



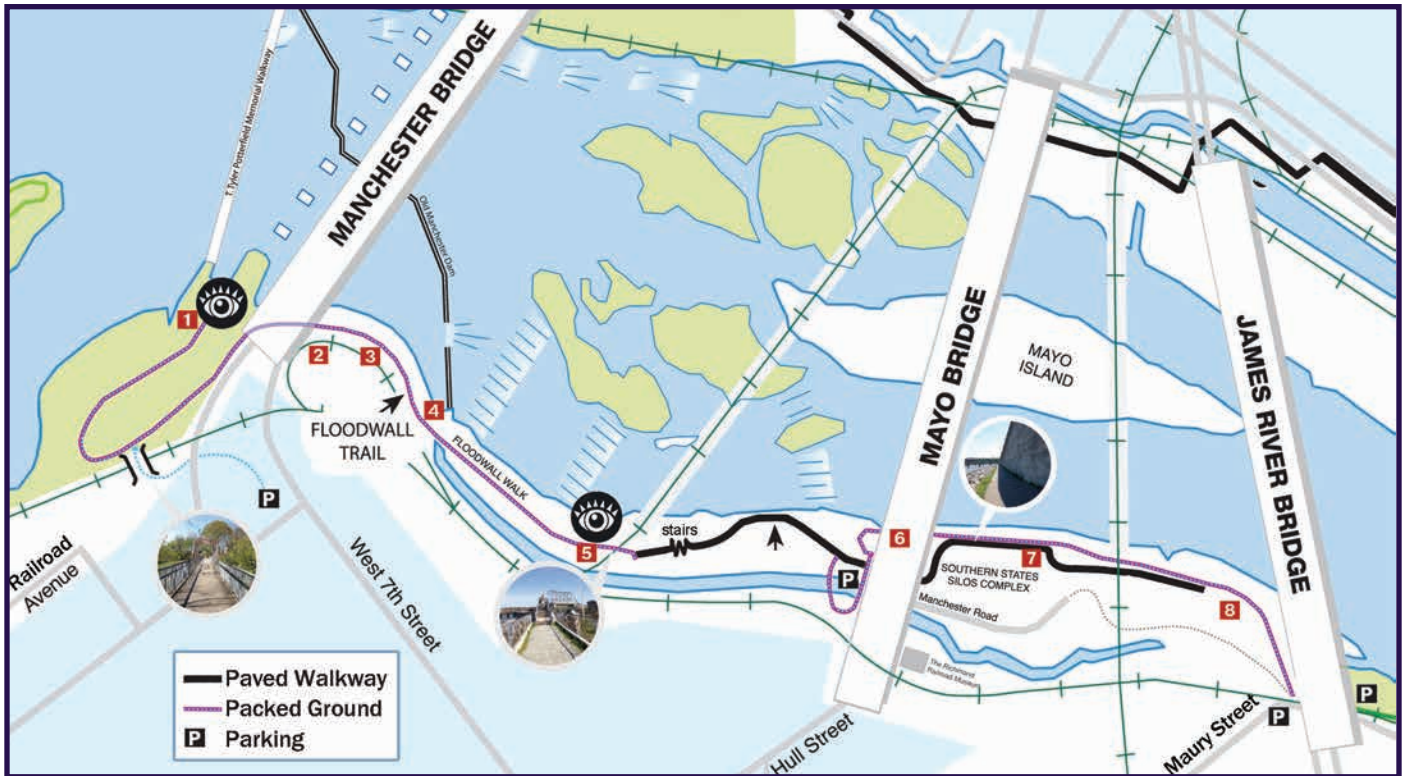
## A Walk on the Wall

*An Interpretive Guide to the Richmond Floodwall*

THE RICHMOND FLOODWALL PROTECTS 750 ACRES of low-lying industrial land from flood impact. Several times a year, the James River swells and overflows. Mountains in western Virginia trap clouds that dump rain into headwater streams. Since the James River drains 25% of the state, moderate floods are estimated to occur every 3 1/2 years. The Richmond Floodwall is a joint city and federal project that cost \$143 million. In Richmond, the cleanup for the Hurricane Agnes flood in 1972 alone cost \$112 million. While there are environmental costs to the floodwall, like the destruction of some wildlife habitat and the movement of flood impact further downstream, the benefits to Richmond include enhanced economic development, increased land values, and an improved tax base.

