*Heavy duty hardware like these slides and rails used on shore anchors will stand up to the rigors of the canal much better than lightweight equipment. (Medina)*

- bumpers may be appropriate in some cases
- Alternative materials including wood/plastic composites, vinyl, and various plastics made of recycled materials. These materials can be more expensive and may require additional structural support, but they are more resistant to damage and warping than wood and may require less maintenance. Some designs flex to the point of instability with steep wakes.

### 5.5.2 Framing

- Pressure treated or naturally rot resistant wood is strong, easily worked, comes in standard dimensions, and accepts standard galvanized or stainless fasteners, but it may not last as long as metal framing
- Aluminum and galvanized steel are also common. They may be more expensive initially but last longer and may have lower life-cycle costs

### 5.5.3 Floats

- Most dock floats have an external shell made of High Density Polyethylene (HDPE), fiberglass, aluminum, or steel enclosing a core of Expanded Polystyrene (EPS) foam. The shell provides attachment points to the dock superstructure and protects the foam from physical and chemical degradation. The foam ensures flotation if the shell is punctured



*Metal and plastic floats are filled with plastic foam to keep them from sinking when punctured or damaged.*

- Floats are available in a variety of dimensions and flotation capacities. Powerboat docks typically use 16" or 24" deep floats but some manufacturers produce 8" deep units that can be assembled to form low-freeboard docks using standard framing materials and techniques
- EPS is used as filler in floats to provide additional flotation and to prevent water infiltration inside flotation chambers. Closed-cell foam is stronger and less likely to absorb moisture but all foams must be protected by an outer shell to prevent damage from chemicals, water, and debris



*Flotation for docks is often provided in the form of purpose-built plastic float chambers which are designed with attachment points. The spacing and sizing of these floats will have an impact on freeboard and stability and should be designed by a professional with experience in these calculations.*

- Fiberglass float drums are not as strong as plastic float drums or as readily available, but they are lightweight and also have resistant qualities
- Canal regulations prohibit the use of unfaced foam billets or recycled food, chemical, or petroleum drums as dock floats
- Concrete floats are sturdy and stable but also costly and heavy and probably not a feasible option where docks need to be removed seasonally.



## UNIVERSAL ACCESS

All hand-launch facilities should be useable by all people to the greatest extent possible. Each facility should maintain both the character and the experience of their settings. Each facility should provide access, without separate or segregated access for people with disabilities. Be flexible in order to provide something that works for as many people as possible. The Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) require minimum standards for accessibility in many public accommodations, including boating facilities.

Here are some key site design elements affecting accessibility that designers should consider:

- Surface type and stability (i.e. gravel, asphalt, concrete, metal, wood or synthetic)
- Grade (from parking and/or loading area to launch site, and within the launch site)
- Maneuvering space (for both watercraft and personal mobility devices). Switchbacks and tight turns can be problematic.)
- Accessible parking and loading/unloading locations
- Accessible routes between the water's edge and parking, restrooms, boat storage, and rental facilities
- Accessible support facilities, such as restrooms, water sources, and parking spaces

Here are some general guidelines for designing an accessible launch:

- Height above water: Between 9" and 12" from highest expected water level
- Width of access routes: At least 5' wide, preferably 6' to 12'
- Length: At least 25' to allow paddlers "dry" access to entire length of their watercraft
- Slope: ADA Accessibility Guidelines (ADAAG) require that ramps shall not exceed 8.33% in an accessible route; A slope exceeding 15% will make transition from land to water difficult for any paddler
- Support: Handrails and other support structures, including transfer benches and ropes, help

## ***Accessibility: One size does not fit all!***

The phrases Accessible, Universal Access, and ADA are often used interchangeably but they are not synonymous. Universal Access is a broad combination of design ideas and programs with the goal of making public facilities accessible and welcoming to all people. The Americans with Disabilities Act (ADA) is a 1990 law that prohibits discrimination against people with disabilities. The law defines disability as a physical or mental impairment that substantially limits one or more major life activities. The Access Board is a federal agency, established under ADA, that develops regulations and guidelines for federal agencies to implement and comply with the law. They have published ADA Accessibility Guidelines (ADAAG) for many types of public facilities, including marinas, docks, and other water recreation amenities. New York incorporated and expanded upon ADAAG in the state building code.

Regardless of the term, it is important to recognize that there are no "one size fits all" solutions. Users come to recreational sites with widely varying abilities and features designed to assist one user group could become a hindrance to another. For example, a network of overhead bars and grab-rails, installed to help people with mobility impairments move between their wheelchair and a kayak, can be a three-dimensional maze that is difficult to navigate by people with limited vision and unusable by people with limited grip, or overhead strength or range of mobility. We need to consider the effects of our designs on multiple user groups and, ideally, provide more than one way to move between water and land at our launch sites.

paddlers balance their weight during put-in and take-out. Curbs or edge rails on docks provide a place to grab on to for stability, and also extra safety for wheelchairs

- Location: Ideally in areas without strong currents, erosion, exposure to elements, and heavy boat traffic

While there are no specific ADA or ABA accessibility standards or guidelines for the water entry point of hand-launch locations, these



*Several components can be combined to create a more accessible hand-launch, but greater complexity brings additional cost and maintenance requirements. Sturdy materials and sound design are especially important for accessible launch equipment. (Brockport)*

standards do apply to many other elements of a launch site, including:

- Parking areas
- Walkways within the site
- Restrooms
- Fishing piers and platforms
- Boat slips
- Floating gangways and transition plates
- Boarding piers

One of the most important elements in the ADAAG standards is the path for travel. An accessible path of travel must be provided with features and

characteristics that comply with the requirements for:

- Running slope and cross slope
- Firm, stable and slip-resistant surfacing
- Elimination of overhanging and protruding hazards
- Elimination of surface gaps and surface obstructions
- Connection to all accessible features, including site entrances when pedestrian facilities are provided in the Right-of-Way, parking, building entrances, and other features
- Maintenance of an accessible condition
- Ramp handrails and landings
- Stair handrails, riser and tread sizes, and visual striping
- Gangway design

## ADA Guidelines

Guidelines for newly designed, constructed, and altered recreation facilities issued by the ADA in 2002 require that all public boat launches, which include fixed and floating structures of all sizes, comply with ADA Accessibility Guidelines (ADAAG) standards. Copies of ADAAG for recreation facilities are available online at <http://www.usdoj.gov/crt/ada/stdspdf.htm> and may be downloaded as an Adobe PDF file.

A lot of effort can go into designing and building a hand-launch facility, but without an accessible path of travel, enhancements at the launching site may well become a moot point for many paddlers. More detail about accessibility enhancements is found in Section 7 of this guidebook.



# ENHANCEMENTS AND RETROFITS

## 7.1 Accessibility Enhancements

Below are some of the key design components that launch designers should consider when seeking to maximize accessibility.

### Launching Slides

Shallow angle ramps to facilitate launching paddlecraft can be added to floating docks and to fixed docks in areas that don't experience wide water level fluctuations during the navigation season. These are constructed counterparts to a gently sloping beach that can be installed in deep water. They typically fill the gap between the legs of a "U" shaped floating dock. Some are simple inclined decks leading into the water, others have longitudinal slides, and some are fitted with rollers. Paddlers have different opinions about the advantages of each. Some like rollers; others note that they put undue strain on their boat's hull. Wheelchair users report that it can be challenging to transfer between their chair and a boat that might scoot away on inclined rollers.

Moving parts require periodic maintenance. Launch slides tend to catch floating debris and may need to

be cleaned several times each season. That can be reduced if they are installed facing downstream.

### Gangways

Gangways provide access to floating structures from the shoreline or fixed docks. Both the Federal 2010 ADA Standards for Accessible Design and the New York State Building Code have sections concerning gangways and their design. The following is a summary of the requirements:

- Gangways must have a minimum clear width of 48"
- Level landings are required at the top and bottom of the ramp run when transition plates are not connected to the gangway. The top landing is required to be a minimum of 60" by 60" (the minimum space needed to turn a wheelchair) with no more than a 2% slope in any direction. The bottom landing is required to be a minimum of 180" to make a swing or 60" long if straight by the width of the ramp or gangway with no more than a 2% slope in any direction
- Compliant handrails are required on gangways
- The vertical elevation gain of a single length of gangway may not be greater than 30" before a



*Gangways allow for a transition between a fixed abutment on land and a floating dock that moves with changes in water level. Most gangways require additional flotation at the dock end to maintain a level dock surface.(Crescent)*



*Transition plates allow for a smooth transfer on and off the gangway, bridging over potential obstruction or trip hazards. A replaceable wear edge protects the plate from abrasion.*

level resting interval is needed

- The gangway may be steeper than 8.33 percent where the length of the gangway, or series of gangways, is at least 80'
- The gangway may be steeper than 8.33% where the boating facility contains fewer than 25 boat slips if the length of the gangway, or series of gangways, is at least 30'

Gangways should always be designed with the least possible slope and, if possible, designed so as not to exceed a slope of 8.33% (a rise/run ratio of 1:12). However, since the slope of a gangway will rise and fall with changing water levels, its slope may, in some cases, exceed 8.33%.

### Transition plates

These are sloped surfaces located at each end of a gangway. If the slope of a gangway is greater than 1: 20 (or 5%) it must be equipped with a landing at the non-gangway end of the transition plate and comply with ADAAG ramp requirements.

Transition plates cover the connection between the shore surface or dock and the gangway. They allow for an accessible path of travel free of changes in level that would block a person using a wheelchair or other mobility device and avoid creating a trip hazard. Given sufficient space, long transition

plates can further reduce slope challenges. Where transition plates are subject to wear from movement, designers should consider a sacrificial edge material that can be replaced.

### Cross slope

The cross slope of a structure refers to the slope perpendicular to the structure's "running" slope or slope spanning the length of the structure. The cross slopes of gangways, transition plates, and floating piers that are part of an accessible route must be designed and constructed to not exceed a maximum of 2% or a slope of 1:50. Gangways and piers that are part of an accessible route are expected to be designed and constructed to meet the 2% requirement. Where floating piers are grounded due to low water conditions, cross slope requirements would not apply.

### Access route

Surface, grade, width, and cross slope need to be as accessible as possible given site constraints. Surfaces should be as even and level as possible (not exceeding 8.33% slope or 2% cross slope) and without gaps or interruptions. The route should also be clearly marked. Surface textures on a launch, including those added to provide extra traction, should be practical for wheelchair use. Surface gaps should not exceed 0.5" to accommodate the tires of mobility devices, as well as canes and walking sticks.



*Transfer benches can be added to docks with launch slides to allow easier entry for wheelchair users. Grab rails help all paddlers enter and exit watercraft.*



### **Level and stable landing/loading area**

There should be an area adjacent to the loading area or a launch that is level, stable, and at least 60" x 60." This can be anywhere adjacent to the loading area, including in water up to 12" deep. A bank launch might incorporate a large, flat surface constructed of stable material that is 8" to 12" under the surface of the water and has a gradual access route made of similarly stable surface material.

### **Transfer systems**

The greatest challenge in using a launch, once a paddler has transported their watercraft to the launch site, can be getting down into the boat. A variety of devices adapted from ADA guidance for swimming pool and play equipment accessibility have been developed to facilitate this transfer:

#### ***Transfer Platform***

A transfer platform is an elevated horizontal surface at the approximate height as the wheelchair seat that a person can shift onto before moving up or down transfer steps. The basic criteria are as follows:

- A transfer platform is a minimum of 19" deep and 24" wide at the top of the transfer system
- A clear floor space of 60" by 60" to the transfer platform
- The clear floor space has a 2% maximum slope in all directions
- The height of the transfer platform is 16" to 19" above the dock

### ***Transfer Steps***

Transfer steps are a series of box-style steps that allow a person to shift between wheelchair height and the dock/ground level or the entry level of the watercraft. The basic requirements are:

- The maximum transfer step riser height is 8"
- Ideally, transfer steps consist of a series of 3 steps at heights of 18", 12", and 6" in succession. Transfer steps can be permanent or movable. The 8-inch maximum change in elevation is consistent with the transfer step concept codified in the Play Equipment Accessibility Standards found in the 2010 ADA Standards for Accessible Design
- The surface of the transfer system is free of sharp edges
- Each transfer step has a tread depth of 14" to 17" and is a minimum of 24" wide
- Metal transfer steps can get very hot in direct sunlight
- Slide out steps can get bound up with sand or dirt and become inoperable quite easily. Blowing or tracked sand can be the culprit.

### ***Grab Bars***

Grab bars are horizontal or vertical elements that provide support during transfers to and from watercraft. They can be used as a means of bracing, lifting, pulling, or grasping. Accessibility regulations and guidelines do not provide specifications directly relating to grab bars at docks and boat launches, but when



*Edge protection is important for the safety of wheelchair users and can also serve as a grab rail and temporary mooring point installed atop short posts.*

used in similar situations, generally grab bars must:

- Have a structural strength of at least 250 lbs and not rotate in the fittings
- Have 1 ½" clearance from the adjacent vertical support and be clear of obstructions above and below the support
- The surface should be free of all sharp and abrasive elements and have rounded edges
- Webbing grab loops attached to the overhead bar make it easier to get in and out of kayaks because the distance from the bar to the seat often exceeds a person's reach

### **Transfer Boards**

Transfer boards are movable or permanent boards that extend out over a canoe or kayak to stabilize a boat and make entry and exit easier by allowing the paddler to slide into the boat. The transfer board may help position the paddler to enter the boat stably.

