Internal Improvements in Antebellum North Carolina

Section 1: Inland Navigation and Canals

Virginia

By 1838, Virginia had amassed $6,662,180 in debt for its support of canals, railroads, turnpikes, and miscellaneous improvements, whereas the State of North Carolina was debt free. Virginia had created a fund for internal improvement and a board to administer it – the Board of Public Works – in 1816. The board could authorize the subscription on the part of the Commonwealth to two-fifths of the stock of companies engaged in improvement projects when private investors subscribed to three-fifths of the stock. The investors had to pay for at least one-fifth of the stock subscriptions. The state deemed this method appropriate for small-scale projects; but great works, such as navigation improvements to the James River by the James River Company, were beyond the means of private capital. The Commonwealth bought up interests in the company and contracted its officials to carry through the work. By 1823, the management of the company was transferred to state officials. This pattern continued with other large-scale canal and turnpike projects, and the railroad companies received aid in the form of state funded stock subscriptions. Virginia borrowed funds on the credit of the state. By 1837, Virginia had incurred debts of $1,324,500 for the James River Company and $780,000 for the James River & Kanawha Company. The state debts on for the several railroads projects included $250,000 to the Portsmouth & Roanoke Railroad Company, $206,800 to the Richmond, Fredericksburg & Potomac Railroad Company, and $80,000 to the Petersburg Railroad Company. The Winchester & Potomac Railroad Company received $120,000 in aid from the state. The state aided the remaining companies less than $64,200 (Morton, 1917, 343, 349, 356-359, 361-362, 366). The first significant public works project in Virginia, the Dismal Swamp Canal, would affect the economy of North Carolina and influence the development of the state’s first plans for a system of internal improvements. It would also spark the trade competition between the commercial centers of southern Virginia.


II

The Dismal Swamp Canal connected the Elizabeth River at Portsmouth, Virginia, to the Pasquotank River in Camden County, North Carolina. The canal, completed in 1805 and subsequently improved to handle more traffic, diverted the commerce from northeastern North Carolina to Norfolk. The federal government required the increase in depth to facilitate the passage of larger craft from the North Carolina sounds and also allowed craft passing through the Roanoke Canal to travel to Portsmouth and Norfolk. This required change in the Dismal Swamp Canal by the federal government had a twofold impact. Opposition to federal funding by central Virginia thwarted the subscription to the company stock. There would be several lotteries held to aid the canal. Notices for the Virginia State Lottery (Fifth Class-For the benefit of the Dismal Swamp Canal Co.) appear in North Carolina.
newspapers. Congress eventually subscribed to shares in the company stock (*Raleigh Register*, 12 January 1827, 10 April 1827). The new depth of the canal made it possible to ship produce from the upper Roanoke Valley via the Roanoke Canal to Portsmouth and Norfolk. In short, it contributed to a trade imbalance between Petersburg and the Hampton Roads region (Stewart, 1973).

*Raleigh Register*


### III

**Archibald Murphey**

Judge Archibald Murphey, a visionary North Carolina state senator, labored to create the state’s first policy on internal improvements. In 1815, he chaired a committee on inland navigation. The *Report of the Committee on Inland Navigation* concluded that river improvements would lead to the growth of commercial towns on the state’s major rivers. His report to the legislature of the following year notes that trade from the Roanoke was entering the Norfolk market via Albemarle Sound, thus drawing off potential revenue (Conner, 1930, 31; North Carolina, 1815, 7; 1818, 18). The *Memoir* was a comprehensive plan of improvements that would transform the state’s rivers into a transportation network. It recommended a system of canals to bypass the falls on the major rivers and proposed a connection between at least two of them (Murphey, 1819, 17-19). The state made a step forward towards this goal when it hired its first professional civil engineer.


