

# Wheels: Historic Transportation Systems and Landscape in the Halifax Watershed

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## ABSTRACT

This paper explores the history of transportation systems in the Halifax River Watershed from an environmental perspective. Emphasis is placed on the negligible environmental impact of early roads as compared to the late nineteenth century and twentieth century railroads, paved roads, and permanent bridges. The early introduction of the automobile to the Halifax region, the appeal of the area as an affordable vacation destination, and the desire for an automobile-friendly transportation grid would have a permanent and destructive impact on the Halifax River watershed.

**Keywords:** Halifax River, roads, Daytona Beach, transportation

## **A note on some of the primary sources used in this paper:**

Numbers in text next to the following sources refer to accession/file numbers of the cited documents.

HHS = Halifax Historical Society, Archives, Daytona Beach.

MOAS = Museum of Arts and Sciences, Cici and Hyatt Brown Museum of Art, Daytona Beach.

SLAF = State Library and Archives of Florida, Florida Photographic Collection, Tallahassee.

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## INTRODUCTION: SOURCES AND EARLIEST RECORDS

A modern aerial view of the Halifax River Watershed reveals a thickly wooded landscape away from the river, but a dense and planned development network adjacent to the river. The modern environmental impacts of such a dense system are covered elsewhere in this special issue. This article is more concerned with the historical development of the extensive transport network and its initial impacts on the watershed.

The sources available for identifying that impact are uneven to say the least. A few academic monographs have been written on the greater metropolitan areas in North, South and West Florida (Ingram, 2014; Karnes, 2009; Gannon, 2003), but monographs specific to the Halifax area were written mostly by local agencies and historians. One broader work is Bruce Seely's *Building the American Highway System: Engineers as Policy Makers* (Seely, 1987). However, while focused on national highway building, Seely studies road building as an engineering problem, not an environmental challenge. This is in keeping with most of the scholarship on roads in the watershed. Any attention to the region's environment has in general been given to the physical challenges that the forested wetlands of the Halifax watershed presented, not to any immediate or long-term environmental impacts. There is a great deal of local research on the important agents and entrepreneurs such as Henry Flagler and Carl Fisher and their 'taming' of the hostile Florida environment, although the majority of it is written for a general public. For most local histories, such progressivist and person-centered histories are completely understandable, but are far less interested in environmental impact than on social development. Where environmental consequences are usually addressed, they are typically found in the more than plentiful and adequate regional scholarship on tourism brought by roads, rails, and airports. However, very little is specific to the Halifax region (Stager and Carver, 2006; Jakle and Sculle, 2005; Belasco, 1979). As the enthusiasm for extensive automobile roads evolved hand-in-hand with the history of flight in the Halifax region, and as both fed the tourism industry, reactions to environmental impacts of road and runway construction are not well addressed in the sources. Most pamphlets and travel guides of the period speak glowingly of the transportation network (e.g. DeLand, Florida, 1900).

The archaeological evidence is also challenging. Before the creation of the Dixie Highway, roads in Florida left little trace on the landscape. Even paved roads quickly disappeared into the Florida undergrowth if not maintained. A good example of this effect is the so-called Pershing Highway, built in 1917, to connect Daytona and DeLand by paved road. Early photographs show a cleared landscape along the road and careful brickwork. However, after the highway was abandoned

in 1947, it quickly fell to the forest. Despite less than eighty years of disuse, only a preserved 2.3-mile stretch, discovered after wildfires swept the area in the early twenty-first century, survives as an interpretive trail off U.S. Highway 92 near Highridge Estates (Williamson, 2008). It is easy to see why important historic roads without permanent surfaces, like the Old King's Road, leave almost no trace at all, or have been incorporated under contemporary paved roads.

In short, there is little discussion of the historic environmental repercussions of the transportation boom in the Halifax watershed between the late nineteenth and mid-twentieth century. There is also a lack of introspection on the impact that road building would have on the political, social, and cultural development of Volusia County in general.

This article will not deal with the environmental consequences that accompanied the development of the Halifax River as a transportation waterway. That is covered elsewhere (Reiter, 2020). Nonetheless, for a good portion of the watershed's human history, the river remained the primary mode of transportation (Reiter, 2020). The native Timucua moved by canoe through the rich oyster beds of the Halifax, and by trackway, as had their ancestors. Their shell middens tell a story of the Floridian diet as early as 7000 years ago (Saunders and Russo, 2011). While this is not the place to discuss the fauna of the middens in detail, there is growing evidence that middens served as directional markers in other parts of the Mesolithic world (Mellars, 2004). In Florida as elsewhere, the evidence suggests that they were not simply refuse heaps; they may have had ancestral significance besides marking the land. Some see importance in their placement in the landscape, but for this we would need a careful understanding of how the landscape looked when the midden was laid down, a difficult task as so many have been mined for their easy shell. In any case, there would seem to be more to them than dump sites (O'Donohue, 2017). Halifax middens are predominantly composed of oysters, with other bone and shell deposits. Whether or not the placement of Florida middens might reflect specific and complex markers rather than simple trash heaps, they remained obvious to travelers on the Halifax in the early twentieth century and would be used later in road construction (Johnson, 1918).

Trackways, generational routes that utilized high ground, lines of sight, and natural or constructed markers, are more complicated as they leave little to no archaeological trace, although we can use evidence from other heavily forested areas to hypothesize logical paths (Darvill, 2002). Beyond the coastline, native Floridians lived in an environment of limited horizons. There were clearings but very little open ground. In other words, the Halifax watershed may have been riddled with trackways, but their purpose was as short connectors in a world of small horizons beyond the

riverbanks. The Halifax and St. John Rivers were the most practical conduits, and it is no coincidence that settlement favored those shores.