### **Guardrails and Handrails**

Handrails and guardrails are useful and often required accessories at ramps, stairs and elevated paths of travel. Handrails are a horizontal or sloping graspable rail intended to provide support and a means for guidance or steadying to an individual maneuvering the course of a path of travel. Guardrails provide a barrier at the edge of a significant change in level, such as at the edge of a pier or elevated walk, to minimize the possibility of a fall from the walking surface to a lower level.

Handrails are required at all stairways, ramps, and walking surfaces with slopes greater than 1:20 or 5%.

Guardrails are required at open-sided walks that are 30" or greater above the adjacent surface. They are to be a minimum of 42" high and provide adequate strength. Requirements for guardrails can be found in the NYS Building Code.

Requirements for handrails are found in the 2010 ADA Standards for Accessible Design and must be:

- Continuous along the entire length of the stair or ramp run
- Between 34" to 38" above the walking surface
- Stable, and not rotate in their fittings, and provide adequate strength
- Free of obstructions to the clearances as defined by the code

### **Overhead Transfer Lift**

A lifting device, similar to a pool lift, can be used to assist a person in transferring between the dock and a watercraft. Independent use of the lift is often facilitated by a control device located on a flexible cable. The lift can be fitted with a chair or a sling. The type of seat or sling used must be compatible and usable by the individual. An overhead lift may be most useful for assisting a person who is exiting the watercraft.

While the ability for independent use of a transfer lift is required, lifts are typically in locations where lifeguards or assistants are on duty. Transfer lifts are not recommended in locations where they are not supervised.

The section of the 2010 ADA Standards for accessible designs that addresses pool lifts provides the most appropriate design to apply to watercraft overhead transfer assistance systems. While some aspects of the standards, like submersion depth of the seat and water depth are not applicable, the mechanical and operational requirements provide useful guidance.

Some sites require choices regarding accessibility. Even when full accessibility cannot be achieved due to site constraints, designers should still seek to provide the maximum level possible. For example, providing an accessible route to launch that is not fully accessible, can at least make the site more accessible to paddlers with disabilities, who may be able to maneuver the transition with some assistance. This is clearly not a preferable situation and every attempt must be made to make the launch site entirely accessible.



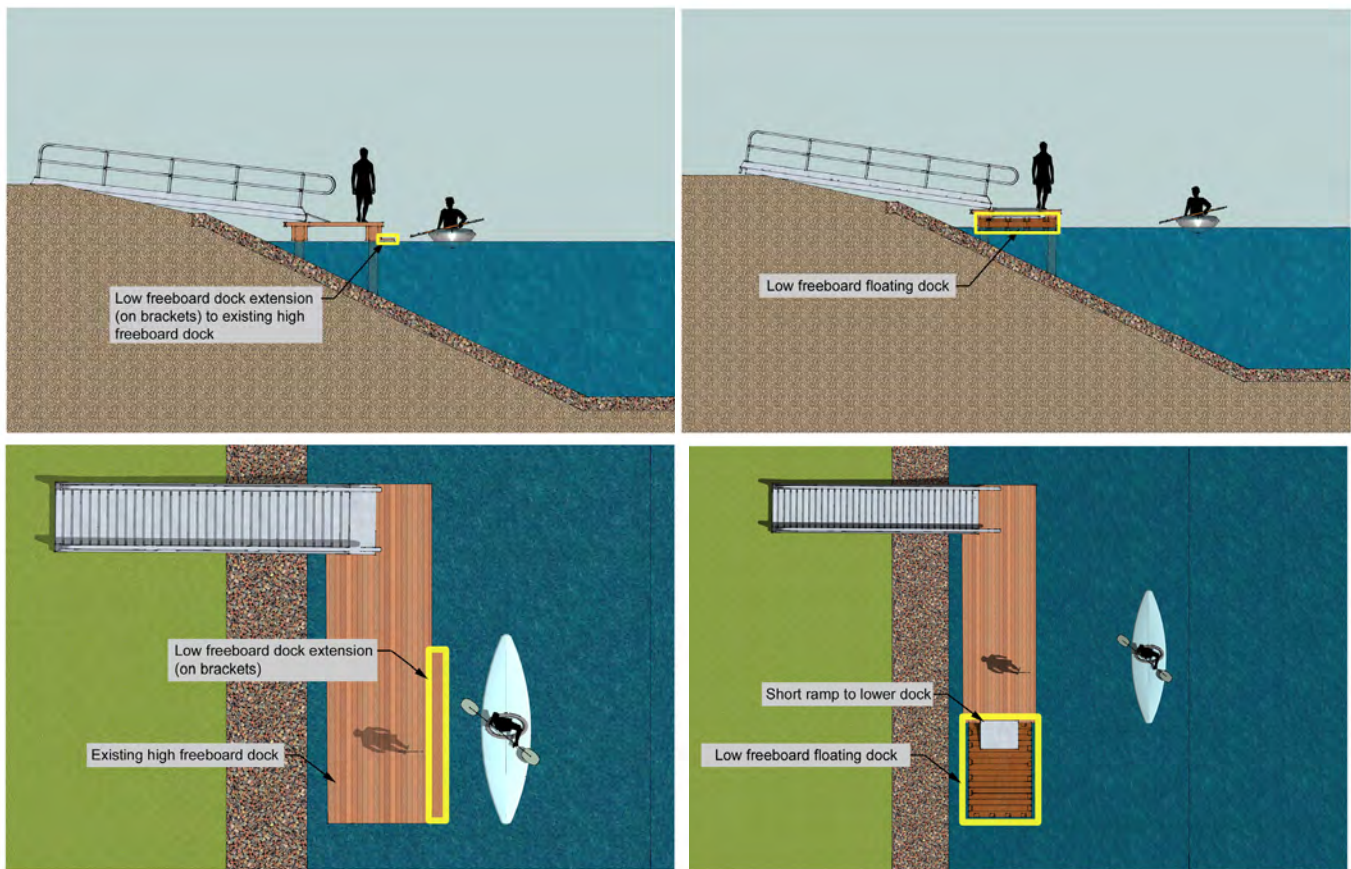


Figure 7.1 Fixed Dock Enhancements



*A floating dock can enhance the utility of an existing high-freeboard dock for paddlers but steps will be a barrier to some users. (Spencerport)*

## 7.2 Existing Launch Enhancements

There are a number of ways that existing launch sites can be improved with retrofits and additions. Here are some ideas for existing bank launches, high-freeboard docks, low-freeboard docks, and boat launch ramps.

### Bank Launch Area Enhancement

Earth or gravel canal banks may not provide a firm and stable surface. Feet, wheelchairs, canes, walkers or scooters can sink in soft mud, sand or gravel and there are tripping hazards associated with rocky shores. Shoreline surfaces can change over time due to currents, wave action and ice. The canal banks can be steep and hard to maneuver, especially when the surface is unstable.

These sites can be enhanced by stabilizing the access path and water entry surface so that people can easily approach the water line and bring their boat to the water's edge. Potential design solutions for creating a firm and stable surface include:

- Temporary or permanent beach access matting
- Grid pavers
- Stone and geocell stabilization
- Articulated concrete mats
- Terraced entry steps



*Low freeboard extensions can be added to floating docks to improve paddler access (Medina).*



*A low-freeboard dock extension is a simple modification that can enhance a fixed or floating dock for paddlers (Seneca Lake State Park, Geneva).*

### High-Freeboard Dock Enhancement

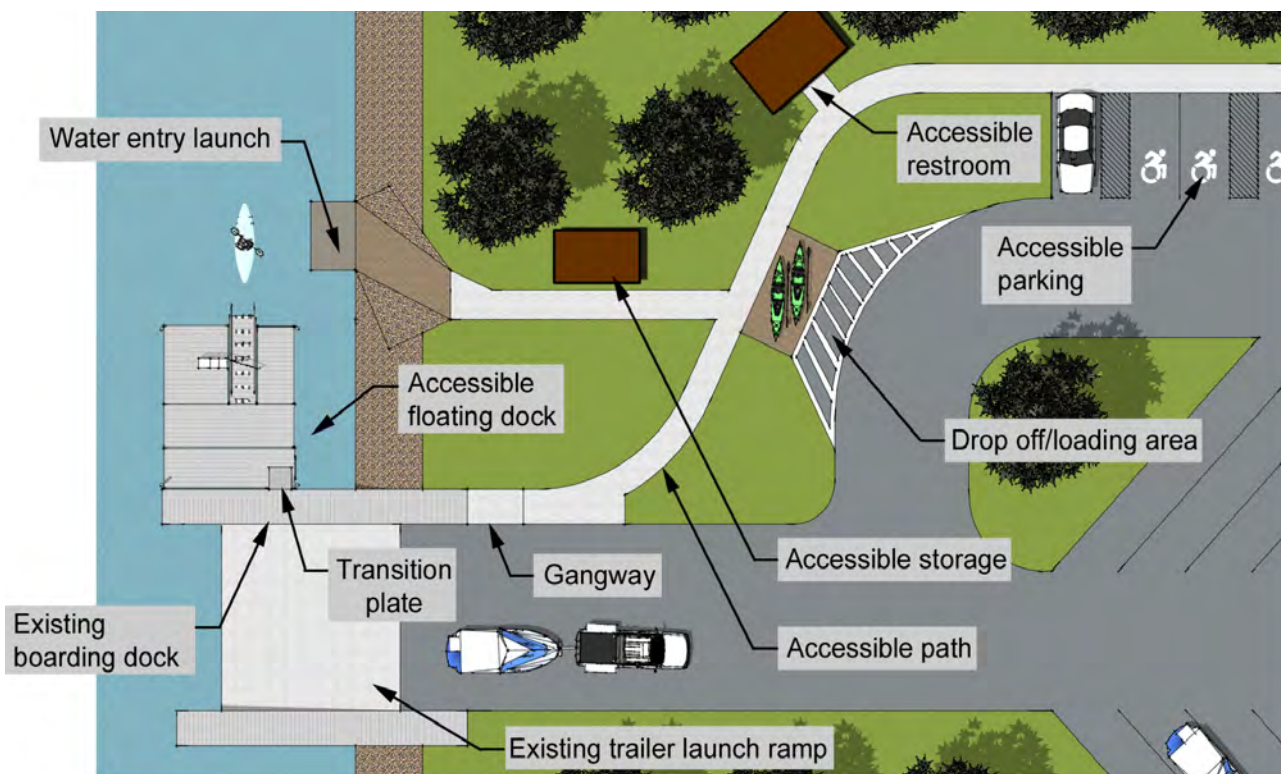
High-freeboard docks are great for powerboat users but a vertical drop greater than 9" from the surface of the dock to the surface of the water is difficult for people using hand-launch watercraft. Good balance is required to avoid tipping the canoe or kayak over when entering, and a high-freeboard dock increases the amount of physical effort required to transition from the dock surface to the seat of the watercraft.

High-freeboard docks can be enhanced by adding elements that get paddlers closer to the water level. Design solutions include:

- Attaching a low-freeboard floating dock
- Adding a fixed low-freeboard dock extension

### Low-Freeboard Dock Enhancement

Low-freeboard docks (9" or less above the water) are better than high-freeboard docks for most paddlers but, getting from the dock into a boat is still a challenge for some people.



*Figure 7.2 Boat Launch Ramp Enhancements*



Low-freeboard docks can be enhanced for improved accessibility. Potential design solutions include:

- Grab rails
- Edge protection
- Transfer steps
- Transfer boards

### Boat Launch Ramp Enhancement

Boat ramps are designed to launch boats from trailers towed by vehicles. They are often slippery, and are then not well-suited for walking or wheeling. With an incline designed for boat trailer launching (often around 13% or more), and with a concrete surface that is subject to algae growth and exposed slippery surfaces, it is very easy to slip or roll into the water. Rough concrete surfaces can damage hulls. Launch ramps do not have level landings at the bottom of the ramp.

A boarding pier adjacent to the boat ramp may be a better place to launch and land a canoe or kayak, but boarding piers are usually high-freeboard docks designed to accommodate powerboats.



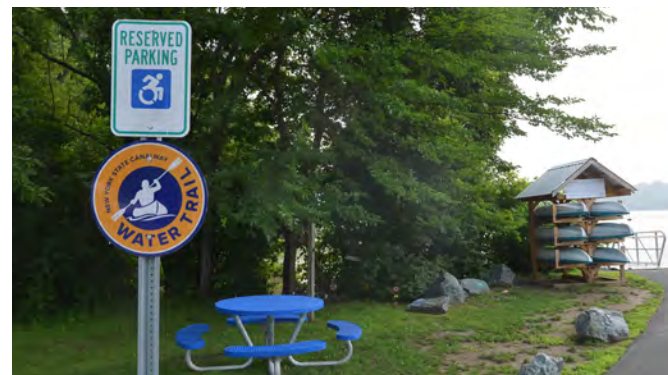
*Signage can help avoid conflicts between trailer and hand-launch facilities (Henley Park, Baldwinsville)*



*Signs also warn against potential hazards, like dams and other structures found along the Canal.*



*A drop off point near the launch site can be identified with signs (Hudson Riverfront Park, Champlain Canal, Stillwater).*



*Good signage, picnic tables, kayak rentals, and a fully accessible dock are amenities that enhance hand-launch sites. (Crescent)*



An accessible boarding pier provides opportunity for a wide variety of boat types. Design solutions include:

- Gangway and Transition Plate (if none exists)
- Low-freeboard dock with accessibility enhancements
- Low-freeboard dock extension

### General Site Enhancements

There are a number of items that can make any launch site more functional and appealing for paddlers:

- Wayfinding and information signage is important for explaining how to use launch facilities, providing directions, and conveying important safety information
- Signage near trailer/powerboat launch alerting boaters to the potential presence of paddlers to avoid collision or heavy wake
- Accessible parking should be located as close as possible to the launch site
- A dedicated loading/unloading area close to the launch is a boon to paddlers
- Boat and associated equipment rental facilities are becoming more common on the Canal System, and are a great way for people who lack the equipment or the means to transport it to take part in paddling
- Accessible restrooms, potable water, and



*Boat racks can be supplemented with lockers where visiting paddlers can secure their gear while exploring town. Rack design by Hudson River Valley Greenway Water Trail. (Lighthouse Park, Halfmoon)*

- camping facilities are all welcome additions to launch sites, connected by accessible paths
- Boat storage racks and lockers are handy for paddlers who want to come ashore in towns and villages or who are on multi day trips



*Kayak rental concessions are an addition which can make a launch site useful to a wider group of patrons. (Seneca Lake State Park, Geneva)*



# MAINTENANCE AND OPERATION OF HAND-LAUNCH FACILITIES

By their nature, launch facilities are subject to a variety of impacts from both Mother Nature and human activities. In addition, to wear and tear from regular use, launches may suffer from vandalism, seasonal water level changes, wind, waves, ice, currents and other forces of nature. An ongoing maintenance and operations plan is essential.

