

THE ROAD TO RECOGNITION: PRESERVING FLORIDA'S HISTORIC BRICK  
PAVEMENTS

by

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(Under the Direction of JAMES K. REAP)

## ABSTRACT

This thesis will examine the ways in which Florida's brick roads remain in use, whether as transportation routes for automobiles or pedestrians. By analyzing the streetscape preservation policy of Saint Petersburg and the case of a brick-paved road in Santa Rosa County that is now listed on the National Register of Historic Places, the thesis will explore several different means by which these resources have been protected. The ability of historic paving materials to contribute to the integrity and feeling of historic districts has been understood, if not broadly addressed, for quite some time. This thesis argues that these passageways are resources in their own right, representative of earlier beliefs about connections within and between towns.

INDEX WORDS: Vitrified Brick Pavers, Saint Petersburg Florida, Milton Florida Historic Roads, Historic Streets, Pavement, Florida Land Boom,

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## DEDICATION

For Jessie Fagan.

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## CHAPTER 1: INTRODUCTION

Streets and roadways dominate much of modern life. Whether school or store, restaurant or residence, the vast majority of the buildings we visit are approached by a public thoroughfare. In most cities or towns, the streets represent an evolution of ideas. The goals for a city's transportation functions—the relationships between neighborhoods, the level and flow of traffic—are visible in the layout, design, and material covering its streets. City drivers of the twenty-first century have come to expect smooth asphalt or concrete surfaces, and maintenance crews are no longer accustomed to laying bricks or cobblestones by hand, nor are local governments accustomed to paying for such services. As a result, materials such as brick pavers have been replaced with, or covered by, asphalt, even along narrow historic passageways through the densest and oldest parts of our urban cores. At the turn of the twentieth century, however, brick pavement was viewed as a durable material whose long lifespan made it an economical choice.<sup>1</sup> Countless roadbuilding projects featured “modern” brick pavement, providing not only a smooth ride, but a sense of civic pride.

In my mind, brick-paved streets have always been deeply tied to the remnants of an earlier Florida that somehow both contrasts with and parallels contemporary growth, theme parks, and sprawl. They represent a slower pace, the slow rumbling sound of traffic on damp, stiflingly hot evenings. When living in

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<sup>1</sup> Frederick P. Spalding, *A Text-Book on Roads and Pavements*, (New York: John Wiley & Sons, 1905), 150.

neighborhoods with a few brick streets scattered here and there, they were a dominant factor in my selection of the routes of dog walks and bike rides. The single brick paver that was reserved to prop open the front door to my apartment building on especially warm days was, I decided shortly before leaving Saint Petersburg to come to the University of Georgia, the most romantic chunk of clay in the universe.

Having noted the names of several Georgia cities stamped across the face of brick pavers in Florida, I remember thinking as I prepared for the move that the streets of my new home town of Athens would likely feature more brick than asphalt. What I found was quite the opposite, and I felt the need to learn why. As I toyed with the idea of turning this curiosity into a thesis, I watched some of the least emotional people I know plunge into the depths of nostalgia as they recounted stories of the brick roads they remember from childhood.

After spending about a year researching this topic, I have come to see the brick pavements that were laid between the turn of the twentieth century and the Second World War as incredible resources. Those laid in Florida during this period were a symbol of the optimism captured by developers who sought to create a winter playground from the marshy frontier in what would come to be known as the Florida Land Boom of the 1920s. Brick pavement represented the end of the era of horse drawn carriages as the automobile began to effect the way that cities and landscapes were planned and created. Bricks paved the road to more sanitary cities, to freedom from muddy roads, and to leisurely country

drives from which one could enjoy the scenery instead of peering through clouds of dust.

Despite their fans, most brick-paved streets have been buried by asphalt. Those that remain, however, can and must be protected through means by which they can remain functional and contributing elements of the modern built environment. Beginning to research these resources and realizing just how vulnerable they are was what led me to my question: *In what ways are Florida's early twentieth century brick streets and roads being recognized, maintained, and preserved as historic resources?* This thesis explores not only the history behind brick pavements in Florida, but methods by which they have been preserved as part of the Sunshine State's rich and dynamic landscape.

### *Review of Current Literature*

Historic preservationists have recently begun to address the significance of elements of the built environment beyond buildings themselves. The recognition of cultural landscapes has been addressed by several publications by the National Park Service, which have shaped not only the way that these resources and their preservation are addressed, but the language with which they are discussed and written about. *Preservation Brief 36, Protecting Cultural Landscapes: Planning, Treatment and Management of Cultural Landscapes* provides an understanding of the significance of historic and cultural landscapes,

and begins to set the stage for a preservation field that includes these resources instead of overlooking them.<sup>2</sup>

Increasing interest in historic roads and trails has become a growing movement in the past twenty years. Scholarship dealing specifically with historic pavements and their preservation, however, has remained somewhat overlooked. As a result the research for this thesis was spread across a great many sources from a great many disciplines.

Paul Daniel Marriott's book *Saving Historic Roads: Design and Policy Guidelines*<sup>3</sup> was the starting point for the research contained herein, and provides a baseline understanding of the significance of historic roads and methods by which they have been preserved. In the same vein, the National Park Service's *Landscape Lines 16: Historic Roads*<sup>4</sup> provides excellent background on roads within the park system and vocabulary with which to appropriately discuss their significance.

Invaluable information on paving materials, including both vitrified brick and its competitors, was gleaned from textbooks written on the subject of roadbuilding during brick pavement's period of significance. These included Frederick P. Spalding's *A Text-Book on Roads and Pavements*,<sup>5</sup> published in

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<sup>2</sup> Charles A. Birnbaum, *Preservation Brief 36, Protecting Cultural Landscapes: Planning, Treatment and Management of Cultural Landscapes*, U.S. Department of the Interior, National Park Service Cultural Resources.

<sup>3</sup> Paul Daniel Marriott, *Saving Historic Roads: Design and Policy Guidelines*, (New York: John Wiley & Sons, Inc., 1998).