### IV

**Hamilton Fulton**

Hamilton Fulton arrived in North Carolina to begin his employment as the state civil engineer in 1819. He examined the work of the Roanoke Navigation Company at the Great Falls, and noticed problems with the work; in the course of developing plans for similar works, he consulted civil engineer Benjamin H. Latrobe on problems concerning the physical geography of North Carolina. He also observed that Franklin, Granville, Warren, and Halifax counties in North Carolina sent tobacco and
wheat by wagon to the Virginia markets, likely destined for the Petersburg market (North Carolina, 1819, 5, 8, 21-32, 42-44, 49). The Annual Report of the Board of Public Improvements for 1820 included examinations of the progress of the Clubfoot and Harlowe Creek Canal, the Fayetteville Canal, a joint report on the Roanoke Canal by the state engineer for Virginia, Thomas Moore, and Hamilton Fulton; and Mr. Fulton’s report on the practicality of reopening Roanoke Inlet. There were also reports concerning other projects on coastal navigation, the Cape Fear, the Broad, the Yadkin and the Catawba rivers (North Carolina, 1820, 1-37). The Annual Report of the Board of Public Improvements for 1821 includes a report by United States engineers on the practicality of reopening Roanoke Inlet and Mr. Fulton’s reported on the progress of the Roanoke Canal – including his plans for the aqueduct over Chockoyotte Creek. He also mentioned the possible useful application of a timber railroad in connection with improvements on the Neuse River. His report on the Clubfoot and Harlowe Canal indicated that the design for a lock constructed for that canal was defective. This document also contains a report from Denison Olmsted, professor of chemistry and mineralogy at the University of North Carolina, on the mineral resources of the state. While much of Mr. Fulton’s report is fascinating, the 1821 Annual Report is significant because it defines the objects of a system for internal improvements in North Carolina: to provide all the citizens of the state with a way of getting the “productions of their industry” to market; and to “fix that market within our own limits.” The means of paying for this system involved the state taking out a loan of $500,000 at an annual rate not exceeding six per cent, and the Treasurer would issue certificates of stock. The state would subscribe to $225,000 in shares of the canal and navigation companies (North Carolina, 1821, 13-29, 38-41, 62-67, xix-xxiii). Murphey’s plan for internal improvements received the attention of the national press for its comprehensive approach and scope (North American Review, 1821). Very little came of these plans; however, that it established a dialogue on internal improvement policy is significant.


North Carolina. (1820). Annual Report of the Board of Public Improvements of North-Carolina to the General Assembly, November 27, 1820; together with Mr. Fulton's Reports to the Board, On the Public Works projected and carrying on throughout the State during the present year. Raleigh, NC: J. Gales.

North Carolina. (1821). Annual Report of the Board of Public Improvements of North-Carolina, to the General Assembly, November 26, 1821; together with Mr. Fulton's Reports to the Board, And other Papers in relation to the Improvement of the State. Raleigh, NC: J. Gales.


V

Roanoke Inlet

Hamilton Fulton’s plan to reopen Roanoke Inlet is particular interesting. The port town of Albemarle Sound had enjoyed access to the Atlantic via Roanoke Inlet during colonial times; however the inlet closed in the mid-1790s. Reopening the inlet became an important element of North Carolina’s internal improvement policy during the antebellum period. Several plans recommended by engineers
The Clubfoot and Harlowe Creek Canal

The great disappointment of public works undertaken in North Carolina during the nineteenth century was the Clubfoot and Harlowe Creek Canal. The project, conceived before the Revolution and finally completed in 1827, never proved very useful. Its purpose was to facilitate navigation between the Neuse River and Beaufort harbor. The canal had consumed tens of thousands of dollars of public funds over many decades; yet, when opened the tolls were merely a fraction of the investment required to build it, and revenue continued to diminish year after year. The anticipated traffic on the canal never materialized, the canal fell into disrepair, and it was not until 1872 that the state was able to sell it (Watson, 2002, 81-85).


The Roanoke Canal

The Roanoke River crosses the political boundary between North Carolina and Virginia. Through its tributaries, the Staunton and the Dan, its basin extends deep into the interior of both states. The river then courses southeast through the Coastal Plain of North Carolina and emptied into Albemarle Sound. In 1663, the Lords Proprietors had set the boundary between Virginia and Carolina at 36 degrees north. In 1728, the line was surveyed to thirty miles east of the Blue Ridge and has remained since (Merrens, 1964, 19-31). The earlier line would have placed most of the basin within Virginia. For the early railroads, the river served as a de facto economic boundary. The Petersburg Company completed its railroad to the north side of the Roanoke in 1833, and the Portsmouth & Roanoke Rail Road followed in 1837. The latter used the toll bridge to carry its trains to Weldon on the south side of the river. Each railroad was an extension of a commercial center in Virginia, and both were competing for the agricultural output of the entire basin. The rivalry between Norfolk and Petersburg had its origin in previous internal improvement projects.