Historically, Volusia County's transportation grid reflects the difficulties of travel beyond the river before the arrival of the railroad (Reiter, 2020). However, even the introduction of rail travel did little to develop the Halifax area beyond Daytona Beach for two reasons. First, a good deal of the rail traffic was commercial, and followed the easy path of the rivers to connect southern Florida with Jacksonville. Second, passenger traffic catered to the better heeled at first, most of whom were travelling to coastal resorts (Reiter, 2020). Anyone wishing to be west of that area would take steamers down the St. Johns to DeLand and Orange City. Even the invention of the automobile at first impacted only the urbanized coastline of the Halifax. While other areas of the country could be accessed by horse, the thick Florida forests proved an extra challenge for roadbuilding.

The honor of the first recorded road in the Halifax watershed belongs to the mid-eighteenth-century Old King's Road, commissioned under Governor John Grant of the British East India Company in 1763 and connecting St. Augustine to Andrew Turnbull's settlement at New Smyrna by 1776 (Ryan, 2012; Schene, 1976). The coquina- and crushed oyster-topped road allowed development of sugar, indigo, and rice plantations along its route. The plan was a failure for Grant, as the region never developed the settlements and smaller plantations that would contribute to a thriving chain of communities. Most maintained roads were private and managed by large plantations in the area such as the Bulow Plantation (Reiter, 2020). The Old King's Road was effectively for haulage of sugar, indigo, and rice, and was a broad, tamped down sand road with little environmental impact. Much of our understanding of its route and purpose are determined not by the road but by the plantation ruins on either side, and the evidence for extensive modification of the land for high impact crops.

Despite the fact that it was one of only two well developed trackways in the entire Florida territory (the Spanish Trail between St. Augustine and Pensacola being the other), the King's Road was effectively abandoned after 1783 when the Spanish took control of Florida and several of the Halifax plantations were abandoned (Liston, 1996; WPA, 1939). Improvements came after 1827 and the United States' control of the region. While the local residents had petitioned for improvement, the army needed a reliable conduit into Seminole territory as well.

Despite its disuse after the Seminole Wars and the failure to build a connecting bridge across the Tomoka River, the King's Road remained the only viable land route south from St. Augustine until 1914. The road appears on 1837 and 1851 maps and may have been palm tree lined by then

(Liston, 1996) but, because the road was never supplied with the crucial bridge, it became little more than a woodland trail after the Civil War. While it was resurrected as State Route 4 in 1926, the route now followed the railroad. What environmental impact it may have had in its construction and in the early adjacent plantation houses was effectively erased by Florida's vegetation. Surviving sections have been found in the Plantation Oaks development along the Ormond Scenic Loop and Trail (Moore, 2021; Schene, 1976), and some pilings and causeway of indeterminate date remain in the Pellicer Creek area. For its day, however, the King's Road was a remarkable piece of wetland engineering (Ryan, 2012). When sections were rediscovered in the 1880s, the abandoned road was still high and level in places.

The King's Road could not guarantee safety after the Seminole Wars in the 1830s, and the Halifax region was effectively abandoned until after the Civil War except for lumbering and turpentine camps. As it was easier to ship these products by river to Mosquito Inlet, the King's Road fell into overgrown decay. The only roads in use were tracks for the lumbermen and the scattered seasonal camps, which were quickly reclaimed by the regional vegetation. The St. Johns River region to the west, on the other hand, benefitted from its easy steamer connections to Jacksonville, but at the time of incorporation as Volusia County in 1854, there remained only thirty-eight families registered in the entire county (Liston, 1996). Roads were of little concern for those near rivers, and the area was considered useless for anything beyond slave-driven plantation use. Only five families lived in the eastern side, two of them on the Halifax (Liston, 1996). Mail moved from Enterprise to New Smyrna for distribution (Schene, 1976). The river and local forests were impacted by lumbering and turpentine gouging of trees, but lumber roads were rough and easily reclaimed after use.

Although settlement increased after the Civil War, there remained no immediate need for roadbuilding. Liston (1996) recounts the story of early settler Andrew Bostrom, an orange grower and founder of Ormond Beach who served on the Volusia County Board of Commissioners in the late 1860s. To attend a board meeting, Bostrom would sail to Port Orange and walk the thirty miles to the county seat at Enterprise in a wet two-day trek (Figure 1). If one did not want to brave the dangerous shoals of the Mosquito Inlet, the walk from the Matanzas Inlet to the Halifax was twenty-seven miles through sloping sand (Reiter, 2020; Liston, 1996). For most of this period, the river remained the main artery of communication, and investment for improvements were directed towards river needs (Reiter, 2020).