<sup>4</sup> Timothy Davis, *Landscape Lines 16: Historic Roads*, U.S. Department of the Interior, National Park Service Cultural Resources.

<sup>5</sup> Spalding.

1905 and Ira Osborn Baker's *A Treatise on Roads and Pavements*,<sup>6</sup> published in 1918. The book *City Pavements*,<sup>7</sup> written by F.S. Besson and published in 1923, provided further awareness of the challenges facing city planners during this era. In the same regard, the Street Maintenance Committee of the American Public Works Association's 1963 text, *Street and Urban Road Maintenance*<sup>8</sup> was beneficial in gaining an understanding of the mindset of the developers and city planners who advocated for the laying of asphalt over many of the brick-paved streets and roads constructed in the preceding decades.

One theme that continued to appear throughout the course of this research was the appreciation and nostalgia that many communities have for their brick streets and roads, despite the lack of wider recognition within the preservation movement. Several books and pamphlets written about roads in specific localities were referenced. Brian R. Rucker's *Brick Road to Boom Town: The Story of Santa Rosa County's "Old Brick Road"*<sup>9</sup> was the source of much information for the State Road 1 case study, as well as information on the popularity of brick-paved highways in Florida. Although it deals with a different area of the country, *Brick Streets in Illinois: A Brief History and Guide to their Preservation and Maintenance*,<sup>10</sup> a pamphlet published by the Illinois Historic

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<sup>6</sup> Ira Osborn Baker, *A Treatise on Roads and Pavements*, (New York: John Wiley & Sons, Inc., 1918).

<sup>7</sup> F.S. Besson, *City Pavements*, (New York: McGraw-Hill Book Company, Inc., 1923).

<sup>8</sup> Lloyd A. Dove, project director, *Street and Urban Road Maintenance*, (Chicago: Public Administration Service, 1963).

<sup>9</sup> Brian R. Rucker, *Brick Road to Boom Town: The Story of Santa Rosa County's "Old Brick Road,"* (Bagdad, FL: Patagonia Press, 1993).

<sup>10</sup> Royce Baier and William D. Walters, Jr., "Brick Streets in Illinois: A Brief History and Guide to Their Preservation and Maintenance," *Illinois Preservation Series* Number 12.

Preservation Agency, was the only modern source that truly dealt with the appropriate treatment of historic brick pavements that are still being used for vehicular traffic.

Developing a deep understanding of the history of roadbuilding was an important element of grasping the context in which most of Florida's brick streets and roads were laid, and for that works such as Geoffrey Hindley's *A History of Roads*,<sup>11</sup> Clay McShane's *Down the Asphalt Path: The Automobile and the American City*,<sup>12</sup> and the American Association of State Highway Officials' *Public Roads of the Past*<sup>13</sup> were consulted. Additional information about the evolution of the administration and funding of public roads in the United States was obtained from books including *Florida Trails to Turnpikes, 1914-1964*<sup>14</sup> by Baynard Kendrick, *Hard Labor and Hard Time: Florida's "Sunshine Prison" and Chain Gangs*<sup>15</sup> by Vivien M.L. Miller, and *The American Highway*<sup>16</sup> by William Kaszynski. These books do not focus on paving materials, but do help to provide insight into the struggle that developing a safe and reliable network of roadways has been for millennia.

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<sup>11</sup> Geoffrey Hindley, *A History of Roads*, (London: Peter Davies, 1971).

<sup>12</sup> Clay McShane, *Down the Asphalt Path: The Automobile and the American City*, (New York: Columbia University Press, 1994)

<sup>13</sup> American Association of State Highway Officials, *Public Roads of the Past, Volume 1: 3500 B.C. to 1800 A.D.* (Washington, D.C.: American Association of State Highway Officials, 1952). and American Association of State Highway Officials, *Public Roads of the Past, Volume 2: Historic American Highways*. (Washington, D.C.: American Association of State Highway Officials, 1953).

<sup>14</sup> Baynard Kendrick, *Florida Trails to Turnpikes, 1914-1964*, (Tallahassee, FL: Rose Printing Company, 1964).

<sup>15</sup> Vivien M.L. Miller, *Hard Labor and Hard Time: Florida's "Sunshine Prison" and Chain Gangs*, (Gainesville, FL: University Press of Florida, 2012).

<sup>16</sup> William Kaszynski, *The American Highway: The History and Culture of Roads in the United States*, (Jefferson, NC: McFarland & Company, Inc., Publishers, 2000).



### *Gaps in Current Literature*

It was a surprise to discover that so little had been written advocating for the preservation of historic brick pavement. Despite an increasing interest in the preservation of historic roads and trails, as well as a seemingly high degree of local pride in historic brick-paved streets and roads, research in this area has remained piecemeal and preservation efforts localized. Without gathering information on the variety of ways that these resources can be preserved and continue to contribute to the fabric of today's landscape, it is difficult to advocate that protective measures be put in place where they have not been previously. Thus, it is important to answer the questions of why and how the extant brick-paved streets and roads in Florida have survived, and what options the advocates have when attempting to preserve an unprotected resource of this nature.

### *Research Methods*

The lack of materials directly addressing the preservation of historic paving materials made it necessary to consult a wide range of resources in order to develop an understanding of the current status of extant brick-paved streets in Florida. This research was begun by developing an understanding of pavements commonly used during the early twentieth century. Research was also conducted on the development of Florida during brick pavement's period of significance, 1870-1940.

The National Register of Historic Places can be seen as an indicator of recognition of the significance of a type of resource within the preservation

community. Multiple successful brick street nominations were analyzed, as well as newspaper and magazine articles discussing localized preservation efforts. Through these sources, a picture of the state of these important, but vulnerable, resources began to emerge.

Because historic streets and roads are publicly owned, and generally maintained at the municipal level, it is difficult to make generalizations about the status of approaches to preservation throughout the state. Instead, several options for preservation were analyzed. The application of two very different approaches was then explored in depth through case studies.

### *Chapter Summaries*

The first chapter sets forth the purpose of this thesis, its inspiration, and a review of the current literature available on the topic, which leads to the questions that will be addressed herein. This is followed by a discussion of the approach to the research that has been conducted in its creation.