Planning for seasonal removal and storage of dock components is a particularly important part of this plan. Safe and adequate winter storage out of harm's way is key to maximizing their lifespan. Level, protected storage areas above flood levels are necessary.

During design, it is also important to consider what equipment and resources will be available to safely move launch components to ensure that components are appropriately sized and efficiently located. Hardware such as lifting eyes and tow hooks should be included in the design of any components that will need to be moved seasonally.

Maintenance and inspection of the water area immediately around the launch for hazards such as aquatic vegetation, broken glass, trash, and debris should be part of planning and operations.



*Winter drawdowns can place enormous stress on dock and launch components.*



*Safe storage of docks which require seasonal removal is an important operational consideration for designers. This dock storage site in Baldwinville doubles as road salt storage.*

A maintenance checklist should be completed every year. Elements to be included are shown on the following page (adapted from a checklist developed by the U.S. Army Corps of Engineers (ACOE). Not all of these elements will apply to every site; relevant items should be added as necessary.



*All launch components should be inspected carefully for damage during the off-season.*

## ***SAMPLE INSPECTION CHECKLIST*** *(adapted from Army Corps of Engineers)*

### **Anchorage**

- ☐ Check cables for frayed or worn areas.
- ☐ Check cable attachment points.
- ☐ Check deadmen/abutments – cables shall not be attached to trees.
- ☐ Check structural arms and associated attachment hardware.

### **Gangway**

- ☐ Check gangway for any obstructions or trip hazards.
- ☐ Check for gaps.
- ☐ Check conditions of gangway to ensure it is structurally sound, free of splits, decay, protruding nails or screws, and slippery surfaces.
- ☐ Gangway shall be free from excessive spring, deflection or lateral movement.
- ☐ If a floating gangway support is being utilized, check for proper flotation.
- ☐ Check gangway attachment points for secure connection.

### **Handrail**

- ☐ Handrails shall be structurally sound (not loose), with a smooth gripping surface, at the proper design height.
- ☐ Guardrails shall also be structurally sound and maintained at the proper design height.

### **Permit**

- ☐ Current Canal Corporation permit properly posted.

### **Superstructure**

- ☐ Check all wood and steel connections to ensure they are secure including welds, sheet metal, steel plates, metal straps, and plywood gussets.
- ☐ Ensure that connections resist movement that would tend to dismantle structure.

### **Deck**

- ☐ Lumber: Free of splinters, decay, and protruding nails or screws. No tripping hazards.
- ☐ Metal: Free of bent, dented, split or rusted areas.
- ☐ All surface types: Free of algae, sediment and debris which could be trip or slip hazards.
- ☐ Free of loose or missing boards.

### **Flotation**

- ☐ Check condition of flotation units: No punctures or other damage.
- ☐ Check flotation units for water intrusion.
- ☐ Ensure flotation units are well secured to dock structure.
- ☐ Check for UV deterioration, which can lead to structural failure of the plastic.

### **Water**

- ☐ Check water area immediately around launch for hazards such as aquatic vegetation, broken glass and debris.



Several permits are required for the construction and operation of facilities on the Canal System. All projects will require permitting from the Canal Corporation; permits from other agencies may also be needed, depending on the location of the project and the type of facility. Here is a summary:

### Canal Corporation Permits

Docks on canal land and waters require a Use and Occupancy Permit issued by the New York State Canal Corporation. Their installation requires a Work Permit. Municipal and commercial facilities are evaluated on a case-by-case basis but design, fabrication, and materials must comply with “Canal Corporation Design and Construction Requirements for Residential/Non-Commercial Docks, Decks, Platforms and Boat Launches/Ramps.” See Appendix F for more detail and contact information for Permit Engineers in Buffalo, Syracuse, and Albany. Canal officials will require permits or letters of non-jurisdiction from other agencies before they review applications.

### State Environmental Quality Review (SEQR)

SEQR is a regulation developed to require state and local agencies to incorporate the consideration of environmental factors into planning, review and decision-making processes of state, regional and local government agencies at the earliest possible time. SEQR requires that all agencies determine whether the actions they directly undertake, fund or approve may have a significant impact on the environment, and, if it is determined that the action may have a significant adverse impact, prepare or request an environmental impact statement.

### Army Corps of Engineers (ACOE)

Projects involving work in waters of the United States need appropriate permits issued by the ACOE under Section 404 of the Clean Waters Act (CWA), which regulates the discharge of dredge or fill material into the waters of the United States. Waters of the U.S. include the territorial seas and traditional navigable waters, perennial and



*Private and municipal structures must display a plate, indicating that they have a Use and Occupancy Permit issued by the NYS Canal Corporation.*

intermittent tributaries to those waters, certain lakes, ponds, and impoundments, and wetlands adjacent to jurisdictional waters. Projects working in federally designated navigable waters require authorization from the ACOE under Section 10 of the Rivers and Harbors Act of 1899. The waterways that comprise the Canal System are afforded protection under both regulations.

In addition, a determination of the project’s potential effect on federally regulated wetlands is required. This includes conducting a wetland delineation survey consistent with the 1987 Corps of Engineers Wetland Delineation Manual and Regional Supplement. Boundaries identified during a formal wetland delineation should be placed on project base maps, and avoided as much as practicable. If projects plans involve unavoidable work (i.e. placement of fill, excavation, etc.) in wetlands, permits under Section 404 of the Clean Water Act are required.

Permits issued by the ACOE authorize various types of development projects in wetlands and other waters of the United States. The Corps’ regulatory process involves two types of permits: general permits for actions that will likely have a minor effect on jurisdictional waters and wetlands, and individual permits for more significant actions.

Nationwide permits (NWP) are one type of general permit. These permits issued for five-year periods and thereafter must be renewed. **NWP #36 specifically addresses development of boat ramps.** It was issued March 21, 2017 and will expire in 2022. NWPs, including NWP #36, are issued with conditions. The final discretion regarding applicability of each NWP falls with the district engineer at the ACOE.

The New York District Regulatory Branch regulates projects in the following counties on the Canal System: Albany, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Warren and Washington.

Upstate New York Field Office  
US Army Corps of Engineers  
Upstate Regulatory Field Office  
ATTN: CENAN-OP-RU, Bldg. 10,  
3rd Floor North  
1 Buffington Street, Watervliet Arsenal  
Watervliet, New York 12189-4000  
Telephone: (518) 266-6350  
Email: [cenan.rfo@usace.army.mil](mailto:cenan.rfo@usace.army.mil)  
Fax: (518) 266-6366

The Buffalo Regulatory District regulates projects in the following canal counties: Cayuga, Erie, Herkimer, Madison, Monroe, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Schuyler, Seneca, Tompkins, Yates, and Wayne.

Buffalo District Office  
1776 Niagara Street  
Buffalo, New York 14207  
Telephone: (716) 879-4330  
Email: [LRB-RegInquiries@usace.army.mil](mailto:LRB-RegInquiries@usace.army.mil)  
Fax: (716) 879-4310

### **New York State Department of Environmental Conservation (NYSDEC)**

New York State Department of Environmental Conservation oversee regulations for the protection of environmental resources including, but not limited to, waterways, wetlands, and rare, threatened, and endangered species. Article 15 of New York's Environmental and Conservation

Law (ECL) - Use and Protection of Waters requires permits for work in New York State protected and navigable waterways. Certain wetlands are afforded protection under Article 24 of the Freshwater Wetlands Act. Prior to any work being conducted in and around a site within or adjacent to the Canal System, on-site resources should be surveyed and appropriately classified in accordance with both Article 15 and Article 24. In the event New York State protected resources occur on site, permits will be required from NYSDEC prior to any construction activities.

The state also protects rare, threatened, and endangered species and their habitats under 6 NYCRR 182. A review of the project's potential to impact listed species should be completed during project planning, and avoidance of impacts should occur as much as practicable. Unavoidable impacts require issuance of an NYSDEC incidental take permit. An initial determination as to whether your project falls within an area known to contain protected species can be completed by using the NYSDEC Environmental Resource Mapper at <https://gisservices.dec.ny.gov/gis/erm/>. Projects located in areas highlighted as "rare plants or animals" should consult the local NYSDEC office for further consideration.

NYSDEC is headquartered in Albany and has nine regional offices. Each regional office maintains a Regulatory Permit Administrator who is responsible for issuance of permits relative to Article 15 and 24, and issuance of incidental take permits under 6 NYCRR 182 for threatened and endangered species. Contact information for each of the nine regional offices can be found at: <https://www.dec.ny.gov/about/76070.html>.

NYSDEC also regulates stormwater pollution for construction sites as part of the State Pollutant Discharge Elimination System (SPDES) program. Construction activities disturbing one or more acres of soil must be authorized under the SPDES General Permit for Stormwater Discharges from Construction Activity – GP-0-20-001. In order to gain coverage under the SPDES General Permit for



Stormwater Discharges from Construction Activity, the following must be completed:

- Develop a Stormwater Pollution Prevention Plan (SWPPP) [https://www3.epa.gov/npdes/pubs/sw\\_swppp\\_guide.pdf](https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf)
- Submit a completed Notice of Intent (NOI) to the NYSDEC using the online eNOI
- Small municipal stormwater sewer systems (MS4s) that are located within the boundaries of a Census Bureau defined “urbanized area” are regulated under EPA’s Phase II Stormwater Rule. This requires MS4s to develop a stormwater management program that will reduce the amount of pollutants carried by stormwater during storm events to waterbodies to the “maximum extent practicable.” Projects subject to MS4 regulation must submit a signed MS4 SWPPP Acceptance Form in addition to the eNOI. Typically, construction projects within the boundaries of an MS4 are required to have their SWPPP reviewed and accepted by the MS4 prior to submitting to the NYSDEC. Consult the Stormwater Interactive Map at <https://gisservices.dec.ny.gov/gis/stormwater> to determine whether your project is within an MS4. The map displays the MS4 regulated areas. Some MS4s have extended their jurisdiction for SWPPP review to the municipal boundary. As such, projects located outside an MS4 regulated area should still contact the municipal office to find out whether you need to submit your SWPPP for approval

### **United States Fish and Wildlife Service (USFWS)**

The Endangered Species Act of 1973 (ESA) aims to protect threatened and endangered fish, wildlife, and plants from extinction. In general, Section 9 of the ESA prohibits persons from importing, exporting, transporting, or selling endangered species of fish, wildlife, and plants in interstate or foreign commerce. Section 10 of ESA is designed to regulate a wide range of activities affecting plants and animals designated as endangered or threatened, and the habitats upon which they depend, and Section 10 applies to non-Federal actions. Section 7 of ESA is the mechanism for

Federal agencies to ensure activities they fund or authorize do not jeopardize the existence of listed species.

A review of the project’s potential to impact federally listed species should be completed during project planning, and avoidance of impacts should occur as much as practicable. Unavoidable impacts require issuance of either a Section 10 incidental take permit or Biological Assessment/ Biological Opinion under Section 7. The mechanism for approval depends whether federal agencies are involved (either funding or approval). The USFWS is the agency that issues incidental take permits and biological opinions.

The USFWS utilizes the Information, Planning and Conservation (IPaC) system as a tool for streamlining the environmental review process. The IPaC system provides a species list that identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the study area and/or may be affected by the proposed project. The IPaC system is located here: <https://ecos.fws.gov/ipac/>. In the event listed species are shown to occur near the project site, further coordination is warranted. The USFWS provides a summary of the review process in New York State at the following website: <https://www.fws.gov/northeast/nyfo/es/section7.htm>

A formal submittal and project review are appropriate:

New York Field Office  
3817 Luker Road  
Cortland, NY 13045  
Telephone: 607-753-9334  
Email: FW5ES\_NYFO@fws.gov.  
Fax: (607) 753-9699

### **State Historic Preservation Office (SHPO)**

The SHPO administers programs authorized by both the National Historic Preservation Act of 1966 and the New York State Historic Preservation Act of 1980. The SHPO Environmental Review program

is a planning process that helps protect New York's historic cultural resources from the potential impacts of projects that are funded, licensed or approved by state or federal agencies. Under Section 106 of the National Historic Preservation Act and Section 14.09 of the New York State Historic Preservation Act, the SHPO's role in the review process is to ensure that effects or impacts on eligible or listed properties are considered and avoided or mitigated during the project planning process. The New York State Canal System was listed on the state and national registers of historic places in 2014 and designated a National Historic Landmark District in 2016; <https://eriecanalway.org/resources/NHL>

The Technical Assistance and Compliance Unit coordinates consultation for SHPO's environmental review programming. A map showing counties assigned to staff and their contact information is at: <https://parks.ny.gov/images/Graphics/SHPO/PreservationTechnicalAssistanceUnitTerritoryAssignmentsComplianceConsultation.jp>

The SHPO also advises local communities upon request on local preservation environmental reviews, under the provisions of SEQR.