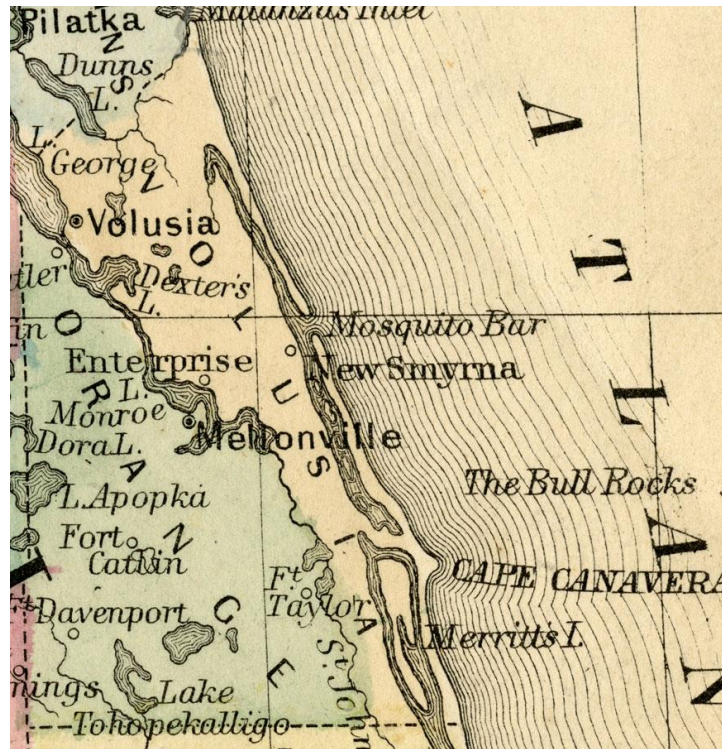


Figure 1: Volusia County in 1860. Source: Samuel Augustus Mitchell. 1860. *Mitchell's New General Atlas*. Philadelphia: S.A. Mitchell. See: <http://fcit.usf.edu/florida/maps/pages/400/f418/f418.htm>

## DAYTONA AND THE RAILROADS

The impetus for designing the first network of sustainable roads came with the founding of Daytona in the 1870s. The planners, originally led by Matthias Day of Ohio, envisioned broad streets lined with trees and large lots for houses. While one could not call Day an incipient environmentalist, his vision of trees, gardens, and open spaces for play informed his idea of how the streets should be designed (Liston, 1996). Those who succeeded Day when he had to drop out of the project carried the same idea of promoting the area as a southern paradise (MOAS, Coll 001617). By 1873, J. W. Smith advertised lots for the short-lived community of Memento (Schene, 1976), and Ormond was homesteaded in 1875. On Oceanside, the beach was used as the first reliable roadway, at least during low tide. A mid-sixteenth century account of the region by Ernst d'Erlach, a French Huguenot who survived the Spanish massacre of Fort Caroline in 1565 and by tradition married into the local Timucuan tribe in 1566, describes the beach in his journals as “. . . hard and broad enough to march a large army over it in ranked battalions . . .” (as quoted in Liston, 1996, p.16).

In 1876, a new stage road connected Daytona to Volusia Landing on the St. Johns River. The King's Road again saw improvements for a regular three-day stagecoach run to Jacksonville, helped by a daily ferry service across the Tomoka River first recorded in 1881. By 1884 the community of Seabreeze was advertised on plat maps as a health resort provided with modern streets and devoted to restoring the mind through natural surroundings: "A Home on the Halifax Peninsula means Health, Long Life and Contentment" (Weaver, 2011; HHS, 1998, 35) The original plats suggest lots sold quickly. Other developers followed, laying out street grids on both sides of the Halifax. The intentions first voiced by Day to maintain level streets lined with trees and fronted with extensive lawn continued, if only to attract northern settlers who were lured with the promise of broad expanses, northern amenities and, above all, easy transportation access.

By the 1890s, Daytona had been platted out as a growing town with many streets (HHS 1999, 117.1). Beach Street, a business-lined shell road along the river, was built up and surfaced by 1914 to accommodate the boom in tourist hotels. However, Daytona remained a very small town, servicing the well-off winter crowd and processing lumber and produce from the inland county for the intermittent freighters off Mosquito Lagoon that brought in regular supplies in exchange (WPA, 1939). Johnson (1918) notes that palmetto and live oak still dominated the landscape beyond the junction of the Tomoka River. The bridging of this river in 1887 allowed the St. Johns and Halifax River Railroad to reach Daytona. At that point the entire Halifax region lay open to the outside world and the permanent changes that such development entailed.

The story of Flagler's railroads and their environmental impact is discussed elsewhere (Reiter, 2020). In sum, there was initially little interest in railroad investment in the Halifax region because of the very low population compared to Jacksonville, Tampa, and Key West (Corliss, 1960). When Albert P. Sawyer obtained a large section of a land-grant to create an inland waterway on the east coast of Florida in 1881 via the Florida Coast Line Canal and Transportation Company (Akin, 1979), he asked Henry Flagler to help with dredging equipment. Flagler took over the company and combined it with his Jacksonville, St. Augustine, and Halifax River Railway (JSH) and his St. Johns and Halifax Railway to form the powerful Florida East Coast Railway in 1885 (Doherty, 1980; Akin, 1979). Flagler's impact in the Halifax River watershed began with the acquisition of a narrow-gauge lumber track that ran from East Palatka to Daytona. By 1887, Flagler's 'White Railroad' (named after the original owner James Utley White) connected the coastal towns and DeLand to St. Augustine by way of Palatka (Doherty, 1980). From this would come the nucleus of the Florida East Coast Railway (WPA, 1939). For Flagler, the Daytona terminus was a crucial acquisition, as it allowed him

to purchase and develop the island in the Halifax River today called City Island and utilize it for his river freight terminal (WPA 1939). Flagler also bought and rebuilt roads to Ormond and Daytona, purchasing and refurbishing the Hotel Ormond in 1892 and bridging the Halifax River (Corliss, 1960).

Unlike earlier roads, railways brought noticeable destruction to the Halifax region. Railroad construction in itself required extensive clear-cutting to allow manpower, supplies, camps, and building equipment access to the proposed route. The scarring was dramatic even before the first rail was set. To negotiate the large logs that had to be cleared along the path, railroad workers used carts fitted with heavy wheels six feet in diameter. Repeated trips wore down the sand tracks, creating rutted gullies that worsened in the rain and wetlands. Coal spillage was common along the rails as well. Coal and wood smoke killed trees on either side of the tracks, while the noise altered wildlife patterns. Erosion increased in the banked areas, requiring constant maintenance while choking the waterways.