The second chapter contains an overview of the history of roadbuilding, with a focus on the evolution of surface materials, as well as information on pavement materials that have been used on American roads within the past two centuries. The construction of overland routes that remain safely passable through all seasons has presented a challenge for many thousands of years. Many of the roadbuilding practices in use today have evolved from innovations that began in seventeenth-century Europe. As the Industrial Revolution shaped the way cities are laid out and changed the interaction between town and

country, the need for higher-quality, cleaner streets and roads led to experimentation with multiple forms of street surfaces.

The third chapter contains an explanation of the administration of Florida's roads, which, like Florida's landscape itself, has changed greatly over the course of the twentieth century. The frenzied development that occurred in the state between the years of 1880 and the Great Depression have left their mark in the form of a great number of resources from this period, brick streets and highways being among them.

The fourth chapter examines several differing approaches that have been used in efforts to protect and restore historic brick pavements. Multiple brick streets and roads that have been listed in the National Register of Historic Places are analyzed, as is protection within historic districts. This chapter also examines some of the maintenance issues that commonly arise with historic brick pavements.

The fifth chapter includes two communities' preservation efforts in the form of case studies, which are examined in depth. The history and development of the communities themselves and the context in which their brick streets and roads were built are explored, as are the methods of preservation and modern use of the streets and roads themselves. Santa Rosa County's Old State Road 1 was constructed for use as a major highway, but it fell into obsolescence within only a few decades. In recent years it has been successfully nominated to the National Register of Historic Places and restored for use as a recreational trail, filling a vital need of the community in addition to retaining its historic appearance

and the majority of its original materials. The historic brick-paved streets that remain in use in Saint Petersburg are protected by city ordinance. Changes to this ordinance in the past few years have allowed for the removal of certain bricks with the intention of creating more functional roads that operate within the overall street grid.

The sixth chapter, the conclusion, synthesizes the research presented throughout this thesis. Recommendations for preservation are coupled with an analysis of different preservation methods. Finally, the need for future research in several areas is discussed.

## CHAPTER 2: HISTORIC ROADBUILDING METHODS AND MATERIALS

Residents of twenty-first century cities, dominated by asphalt as they are, might find it difficult to imagine exactly how limiting a lack of smooth roadways was in the not-so-distant past. The construction of navigable routes connecting settlement to settlement, farm to market, and consumer to commerce is a task that countless laborers, landowners, and engineers have struggled with for millennia. Though the transportation structures that dot the landscape and the vehicles that use them have changed greatly in the past centuries, the function of these connections has remained largely the same. As a result, historic roads, often having received only minor alterations, are expected to withstand traffic of a very different nature than what they were initially intended to carry.<sup>17</sup> When used as passageways for traffic other than that which they originally served, historic pavements can quickly deteriorate. This is not dissimilar to the damage that is done to buildings by severe overcrowding. In order to preserve historic pavement, the use for which it was originally designed must be kept in mind.

It is important to note that the history that follows is intended to provide context to the study and preservation of brick pavement. The focus, therefore, is on the evolution of the techniques used to create solid, level surfaces on which traffic could pass, whether by foot or wheeled vehicle. While the study of the evolution of roadways is often difficult to separate from the study of their

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<sup>17</sup> Sylvia Crowe, *The Landscape of Roads*, (London: The Architectural Press, 1960), 12.

surfaces, an in-depth examination of historic routes is not in the scope of this thesis.

### *History of Roadbuilding Methods*

Though the distinction between them is not always immediately visible and might change over the span of a path's lifetime, there are two categories into which roadways fall. The first is comprised of rural through-roads, which connect a series of places that are generally separated by unsettled or agricultural land. Although these state roads and interstates have drastically changed the American landscape in the twentieth century in their quest to connect (and later circumvent) cities and towns, ancient passageways, such as the Roman roads connecting European cities served the same purpose.<sup>18</sup>

The second type of road, today primarily consisting of city streets, is used for local traffic: from homestead to market, from townhouse to grocery.<sup>19</sup> These types of roads were built to receive different classes and amounts of traffic and therefore had different needs for surface treatments. Additionally, in urban areas, the higher density of buildings and their closer proximity to the streets they faced resulted in different concerns for sanitation and drainage than their rural counterparts. As a result, these two road types followed a slightly different trajectory as their builders sought to find suitable treatments for them. This section begins with a discussion of rural roads and is followed with an examination of urban pavements.

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<sup>18</sup> Crowe, 15.

<sup>19</sup> *ibid*, 15.

## Early Roadbuilding in the United States

Roadbuilding in the New World did not begin at European settlement. Rather, a system of unpaved, interconnected footpaths and trails had been used by Native Americans for centuries. Many of these trails remained in use during the early history of the United States as postal and military roads. One such example is found in the Natchez trace, a trail constructed by Native American travelers which covered a total of 450 miles and ran from Natchez, Mississippi to Nashville, Tennessee. This trail was used, in turn, by French, English, and Spanish colonists, and marched upon by Andrew Jackson and his troops en route to New Orleans during the War of 1812. With the increasing availability of steamship travel on the Mississippi River, however, the Natchez trace fell into disuse.<sup>20</sup>

The earliest road built in North America by European settlers was likely a route that is situated in present-day Florida. The dirt path was opened by Spanish troops between the fort at Saint Augustine (later Fort San Marcos and now Fort Marion) and France's Fort Caroline, about forty miles to the north. The trail was cleared during a Spanish campaign that would successfully cripple the French settlement. The southern portion of this trail would later be incorporated into the path known as the King's Road, created in 1765 connecting Saint Augustine and the area of present-day Jacksonville. This route now comprises a portion of US Route 1.<sup>21</sup>

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<sup>20</sup> Hindley, 84-85.

<sup>21</sup> AASHTO, *Volume II*, 18.