### **New York State Department of State (NYS DOS)**

The Local Waterfront Revitalization Program (LWRP) serves as the Office of Planning and Development's primary program for working in partnership with waterfront communities across the state to address local and regional (coastal or inland) waterway issues, improve water quality and natural areas, guide development to areas with adequate infrastructure and services away from sensitive resources, promote public waterfront access, and provide for redevelopment of underutilized waterfronts.

LWRPs begin with a planning process that centers on developing a vision for the future of the waterfront. LWRPs are approved on three levels of government through local adoption; Secretary of State approval, and federal concurrence from NOAA's Office of Coastal Management for coastal LWRPs. Projects that require federal permits, including permits from the US ACOE, require review and concurrence from DOS, and should submit a federal consistency assessment form, the Joint Application for Permit, and all other necessary data and information to the Department of State concurrent with their submittal to other regulatory agencies. Projects that are within an LWRP should coordinate with the municipality's Local Waterfront Revitalization Coordinator to submit a Waterfront Assessment Form for review and approval.

### **New York State Department of Transportation (NYSDOT)/Local DOT**

A Highway Work Permit from NYSDOT is required for any work on any part of the state highway system, its properties or right of way. Some typical examples of this work would be permanent or temporary driveway installations and related improvements to a launch site, as well as drainage work, slope work, sign installations, landscaping and plantings, and utility work, and work near highway bridges that cross the canal. Similar permitting may be required from the county or local DOT/Highway Department for roads under their jurisdiction. Contact NYSDOT or the appropriate local entity for more information on what type of permit you will need. NYSDOT: <https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/traffic-operations-section/highway-permits>

Local approval town/village board or local planning board approval may be required for some projects. Check with your local municipality to determine what approvals are required.





## REFERENCES

Accessible Boating Facilities, (Washington, DC: United States Access Board, June 2003). [www.access-board.gov/files/ada/guides/boating.pdf](http://www.access-board.gov/files/ada/guides/boating.pdf)

Accessibility Guidebook for Outdoor Recreation and Trails, (Missoula, MT: USDA Forest Service Technology and Development Center, August 2012). [www.fs.usda.gov/sites/default/files/Accessibility-Guide-Book.pdf](http://www.fs.usda.gov/sites/default/files/Accessibility-Guide-Book.pdf)

Bladensburg Waterfront Accessibility Project (Bladensburg, MD: Maryland Conservation Jobs Corps, 2013).

Max Burns, *The Dock Manual*. (North Adams, MA: Storey Books, 1999).

Building Better Boat Ramps. Virginia Department of Game and Inland Fisheries (DGIF). [www.dgif.virginia.gov/boating/building-boat-ramps/#Design](http://www.dgif.virginia.gov/boating/building-boat-ramps/#Design)

*Design and Construction Requirements for Residential/Non-Commercial Docks, Decks, Platforms and Boat Launches/Ramps*. (Albany: New York State Canal Corporation, Office of Real Property Management, July 2011). [www.canals.ny.gov/business/realproperty/tap-923b.pdf](http://www.canals.ny.gov/business/realproperty/tap-923b.pdf)

“Design Development” Developing Water Trails in Iowa. (Des Moines: Iowa DNR, June 2010). [www.iowadnr.gov/things-to-do/canoeing-kayaking/water-trail-development](http://www.iowadnr.gov/things-to-do/canoeing-kayaking/water-trail-development)

*Design Guidelines for Recreational Boating Facilities, Third Edition*. (Oregon State Marine Board, Sept. 2011).

*Design Handbook for Recreational Boating & Fishing Facilities* (Washington: States Organization for Boating Access (SOBA), 1996).

Floating Trail Bridges and Docks. (Missoula, MT: USDA Forest Service, July 2002). <https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf02232812/pdf02232812dpi72.pdf>

Guidelines for Developing Non-Motorized Boat Launches in Florida. (Florida Fish and Wildlife Conservation Commission, 2010). <https://myfwc.com/media/4118/non-motorizedboatingaccessguidelinesver4.pdf>

*Historic Water Trail for the Erie Canal and Mohawk River: Planning Document & Recommendations* (C.T. Male Associates for Erie Canalway National Heritage Corridor, 2016).

Logical Lasting Launches: Design Guidance for Canoe and Kayak Launches (Washington: NPS Rivers, Trails & Conservation Assistance Program, 2004). <https://npgallery.nps.gov/RTCA/GetAsset/86bb0d45-8417-4904-97ae-771c8eba5a42/original>

Michigan Water Trails Manual (Traverse City: Land Information Access Association LIAA, April 2017). [www.michiganwatertrails.org/downloads/water\\_trail\\_manual\\_20170609\\_web.pdf](http://www.michiganwatertrails.org/downloads/water_trail_manual_20170609_web.pdf)

*New York State Canalway Water Trail Guidebook* (Waterford: Erie Canalway National Heritage Corridor, 2019). <https://erieCanalway.org/explore/watertrail>

*Old Erie Canal Boat Launch Feasibility Study* (Syracuse: EDR -Environmental Design & Research, October 2018).

Outdoor Recreation and Accessible Routes. (Northeast ADA Center). [www.dec.ny.gov/docs/remediation\\_hudson\\_pdf/hrerecaccessroutes.pdf](http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrerecaccessroutes.pdf)

Prepare to Launch: Guidelines for Assessing, Designing, and Building Launch Sites for Carry-in Watercraft (Washington: National Park Service & River Management Society, April 2018). <https://www.river-management.org/prepare-to-launch->

Recreational Boating Facilities: ADA Checklist for Existing Facilities. (Institute for Human Centered Design / New England ADA Center, 2016). <https://www.adachecklist.org/doc/rec/boating/boating.pdf>

River Access Planning Guide: A Decision-Making Framework for Enhancing River Access (National Park Service & River Management Society, October 2019). [www.river-management.org/assets/RiverAccessGuide/02212020%20Layout\\_RAPG\\_FINAL.pdf](http://www.river-management.org/assets/RiverAccessGuide/02212020%20Layout_RAPG_FINAL.pdf) PRINT\_v21.1.

San Francisco Bay Area Water Trail Design Guidelines (San Francisco: Association of Bay Area Governments, January 2019). [https://sfbaywatertrail.org/wp-content/uploads/2019/03/Final\\_reduced\\_BayAreaWT\\_DesignGuidelines\\_Jan2019.pdf](https://sfbaywatertrail.org/wp-content/uploads/2019/03/Final_reduced_BayAreaWT_DesignGuidelines_Jan2019.pdf)

Team River Runner Adaptive Paddling Primer (2016). [www.teamriverrunner.org/wp-content/uploads/2014/09/EditedAdaptiveVersion.docx-1.pdf](http://www.teamriverrunner.org/wp-content/uploads/2014/09/EditedAdaptiveVersion.docx-1.pdf)

*Water and Land Recreation Opportunity Spectrum (WALROS): Users' Handbook, Second Edition.* (Denver: USDOI Bureau of Reclamation, September 2011). [https://www.usbr.gov/recreation/publications/WALROS\\_Handbook\\_2011.pdf](https://www.usbr.gov/recreation/publications/WALROS_Handbook_2011.pdf)

*Janet A. Zeller, Canoeing and Kayaking for People With Disabilities.* (Champaign, IL: Human Kinetics, 2009).



# B GLOSSARY OF TERMS

**Barge Canal** – The currently operational New York State Canal System, completed in 1918. Successor to the towpath-era Canal System. (see below: New York State Canal System)

**Abutment** – A masonry structure that supports pressure of an arch or bridge; for purposes of this guide: a wedge-shaped anchor that connects the end of a floating launch with the top of a launching ramp or connecting structure

**Bulkhead** – A retaining wall along a shoreline or waterfront

**Canalway** – An artificial waterway constructed for navigation, irrigation, or water power

**Canalized** – To convert to a canal. Refers to modified river and lake sections of the NYS Canal System (Barge Canal), such as the Mohawk and Seneca Rivers. See also “riverways,” below

**Cleat** – A fitting where a rope may be tied to provide support or anchoring; frequently has two projecting ears

**Clinton’s Ditch** – Nickname for the original Erie Canal, which opened in 1825

**Enlarged Canal** – The towpath-era Erie canal that was modified between 1835 and 1862. The Champlain, Oswego, and Cayuga-Seneca canals were enlarged during the same period

**Erie Canal** – Refers to the main line of the 20th century Barge Canal or towpath-era canal that ran from Albany to Buffalo

**Feeder (also “feeder canal”)** – Any artificial channel built to supply water to the navigable Canal System. Feeders enter the Canal System at or near a summit level. Several feeders (e.g., Fayetteville, Chittenango, Oneida, Glens Falls) were navigable.

**Fender** – A protective device used on the edges of a launch to lessen shock and prevent damage

**Freeboard** – The distance between the waterline and main deck

**Gabion** – A strong and flexible steel wire cage, filled with rocks, designed to abate erosion; may also house macro-invertebrates and provide shade and eddies for fish habitats

**Gangway** – A removable walkway platform enabling continuous access; often used to connect two structures or to connect a launch or other structure to the shoreline

**Geocell** – A cellular confinement system used in construction for erosion control and soil stabilization

**Land cuts** – Those sections of the Canal System that were excavated, as opposed to canalized sections or riverways. Nearly all of the towpath-era Canal System consisted of land cuts; in the 20th century Barge Canal, the western Erie and northern Champlain are land cuts

**Lateral (also “lateral canal”)** – Refers to any navigable part of the 20th century Barge Canal other than the Erie Canal – i.e., the Champlain, Oswego, and Cayuga-Seneca Canals. Some discontinued laterals of the towpath-era Canal System – namely, the Black River and Chenango Canals – have been retasked as feeders for the 20th century Barge Canal

**Launching Slide** – Shallow angle ramp designed to ease launching of canoes and kayaks from docks. Some include longitudinal rails or rollers

**Lock** – A device used to lift or lower boats from one level to another. Locks are used in most canals to bypass waterfalls, rapids, dams, and other obstacles to navigation. A typical lock consists of a chamber

with gates at both ends: a boat enters through the gates at one end of the lock; the gates are closed; water is added to or released from the chamber through valves until it reaches the level at the other end of the lock; and the gates at that end are opened. Locks on the New York State Canal System today are 310' long, 45' wide, and electrically operated

**New York State Canal System** – The official name of today's operating Canal System, also known as the Barge Canal. This Includes the Erie, Champlain, Oswego, and Cayuga-Seneca canals

**Pile** – A column, typically made of timber, steel, or reinforced concrete driven into the ground and used as a support for a launch or other horizontal platform

**Pile guides** – Fixtures that allow vertical movement of a floating dock while maintaining its horizontal location; typically steel hoops or a roller cage attached to the dock frame

**Prism** – The man-made channel that carries canal water; essentially, a large ditch – hence the name "Clinton's Ditch"

**Ramp** – A sloped surface enabling traffic to move from one level to another; a slope for launching watercraft

**Rebar** – Rod of steel placed into concrete as a reinforcement

**Rip-rap** – A sloping surface of coarse rock installed to reduce erosion on river and canal shorelines

**Riverways** – Canalized river sections of the Canal System

**Stringers** – Support devices, usually made of wood, aluminum, or steel, used as a series of uniform pieces, to reinforce decking on a launch structure

**Summit level** – A high point where a canal crosses between two drainage basins; water drains away from a summit level in two directions. There is a summit level on the Erie Canal between locks E20 and E21 near Rome that drains west toward Lake Ontario and east toward the Hudson River. A high point on the Champlain Canal is between C8 and C9

**Taintor Gate** – A type of radial arm floodgate used in dams and canal locks to control water flow

**Towpath** – A path alongside a canal used by horses or mules towing boats by means of a rope ("towrope"). Many towpaths along abandoned canals have been converted into recreational trails

**Towpath-era Canal System** – Refers to the predecessors of the 20th century Barge Canal – both the original system, built 1817-1825, and the enlarged system, built 1835-1862 – in which mules or horses towed canalboats. The 20th century Barge Canal (opened in 1918) does not require towpaths - canalboats operate under their own power or are pushed or pulled by tugboats

**Water Trail** – A water trail is a designated route along a lake, river, canal or bay specifically designed for people using kayaks, canoes, standup paddleboards, single sailboats or rowboats. The trails, sometimes called "blueways," are the aquatic equivalent of a hiking trail (or "greenway"). Water trails feature well-developed access and launch points; are near significant historical, environmental or cultural points of interest; and often include nearby amenities such as restaurants, hotels and campgrounds





# HAND-LAUNCH EXAMPLES ON NEW YORK CANALS

There are already a number of high quality hand launches on the Canal System. The following are a small sample, selected because they are representative of good solutions that also have counterparts elsewhere on the system. (Please don't be offended if your favorite launch wasn't used as an example. We will be getting better photographs and updating this section regularly.)