Streams and wetlands were the most impacted, as fill was brought in to create sturdy weight-bearing platforms. When workers paved the St. Johns and Halifax River Railroad in 1885, they were stymied at the Tomoka River wetlands, and spent a year dumping dirt into the swamp before they resorted to a large, crisscrossed log road to retain the dirt. They then threw the construction engine into the swamp to dispose of it. The line was hailed as a blessing in Ormond when it arrived in November 1885 but left a scarred landscape and disturbed wetland system in its wake. In fact, the railroad was so shoddily made that Flagler later had the entire track replaced and rebuilt, adding to the scarring (Liston, 1996).

Another trend initiated by the railroads was hostelry. Settlements along the King's Road and Halifax River provided for travelers and coaches, but Flagler expressed dissatisfaction with amenities on Florida's east coast and invested in luxury hotels that built their reputations upon lush and exotic Floridian landscapes. Prior to this, hostelry appeared where there were people already in sufficient number to support a coach stop. Now the trend reversed, hotels serving as anchors for new communities that flourished with the rise in tourism.

In anticipation of the tourism benefits brought by the new railway system, wealthy residents and developers encouraged bridge construction across the Halifax to Ormond, Seabreeze, and Daytona Beach to replace the steam ferry service (Schene, 1976). In the mid-1880s, Ormond built a wooden drawbridge on the site of the current Granada Bridge capable of supporting carriage traffic and leading directly to the luxurious Hotel Ormond completed in 1888. Daytona followed with the



South Bridge to Silver Beach and North Bridge (Main Street). By 1902, a third bridge connected Mason Avenue to Seabreeze.

The impact of these bridges on the Halifax watershed was minimal. Many homes were built with brick, coquina, and some concrete, but the infrastructure of the developments, not to mention the bridges, required large amounts of local wood. While the growth of Daytona and bridge construction contributed to local deforestation, most of the lumber was taken through the already established industry that filtered through Daytona. However, in 1913 Daytona built its first concrete bridge to accommodate automobiles and trucking. While in use only twenty-five years, it would mark the beginning of permanent construction of the Mason, Oakridge, Halifax, Main Street, Speedway and Orange Avenue Bridges in the mid-twentieth century and would require reinforced banks, shoreline infrastructure, and central dredging. There was also increased runoff of various pollutants from the bridges. The ease of crossing the Halifax was a major factor in the great development boom that followed, but the construction of bridges marked one of the first permanent impacts on the Halifax River.

Key to much of this activity to construct permanent bridges was the introduction of automobiles to the Halifax region in 1901. The elites of Ormond and Daytona who introduced the expensive new toys in celebration of their status soon discovered that the tires could not grip the sandy soils of regional roads and pressed for smooth, hard chip roads for their vehicles (SLAF, 30712; MOAS, 001988). Beach Street, still a dirt road in 1910 (MOAS, 001639), was soon paved in brick. By 1914 the Daytona Fire Department boasted automotive trucks (HHS Photo Collection, Street Scenes Bk. 2). While the coquina paving, ‘marled’ crushed rock and pine needles inside Daytona and DeLand proved adequate, any journeys in between were hazardous and best done by slow horse and team.

In the western portion of the county, road development remained slow despite the rush of settlers to Enterprise, Volusia Landing, Orange City and DeLand (Figure 2). The St. Johns River was a reliable and rapid highway to Jacksonville, and roads in general remained as local or commercial trackways to the river (Liston, 1996). In 1900, it took twelve hours to make the 25-mile journey from Daytona to DeLand, although one automobile daredevil made it in two hours in 1903 (Hebel, 1955; Fitzgerald, 1937). A shell road would not connect the two communities until 1907.



Figure 2: Emerging road network in Volusia County, 1897. Source: *The Century Atlas of Florida*. 1897. New York: The Century Co.

Part of the issue was that, beyond Orange City and the county seat of DeLand, the western side of Volusia remained agricultural and conservative. Few automobiles travelled beyond DeLand streets until the 1920s. Cattlemen disliked the new automobiles and the tourists they brought. Branch roads remained narrow and soft, reflecting the low incidence of automobiles in the western portion of the county where gravel continued to be laid by horse drawn rollers (SLAF, 396). Horses remained a common sight on west Volusia roads. The most visited tourist destination on the west side of the county, DeLeon Springs, was accessible only by a narrow forest sand track into the 1920s (SLAF, 11634; 139711).

By 1902, the road connecting Ormond to Daytona was marled to accommodate the new automobiles, cutting the journey time in half. A similar road to New Smyrna was finished by 1905. On oceanside, a marled road led to the hard beach sands where automobile races became popular after 1902, and another linked Ormond to Seabreeze (Fitzgerald, 1937). Postcards of the period feature smooth brown roads painted in such a way to indicate aesthetic and reassuring durability.

## **THE DIXIE HIGHWAY**

While part of the impetus to build roads for the new automobile led to a clearing and improvement of the King's Road, it would be the Dixie Highway (see Figure 3) a few years later that would change Volusia permanently, bringing mass tourism by automobile instead of simply elite winter vacationers and encouraging the development of the more sensitive wetland regions of the Halifax to accommodate and entertain tourists. The Dixie Highway also incentivized branch routes to the various St. Johns River and western Volusia communities.

The Dixie Highway was conceived by cycling and automobile entrepreneur Carl G. Fisher and his associate William Gilbreath. It formed part of a national 'Good Roads Movement' whose goal was to bring better cross-country highways at a time when increasingly affordable automobiles opened up travel opportunities to the middle class. Not all Floridians bought into the idea. Despite the poor and sometimes destructive conditions of rural roads in Florida (Ingram, 2014), few in rural Florida could yet afford an automobile at the time of construction. In any case, better roads meant more vehicles to upset livestock, more outside interference in close-knit rural communities, and higher taxes for what were seen as urban problems (Berger, 1979). However, resistance seems to have been worn down by a southern concern to improve their own local roads before governments chose which towns would be on the new routes and where mail would be delivered under the new postal regulations first implemented after 1918 that required drivable roads. There was also the attraction of easier and less muddy market roads (Preston, 1991; Proceedings Fourth American Road Congress, 1915). Nonetheless, progress was slow, as no strong federal inclination yet existed to fund roadbuilding in the south.