Overall, improved roads built before American independence and shortly thereafter were not dissimilar in construction to, and quite often followed, the Native American trails that had preceded them. These long-distance trails were generally only suitable for passage by foot or on horseback, and roads that could carry carts and wagons were limited to relatively densely populated areas.<sup>22</sup> Overland travel, especially the transport of goods, was incredibly difficult due to limited numbers of roads. It was not until the mid-nineteenth century that significant improvements were made in the practices and policies of roadbuilding.

Like the styles and methods employed by early European colonists in the construction of buildings, early American road builders owed much to the advancements of their European counterparts. In a time before governmental involvement or funding for the construction and maintenance of roads was exceedingly rare, the use of turnpikes, or toll roads, was popular first in England and later in the United States. The first American turnpike was opened in 1785 as a state enterprise in Virginia, though the majority were built in the first half of the following century by private companies. Early nineteenth century turnpikes were among the first paved roads in the United States and were typically paved with planks or stones, although unpaved turnpikes in rural areas were not uncommon. After workers cleared and leveled their paths, marshy areas in the turnpikes' routes were filled with layers of logs..<sup>23</sup>

Turnpikes became especially common in the relatively densely-settled northeastern states throughout the first half of the nineteenth century. American

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<sup>22</sup> AASHTO, *Volume II*, 23.

<sup>23</sup> Karnes, 7.



turnpikes proved to be profitable, as they provided some of the only passages through the thickly forested countryside.<sup>24</sup> With the expansion of canal and railroad transportation, however, turnpikes ceased to return dividends on their investors' contributions. By the 1840s, many turnpike companies ceded operation of these roads to state governments.<sup>25</sup>

In the late eighteenth and early nineteenth centuries, several English and French engineers sought to improve the the traveling conditions in their own countries, making noteworthy advancements that contributed to American roadbuilding. Perhaps the earliest was Pierre Marie Jerome Tresaguet, who served as France's Inspector General of Roads and Bridges from 1775 to 1785. Tresaguet urged road builders to construct roads with solid foundations and well-planned drainage. He argued that the cost of materials could be greatly reduced and high quality roads constructed with a thin but tight foundation laid on a compacted sub-grade that was crowned in the center and sloped at an angle of around twenty degrees.<sup>26</sup>

Tresaguet additionally advocated for frequent and organized road maintenance procedures. Though a seemingly simple request, roads of that time commonly received little or no upkeep after the time of their construction. Debris cleared during building was often simply pushed to the side and never fully removed, lack of adequate drainage resulted in mushy roads during much of the year, and unpaved surfaces could be so uneven that it was nearly impossible for

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<sup>24</sup> Karnes, 7.

<sup>25</sup> Hindley, 86.

<sup>26</sup> AASHTO, *Volume I*, 39-40.

wagons to pass without scraping their bottoms on the ground. To combat these conditions, Tresaguet organized France's "cantonnier" system of maintenance. Under this system, roads were maintained by workers who were paid and supervised directly by the French Government. This structure was a significant improvement from the system of disconnected, localized responsibility for improvements.<sup>27</sup>

In the early nineteenth century, an English engineer named Thomas Telford made further strides in the area of road construction. His early career was focused on the construction of canals, but parliament later placed him at the head of a commission for roadbuilding, and by 1820 he had overseen the construction of over one thousand miles of roads and hundreds of bridges. Unlike earlier roads which were often impassible during the wet season, the roads that Telford constructed were laid with foundations of large stones and a canted upper layer of smaller stones to promote drainage. Telford's roads provided the first reliable overland connections between London, the Scottish Highlands, and North Wales in centuries.<sup>28</sup>

Additional advancements in roadbuilding were made during the same period by John McAdam, who in 1816 became the highway inspector for the Bristol area. McAdam's name, though in most cases today spelled "macadam," is still used to describe the type of road improvement he developed. The large stone foundation used by Telford was unnecessary, McAdam argued, so long as the subsoil was impenetrable by water. McAdam's method employed much

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<sup>27</sup> AASHTO, *Volume I*, 39-41.

<sup>28</sup> Hindley, 64-65.

smaller stones, both in its relatively thin foundation and in its top layer, which would be bound by being compacted by traffic into a water-bound dust.<sup>29</sup>

In addition to their contributions to the methodology of roadbuilding, English historian Geoffrey Hindley argues that the work of Telford and McAdam was additionally significant for two reasons. First, they reintroduced engineering into the practice of roadbuilding, placing more emphasis on permanence and reliability than had been done since the Roman Empire. Further, the roads constructed by Telford and McAdam were designed to carry wheeled vehicles. This went against the idea that traffic should adapt to roadways, a philosophy which had been dominant throughout the Middle Ages and beyond.<sup>30</sup>

America's first macadam surface was laid in 1823. The road was the "Boonsborough turnpike road," which connected the towns of Hagerstown and Boonsboro, Maryland. The project resulted in the resurfacing of an existing unimproved road. Not long after, beginning in 1825, macadam pavement was added to seventy-three miles of the Cumberland Road at the expense of the United States government, which would mark the beginning of the paving of the National Road.<sup>31</sup> Now part of US Route 40, the cost of Federal improvements to the portion of the road stretching from Baltimore, Maryland to Vandalia, Illinois between 1806 and 1841 totaled \$6,759,257.<sup>32</sup>

Overall, the long-distance roadbuilding projects of the nineteenth century were greatly limited by uncertainty surrounding what the role of government

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<sup>29</sup> Hindley, 65-66.

<sup>30</sup> *ibid*, 67.

<sup>31</sup> AASHTO, *Volume II*, 53.

<sup>32</sup> *ibid*, 66.

should be in constructing these paths. In spite of the number of individuals who would have benefitted from reliable city-to-city or farm-to-market roads, many legislators of this era considered roadbuilding to be an unconstitutional use of federal funds.<sup>33</sup>

### City Streets

As mentioned at the beginning of this section, the development of urban streets, that is, streets connecting places within a populated area, is a different matter than that of rural routes which serve to join locations across agricultural or unsettled spaces. The short-distance routes used to connect places within a town in its early days of settlement often leave a lasting mark on the landscape. In fact, the layout of urban streets can be among the most lasting and visible features of the mentality of an area's early developers. Long after neighborhoods have undergone aesthetic changes and buildings have seen alterations, expansion, and waves of demolition and infill, streets can reveal an untold history, both in pattern and pavement.