### ABOUT THIS TOUR:

- Scenic and accessible, this one mile riverside tour runs on the southside of river from the Manchester Bridge Overlook at Semmes Ave. and 7th St. to the Mayo Bridge Overlook at First and Hull Sts. and on to the I-95 overpass at Maury Street. Parking is available at all three locations.
- From the Manchester Bridge Parking Lot, follow what used to be an old railroad grade across the lawn and under the Manchester Bridge to a footbridge. Cross over the railroad tracks and follow the path to the right to the overlook.
- The best views of rapids, historic structures, and wildlife are during the first half of the walk. Most of this section is wheelchair accessible with assistance. (There is a steep asphalt section below the Manchester Overlook and the rest is packed gravel.) A set of stairs three-quarters of the way to the Mayo Bridge blocks complete wheelchair passage. The second half, east of the Mayo Bridge, is asphalt and parallels the flatwater. There is a moderate hill at the end near the I-95 overpass.



*From the Manchester Bridge Parking Lot, follow what used to be an old railroad grade across the lawn and under the bridge. Cross over the railroad tracks and follow the path to the right and the overlook.*

**1 The Manchester Overlook**

You are standing on one of the abutments for the Richmond & Petersburg Railroad Bridge built in 1838. This bridge provided a major north-south rail connection and was burned by retreating Confederate troops during the Civil War. The granite remains of several piers extend across the river before you. Today, the rough texture and jointed surfaces make this a popular bouldering site for skilled climbers. The shorter cement pillars that have fallen

over show the power of the floods. These once supported a railroad bridge built in 1902.

To the left of the pillars is a long, low, bridge-like structure with handrails and narrow tracks. Metal spacers were wheeled out and dropped between the supports to create an adjustable dam called the Veeco Levee, also called the Brown's Island Dam. The pilings now form the supports for the T. Tyler Potterfield Memorial Bridge. The dam funneled water to the Haxall Canal on the north bank. This fed the now abandoned steam and hydroelectric power plant identified by the 3 tall brick smokestacks to your right. The canal now marks the perimeter of Brown's Island Park.

Further to the left, among the trees, is the eastern tip of Belle Isle, part of

the James River Park System. It is the site of an infamous Civil War prison camp and has the remains of early iron and quarry industries. Today it is a popular place to view whitewater rapids, jog, climb, and fish.

On the horizon and slightly to your left is the white mansion-like structure of Ethyl Corporation, the company that invented high-octane



*R&P Railroad Bridge (pre-civil war). Photo courtesy of the Virginia State Library.*



gasoline. The old brick buildings below Ethyl comprise the famed Tredegar Iron Works, once the largest iron foundry in the South. It manufactured cannons during the Civil War and produced the armor plates for the confederate iron-clad Virginia, better known as the Merrimac. Today these buildings are the hub of the American Civil War Museum.

The rapids in front of you and to the far right provide excellent habitat

for fish and other wildlife.

In the spring, shad, herring, and rockfish migrate upriver to spawn. Fish-eating birds, like great blue herons, cormorants, and fish crows, line the shore and islands, while anglers crowd the Mayo Bridge to your far right. At any time, keep a lookout for rafts, kayaks, and canoes shooting the rapids.