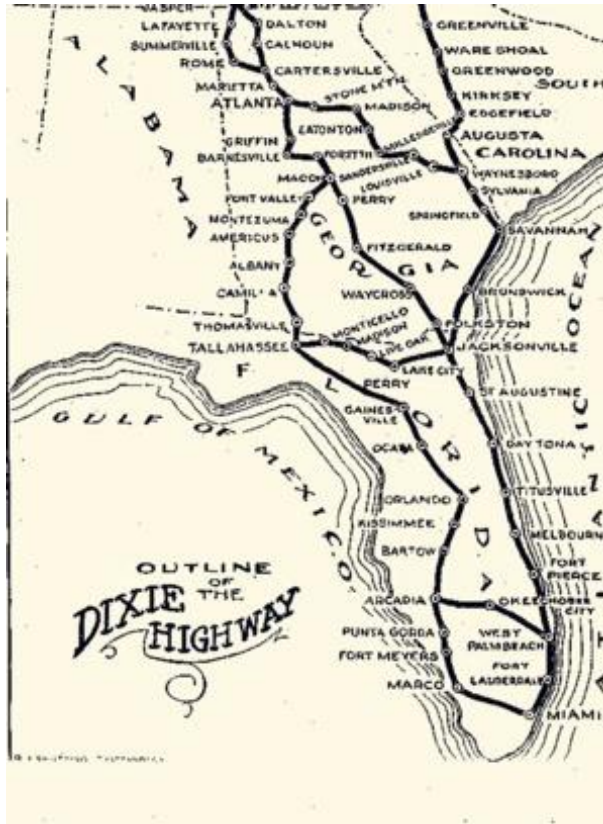


Figure 3: The Dixie Highway at completion in 1929. Source: Carl Fisher Papers, Box 4, Folder 46: “Dixie Highway,” History Miami, Miami, Fla.

Another cause for concern among Florida communities was the lack of local funding for construction. While the preferred materials for road building during the Good Roads Movement were brick and concrete, Florida communities could rarely afford large stretches in these expensive materials. Both had to be manufactured and hauled which, in a classic catch-22 situation, needed good roads to be able to do so. One solution used further north was to use a local sand and clay mixture. Once combined and then liquified to a mud, a sand/clay mortar can be sunbaked to a hardness that lasts years with little impact on the environment (FHA, n.d.). As most of Florida did not have abundant quantities of clay, some communities substituted bitumen oil, a poorer binder available from southern lakes and needing to be renewed frequently. The mixture also increased pollutant runoff when the rains washed the oil into the local streams and farmland (*Courier-Informant*, 1914). It did, however, keep the dust down and prevented water from seeping into the road base and undermining the road.

The Halifax area was not an oil producer and continued to use shell and gravel roads. Quarrying local Anastasia Formation Coquina for road surfaces was backbreaking work, and convict labor was contracted for the task. Bound in a sand and Calcite matrix, the Anastasia coquina was durable if friable over time. Coquina was also quarried in the Thompson/Bulow Creek area (Liston, 1996), although Volusia increasingly turned north to Flagler County for its supply. The superior quality Ocala limestone was preferred for aggregate, but at first it was prohibitively expensive as it had to be hauled overland. Nonetheless it would be used by wealthier Florida communities for road and building construction.

Extraction of both coquina and limestone began with the clearing of the overburden cover of earth. Explosives would then be set in most cases to break the rock for extraction and crushing before shipment to road crews (Ingram, 2014). No reclamation of quarries occurred when a lode was exhausted. The gravel or coquina, once delivered to road crews, would be laid by truck or mule-drawn equipment on the raised and levelled bed and tamped into place. Horseless trucks were still fairly new when the Dixie Highway was built (SLAF, 12302).

For the Halifax region, the Dixie Highway story picks up in April 1915 when the governors of several southern states convened in Chattanooga, Tennessee to discuss the merits of the proposed highway originally planned to link Indianapolis (not by coincidence Fisher's original home) to Miami (again not by coincidence Fisher's winter home). There was so much rancor among the governors and the Highway promoters over the route that one observer called it the "Second Battle of Chattanooga". Florida Governor Park Trammell decided not to wade into the politically charged fray, but his representatives negotiated routes along the east coast and through the center of the state, satisfying those who wanted the Dixie Highway routed through Atlanta and Jacksonville (*Atlanta Constitution*, 1915). Despite Tampa's efforts, Orlando deftly won over the commission in its bid to open up the farmlands of the state's spine to the proposed highway. Miami, at this time still a remote tropical rail destination, would now be linked more affordably to the rest of the state through a coastal trunk planned to run down from Jacksonville. These decisions had a massive impact on the Halifax region. Mindful of the benefits more roads like the Dixie Highway could bring and without funding to build them, Florida finally created a State Road Department in 1915 (Berry, 1923). Consequently, the road from Daytona to DeLand was marled, while brick lined streets appeared in DeLand and Daytona over the next decade (Hebel, 1955).