## Champlain

**Lock C5, Schuylerville** - A lock with low dock on the upstream side, a bank launch below, and a well marked portage route and parking area in-between. The site also has racks with lockers where visiting paddlers can secure their boats and gear, installed by Hudson River Valley Greenway; rental kayaks on a self-service rack; exhibits, picnic shelter, and a historic buoy boat at the lock; and portable toilets, trails, play areas, and outdoor sculpture at the adjacent Hudson Crossing Park.

**Hudson Riverfront Park, Stillwater** - A bank launch with seasonal fixed docks; dedicated parking/unloading area nearby with portable toilets, picnic shelter, playground, and trails.

## Erie

**Freeman's Bridge, Glenville** - DEC concrete boat ramp with floating boarding dock. Separate hand-launch adjacent with low-freeboard floating dock and launching slide fitted with rollers. There is a wide low-angle gangway (but no transfer bench and only one grabrail).

**Onondaga Lake Outlet, Liverpool** - Three launch and docking facilities at one location: a bank launch with dedicated parking and an accessible path; a floating dock with roller equipped launching slide, transfer bench, and grabrails; and a high-freeboard floating dock designed for water taxis.

**Fairport** - Fixed docks on the south bank with wide steps leading to a moderately low-freeboard section. Fixed and floating docks on the north bank, installed in 2021 with special attention to universal access. Features include a launching slide with transfer steps and grabrails and a separate overhead lift where assistants can help wheelchair users shift between chairs and boats. An on-site rental business offers kayaks and bicycles with assistive features.

**Brockport** - Many years ago, the village and Canal Corporation worked together to install a notch in the 4' tall vertical wall that lines the south bank of the Erie Canal through Brockport. It improved access for small boats but remained daunting for many paddlers. In 2021 the village installed a small floating dock with a launching slide, transfer bench, grab rails, and loops.

**Canajoharie** - Site for potential hand-launch enhancements, under the bridge between the existing DEC boat ramp and seasonal high-freeboard docks installed for large power vessels.

## Lock C5, Schuylerville, Saratoga County, Champlain Canal/Hudson River

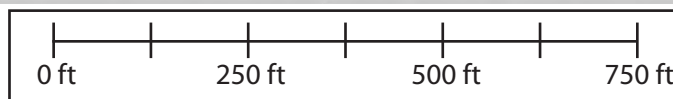


**Parking:** Three public parking areas are located on the site.

**Launch:** The upper launch has floating dock with gangway, but no additional accessibility enhancements. Portage route from floating dock to bank launch area provides an alternative to passing through the lock. Bank launch has gravel surface and is usable year-round.

**Carry to launches:** Paths lead from the lock parking area to each launch site. The path to the upper launch is fairly level; the path to the lower launch is steeper and has switchbacks.

**Amenities:** Portable toilets are located at a nearby parking area located in the park, but are some distance away. A picnic shelter and exhibit building are located near the launches. Hudson River Valley Greenway boat racks for temporary storage and a self-service kayak rental rack are located on trails leading to the lower bank launch. The Champlain Canal Trail/Empire State Trail goes through the site.

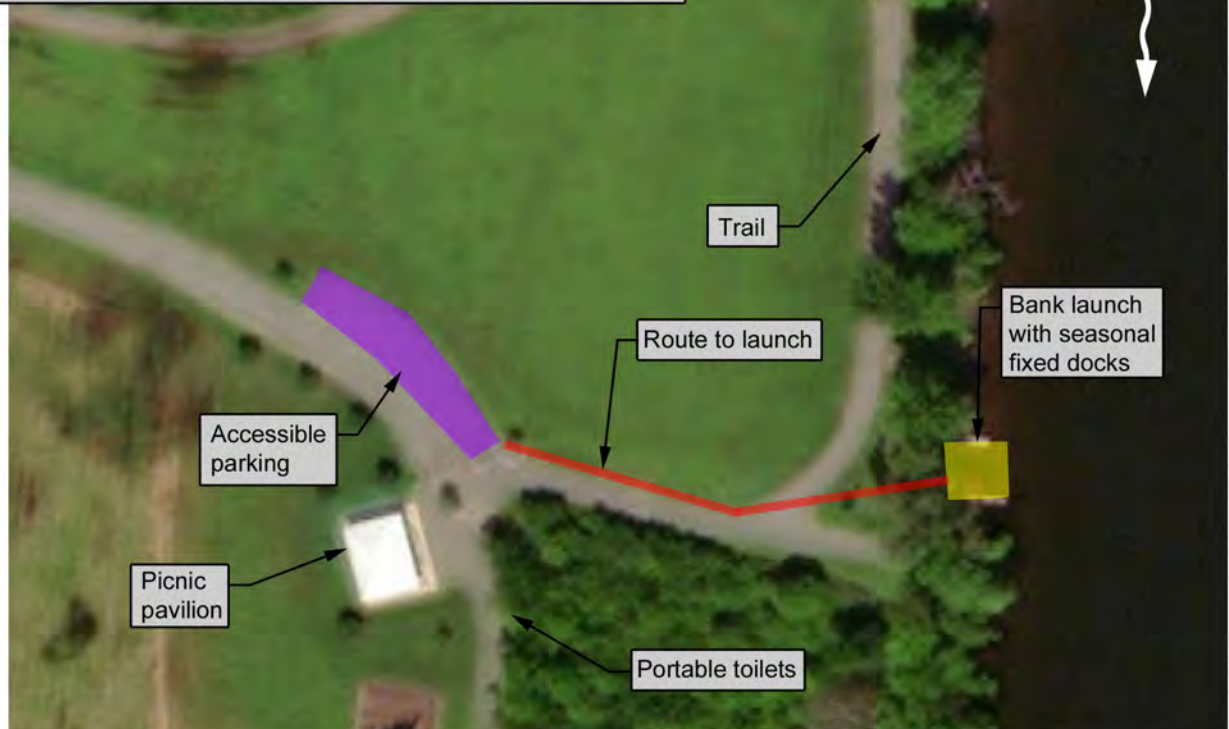




## Hudson Riverfront Park, Stillwater, Saratoga County, Champlain Canal



*Bank launch with seasonal fixed docks*

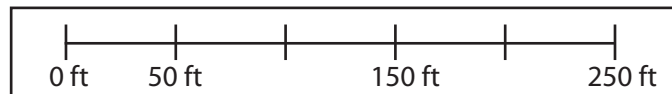


**Parking:** Unloading area and parking located at end of park road with accessible parking.

**Launch:** Bank launch with a gravel surface retained in geocell material. Surface is eroded, exposing the top of the geocells. A fixed boarding dock is adjacent to the beach landing.

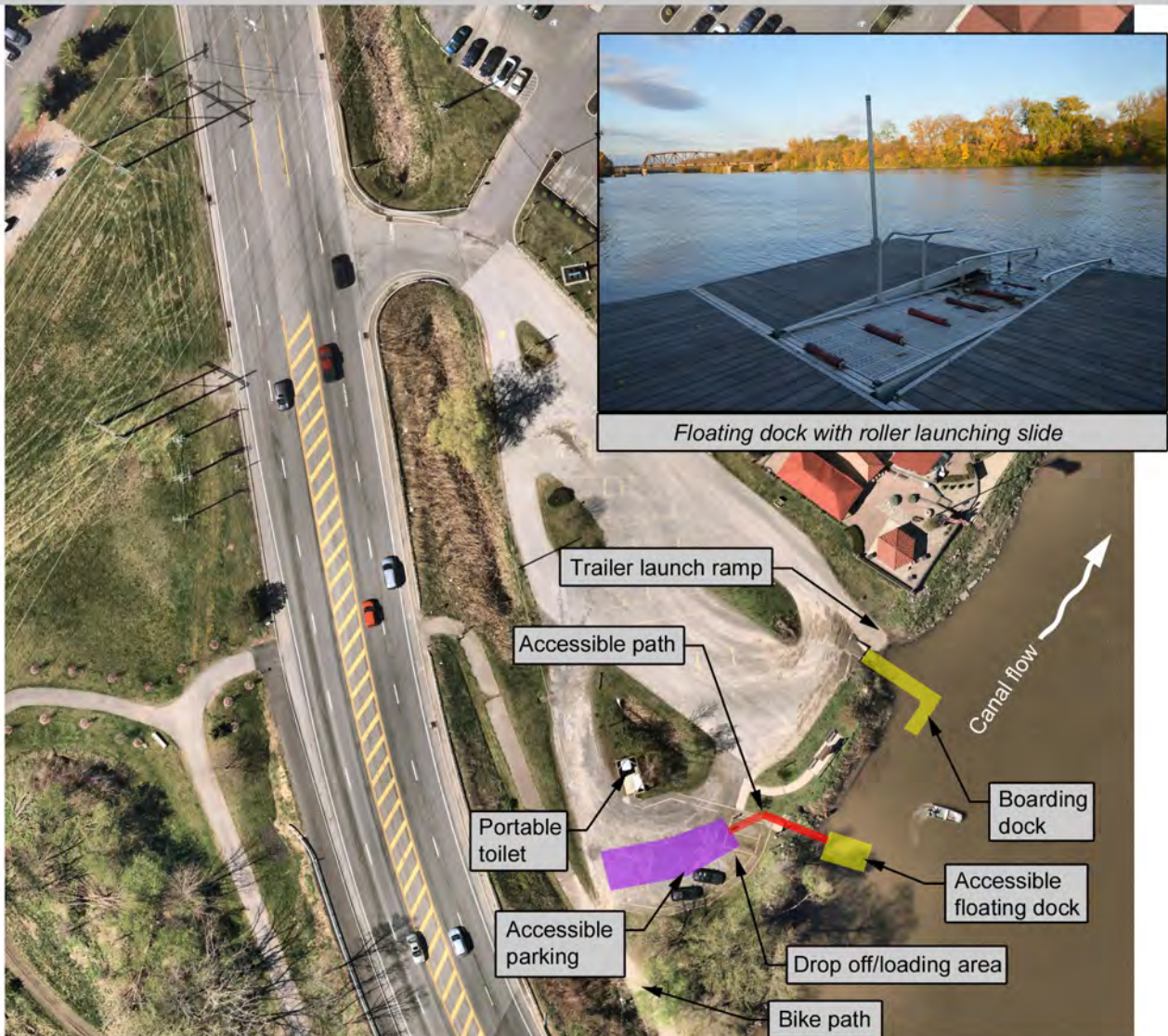
**Carry to launch:** A level 260' packed stone dust path leads from unloading area to launch site.

**Amenities:** A picnic pavilion and portable toilets are located near the unloading area.





## Freeman's Bridge Boat Launch, Glenville, Schenectady County, Erie Canal/Mohawk River

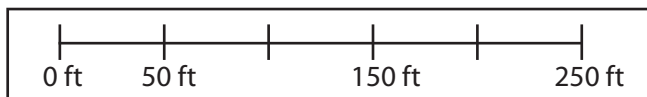


**Parking:** Launch site has separate dedicated parking areas for trailers and vehicles carrying cartop boats.

**Launch:** Floating dock with roller ramp and grabrails; gangway from shore to dock. Launch components require disassembly and storage for winter. Trailer ramp has a high freeboard floating boarding dock.

**Carry to launch:** The accessible route to the launch is a dedicated path from the parking area to the launch and the boarding ramp, as well as a seating area. There is also a pickup and drop-off area directly above the launch in the parking area.

**Amenities:** Portable toilets located on site. Restaurant, hotel and marina adjacent to the site. Other services nearby. Direct connection to a bike trail.





## Onondaga Lake County Park, Liverpool, Onondaga County

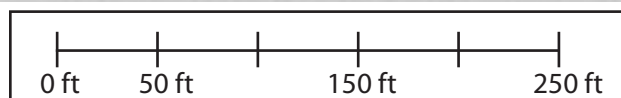


**Parking:** Launch site has dedicated accessible parking for paddlers for both launches.

**Launch:** Floating dock with launching slide with rollers, transfer bench and grabrails; gangway from shore to dock. Launch components require disassembly and storage for winter. Water taxi dock is a high freeboard dock designed for boarding powercraft. Bank launch has gravel surface and is useable year-round.

**Carry to launch:** The accessible route is a dedicated asphalt path from the parking area to the launch and the boarding dock as well as a seating area. There is also an accessible path to the bank launch.

**Amenities:** Public restrooms area located in the park, but are some distance away. Services are not directly adjacent to the site but there is a connection to the internal park trail.





## Fairport, Monroe County, Erie Canal

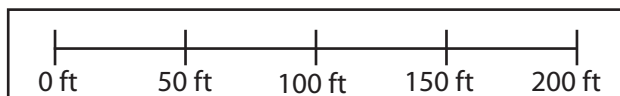


**Parking:** Located in public lots near launch sites.

**Launch:** Accessible launching slide inserted in existing concrete ramp in 2021. Launch includes transfer bench, grab rails and launch slide. This section of the canal is drained during the winter and some launch components may require disassembly and storage. Fixed dock on opposite side has high freeboard; small lowered section may still be high for paddlers with existing water levels.

**Carry to launch:** The unloading/staging area is adjacent to the launch, but requires crossing a heavily trafficked bike path/trail.

**Amenities:** Public restrooms located a short distance away in public library on south side of canal. Restaurants and shops on the village's main street are a short walk.