Great Blue Heron



Cormorant



Fish Crow

The jagged rocks and islands to your right were once part of a granite quarrying operation and were connected by bridges to the larger Mayo Island downstream. Mayo Island marks the lower edge of the Fall Line and the beginning of the flat tidewater area. The Fall Line in Richmond is a 7-mile wide band of granite that

## Timeline of Richmond History

- 1600s Powhatan Indians harvested 8 and 9 foot sturgeon from the James River.
- 1607–1700 Captain John Smith purchased the land of the Falls from Chief Powhatan.  
Early colonists sent sailing ships up the James as far as the Falls at the Mayo Bridge.
- 1700 The River was lined with floating fish traps.
- 1730 Earliest industry on the James begun by William Byrd.
- 1742 William Byrd operated two flour mills in Manchester.
- 1771 The Great Flood crested around 40 feet.
- 1772 Bateaux shoot the rapids.
- 1785 James River Company incorporated to build Canal System.
- 1800 Hollywood Paper Mill established along north bank serviced by a canal in 1887 and became a hydroelectric plant from 1940–1972.
- 1801 Flour mill established at Tredegar Iron Works site, became an armory in 1802 and Tredegar Iron Works in 1837.
- 1804 Manchester Mill Canal formed.
- 1834 Gallego Mills established on the north bank.
- 1865 14th Street Bridge destroyed by retreating Confederate soldiers after setting fire to Richmond. Stone and brick sewers installed by the city.
- 1958 Primary treatment of wastewater entering the river begins.
- 1969 Hurricane Camille crested at 28.6 feet.
- 1972 Hurricane Agnes crested at 36.5 feet.
- 1973 Secondary treatment of wastewater begins.
- 1985 Tropical Storm Juan crested at 30.76 feet.
- 1990s Fish passage at William’s Dam.  
Floodwall protects 759 acres of the city.  
New CSO plan to carry combined sewer overflow closer to sewage plant and out of James River Park.  
Bosher’s Dam fishway provides migrating fish a passageway through Richmond.  
Renovation of the Kanawha and Haxall Canals.

created river rapids, which begin west of here at Boshers's Dam near the Willey Bridge. The length of granite actually extends about 1,000 miles from New Jersey to Georgia. Most large eastern cities were located along it because early ships could not sail up through the rapids. The energy of the rapids was then harnessed to power early industry.

*Turn around and follow the path down the hill. It leads under the footbridge and along the railroad to the underside of the Manchester Bridge.*

## **2** Curving Arches Under the Manchester Bridge

The earthen levee you are walking on marks the start of the floodwall. The squared-off rocks on your right are salvaged materials from the Kanawha Canal in a restoration project. The open area beyond is the switchyard and repair station for the Norfolk Southern Railroad. Ahead of you along the path you can see the top of the cement portion of the floodwall.

## **3** Observations Along the Wall

Looking at the river, you will notice a large flat water area formed by a dam. This connects to the floodwall at the machinery site about 200 feet down the path. Beyond the dam and below it are numerous rocks and rapids. These provide feeding areas for birds, such as bald eagles, ospreys and kingfishers, and nesting sites for Canada geese. Also, look for mammals like muskrats, beavers, and otters in the river.

**The Old Dominion Railway Museum is located at Hull and 1st Streets and is at the midpoint of the walk.**

Looking toward the railroad is a large, open, earthen area without railroad tracks. It was the site of the Norfolk Southern Roundhouse, where steam locomotives were turned around and repaired. Today, you may see railcars on the tracks loaded with pulpwood, a commodity you would have also seen a hundred years ago. The lovely grass strip is maintained to prevent tree roots from undermining the wall.

## **4** Machinery Site Regulates Canal Flow

The pipes and machinery around you adjust the flow of water through the wall and into the Manchester Canal behind you. This millrace supplied water to power early flour, textile, and corn mills. William Byrd blasted out the first part in the 1730s. Paper mills and a hydroelectric power plant utilized waterpower from the canal. The canal reenters the river at the power line near the end of the walk.

The concrete wall that runs diagonally across the river is the Manchester Dam. A notch about 200 yards off shore, called Second Break Rapids, creates the only safe place for white-water boaters to cross the dam. The rocks and rapids that continue to your right are known as Southside Rapids. This area is another good place to look for wildlife. The more famous Pipeline Rapids are on the

north side of the river. The Devil's Kitchen Rapids are hidden among the islands in between.

## **5** Set of Stairs Rising Over Swinging Gate

Below these stairs is a floodwall closure that allows Norfolk Southern trains to cross through the wall. Notice how it can be swung closed like a door in the event of a flood. Most other closers slide shut.