The Roanoke Canal was thirty feet wide at the bottom with slopes of one and a half feet to one foot, and three feet deep. The total length at the water’s surface was thirty-nine feet and a towpath that was ten feet wide (North Carolina, 1821, 22-23). The Clubfoot & Harlowe Creek Canal was four feet deep and fourteen feet wide at its bottom. The slopes were one and half feet to one foot, and the total width at the surface of the water was twenty-six feet. The towpath was eight feet wide (North Carolina, 1820, 2). The Roanoke Canal extended approximately eight miles, of which a little more than seven miles remain. The stone culverts, massive aqueduct, and locks remain. The upper sections of the canal are dry. The Clubfoot & Harlowe Creek Canal also remains, and water still flows in it. Though slightly larger when completed and now silted to half its original depth, it is apparent to the observer that small shallow-draft bateaux navigated these canals.
The Roanoke Navigation Company continued its improvements of the Dan and Staunton rivers after the Roanoke Canal was in operation (North Carolina, 1829). By 1831, the Virginia & North Carolina Transportation Company was operating eight boats of sixty tons burthen between Norfolk and Weldon. The trip took between eight and thirteen days. The monthly average loads on these boats included 400 hogsheads of tobacco, 1200 barrels of flour, and 800 bales of cotton. The company put two steamboats in service on the lower river for towing boats to Norfolk. The steamboats carried their own load for freight (Roanoke Navigation Company, 1831). In the same year, the State of North Carolina received the sum of $875 as dividends on its 500 shares of stock in the Roanoke Navigation Company (Coon, 1908, 539).


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Why the plan did not work

The first attempt at a state system of internal improvements was underfunded and mismanaged. Its defects included the lack of engineering expertise to oversee the various projects, the absence of a sufficient labor force, and a waste of funds (Owen, 1829, 4; Brown, 1928, 12-13). Some of the more profound defects were intrinsic and would have an impact on the development of railroads. There was a widely held belief that private corporations could carry through internal improvement projects more effectively; and the power block of the eastern counties opposed plans that they perceived to suggest taxation for improvements that would benefit the west at their expense. North Carolina’s veteran politician, the unshakeable Nathaniel Macon, was opposed to soliciting aid from the general government for internal improvements, and many in North Carolina agreed with the view. He also believed that the state had little commercial potential, and tax revenues would be better applied to education (Price, 2001, 209-210; Turner, 1971, 69; Jeffery, 1978, 114; Price, 2004, 297, 290-291; Dodd, 1908, 388-390). When all factors are considered, it appears that Archibald Murphey’s plan for a state system was beneficial insomuch as it focused attention towards the need for transportation policy in North Carolina and identified the causes of the degradation of its economy. The Roanoke Canal, constructed by the Roanoke Navigation Company and jointly supported by North Carolina and Virginia,
was the principal work completed out during this period; and, as it came into operation, its existence would attract attention to the early railroads built in both states.


In 1821, the Board of Public Improvements of North Carolina proposed a plan for borrowing $500,000 on the credit of the state to help pay for transportation improvements. The board recommended that the state invest nearly half of this amount in the stock of the Roanoke Navigation Company, the Yadkin Navigation Company, the Cape Fear Navigation Company, the Tar Navigation Company, The Neuse Navigation Company, the Catawba Navigation Company, and the Clubfoot & Harlowe Creek Canal Company. The remainder was committed to a number of coastal navigation projects and road projects in the western part of the state. The citizens of the state were adverse to paying for improvements with high taxes, so the board recommended that the treasurer of the state issue certificates on the debt payable bearing six percent interest annually. The board also noted that some projects, such as improving access to the port of Beaufort, had commercial advantages over other projects. They were of the opinion that the jealousy between commercial towns interfered with developing a general plan of internal improvements. Each town supported the projects that would direct commerce to their neighborhood (North Carolina, 1821, xx-xxviii). The state could not accomplish Judge Murphey’s plan for internal improvements. The Roanoke Navigation Company proved a successful investment, but it benefited Norfolk more than the other commercial towns in North Carolina and Virginia. As South Carolina and Virginia poured capital into public works, North Carolina made plans, and invested in the stock of the several navigation companies.