## Brockport, Monroe County, Erie Canal

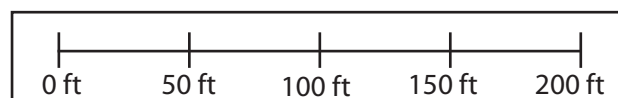


**Parking:** Located on street adjacent to launch.

**Launch:** Floating dock with gangway attached to a notch in a high vertical wall installed 2021. Launch includes transfer bench, grab rails and launch slide. Launch components require disassembly and storage for winter.

**Carry to launch:** The accessible route to the launch uses existing sidewalks with some tight corners. Unloading on street, additional parking in municipal lot near Welcome Center.

**Amenities:** Boater restrooms and showers in nearby Canal Welcome Center. Restaurants and shops on the village's main street are a short walk.





## Canajoharie, Montgomery County, Erie Canal/Mohawk River

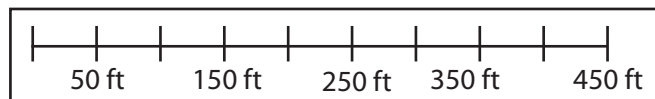


**Parking:** Parking for Riverfront Park and NYSDEC trailer launch located on west side of bridge.

**Launch:** Rip-rap embankment adjacent to east side of bridge abutment is a potential location for a hand launch facility.

**Carry to launch:** The accessible route to the launch would use an existing path from the accessible parking area on the east side of the bridge.

**Amenities:** Public restrooms are located at a public library about 1/4 mile from site. Village services are a longer walk and require passing under the highway or over the bridge.







# LAUNCH EQUIPMENT SUPPLIERS

The following companies have installed equipment for canoes, kayaks and other small watercraft on the New York State Canal System and comparable waterways. **The list is not exhaustive, nor should it be considered an endorsement of any firm or its products.** Site managers should solicit and compare proposals from several businesses.

## **Board Safe Docks**

130 West High Street  
Topton, PA 19562  
(610) 899-0286  
<https://boardsafedocks.com/services/adaptive-docks-launches/>

## **Connect-a-Dock**

1501 Owner Avenue  
Atlantic, IA 50022  
(712) 243-2430  
[www.connectadock.com](http://www.connectadock.com)

## **The Dock Doctors**

19 Little Otter Lane  
Ferrisburgh, VT 05456  
(802) 877-6756  
[https://thedockdoctors.com/client\\_media/files/pdfs/2020/Dock-Doctors-Paddle-Products.pdf](https://thedockdoctors.com/client_media/files/pdfs/2020/Dock-Doctors-Paddle-Products.pdf)

## **EZ-Dock, Inc.**

11515 Vanstory Drive, Suite 100  
Huntersville, NC 28078  
(833) 995-2219  
[www.ez-dock.com/kayakcanoe-launches/](http://www.ez-dock.com/kayakcanoe-launches/)

## **Kay-akcess**

Placida, Florida  
(941) 662-5935  
<http://kay-akcess.com/>

## **Meeco Sullivan**

3 Chancellor Lane  
Warwick, NY 10990  
(845) 986-7377  
[www.meecosullivan.com](http://www.meecosullivan.com)

## **RGC Marine**

1849 Harlem Road  
Buffalo, NY 14212  
(800) 831-5438  
<http://rgcmarine.com/>





APPENDIX



# SITE ASSESSMENT CHECKLIST

*provided by American Trails ([www.americantrails.org](http://www.americantrails.org))*

# Water Trail Site Assessment Tool

Launch/Access Site Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Agency / Outfitter Info

Park/Area Name: \_\_\_\_\_

Managing Agency: \_\_\_\_\_

Resource Type: ☐ Lake/Reservoir ☐ Ocean ☐ River

Launch/Access Site Description: (please give potential users a general description of this launch/access site)

Please describe the Location of the Launch/Access Site

Are Boats Provided at this site?

☐ Canoes ☐ Kayaks ☐ Paddleboats ☐ Rowing Boats ☐ Other: \_\_\_\_\_

Is an Essential Eligibility statement provided?

☐ Yes ☐ No ☐ Unknown

Is Adaptive Equipment Available at this site?

☐ Seating ☐ Transfer ☐ Mobility ☐ Signage ☐ Other: \_\_\_\_\_  
☐ Paddling ☐ Boat Transport ☐ Communication ☐ None available ☐ Unknown

Are Staff Trained in working with disabilities?

☐ Cognitive ☐ Visual/hearing ☐ Physical ☐ Emotional ☐ Unknown

## Exposure - Wind, Waves, Current

Direction of Greatest Exposure to Wind and Waves? [circle direction(s)]



Fetch in this direction? (Distance wind can travel over water without encountering land)

☐ < 0.25 mile ☐ .25-1.0 mile ☐ > 1.0 mile

Average Wave Height?

☐ < 1ft ☐ 1-3 ft ☐ 3-5 ft ☐ > 5 ft ☐ Unknown

Maximum Wave Height? \_\_\_\_\_ ( ft m )

Is there Exposure to Current? [If yes, circle direction(s)]

☐ Yes ☐ No ☐ Unsure



Maximum Current in this direction? \_\_\_\_\_ ( knots mph cfs )

Is there potential for wind and current to be in opposition?

☐ Yes ☐ Unsure

If yes, please explain: \_\_\_\_\_

☐ No

Is this site exposed to open water swells or breaking waves?

☐ Yes ☐ Unsure

If yes, where? \_\_\_\_\_

☐ No

## Transfer Site (the available space immediately adjacent to the boat)

Method of Entry/Exit from boat:

☐ Dock ☐ Beach/soil shoreline ☐ Cement Ramp  
☐ Bedrock ☐ Loose Rock/cobble ☐ Stairs ☐ Other (specify) \_\_\_\_\_

Characteristics of Transfer Site Options:

	Transfer site Location(s)	Boat Orientation (restricted, unrestricted)	Surface Type (I.e.soil, sand, rock)	Surface Firmness (p, h, f, s, vs)	Slope of site (%)	Dimensions		
						L	W	H
1								
2								
3								



### Access Routes (paths of travel throughout launch area)

	From _____ to _____	From _____ to _____	From _____ to _____	From _____ to _____
Length ( ft m )				
Max Grade				
Typical Grade				
Max X-slope				
Typical X-slope				
Surface Type				
Surface Firmness				
Min Width				
Typical Width				
Obstacles				

Additional Access Route Notes:

### Facilities Available

Please check all available facilities at this site:

- |   |   |                                      |                                    |                                       |
|---|---|--------------------------------------|------------------------------------|---------------------------------------|
| <input type="radio"/> Parking                       | <input type="radio"/> Accessible Toilet   | <input type="radio"/> Picnic Table   | <input type="radio"/> Fishing Pier | <input type="radio"/> Visitor Center  |
| <input type="radio"/> Boat Ramp                     | <input type="radio"/> Inaccessible Toilet | <input type="radio"/> Bench          | <input type="radio"/> Shade        | <input type="radio"/> Trailer Parking |
| <input type="radio"/> Signage                       | <input type="radio"/> Showers             | <input type="radio"/> Changing Rooms | <input type="radio"/> Public Beach | <input type="radio"/> Grills          |
| <input type="radio"/> Other (please specify): _____ |   |                                      |                                    |                                       |

Additional Facility Notes:

### Obstacles

Is there potential to have wind and current in opposition? ☐ Yes ☐ No ☐ Unsure

Describe the Wind and Current Orientation that could cause this: \_\_\_\_\_

Is there Motorized Vessel Traffic present? ☐ Yes ☐ No ☐ Unsure

Proximity? \_\_\_\_\_

Frequency? \_\_\_\_\_

Vessel Types? \_\_\_\_\_

Are there Reef or other Submerged Hazards? ☐ Yes ☐ No ☐ Unsure

Proximity? \_\_\_\_\_

Describe: \_\_\_\_\_

Does the Water Level Fluctuate? ☐ Yes ☐ No ☐ Unsure

If yes, what is the source of fluctuation?

- |                                   |   |
|-----------------------------------|---|
| <input type="radio"/> Tidal       | <input type="radio"/> Dam Controlled        |
| <input type="radio"/> Rain/runoff | <input type="radio"/> Other (specify) _____ |

Magnitude of fluctuation: \_\_\_\_\_ ( ft or m )

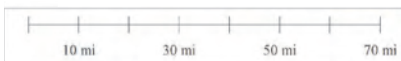
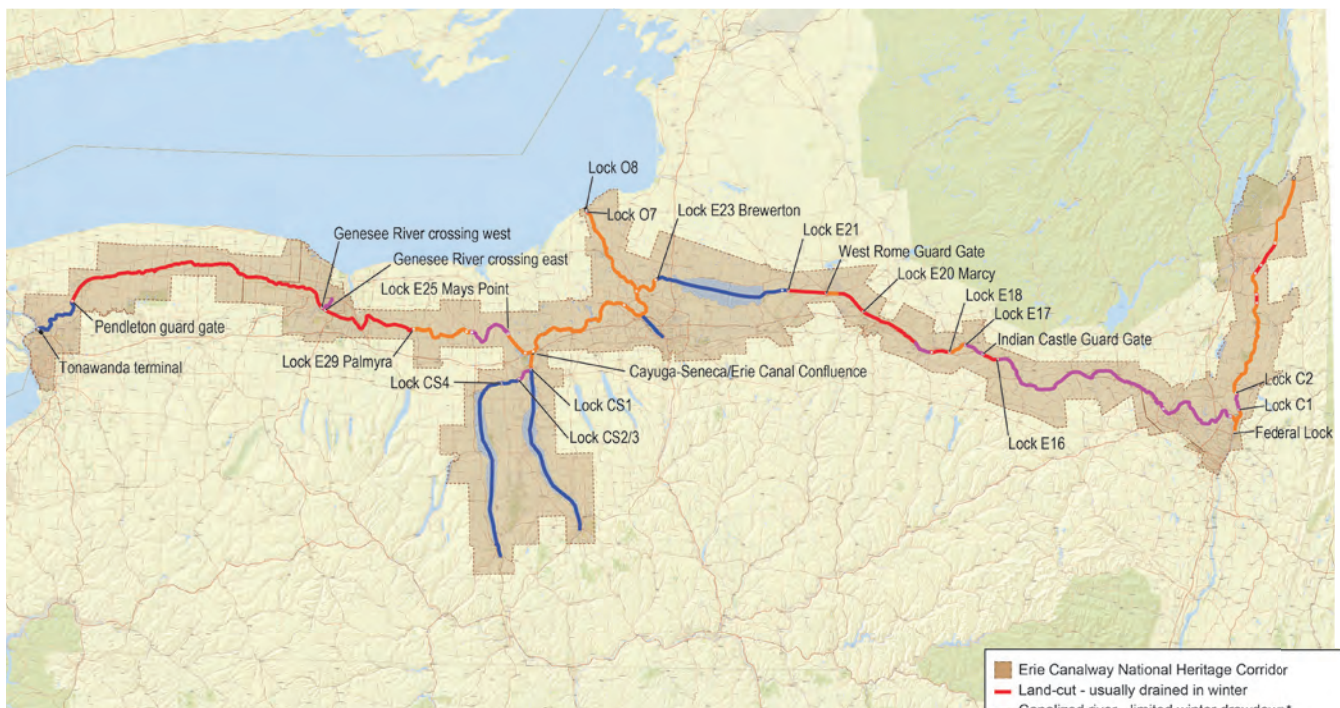
What is the Water Temperature? Highest \_\_\_\_\_ ( C or F ) Lowest: \_\_\_\_\_ ( C or F )

Additional Notes:





# CANAL WATER MANAGEMENT ZONE MAP





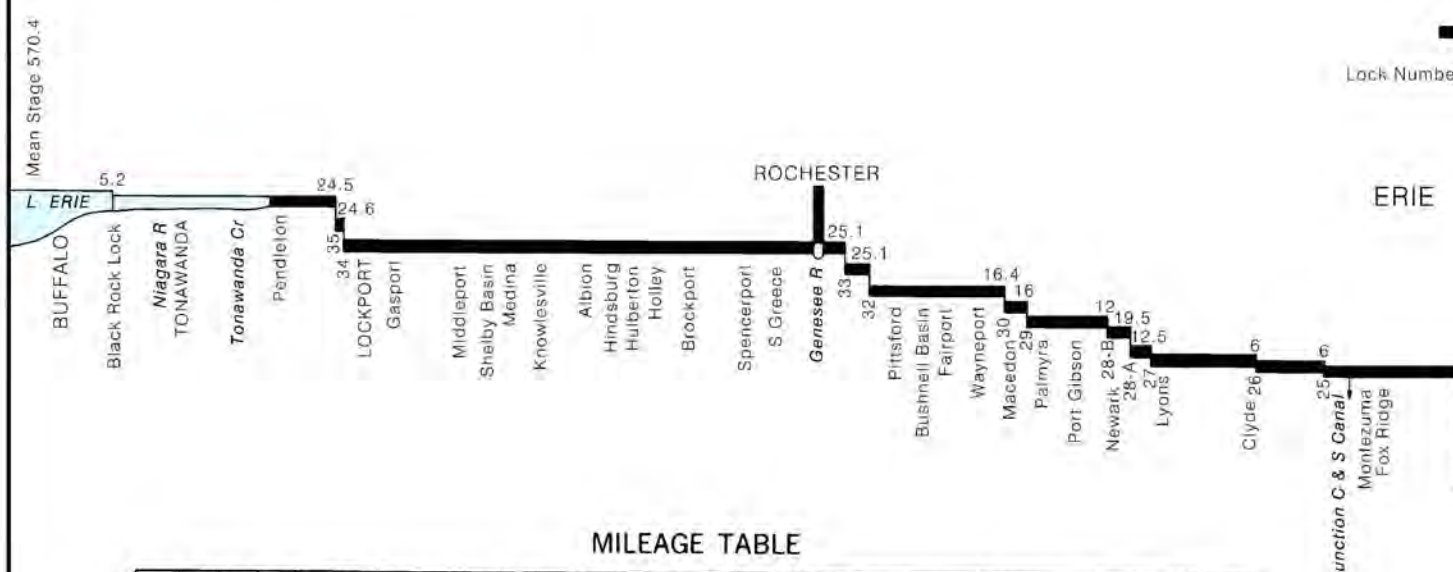
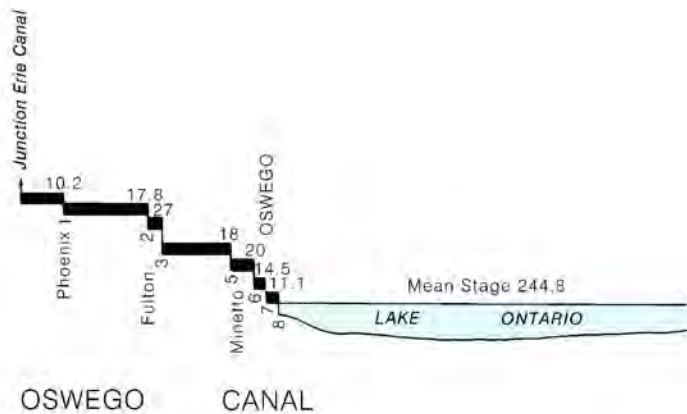
# PROFILE AND MAP OF THE NEW YORK CANAL SYSTEM