The social unrest of medieval Europe that had made a system of vehicle-oriented long-range rural routes unfeasible additionally encouraged cities to grow ever denser as the population expanded within the confines of high protective walls. Resulting cities had little land to spare for use as roadways, so internal paths were narrow and shared by horses, carts, and pedestrians. This density of traffic resulted in crowded, unsanitary conditions.<sup>34</sup> The paving of streets not

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<sup>33</sup> Karnes, 7-8.

<sup>34</sup> AASHTO, *Volume I*, 23.

only prevented them from turning to mud pits during rainy weather, but allowed refuse from animal traffic to be more easily cleaned.

The paved streets that began to appear in Europe's urban centers were relatively primitive and often made use of small stones and wooden boards. They were narrow by comparison, and pavement was generally confined to marketplaces and the immediately surrounding areas. Secondary streets within towns were left unpaved and tended to be narrow, crooked, and darkened by the overhanging upper stories of the buildings that faced them.<sup>35</sup> Paved city streets would slowly become more common throughout the fourteenth and fifteenth centuries.<sup>36</sup> In general, however, densely populated cities were known for filthy, refuse-strewn streets; custom dictated that housewives were free to throw household rubbish from their windows to the streets below, so long as they gave a warning shout.<sup>37</sup>

These tightly-packed cities provided a frame of reference for early American settlers, which is evidenced when one looks at the meandering street patterns of the oldest portions of Boston and New York City.<sup>38</sup> Increasing use of carriages and horse-drawn carts in the seventeenth century posed a problem for towns built in this manner. Some European cities attempted to limit vehicular travel on cramped urban streets by imposing carriage taxes, limiting the number of vehicles allowed on city streets, and promoting the use of the human-powered sedan chair, but the popularity of carriages continued to grow nonetheless.

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<sup>35</sup> AASHTO, *Volume I*, 24.

<sup>36</sup> *ibid*, 28.

<sup>37</sup> *ibid*, 26.

<sup>38</sup> McShane, 2-3.

Baroque city planners were the first to embrace carriages by laying out roomy boulevards and encouraging segregation of neighborhoods by class and building use.<sup>39</sup>

A noteworthy development in the study of early American street paving occurred in the settlement of Pemaquid, Maine, in the modern-day city township of Bristol. This coastal fishing village was likely the site of the first paved road in North America. Excavations there have revealed a broad cobblestone main street, thirty-three feet across including gutters for drainage, leading toward a sandy beach that would have provided a desirable landing for fishing boats. The main street was paved with larger stones than the narrower side streets, which measured only eleven and one-half feet wide and were paved with stones likely collected from the beach. The pavement appears to have been planned and laid in accordance with techniques imported from Europe, from their crowned center portions to promote drainage to their depth of twelve to fifteen inches. The presence of this sophisticated improved road is seen as perhaps the strongest piece of evidence that residents of this New World outpost were attempting to recreate the conditions they had left behind.<sup>40</sup>

The growing presence of horse traffic, wagons, and carriages on city streets not only called for broader streets to permit vehicles to pass one another and turn easily, but produced waste that could not be easily cleaned from unpaved streets. Early American cities surfaced their streets with whatever pavement was readily available in the area. New York and Boston, for example,

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<sup>39</sup> McShane, 3.

<sup>40</sup> AASHTO, *Volume II*, 21-22.

had used cobblestones collected from riverbeds during dry months set in sand beds to pave some of their streets by 1700, while New Orleans' and Charleston's earliest paving projects made use of crushed shells.<sup>41</sup>

Early urban street building and paving programs, however, were difficult to afford for municipal governments in an era before property taxes were common. New York was the first American city to collect special assessments for the purpose of paving streets with a program beginning in 1691 that required abutters, or the owners of street-facing properties, to pay a portion of the cost of paving based on the proportion of their property's street frontage. This system of funding street paving was adopted by other American cities beginning in the mid-eighteenth century and would remain dominant in some cities as late as the twentieth century. Contributing property owners were commonly given control over the construction of the streets that they had paid for, though local governments were responsible for maintenance. As a result, abutters might be tempted to select cheaper, inferior pavement, understanding they would not be obligated to pay for the resulting high maintenance costs.<sup>42</sup>

The planning of vehicle-friendly streets grew conjointly with the affordability and comfort of the rides of carriages and wagons themselves. American cities planned in the late eighteenth century were often reliant on a grid system, while sometimes incorporating pre-existing rural routes as radial thoroughfares.<sup>43</sup> At the same time, cities began providing street-cleaning

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<sup>41</sup> McShane, 3.

<sup>42</sup> *ibid*, 7.

<sup>43</sup> *ibid*, 4.

services of paved roads, often at a profit since the waste collected in the process could be sold to farmers as fertilizer.<sup>44</sup>

The horsecar, another innovation that would alter both the appearance and function of urban American streets, began to appear in the 1850s. Although the steam engine was too dangerous and provided too much pollution to be practical to be used for intra-city transit, the iron rails used by expanding railroad lines allowed horse-powered buses to travel faster and farther, expanding the distance it was possible to travel within a half-hour commute from two miles to three. This development increased the ideal geographic conditions for the potential residential area of a city to rise from 12.6 to 28.3 miles.<sup>45</sup>

Although horsecars were typically operated by private companies, their use of public streets required franchises to be granted by local governments. Franchises often required that horsecar companies pave the streets on which they laid tracks, both between the rails and for several feet beyond, to create rails that were flush with street surfaces. The expansion of horsecar service, therefore, resulted in an increase in the number of paved city streets. The limitations of horse-powered transit, however, prevented further development of horsecar lines after only a few decades. Speed and passenger capacity were both limited by horses' strength, and resulting dirty streets were both a nuisance and a public health risk.<sup>46</sup> By the 1870s, companies in large American cities were experimenting with systems such as elevated, or "el" trains, which would

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<sup>44</sup> McShane, 6.