The lack of a national plan for internal improvements placed the full burden of financing state projects on citizens that resisted taxation for improvements that would benefit another region of the state. The jealousy between towns and regions in North Carolina cannot be understated. This is the central theme of early railroad development in North Carolina. Different sections of the state, with their respective commercial towns, would align their interests with commercial centers in Virginia. Weldon, at the lower end of the Roanoke Canal, became the focus of early railroad construction. At the time, Petersburg was contemplating a railroad to the Roanoke, the Roanoke Navigation Company anticipated the transport of 4,800 hogsheads of tobacco, 14,400 barrels of flour, and 9600 bales of cotton on the Roanoke River annually. It was estimated that the actual annual agricultural output of the Roanoke Valley included 15,000 hogsheads of tobacco and 20,000 bales of cotton (Roanoke Navigation Company, 1831, 6).


### Section 2: Early railroad in North Carolina

#### The technology

- 1804, Richard Trevithick demonstrated first steam locomotive.
- 1814, George Stephenson built his first locomotive, developed the flanged wheel, and standard gauge, 4’8.5”.
- 1825, Stockton & Darlington Railway – 26 miles, first permanent steam railroad
- 6 October 1829, The Rainhill Trials – the *Rocket*, built by George and Robert Stephenson wins the competition, and is awarded the contract for building the locomotives for the Liverpool & Manchester Railway
- 15 September 1830, the opening of the Liverpool & Manchester Railway
- 1827, Baltimore & Ohio Rail Road incorporated in Maryland and Virginia; Charleston & Hamburg Rail Road in South Carolina
- 1830, Charleston & Hamburg Rail Road in operation – finally completed in 1833, 136 miles in length

#### Construction techniques

- Strap iron wooden rail construction
- Pile construction – used extensively on the Charleston & Hamburg Rail Road
- Trestlework – used extensively on many early Southern railroads
- Lattice Truss Bridges (also Towne Truss)
- Sills (crossties) placed every six feet
- Drains and culvers
- Excavation
- Embankment
- Grading
- The “horse path” used in early designs

#### Problems
• No dependable source of domestic iron, railroad up until the end of the antebellum period imported railroad iron from England
• Wooden rail construction began to show rot within approximately 6 years, rails had to be replaced by at least 10 years
• “Snakeheads” – strap iron worked free of the wooden rails and punched holes through the bottom of passing cars
• Pile construction trestlework was used to cross uneven land surface. The intention was to make the “permanent way” by creating earth embankments at a later time.
• Low weight locomotives – 5.5 to 8.5 tons had limited hauling power on modest grades. (Civil War Era locomotive – 40-50 tons, early 20th century steam locomotive, 100 tons)

Timetable: The Roanoke

• Roanoke Inlet closes during the mid-1790s – the Albemarle Region of North Carolina is deprived of convenient access to the Atlantic
• Dismal Swamp Canal completed in 1805, and improved during the next decade – connected the Elizabeth River at Portsmouth, VA to the Pasquotank River in Camden County, NC – produce entering Albemarle Sound from the lower Roanoke River transported to market at Norfolk
• The Roanoke Canal - allowed navigation around the Great Falls of the Roanoke – built by the Roanoke Navigation Company, and supported by the Commonwealth of Virginia and the State of North Carolina - Thomas Moore, state engineer for Virginia, and Hamilton Fulton, state engineer for North Carolina – in operation during 1820s, completed early 1830s.
• Petersburg, VA constructs the Petersburg Rail Road to Blakeley, North Carolina on the north side of the Roanoke River opposite the basin of the Roanoke Canal at Weldon – completed in 1833
• Norfolk interest incorporate the Portsmouth & Roanoke Rail Road in 1832, completed to the Weldon Toll Bridge in 1837.
• The Weldon Toll Bridge Company was incorporated during the 1832-33 Session of the North Carolina General Assembly.
• The Halifax & Weldon Rail Road Company was incorporated during the 1833-34 Session of the North Carolina General Assembly.
• The Greensville & Roanoke Railroad, a branch line of the Petersburg Rail Road, was incorporated during the 1833-34 Session of the North Carolina General Assembly.