Designing Florida's roads was one thing, willingly paying for them was another. Southern states typically spent half of what northern states allotted for roads (Ingram, 2014). Roads remained

costly in Florida because of the extensive hardwood forests and wetlands, which is one reason there was heavy reliance on inexpensive convict labor (Gordon, 2017). Volusia County used predominantly Black convict chain-gangs, who did the work of slaves in conditions worse than had existed in antebellum Florida. The program was presented as a progressive and paternalist gesture for those who needed to pay their debt to society. However, Jim Crow racism created miserable conditions for Black convicts working on the Dixie Highway, a road whose very name came from a southern commemoration of the fiftieth anniversary of the Civil War (Gordon, 2017). Because these gangs were county-supervised, there was little state or federal oversight on working conditions, but also little interest to do so as the labor was cheap and the work force predominantly Black (Ingram, 2014; Preston, 1991). One author describes the labor and health conditions in Florida for state prisoners working on roads and phosphate mines as a 'hell-hole', a finding confirmed by several governmental investigations up through 1919 and later when Black convicts were diverted to other road projects (Kendrick, 1964). Construction camps operated between nine to fourteen months, and then rebuilt every ten to twenty miles, creating large areas temporarily worn down by human and mule occupation but eventually reclaimed by forest.

A March 1917 photograph of one such convict chain gang working on an unspecified section of the Daytona Road illustrates the difficulties of setting an improved road in central Florida (Figure 4). The forest cover that can be seen to either side of the road in older pictures of Volusia roads is absent, replaced by broad clearings and significant soil waste. The clearing reaches into wetlands, and the roadbed is raised. In this and other contemporary photographs the damage being done to wetlands and forests was extensive. Where bitumen had begun to be used there was runoff into wetlands, although the amount of automotive traffic on the Dixie Highway was still too small for overload of hydrocarbon pollution to build up.



Figure 4: Convict chain gang working on Volusia County section of Dixie Highway, ca 1917. State Library and Archives of Florida, photo number RC10401.

By 1919, authorities diverted convict chain gang labor to other projects, but roadbuilding continued in the Halifax region because of the federal 1916 Road Act, which provided \$75 million over five years to improve rural roads nationally for potential troop movements and economic development (Ingram, 2014; Seely, 1987). Florida was assured about \$1 million in annual funding and, like other southern states, used various taxes to match federal funds, most successfully gas and property tax increases. Given the dramatic increase in tourism by 1912, gas taxes were an effective funding mechanism as it captured revenue from those out of state as well as Florida residents.

## **TOURISM AND THE GROWTH OF DAYTONA**

With better roads came more tourists, the great majority from the north seeking an outdoor and low-cost vacation in a national 1920s trend called autocamping (Preston, 1991). Autocamping was as it sounds: a combination of tents and cars promising freedom from stuffy hotels and dress codes and the chance to be a vagabond and meet interesting people. The wealthy also autocamped on occasion, albeit with better tents and Rolls Royces, to mingle with ‘Main Street’ (Belasco, 1979). While at first ‘tin-can tourists’ camped by the side of a road, the rising popularity of autocamping created issues of overcrowding in convenient spaces to the dismay of private landowners (SLAF, [https://www.floridamemory.com/learn/exhibits/photo\\_exhibits/tincans/](https://www.floridamemory.com/learn/exhibits/photo_exhibits/tincans/)). Damage to the roadside was relatively minimal in the early days of autocamping, but eventually waste management issues became a pressing challenge. Local governments, anxious to control the issue without



stopping middle-class tourism, established public autocamp parks. In 1921 there were 38 established autocamps in Florida. By 1925 the number had grown to 210 locally funded autocampgrounds in Florida alone that promised better tents, amenities, groceries, entertainment, and safety for an average of 50-60 cars per day (Belasco, 1979). Most of those in Volusia County followed the Dixie Highway or Daytona to DeLand Road.

Autocamps provided better and cleaner facilities, but also more concentrated waste which would often end up in local wetlands. Trash was better managed at centralized autocamps, but still needed a mass disposal system (Berger, 1979). A 1922 notice in the national *Public Works Review* noted a paper recently read by George Simons, Florida's chief sanitary engineer, concerning the need to ensure a clean water supply and areas for human and other waste disposal, and the uneven local response to waste and hygiene. There was also the issue of the semi-permanent auto camper, the homeless down-at-heels or seasonal worker groups that auto camped by necessity and supposedly created huge waste disposal problems by imposing a constant and concentrated load on the facilities. For most communities, however, the increased load on the landscape was less an issue than the concern that the presence of the dilapidated worker vehicles quite bluntly ruined the 'look' of a campground designed for the casual 'vagabond' with spending money (Belasco, 1979). Florida law enforcement stopped "hitch-hiking, rod-riding, and flivver-driving itinerants" (sic) at the border; many of those turned back were African American (Snyder, 2002).

One early attempt at a solution to the waste management problem was mandating fees for campgrounds, the solution favored in Volusia County (Brown, 1924). The autocamps enjoyed a frenzied popularity until the 1930s, when cleaner private motor-hotels (motels) and cabins began to replace the camps despite improvements in tin-canners' camping equipment ([https://www.floridamemory.com/learn/exhibits/photo\\_exhibits/tincans/](https://www.floridamemory.com/learn/exhibits/photo_exhibits/tincans/)).

While Ormond became a playground for the wealthy, tourism in 1920s Daytona catered to the middle-class. The towns of the Halifax were easily reachable by new roads and offered several amusements and expeditions that the middle-class pocketbook could afford. By 1919, 22 hotels, many on the beach, served nearly 2000 people per night (*Florida Times-Union*, 1919-1920). Daytona promoted itself as Florida's equivalent of Atlantic City or an American Riviera, attracting over 100,000 visitors each winter. On January 1, 1926, Daytona was incorporated into Daytona Beach, combining the oceanside town of Daytona Beach with Seabreeze and Daytona into a thirty-eight square mile region of 30,000 residents and named streets (Weaver, 2011; HHS, 1998.41). Various new developments and subdivisions required an expansion of the road system and a reappraisal of



the Halifax bridges. An active Park Board of Advisors staffed by the influential ladies of town worked to keep the streets and parks beautiful and sign free. The Daytona Beach Realty Board slogan was clear: “The Fountain of Youth is not IN Florida, the Fountain of Youth IS Florida” (HHS, C.M. Wilder Box, 1926-31).