<sup>45</sup> *ibid*, 14-15.

<sup>46</sup> *ibid*, 18.



liberate urban streets from horses.<sup>47</sup> Not all alternatives removed mass transit from street railways, however, as electric trolleys were developed, beginning with the system installed in Richmond, Virginia in 1887.<sup>48</sup>

The growth of American cities following the Civil War had great impact not only on the way that municipalities funded their street paving programs, but on the perceived function of the street itself. In urban areas where residential buildings primarily took the form of apartment buildings and row houses, the streets that crossed in front of them served not only as transportation routes, but as common open spaces for residents' recreation and socialization. In the 1960s Jane Jacobs would point to this street-based activity as a sign of a healthy and viable community, but in the final decades of the nineteenth century a growing number of engineers, developers, and health experts felt that this pattern needed to change. New suburbs filled with detached houses were thought by many to be more sanitary living spaces, but the system by which abutters paid for streets encouraged the mentality that the street in front of one's home was a public but usable extension of living space. Abutters, with the ability to determine the surface treatment used on their roads, often had little concern for the needs of through traffic and could opt for wide sidewalks with narrow streets.<sup>49</sup>

Reformers, however, called for the centralization of decision-making when it came to roadbuilding. Metropolitan boards were created in growing areas to aid the connection between city and suburb, and power was slowly transferred

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<sup>47</sup> McShane, 26.

<sup>48</sup> *ibid*, 28.

<sup>49</sup> *ibid*, 63.

from abutters to these boards. Initially, abutters were still able to select pavement type with veto power given to the boards, later the boards made the decision and abutters had the right to veto as authority continued to shift.<sup>50</sup>

Street building, paving, and grading technology improved significantly between 1870 and 1900 as traffic continued to rise in American cities. Drainage problems afflicted the popular gridiron pattern which disrupted the natural flow of water. Examples included floods, difficulties in construction caused by damp soil, and the spread of diseases as insects bred in stagnant water. Properly graded streets not only assuaged drainage problems, but made it easier to lay subterranean utilities such as sewers and water pipes.<sup>51</sup> By the turn of the twentieth century, the centralization of public works departments seemed to be a necessary component of a sanitary city and forever coupled roads and utilities.

Additionally, as the automobile began to creep onto city streets, its advocates increased calls for government spending on streets as they sought the ability to travel faster. The automobile seemed to be the solution to the crowding, social conflicts, and pollution that inspired nineteenth century utopian authors to envision future cities dominated by broad, flowing boulevards and even multi-level streets.<sup>52</sup>

During the early twentieth century, many business leaders and urban planners became disciples of the City Beautiful movement, which placed high value on the creation of long lines of sight leading to dramatic monuments that

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<sup>50</sup> McShane, 78.

<sup>51</sup> *ibid*, 66-67.

<sup>52</sup> *ibid*, 204.

served as neighborhood focal points. Supporters of the movement believed that their plans would create order in otherwise chaotic cities and improve their residents' quality of life. Many City Beautiful planners based their designs for the future of American cities on the needs of the automobile. Urban streets were no longer seen as the responsibility of abutting property owners, but were to serve as "arteries," allowing quick and smooth access through neighborhoods.<sup>53</sup> Many City Beautiful planners advocated the creation of broad radial boulevards through existing gridirons, often despite the fact that thousands of residents would have to be relocated. Many proposals for such impositions into historic downtowns were too expensive to ever actually be constructed, and often those that were soon became clogged with traffic and proved to be ineffective for the rapid movement of traffic that their designers had anticipated.<sup>54</sup>

### *Types of Street Surface*

The surface of a street or road that is visible to those who cross it represents only a fraction of the materials and labor put into its creation. As can be seen by the historical challenges in creating lasting overland routes, securing safe paths between two points has often proven difficult enough to cause isolation. To properly construct even seemingly-simple gravel roads, land must be surveyed, cleared, and graded to create roadbeds which naturally drain yet are not so steep as to make passage difficult.

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<sup>53</sup> McShane, 209.

<sup>54</sup> *ibid*, 215.

Roadbed foundations, which serve to distribute vehicles' weight over a greater area to prevent wear from being concentrated in a small portion of the surface, can vary greatly in degree of complexity and effectiveness. One of the simplest forms road foundations can take is that of a bed of sand as shallow as a few inches, but more commonly six to twelve inches deep. To create an even surface, this sand bed is typically laid in layers of three to four inches and compacted between each layer's application. When confined by deep curbs at either side of the roadbed, the sand's inability to compress further allows it to distribute load weight across a broad surface.<sup>55</sup> Gravel, broken stone, or even broken shells can also be laid and compressed into place in the same way.<sup>56</sup> This type of foundation was commonly used in southern coastal areas, especially Florida's brick roads, due to the ample supply of sand and shells in the area.

A stronger and waterproof foundation can be created with hydraulic concrete. Concrete foundations are created by mixing Portland cement, sand, and broken stone or gravel. Concrete first came into use as a material in roadbuilding in the decade following the Civil War, but its tendency to shatter under the blow of iron horseshoes made it an undesirable surface treatment. Its use as a sturdy foundation was recognized, however, and streets with Portland cement concrete foundations topped with asphalt concrete pavement became increasingly popular throughout the late nineteenth and early twentieth centuries. This popularity grew even more rapidly with the rise in availability of the

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<sup>55</sup> Spalding, 111-112.

<sup>56</sup> *ibid*, 113.

jackhammer, or pneumatic drill, which made accessing subterranean utilities after the concrete had already hardened significantly easier.<sup>57</sup>

In spite of the importance of a solid foundation, the surface pavement of streets and roads serves as the face of the road itself as it interacts with the surrounding landscape, whether rural or urban. Smooth pavements not only make travel faster and easier but have often served as a symbol of prosperity for the terrain they cross. As American cities and their streets became increasingly congested in the late nineteenth and early twentieth centuries, smooth pavement was seen as a necessity for good sanitation. The question of how to create sleek and hygienic street surfaces, however, has not come with a single answer. In the past centuries, particularly in the years following the Industrial Revolution, many methods of paving streets and roads have been used with varying degrees of satisfaction.