Timeline: Early railroad plans in North Carolina

• 1828, Joseph Caldwell proposed the construction of a Central Rail Road in his Numbers of Carlton; Governor James Iredell, proposed a experimental railroad from Fayetteville to Campbellton.
• 1829, Governor John Owen recommended that Iredell’s plan for an experimental railroad be extended to the Narrows of the Yadkin.
• 1830, locomotive demonstrated at Fayetteville
• Fayetteville Rail Road Company incorporated during the 1830-31 Session of the General Assembly
• 29 May 1831, the Great Fire of Fayetteville destroyed a large portion of the town.
• 21 June 1831, the Capitol Fire in Raleigh
• The fires presented two opportunities – The Cape Fear & Yadkin Rail Road, and the movement in the Cape Fear and western counties to the Capitol moved from Raleigh to Fayetteville.
• The Cape Fear & Yadkin Rail Road was incorporated during the 1831-32 Session of the General Assembly – capital stock to be $2,000,000 – books opened on 8 May 1832
• The supporters of retaining the Capitol at Raleigh prevailed, but this struggle brought topics of internal improvements and amending the North Carolina Constitution to the surface. The Experimental Rail-road Company, designed to transport stone for the building of the new Capitol, was incorporated during the 1832-33 Session of the General Assembly
• 8 May 1833, The Cape Fear & Yadkin Rail Road announces the return of subscriptions – only $300,000

Problems with Early Proposals

1) Lack of Private Investment Capital, particularly in the interior counties
2) Sectional Interests – cultural, political, and economic regional differences worked against developing a state policy on internal improvements.
3) Promoters of the early plans did not fully understand the nature and limitations of early railroad technology.
4) Promoters did not fully understand the physical geography and geology of North Carolina.

Timeline: The Wilmington & Raleigh Rail Road

• Following the failure of the Cape Fear & Yadkin Rail Road in May of 1833, the citizens of Wilmington proposed the building of a turnpike between Wilmington and Raleigh via Clinton.
• Interests in New Bern suggested the building of a railroad between New Bern and Raleigh via Waynesborough.
• Governor David Swain recalled in the late 1860s that Mrs. Sarah Polk was the first person to recommend the extension of the Experimental Rail Road.
• The editor of the Raleigh Register recommended in June of 1833 that the citizens of Raleigh, New Bern, and Wilmington build a railroad between Raleigh and Waynesborough than branch line to New Bern or Wilmington or both places.
• The idea took root during the Internal Improvements Convention held on 4 July 1833. Introduced in a resolution by Judge William Gaston, meetings took place after the convention in Waynesborough, and subscriptions were taken – including separate coupons for the New Bern and Wilmington branch lines.
• Early support in the Piedmont –
• Incorporated under a private act during the 1833-34 Session of the General Assembly – the Halifax & Weldon Rail Road was also incorporated during this session
• During the second Internal Improvements Convention held in November of 1833, the plan for a state system of internal improvements was devised and expressed in a memorial to the General Assembly. The General Assembly could not offer the necessary support to the plan.
• Gavin Hogg’s Report of the Select Committee on Internal Improvements inflamed commercial interests in Wilmington and set off a protracted fight in the press between Hogg and the Wilmington Committee that lasted long into 1834.
• The friends of the Weldon Toll Bridge Company defeated an amendment to the charter of the Petersburg Rail Road that would allow them to build a bridge near Weldon.
• The Wilmington & Raleigh Rail Road submitted amendments to its charter; they are tabled to the 1835-36 Session of the General Assembly
• The North Carolina State Constitutional Convention of 1835
• The charter of the Wilmington & Raleigh Rail Road was amended under a public act during the 1835-36 Session of the General Assembly. Under this new charter, the route of the railroad was changed to Halifax, with provisions for branch line to Raleigh. It was also allowed to operate a steamboat line from Wilmington to Charleston.