Much of this new development was meant for a mobile middle class looking for a sunshine life, but other neighborhoods were populated by the large body of African Americans who had been pushed out of desirable Daytona areas since 1900. Previously, prosperous black merchants lived in Daytona in unsegregated neighborhoods, but segregated black neighborhoods formed west of the railroad tracks after 1900 (Lempel, 2001). These neighborhoods saw less attention to street improvement than in Daytona, and monies originally slated for drainage ditches and paving in Black neighborhoods were diverted to oceanside recreational areas (Snyder, 2002). Many Black residents arrived with the railways when the great citrus groves froze in the 1890s (Liston, 1996). By 1930 the significant African American community comprised one-third of Daytona’s population (Snyder, 2002; WPA 1939). These communities provided labor to work the outlying farms and to build the paradise Daytona and Ormond promoted to northern white families. They staffed the hotels and other tourist facilities but had to find their way to work by cart or bicycle. Cars remained out of reach for many African Americans, but a few fortunate Black residents of the area could buy their own automobiles and participate in a limited fashion in the freedom of the road (Gordon, 2017; Snyder, 2002).

As tourism was essential to the growth of the Halifax area, especially after the citrus freezes at the end of the nineteenth century made a produce economy risky, officials prioritized making Daytona attractive to visitors. Street expansion was also emphasized to attract permanent residents. Marketing Daytona as an accessible paradise depended on advertising a modern and accessible town with the charms of a local beach and the lush and beautiful Halifax, still teeming with fish, dolphins, and birds.

Clifton Johnson’s 1918 travelogue described the oceanside of the Halifax watershed as a combination of hardwood forest and saw palmetto (Johnson, 1918), but that picture would change rapidly over the next ten years. With increased speculation and subdivision development came the need for more streets and clearing in what had been a wet forest hammock. In some Volusia towns, the population doubled from 1910-1920 (Schene, 1976). Urban maps of the Halifax watershed suggest a well-defined transportation grid. A canal had been constructed west of Fourth Street to provide drainage for further agricultural and residential development. Then, during the ‘Great

Florida Land Boom of 1921-25', residential subdivision, hotel building, and street development accelerated on both sides of the river (Kendrick, 1964). The Main Street Bridge was completely replaced with a heartwood, creosote pine, and steel span after 1923, an expensive undertaking that underscored the wealth now invested in improving roads (HHS, C.M. Rogers Box, 1923). Major roads acquired hard surfaces and Halifax Drive (State Highway A1A by 1927) became the primary artery oceanside (Weaver, 2011). Firm and sturdy, beach roads remained popular in Volusia County (Johnson, 1918), but by the 1920s beach access roads showed wear and sand pollution, although a tourist-friendly postcard created from a gritty photograph (see Figures 5 and 6) shows the same scene as smooth and perfect (SLAF, 165137; 259433).



Figure 5: Beach road erosion on approach to Daytona Beach, undated but in 1920s. Source: State Library and Archives of Florida, photo number PHA038.



Figure 6: Postcard rendering of scene in Figure 5. Source: State Library and Archives of Florida, image number PC07512.

The boom created a rush to develop all along Florida's east coast, and land speculation was rife. Passengers and cargo competed for space on railroads, making the 1920s especially challenging to the railway industry. Miami was especially snarled. Cars loaded with excess building materials to feed the development boom were unable to unload until the empty cars of recently arrived prior trains could be removed. The rails needed constant maintenance. In late 1925 the Florida East Coast Railway declared a railroad embargo on all construction materials, stimulating maritime shipping until the rails could be expanded (Weaver, 2011; WPA, 1939). The embargo also helped cool the rampant speculation and development of land by 1926. Notable hurricanes in the 1920s ended the Great Florida Land Boom.

Railroads provided powerful incentives to build more roads as well. Freight moving via ports and Flagler's trains needed smooth access roads, and the industry subsidized those access points. Truckers on short-haul trips and other drivers took advantage of these well-built conduits that cost less than taking the railroad, reducing train congestion resulting from boom period developments that snarled the rail supply lines and damaged the trust in train haulage of Florida perishables

(especially citrus, the main product of the Halifax area at this time) (Ingram, 2014; MacDonald, 1932).

With the installation of cooling facilities at shipping terminals, trucks were able to make the short hauls into communities that the railroad and cargo ships could not reach. By 1937, Florida enacted legislation allowing rail lines to operate delivery trucks. In Daytona, a hard-surface truck route was constructed on what is now Nova Road (Hebel, 1955). On the human side, long distance passenger buses allowed flexible entry into many communities, which helped spur tourism and residential growth. In both cases, durable roads with permanent surfaces were the answer to the far less accessible rails (WPA 1939).

### **DAYTONA TRANSIT 1930-1970**

With the resurgence of Daytona Beach tourism in the mid-1930s came asphalted city streets and the completion of U.S. Highway 1, which made access to Daytona from the north even easier (SLAF, 274238; compared to 259330 and 30712; Weaver, 2011). A 1925 mileage map of the best roads in Florida indicates an easy connection on U.S. Highway 92 of twenty-one miles between Daytona and DeLand en route to Kissimmee, the so-called 'Jackson Highway'. The same map also indicated that there was an offshoot from the Dixie Highway/Spanish Trail, the 'Atlantic Highway', accessible from Bunnell to Flagler Beach and continuing south (SLAF, 323012).