#### Unpaved, or Earth Roads

Earth roads typically feature neither foundations nor pavement, but do require land to be graded and compacted. Eighty-seven percent of the roads in the United States were surfaced with earth in 1915, and in his 1918 *Treatise on Roads and Pavements*, University of Illinois Civil Engineering professor Ira Osborn Baker predicted that for 70 to 80 percent of these, their unpaved status would not change.<sup>58</sup> This prediction highlights the perceived suitability of earth

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<sup>57</sup> McShane, 60-61.

<sup>58</sup> Baker, 70.

roads for highways that saw low to moderate amounts of traffic, whether in the form of animals and pedestrians, carts and carriages, or early automobiles.

Applying sand-clay surfacing to earth roads is an inexpensive method of improvement in regions with little frost penetration. This method, used as early as 1806 in the United States, involved the spreading of a mixture of sand and clay over the road surface. At times the cost could be decreased by only covering half of the road to eliminate the dust that traffic would stir up during dry summer months, with the remaining portion being left coated in sand to be used during wetter seasons.<sup>59</sup>

#### Cobblestone and Stone Block Pavement

The earliest pavements were created with small pieces of stone, whether in the shape of cut blocks or naturally-occurring pebbles. Stone pavement provided a good foothold for horses and would show relatively little wear after years of use. Stone pavements were additionally resistant to the ruts that often formed on earth roads.<sup>60</sup> The majority of the earliest paved urban streets in both European and American cities were surfaced with cobblestones. The popularity of this surface treatment owed largely to its low initial cost.<sup>61</sup> The pebbles used in cobblestone streets were often collected from nearby riverbeds, compared with stone blocks which had to be hand quarried and cut. At the turn of the twentieth century, as smoother asphalt, brick, and Portland cement concrete pavements became more accessible and affordable, the laying of cobblestone streets quickly

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<sup>59</sup> AASHTO, *Volume II*, 91-92.

<sup>60</sup> Baker, 566.

<sup>61</sup> *ibid*, 567-568.

went out of fashion. Many cobblestone streets were covered, and some municipal governments went as far as to outlaw their construction.<sup>62</sup>

Stone block pavement, on the other hand, was viewed as a surface capable of handling heavy amounts of traffic while providing a slip-free path for horses without being rapidly worn down by weather.<sup>63</sup> The most common materials for stone block pavements were sandstone and granite, though limestone was sometimes used with less satisfactory results. “Oblong block” pavement, consisting of oblong blocks measuring 3.5 to 4.5 inches wide by 8 to 12 inches long and 4 to 5 inches deep, remained popular well into the twentieth century.<sup>64</sup>

An additional type of stone blocks used in the northeastern United States, and extensively so in New York City, was the Belgian block. Belgian blocks were nearly cubical, typically measuring about 5 to 7 inches per side, and cut from darkly-colored trap-rock. The square face of Belgian blocks resulted in significant lengths of joints running parallel with traffic, however, which made streets surfaced in this way particularly prone to developing wheel ruts. To prevent this problem, Belgian block streets were sometimes laid in diagonal courses.<sup>65</sup>

### Gravel and Macadam Pavement

Although turnpikes surfaced with gravel and described as macadam pavements appeared in the United States as early as the 1820s, urban historian

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<sup>62</sup> Baker, 568.

<sup>63</sup> Spalding, 186.

<sup>64</sup> Baker, 568.

<sup>65</sup> *ibid*, 568.

Clay McShane argues that the first true macadam pavement was laid in 1858 by Frederick Law Olmsted and Calvert Vaux during the construction of New York City's Central Park.<sup>66</sup> The high cost of labor in America made it difficult to create gravel of the varying sizes needed for a true macadam road, especially before the introduction of blasting powder when stones had to be broken by hand. The introduction of the steam roller in the mid-nineteenth century made macadam streets less labor-intensive and more affordable, and the paving method became popular, especially in growing suburbs.<sup>67</sup>

The stirring up of dust by traffic crossing macadamized roads has always been among this surface type's biggest downfalls. A common method of reducing this dust used in the early twentieth century was to bind the top layer of gravel with a bituminous cement such as tar or asphalt, creating what was called a bituminous macadam road. Even with this reinforced top layer, however, macadam roads disintegrate relatively quickly under the weight of automobile traffic. As a result, their use declined as automobiles became larger, heavier, and more common, and macadam roads are now associated with low-traffic rural roads.<sup>68</sup>

### Wood Plank Pavement

Plank roads, a relatively short-lived trend in road surfacing, were constructed with private funds between 1846 and the 1870s, when private stock companies promoted plank roads as an inexpensive alternative to macadam

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<sup>66</sup> McShane, 58.

<sup>67</sup> *ibid*, 58.

<sup>68</sup> Baker, 185.



roads.<sup>69</sup> The trend began in New York state and spread throughout the United States, though it failed to gain popularity in New England. With the cost of lumber accounting for as much as 70 percent of total construction costs, plank roads were understandably most popular in states with large lumber reserves.<sup>70</sup> These roads tended to be about fifteen miles long and were often put in place to connect otherwise isolated rural towns.<sup>71</sup>

The simple construction of plank roads made them an even more appealing alternative to macadam surfacing. Typical construction required “sleeper rails,” wooden rails running the direction of the road which were planted firmly into the roadbed instead of a deeply-laid foundation. Planks of hemlock or pine measuring three or four inches thick were then laid perpendicularly atop the sleepers, embedded to be level with the surrounding ground.<sup>72</sup>

Despite the early interest in plank roads, the trend’s rural application came to a sudden halt in 1854, as companies began to realize the deterioration that affected the wooden boards after only a few years. Not worth the cost of replacing the planks, large numbers of roads were abandoned as the private companies that had run them were dissolved. An estimated 40 percent of the plank roads that had been extant in 1855 were no longer in existence from 1860.<sup>73</sup>

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<sup>69</sup> Majewski, 109.

<sup>70</sup> *ibid*, 109.

<sup>71</sup> *ibid*, 114.