• The Raleigh & Gaston Rail Road Company was incorporated under a private act during the 1835-36 Session without going to committee.

• Edward B. Dudley, the president of the Wilmington & Raleigh Rail Road, is elected as North Carolina’s first popularly elected governor in 1836.

• The Deposit Act of 1836 and the Federal Surplus.

• Merges with the Halifax & Weldon in 1837.

• The Wilmington & Raleigh Rail Road received the contract to transport the “Southern Great Mail” from the Post Office Department in 1838.

Strengths of the Wilmington & Raleigh Rail Road

• Two-fifths investment on the part of the State of North Carolina.

• The Steamboat Line.

• A Stagecoach Line.

• The Halifax & Weldon Rail Road.

• An existing bridge over the Roanoke River.

• The most direct route through North Carolina.

• Connection to Charleston and the Charleston & Hamburg Rail Road.

• The “Southern Great Mail” contract.

• Coastal Plain terrain.

The Raleigh & Gaston Rail Road

• Disadvantages:
  – Had to build its own bridge over the Roanoke at Gaston.
  – Incorporated in haste under a private act.
  – Undercapitalized.
  – Its success, in part, was dependent upon the completion of the projected Raleigh & Columbia Rail Road.
  – The Panic of 1837.
  – Piedmont terrain, $12,000 per mile construction excluding bridges.
  – State endorsed mortgage bonds to complete construction.
  – North Carolina forecloses on the mortgage in 1845.

The trade war

In 1840, letters that appeared in the Wilmington Chronicle between writers “Roanoke” and “Petersburg” related that interests in Raleigh and the Petersburg Rail Road Company were not pleased by the Wilmington & Raleigh Rail Road Company’s efforts to have the route of the railroad changed to the Roanoke. These interests lobbied the North Carolina Legislature to prevent the change of the charter.
• In 1842, Rochelle and Smith, unable to secure payment for a debt of $16,846 from the Portsmouth & Roanoke Rail Road, obtained a deed for the section of the railroad in North Carolina from the Sherriff of Northampton County (NC).
• On 1 December 1843, Francis E. Rives, a politician and agent of the Petersburg Rail Road obtained this deed.
• On 6 January 1844, Francis River began dismantling the railroad. He was arrested by the Sheriff of Northampton County, and put on trial.
• He escape with a small fine, but was later acquitted.
• Rives attempted to obtain a charter for the railroad he had acquired but was refused by the State of North Carolina.
• “An Act to provide for the reorganization of the Portsmouth & Roanoke Rail Road Company” was passed during the 1844-45 Session of the North Carolina General Assembly.
• This act clarified the penalties for damaging a railroad.
• The governor of the State of North Carolina and the Commonwealth of Virginia would set the terms for the Petersburg Rail Road’s use of the disputed bridge at Weldon.

An inefficient rail network

• The Wilmington & Raleigh Rail Road and the Raleigh & Gaston Rail Road together constituted a dysfunctional network, not only because both terminated a few miles from each other at the Roanoke, but also because of a lack of connection between them.
• From a planning perspective, the Raleigh & Gaston Rail Road was a colossal failure.
• The financial downturn of the 1840s curtailed railroad development in North Carolina to the end of the decade.
• Given the narrow window of opportunity for railroad development in North Carolina during the 1830s and the limited available capital, projects on the scale of the Raleigh & Columbia Rail Road, the Cape Fear & Yadkin Rail Road, and the Central Rail Road can be excluded from an possible network.
• The possible alternative network would include the Wilmington & Raleigh Rail Road with its connection to Weldon, and a railroad (or branch) from Waynesborough to Raleigh.

Walter Gwynn

• Trained at West Point
• Worked on the Baltimore & Ohio Rail Road Survey
• Employed on the construction of the Petersburg Rail Road
• Chief Engineer of the Portsmouth & Roanoke Rail Road
• Chief Engineer of the Wilmington & Raleigh Rail Road
• Employed by the State of North Carolina for many civil engineer projects throughout the 1840s
• Chief engineer of the North Carolina Railroad
• Work on the Wilmington & Manchester Rail Road, including bridge design
Photographs of the Clubfoot and Harlowe Creek Canal and the Newport River