By 1939, authors of the Works Progress Administration's *Florida: A Guide to the Southernmost State* noted a railway station, two passenger bus terminals, and a municipal airport in the town of Daytona, which it described as a thriving town of over 16,000 (WPA, 1939). A large gas station on Main Street had opened two years previously by mechanic Bill France, who took advantage of the lack of fueling stations on the barrier island (Weaver, 2011). Already possessed of 39 hotels and many more bed-and-breakfasts called 'tourist houses', Daytona also boasted four full golf courses, five picture houses, and several community events. Most permanent residents lived on the west side of the Halifax, while the four permanent bridges across the river allowed access to a growing permanent and wealthy residential community beachside.

There was a downside. Despite continued narrative and painted depictions of the Halifax area as paradise (MOAS, 002276), WPA writers noted the disappearance of local vegetation. While commenting on the region's lushness, writers mentioned that the live oak, magnolia and bay trees that once marked prolific hardwood forests in the area now merely lined the streets. Postcards from the 1930s placed heavy emphasis on drivable beaches and the Halifax area as an automobile mecca.

Added to this was the initiation of Bike Week beginning in 1937, drawing hundreds of motorcyclists to the beaches every spring. Already the beaches had issues with exhaust and motor oil. While scientific records do not go back far enough to verify, photographs suggest that sea turtle nesting was disrupted in the area. Since the 1930s, the steady growth of hard surface roads and cars in the region had a continuing and growing impact on urban runoff in the watershed, dune and dune grass erosion, roadside degradation, and bank erosion near bridges.

The final episode in roadbuilding addressed here is the completion of U.S. Highway 1 and Interstate Highways 95 and 4. The section of the Dixie Highway that crossed Volusia County was essentially absorbed into U.S. Highway 1. By this time, asphalt-concrete amalgams were preferred, creating environmental run-off issues (Kendrick, 1964). The completion of the Florida Turnpike in the early 1960s served as the impetus for a connector highway from Interstate Highway 95 in Daytona to Orlando and Tampa. Interstate 4 was completed in 1964, while Interstate 95 was completed in Daytona by 1970. The Dixie Highway faded into oblivion in the Halifax region, but the name has been retained on a section of U.S. 1 running from the mouth of the Tomoka River in Ormond along Bulow Creek Park to Plantation Bay.

Interstate 95 would have repercussions on the St. Johns watershed. By diverting north/south traffic from U.S. Highway 17 in western Volusia County, several older towns like Pierson, Crescent City, and Satsuma faded in prominence on what had been historically the most used route to Jacksonville in central Florida. Development moved from west of the St. Johns River to the eastern Florida shoreline. Ironically, this allowed much of the central route to remain rooted in agriculture, with less road damage.

Finally, the popularity of Daytona Beach would be a major factor in the creation of a permanent airport in 1930, with full passenger service beginning in 1946. The region had been a frontier for flight because the same hard beaches that attracted automobile races also proved useful as a runway for early airplanes, aerial entertainment, and mail runs. The 1920s Cowan's Beach Airport attracted early aviators including Clarence Chamberlin, the first man to take a passenger across the Atlantic to Berlin (SLAF, 6791). By 1928, the city created an airport at Bethune Point, but the site was hazardous and at times fatal during take-off; the airport was moved to its present site in 1930. The runways were paved with coquina, which coincidentally absorbed most of the fuel oil. After 1946, air travel surpassed rail travel as the preferred means to reach Daytona, and the city began construction of a full terminal by 1952. By the end of the decade the airport handled over 6,000

flights per year, prompting increased investments in terminals and other facilities. Road building accelerated as the Halifax watershed became increasingly accessible by air and hotel demand grew.

## **CONCLUSIONS**

Up until the 1880s, roads had very little impact on the natural landscape of the Halifax basin. Even relatively well-built historic roads like the King's Road cast a minimal footprint on the semi-tropical forests. The structures left behind by the English, Spanish, and pre-Seminole American settlers faded so easily into the forest that, by the 1880s, few remembered them or could locate and identify the ruins (e.g. James Ormond III went for a search of his childhood home Damietta in the early 1880s, and found only one chimney). Given the landscape, environmental conditions, and available technology of the time, it is little wonder that older roads most often faded back into the wetlands and forests with very little trace (Liston, 1996).

This minimal impact changed dramatically with increased settlement in the Ormond and Daytona areas and the introduction of the railroad. The demand for construction lumber and timbers for the rails and bridges scarred the forests closest to the Halifax, while coal spillage impacted wetlands. The introduction of oil/sand and shell roads to service the needs of automobiles accelerated local coquina quarrying, while contemporary studies of hydrocarbon pollution in Volusia County strongly suggest that the less regulated road building and use introduced new petrol-based runoff from the roadbeds as well as exhaust in the forests (see for example Kheimi et al., 2022 and Goolsby et al., 2016). The Dixie Highway gave average tourists access to all of the Daytona attractions previously reserved for winter elites, and Daytona promoted itself as an affordable tropical town with northern travel amenities. The resulting exponential growth of Daytona Beach and Ormond as tourist and residential destinations in the early twentieth century accelerated roadbuilding and bridge construction, stressing the popular but environmentally fragile beach access, damaging riverbanks, and reducing forests and wetlands. Finally, the construction of interstate highways and a full airport in the mid-twentieth century so urbanized the landscape that the lush natural environment that had attracted settlers and magnates a century before was reduced to modified fringe vegetation, parkland, and reserves. Today, the Halifax River Urban Watershed is a child of Daytona's marketed appeal as an accessible paradise for those who loved to be behind the wheel.

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