*The walkway follows the canal to Hull Street and is paved from this point to I-95.*

## **6** Mayo Bridge Overlook

A large sliding closure that seals off the wall during floods is hidden in the thick concrete wall under you. On your right are the grain storage towers of Southern States Cooperative and to the left is the Richmond Paperboard Company.

Ahead of you are Mayo Island, Mayo Bridge, and the end of the fall line, where rapids cease and the flatwater begins. The Mayo Bridge, the first and most famous bridge in Rich-



*Confederate troops burned the Mayo Bridge as they exited Richmond in 1862. Photo courtesy of the Valentine Museum.*

mond, was originally constructed of wood. Tolls paid for its frequent rebuilding and provided a good profit for Mr. Mayo, an early Mayor of Richmond. It was reputed to be so rickety, though, that wagon drivers sometimes did not want to pay because their horses bolted when it swayed.

Near the end of the Civil War it was burned by retreating Confederate troops. The current Mayo Bridge, built of concrete in 1913, has been totally submerged in floods and has not been damaged.

*The asphalt path now goes under the bridge and follows the river at the base of the floodwall.*

**7 Granite Surrounds You at Wall Base**

The height of the wall here, 30 feet, gives you a sense of how much water the structure can hold back. The flatwater in front of you is both an important resting site for striped bass and shad before they make their way through the rapids and a popular spot for boaters and anglers in the spring. The concentration of fisher-

**JAMES RIVER FLOOD PROTECTION SYSTEM FACTS**

The floodwall has sections on both sides of the river. It varies in height from 7 to 30 feet. The concrete wall sections are built with an underground ledge (inverted T), so that the weight of the floodwater actually helps brace the wall. Data from the Army Corps of Engineers.

	Total System	Southside	Northbank
Protected area	750 acres	600 acres	150 acres
Overall length	17,327 feet (3.28 miles)	13,029 feet (2.47 miles)	4,300 feet (miles)
Closures (roads & railway)	14	6	8
Fill (cubic yards)	630,000	63,000	567,000
Pump stations	3	2	1
Concrete used (cubic yards)	48,000	26,000	22,000
Reinforcing steel (pounds)	4,000,000	1,900,000	2,100,000
Steel piles (linear feet)	105,000	50,000	55,000

men is a modern view of what you might have seen 400 years ago with aboriginal Americans!

The rocks (riprap) around you are designed to reduce erosion and may also serve as a home for harmless baby water snakes. Please do not hurt the snakes. Gently urge them off the path away from feet and bicycle wheels.

**8 Flatwater View From Top of Hill**

The I-95 bridge looms to the east. Behind it along the south shore was located the first permanent English settlement at the Falls (later known as William Byrd's trading post) and the site of Virginia's first railroad, a gravity-powered system that carried coal from Midlothian to the wharves on the river.

Across the river, the low concrete platform with trees in front marks the largest underground concrete tank in the world, the Richmond Sewage Retention Basin. It fills with combined storm and sewage water during heavy rains, thereby protecting the river. Emergency overflow gates are also visible along the river. The restored brick buildings are former tobacco warehouses. Behind the basin and to the left is the CSX Railroad Trestle. At three miles, it is the longest double track railroad

*Flooding on I-95 in south Richmond prior to the construction of the floodwall.*





trestle in the U. S., and the site of the only triple railroad crossing.

Behind you on the south side are the large pond areas that store storm water runoff during floods. The pond area at 4th Street is a 6acre man-made wetland and is being managed for wildlife. (Note the purple martin boxes on tall poles.) The concrete building houses a pumping station which removes rainwater when the floodgates are closed. Behind these are cylindrical tanks which store gasoline and diesel fuel.

The floodwall continues along I-95 for another 1½ miles, but the walkway ends here at the intersection with Maury Street. It is about one mile back to the overlook at the Manchester Bridge.



A publication of the Friends of the James River Park,  
Original edition 1993, Revised 2018  
Written by Ralph White  
[www.jamesriverpark.org](http://www.jamesriverpark.org)