Horizontal Scale 10 5 0

Vertical Scale 100 50 0

EXPLANATION

Lock Number 23.5 24



MILEAGE TABLE

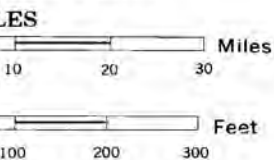
	3	22	42	65	84	103	117	131	158	165	176	207	226	262	283	297	324	343	210	245	212	223	257	175	186	27	63
Troy Lock		19	39	60	79	100	114	128	153	160	173	202	221	259	268	282	309	328	207	242	209	220	254	172	183	24	58
Waterford		18	41	59	81	95	109	131	141	154	182	201	240	259	274	302	320	188	223	190	201	235	153	164	43	78	
Schenectady		23	42	63	77	91	116	123	136	165	184	222	241	255	286	301	170	205	172	183	217	135	146	61	96		
Amsterdam		19	40	54	68	93	100	113	142	161	199	218	232	259	278	147	182	149	160	194	112	123	84	119			
Canajoharie		22	36	50	74	81	95	123	142	181	199	213	240	259	129	164	131	142	176	94	105	102	137				
Little Falls		14	28	50	60	73	101	120	159	178	193	221	239	107	142	109	120	154	72	83	124	159					
Utica		14	36	46	59	87	106	145	164	179	207	225	93	128	95	106	140	58	69	138	173						
Rome		22	32	45	73	92	131	150	165	193	211	79	114	81	92	126	44	55	152	187							
Sylvan Beach		7	23	49	68	109	125	139	166	185	57	92	59	70	104	22	33	174	209								
Brewerton		13	42	61	99	118	132	159	178	47	82	49	60	94	12	23	184	219									
Three Rivers		40	59	98	117	132	160	178	46	81	48	59	93	25	36	197	232										
Syracuse		19	58	77	90	117	136	6	41	8	19	53	53	64	225	260											
Jct C & S Canal		39	56	70	97	116	25	60	27	38	72	72	83	244	279												
Lyons		19	34	62	80	64	99	66	77	111	111	122	283	318													
Genesee River		14	41	60	83	118	85	96	130	130	141	302	337														
Brockport		27	46	98	133	100	111	145	156	317	352																
Albion		18	126	161	128	139	173	173	184	345	380																
Lockport		144	179	146	167	191	191	202	363	398																	
Tonawanda		35	4	17	51	59	70	231	266																		
Cayuga		41	52	86	94	105	266	301																			
Ithaca		11	45	61	72	233	268																				
Seneca Falls		34	72	83	244	279																					
Geneva		106	117	278	313																						
Watkins Glen		11	196	231																							
Fulton		207	242																								
Oswego		35																									
Schuylerville																											
Whitehall																											

Montour Falls  
Watkins Glen





# MILEAGE TABLE NEW YORK STATE CANAL SYSTEM

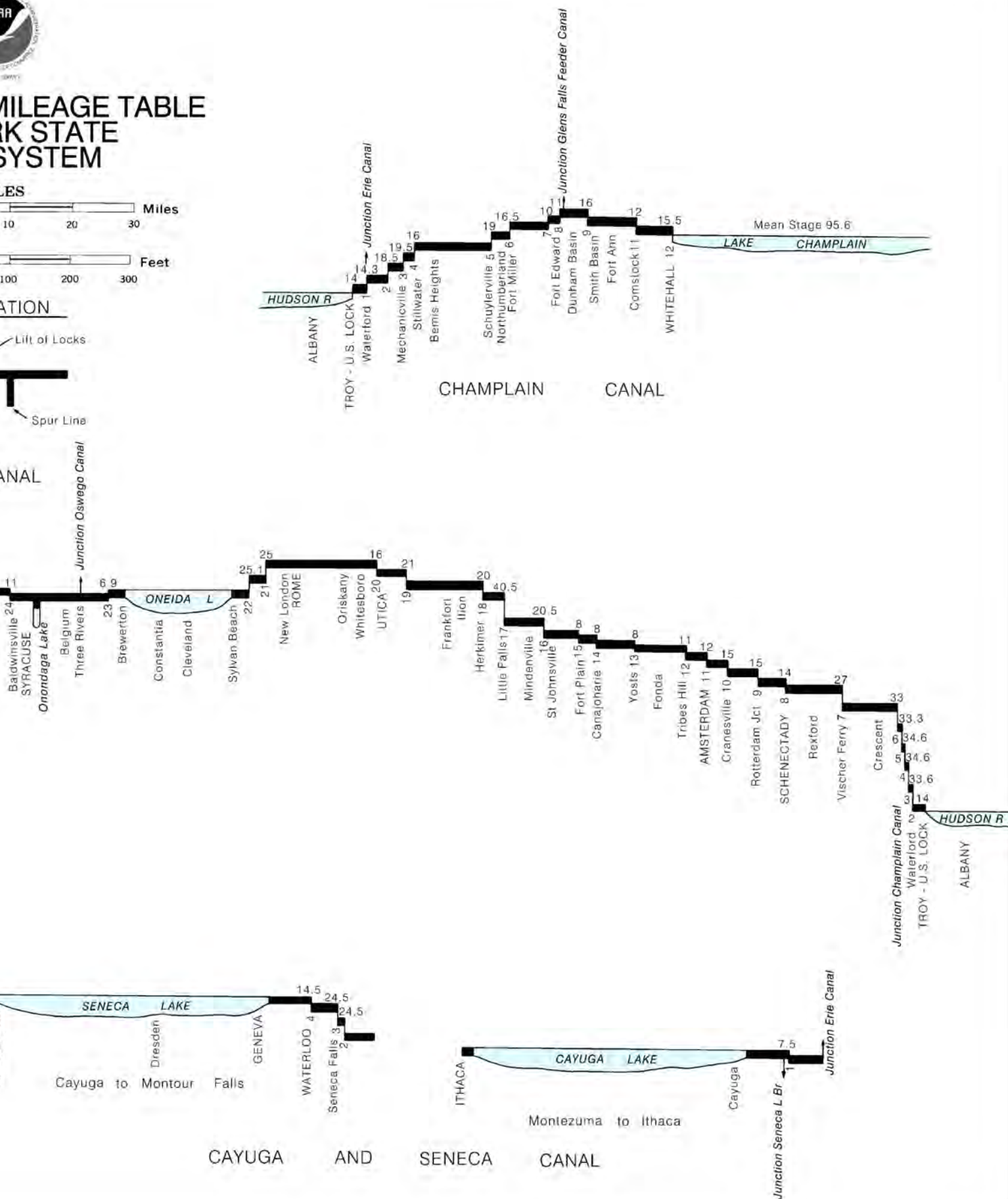


NOTATION

▲ Lift of Locks

— Spur Line

CANAL









# CANAL CORPORATION PERMIT REQUIREMENTS

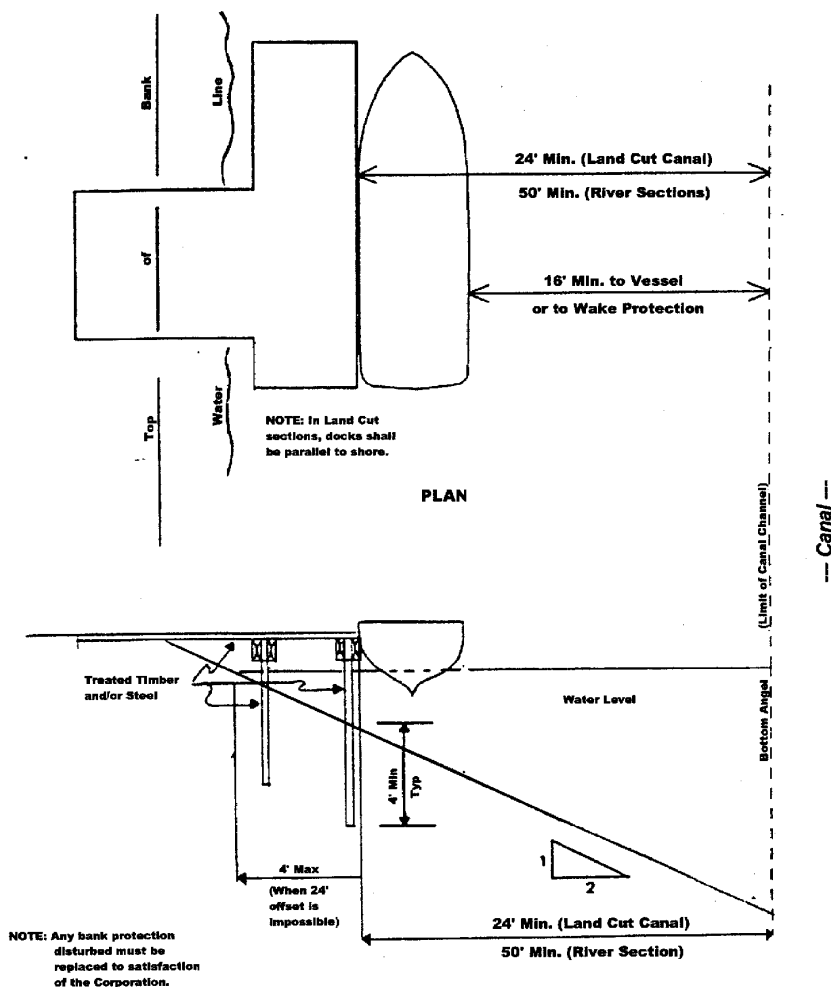
Docks on canal land and waters require a Use and Occupancy Permit issued by the New York State Canal Corporation. Their installation requires a Work Permit. Municipal and commercial facilities are evaluated on a case-by-case basis but design, fabrication, and materials must comply with Canal Corporation Design and Construction Requirements for Residential/Non-Commercial Docks, Decks, Platforms and Boat Launches/Ramps.

- These requirements apply to residential/non-commercial docks, which can accommodate four or fewer watercraft, each of which shall not exceed 40' in length, with a maximum dock length of 100'.
- Commercial and municipal docks as well as docks on reservoirs and feeder canals will be considered by the Canal Corporation on a case-by-case basis.
- Any work to install a new dock, extend an existing dock or replace an existing dock will require a separate Work Permit.
- Should construction on Corporation Property require digging or any type of excavation work, New York State law requires the Permittee to notify the Dig Safely New York program so that buried facilities in the area of the proposed construction can be identified and marked.
- Installations over, under, along and on Canal Corporation property must conform to the requirements of the current New York State Department of Transportation Standard Specifications for Construction and Materials, the current New York State Uniform Fire Prevention and Building Codes (19 NYCRR) and their referenced standards, and the Americans with Disabilities Act.

Some additional Canal Corporation requirements for designers to consider:

- Docks and decks shall not restrict access (e.g., for trails, maintenance or operations) across Canals' property.
- Docks and slips shall have their design approved by the Division Canal Engineer. A standard approved dock minimum offset as shown in the diagram must be observed.
- Docks shall be set back at least 10' from property lines of adjacent upland owners (i.e., owner of property adjacent to the permit area on the side away from the water).
- Decks or platforms shall have a maximum area of 500 sq/ft. This limit may include the area of a connecting dock or walkway.
- Flotation devices for docks shall be foam blocks, pontoons or other material manufactured specifically for flotation. Metal barrels, drums, or other containers that are not specifically made for flotation are prohibited.
- Retaining walls, when a part of a dock design, must be constructed of stone, concrete blocks, poured concrete or other similar materials acceptable to Canals. Railroad ties, vehicle tires, creosote timbers, guide railing, and asphalt are not permitted.
- Excavated slips, where permitted, shall be no larger than 1,000 sq/ft.
- Excavated slips are not permitted where:
  - a. The Canal is in a raised embankment section;
  - b. An unstable or unsafe condition would be created; or
  - c. The Division Canal Engineer determines that there is insufficient Canal Right-of-Way, or a future trail would be impeded.

- Slips, cuts, etc., must be lined with stone bank protection, riprap, or other method for protection against erosion and wave action as approved by the Canals.
- No dock installation will be permitted which may impair the integrity of an embankment, which shall be determined by the Canal Division Engineer.
- No dock shall interfere with Canal navigation, by either physically impeding navigation or obstructing the vision of boaters traveling on the Canal System. Docks shall have a minimum offset from edge of navigation channel of 50' in river channel segments and 24' in land cut sections. The Division Canal Engineer may designate certain limited areas where docks require greater offsets, or are prohibited for navigation reasons.
- Docks shall be parallel to shore in land cut areas.
- Docks shall be at least 50' from canal navigation aids.
- Docks and moored watercraft shall not hinder boaters' views of navigation aids or structures on the Canal System.
- No creosote, pentachlorophenol or other hazardous materials shall be allowed. Only appropriate preservatives approved for use in a marine environment are permitted.
- Slips or other excavations shall require a letter of no effect from the State Historic Preservation Office (SHPO) before permit issuance.
- Slips or other excavations will require appropriate sampling and disposal of materials as directed by the Corporation.
- Fills are prohibited within the limits of an established floodway, flowage easement or flood plain, unless mitigation measures approved by the Corporation and all other appropriate state and federal agencies are included.





## Commercial Canal Permit Application Instructions

An applicant requesting a Canal Work Permit and/or Use & Occupancy Permit must complete those forms which have been checked below or otherwise provide the following information:

- ☒ Canal Permit Application
  - ☒ Certificate of Insurance in the amount of \$1,000,000.00. Two endorsements specifically naming the People of the State of New York, the New York State Canal Corporation, and the New York State Power Authority as additional insureds & waiver of Subrogation. Insurance to provide general liability for combined property damage and/or bodily injury, including death, single limit per occurrence for the protection of the permittee. (Copy of ACORD form or declarations page and 2 endorsements.)
  - ☒ Workers Compensation – NYS Canal Corporation will only accept insurances listed below:  
Either Form C105.2 or U26.3 or;  
Form SI-12 (If Self Insured) or;  
Form CE-200 (Certificate of attestation of exemption)
  - ☒ Disability – NYS Canal Corporation will only accept insurances listed below:  
Form DB-120.1 or;  
Form DB-155 (If Self Insured) or;  
Form CE-200 (Certificate of attestation of exemption)
- NYS DEC and US Army Corp of Engineers Joint Permit Application:
- ☒ US Army Corp of Engineers permit or letter of non-jurisdiction.
  - ☒ NYS DEC permit or letter of non-jurisdiction.
- ☒ Projects > 1 acre of ground disturbance require a SPDES permit from NYS DEC and a SWPPP
  - ☒ State Environmental Quality Review (SEQR) Short form. If your project is a Type 1 a SEQR long form, Neg Dec will be required. If NYS Canals lands are to be used, we will need to be included on the SEQR review.
  - ☒ New York State Parks, Recreation and Historic Preservation (SHPO) correspondence.
  - ☒ Non-refundable application fee in the amount of \$25.00 made payable to the “New York State Canal Corporation” by check, bank cashier’s check or money order.
  - ☒ Signed and Stamped plans by a NYS Professional Engineer.
  - ☒ COVID affirmation. Please follow the link: <https://forms.ny.gov/s3/ny-forward-affirmation>

**Please return all requested forms, documents and fees to  
the Canal Permit Engineer, listed on the application form,  
whose territory includes your project location**



New York State Canal Corporation  
**CANAL PERMIT APPLICATION**

Please enclose non-refundable  
application fee of  
**\$25.00**  
Additional fees may be required upon  
review of Application

**Section I** Applicant Identification Information

Applicant/Company	Work Phone No. (       )       -	Home Phone No. (       )       -
Contact	Title	Fax No. (       )       -
Street Address	State	Zip Code - (       )       -
Town/Village/City	County of Permit Site	Federal ID No. (for businesses only)
E-mail Address	Use and Occupancy Permit No. (if pre-existing)	Canal Plate No. (if pre-existing)

Purpose of Application (Please provide brief description and locations)

Duration of work (if applicable)      From: \_\_\_\_\_      Through: \_\_\_\_\_

**Section II** Property Information

Intended type of use of property (check one)

<input type="checkbox"/> Agricultural	<input type="checkbox"/> Municipal	<input type="checkbox"/> Residential	<input type="checkbox"/> Not for Profit
<input type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	<input type="checkbox"/> Utility (Commercial Only)	<input type="checkbox"/> Other _____

Specific use (check if applicable)

<input type="checkbox"/> Access	<input type="checkbox"/> Beautification	<input type="checkbox"/> Boat Launch	<input type="checkbox"/> Boathouse
<input type="checkbox"/> Camp	<input type="checkbox"/> Dock	<input type="checkbox"/> Encroachment	<input type="checkbox"/> Event
<input type="checkbox"/> Fence	<input type="checkbox"/> Farming	<input type="checkbox"/> Marina	<input type="checkbox"/> Mooring
<input type="checkbox"/> Parking Lot	<input type="checkbox"/> Public Park	<input type="checkbox"/> Shore Protection	<input type="checkbox"/> Sign
<input type="checkbox"/> Slip	<input type="checkbox"/> Storage	<input type="checkbox"/> Trail	<input type="checkbox"/> Vendor
<input type="checkbox"/> Water Diversion	<input type="checkbox"/> Well	<input type="checkbox"/> Other _____	

Location and current use of Canal property (if known, please provide address, waterway, buoy number, tax map parcel number and GPS coordinates)	Latitude _____  Longitude _____
---	---------------------------------------

OFFICIAL USE ONLY			
Parcel:	Side:	Coord:	CL Sta:
CPM:	Buoy:	Tax:	
<b>Permit Type:</b> <input type="checkbox"/> Work <input type="checkbox"/> Use & Occupancy			

## CANAL PERMIT APPLICATION

### Section III Read Thoroughly Before Signing - Applicant Affirmation/Certification

Canal property is devoted to public use. Permits, therefore, are by sufferance and the duration thereof is at the discretion of the Canal Corporation (Corporation), regardless of the length of term granted. All permits are, therefore, revocable unilaterally by the Corporation. The permittee will maintain all installations permitted hereunder subject to the risk of relocating or removing them at the permittee's own expense, in accordance with the directions of the Corporation. Violators may be subject to a penalty.

Application is hereby made by the undersigned subject to the RULES AND REGULATIONS OF THE NEW YORK STATE CANAL CORPORATION. This applicant will obtain any other consents or permits that may be necessary to accomplish the purposes set forth above, as it is understood that in granting a permit, the Corporation merely expresses its assent in so far as it is authorized. A charge of \$250 per day shall be imposed for any approved work on the Canal System requiring an on site inspection by Corporation staff.

I understand that this Application incorporates by reference the terms and conditions of the NEW YORK STATE CANAL CORPORATION OCCUPANCY AND WORK PERMIT ACCOMMODATION GUIDELINES (TAP-922), and the DESIGN AND CONSTRUCTION REQUIREMENTS (TAP-923A-D), as such documents may be amended. I agree that if granted a permit, this Application becomes a part of such permit, and as a condition of the issuance of the permit and/or exercise of any privileges granted thereunder, I shall comply with any and all RULES AND REGULATIONS OF THE NEW YORK STATE CANAL CORPORATION, as same may be amended, and any CONDITION RIDER issued with the permit and any subsequent amendments to the permit.

The Applicant affirms and certifies that all information provided by the Applicant to the Corporation is complete, true and accurate.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
Name of Applicant (print or type)

\_\_\_\_\_  
Name of Co-Applicant (print or type)

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Signature of Co-Applicant

\_\_\_\_\_  
Title (if applicable)

\_\_\_\_\_  
Title (if applicable)

*Please contact the Canal Permit Engineer for the Division to which you are applying for a permit to determine whether supplemental documentation is required.*

### Section IV Submit Applications to the Appropriate Canal Corporation Permit Office

#### Division Limits

##### Eastern Division

Albany Office: Erie Canal River from the Hudson River to the Montgomery/Herkimer County line; Champlain Canal; Glens Falls Feeder Canal; Port Henry Terminal; and Wilcox Dock (City of Plattsburgh).

Utica Office: Erie Canal from the Herkimer/Montgomery County line to the east end of Oneida Lake (including Sylvan and Verona Beaches); Adirondack Canal Lands and all other Reservoirs and Feeder Canals in Oneida, Madison and Herkimer Counties with the exception of DeRuyter Reservoir and Cazenovia Lake.

##### Western Division

Syracuse Office: Erie Canal from Oneida Lake (excluding Sylvan and Verona Beaches) to the Monroe/Wayne County line; Oswego Canal; Cayuga-Seneca Canal; Jamesville and DeRuyter Reservoirs; and Cazenovia Lake.

Buffalo Office: Erie Canal from the Monroe/Wayne County line to the Niagara River.

#### Addresses and Phone Numbers

##### Eastern Division

NYS Canal Corporation  
Albany Office  
Canal Permit Engineer  
30 South Pearl St., 5th Fl.  
Albany, NY 12207  
Phone (518) 449-6039

NYS Canal Corporation  
Utica Office  
Phone: (315) 738-9031  
(mailing address same as  
Albany Office)

##### Western Division

NYS Canal Corporation  
Syracuse Office Canal  
Permit Engineer  
149 Northern Concourse  
North Syracuse, NY 13212  
Phone: (315) 423-2080

NYS Canal Corporation  
Buffalo Office  
Canal Permit Engineer  
4950 Genesee Street  
Cheektowaga, NY 14225  
(716) 686-4400

##### Overnight mail address:

30 S. Pearl St.  
Albany, NY 12207







# LAUNCH CHECKLIST: CONCEPTUAL TO OPERATIONAL

## Determining the Need/Desire for a Launch

- ☐ Meets a water trail need (self-identified)
- ☐ Resource manager request to address opportunities or undesirable usage
- ☐ Public feedback/input
- ☐ Replacing or moving an existing, deteriorated launch

## Site Assessment (See Appendix E Site Assessment form)

- ☐ New or existing launch site
- ☐ Water traffic
- ☐ Characteristics of site
  - ☐ Concrete walls, locks, dams, bank/beach landing, soils
  - ☐ Visibility
  - ☐ Current/water flow
- ☐ Amenities: Parking, paths, restrooms, potable water, staging space, storage
- ☐ Secure/safe location

## Concept Design and Cost Estimating

- ☐ Select consultant(s) to work with, if necessary
- ☐ Gather options for launch type and expected costs of each
  - ☐ Bank launch, boat ramp, fixed dock, floating dock or combination
  - ☐ Materials
  - ☐ Enhancements/accessories
  - ☐ Parking, paths, restrooms, potable water, staging space, storage
  - ☐ Signage – safety, wayfinding, mileage, usage, parking, other signs (invasives, litter)
- ☐ Address accessibility (Sections 6 and 7)
- ☐ Address launch needs, environmental conditions and sustainability
- ☐ Anticipate maintenance activities and cost
- ☐ Prepare a cost budget (uses of funds)
- ☐ Identify funding (sources of funds)

## Permitting

*NOTE: Contact NYS Canal Corporation permitting representatives early on and throughout the process to plan and collaborate on your project*

- ☐ Determine permits needed (Section 9) and involve permitting agencies and stakeholders
  - ☐ NYS Canal Corporation (Appendix F)

## Additional permits may be needed:

- ☐ State Environmental Quality Review (SEQR)
- ☐ US Army Corp of Engineers (ACOE)
- ☐ NYS Department of Environmental Conservation (DEC)
- ☐ US Fish and Wildlife Service (USFWS)
- ☐ State Historic Preservation Office (SHPO)
- ☐ NYS Department of State (DOS)/Local Waterfront Revitalization Program (LWRP)
- ☐ NYS Department of Transportation (DOT)

## Developing Construction Plans

- ☐ Select a concept design
- ☐ Develop further designs (30%, 75%, 100%) up to construction ready plans, this should include a timeline taking into account seasons/weather and other construction related factors
- ☐ At each phase refine the cost budget and work with permitting agencies to be sure it is possible to build what you want
- ☐ Apply for permits, obtain local and agency approvals, including SWPPP (Section 9)
- ☐ Secure final funding, including a contingency for unforeseen circumstances

## Build the Launch and Logistics

- ☐ Construction oversight (may be hired out, should not be the same firm doing the construction)
- ☐ Site security during construction
- ☐ Delivery of launch and materials

## Education

*NOTE: Get potential user groups involved early in the process for their feedback, buy-in, and support and for their help in getting the word out.*

- ☐ Stakeholder involvement
  - ☐ Paddling community – clubs, groups, users
  - ☐ Boating community
  - ☐ Disability community
  - ☐ Fishing community
  - ☐ Other
- ☐ Business feedback
  - ☐ Outfitters/rentals
  - ☐ Restaurants/cafes/nearby businesses
  - ☐ Other
- ☐ Erie Canalway National Heritage Corridor, state and local agencies

## Ribbon Cutting and Celebration

- ☐ Choose date or coordinate with other events (National Trails Day, Canal Fest, etc.)
- ☐ Consider ways to actively engage the community, leaders, stakeholders/agencies for an activity on the water
- ☐ Invite the public, ask funders to speak, big press release
- ☐ Social media, flyers/posters
- ☐ Inform paddlers, boaters, fishing groups

## Operations and Maintenance

- ☐ Plan for operations and maintenance, including future capital maintenance costs
- ☐ Address seasonal storage
- ☐ Use Inspection Checklist (page 36)