<sup>72</sup> *ibid*, 109.

<sup>73</sup> *ibid*, 119-120.

As urban street surfaces, plank surfacing was marketed as a quiet alternative to granite block or asphalt for its ability to dampen the sound of iron horseshoes. In 1858, Samuel Nicholson patented a method of laying urban wood plank roads, which featured blocks that could be individually replaced and wood treated with creosote oil to increase durability. The patent increased the cost of wood-surfaced streets considerably, but cities with easy access to timber, such as Detroit and Chicago, invested heavily. The creosote oil treatment, however, made the wood highly flammable, and is thought to have contributed to the spread of the Great Chicago Fire of 1871, during which the combustible wood streets actually spread the flames instead of serving as fire breaks as many other types of pavement would have done. Additionally, the high cost of the patented system of wood plank paving became a part of several scandals that arose in the tumultuous and corruption-addled early years of municipal public works departments. By the time of the national fiscal crisis following the Panic of 1873, the use of wood plank streets had declined sharply, but they were laid as late as the 1920s in places where quiet was especially important, such as the streets in front of hospitals.<sup>74</sup>

### Concrete Pavement

Two main types of concrete— asphalt concrete and Portland cement concrete — are commonly used as road surfaces. Asphalt concrete, often referred to simply as “asphalt” or “blacktop,” is composed of a mixture of asphalt and sand or gravel. Its cost decreased greatly after 1870. Additionally,

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<sup>74</sup> McShane, 59-60.

machinery aiding in the application of asphalt pavement furthered its attractiveness to municipalities trying to avoid the high cost of the labor required to lay brick or block pavements.<sup>75</sup>

Portland cement concrete pavement was used as early as the 1860s in Scotland, but its first application in the United States was to a small stretch of alleyway in Connorsville, Indiana in 1890. However, its first extensive use was not until 1909, when a road connecting Detroit with Michigan's State Fair Grounds was constructed.<sup>76</sup>

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<sup>75</sup> McShane, 62.

<sup>76</sup> AASHTO, *Volume II*, 106.



Figure 1: Men spread asphalt by hand. This method took ten men twelve hours to lay 300 tons of asphalt pavement.<sup>77</sup>



Figure 2: A man spreads asphalt mechanically. Using this method, 2,000 tons of asphalt pavement could be laid in an eight-hour day.<sup>78</sup>

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<sup>77</sup> Kendrick, 44.

<sup>78</sup> *ibid*, 45.

A primary reason for the increase in use of asphalt as a road surface as the popularity of other pavements declined in the mid-twentieth century is the innovation in technology for its application. This machinery not only allowed for application to move much more quickly, but decreased labor costs exponentially.<sup>79</sup>

### Brick Pavement

It is thought that the first experiments with brick pavements were conducted by the Romans. The bricks produced with their technology, however would not have been strong enough to withstand the impact of hoof steps and narrow cartwheels and would have crumbled after exposure to traffic. Most historians have come to agree that the first successful brick pavements were laid in the Netherlands, perhaps in the village of Moor where bricks have been made for centuries. Many Dutch towns had brick streets by the seventeenth century, and the American Colonies are reported to have made limited use of this type of pavement as well.<sup>80</sup>

Bricks created specifically for use as pavers<sup>81</sup> first appeared in the Netherlands and northern England in the mid-nineteenth century, making their way into use in the United States following the Civil War. In 1870, a city block was paved with brick in Charleston, West Virginia, and this is thought to be the first application of brick pavers in the United States.<sup>82</sup> The single city block was

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<sup>79</sup> Kendrick, 44.

<sup>80</sup> Baier and Walters, 3.

<sup>81</sup> For the purposes of this thesis, surfaces referred to as “brick pavements” that were laid after the mid-nineteenth century can be assumed to be composed of brick pavers and not bricks intended for the construction of buildings, unless otherwise noted.

<sup>82</sup> Baker, 474.

paved at the expense of Dr. Nathan B. Hale with bricks specially pressed and fired to his specifications, laid on a foundation of planks covered by a bed of sand. The construction of this first block of brick pavement was an experiment which many in the community thought would be a failure. After Dr. Hale's street was shown to remain in excellent condition after three years, the city laid this type of pavement along multiple streets throughout Charleston.<sup>83</sup>

Dr. Hale's method of laying brick over a plank foundation does not appear to have spread beyond Charleston, despite its local success. Unrelated experiments with the durability of brick pavement were conducted in Bloomington, Illinois in 1875 by brick manufacturer Napoleon B. Heafer.<sup>84</sup> Heafer's experimental streets were constructed with standard bricks, which were soft, porous, and less durable than the brick pavers that would be developed in the coming decades. Heafer's brick streets, however, used a new type of foundation that would later be known as "double-layer pavement." It consisted of a layer of sand and coal cinders, followed by a course of bricks, a bed of sand, a second course of bricks, and a surface cushion of sand.<sup>85</sup> This method of laying two layers of bricks separated by sand or gravel would be repeated into the twentieth century,<sup>86</sup> though foundations of gravel or concrete appear to have been more common in the southern states.

The durability of a brick-paved road relies heavily on the quality of its bricks. Bricks made from surface clay are durable enough to be used in the

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<sup>83</sup> Baier and Walters, 3.

<sup>84</sup> *ibid*, 4.

<sup>85</sup> Baier and Walters, 5.

<sup>86</sup> Spalding, 116.

construction of buildings, but cannot be fired at high enough temperatures to produce the hardness necessary for paving brick without losing their shape.<sup>87</sup> The most successful brick pavers are made from shale, a clay which is found beneath the surface and has been compacted to a rock-like texture from the weight of the ground above it. Shale can be reduced to a powder and then mixed with water to be made plastic and easily moldable.<sup>88</sup> A mixture of shale and fire-clay can also be used to create brick pavers when vitrified, as described below.<sup>89</sup>

Hundreds of manufacturers produced paving bricks between the 1870s and 1930s, and as such, there was a considerable amount of diversity in size, design, and color. Bricks were sometimes molded to include small projections from the bricks' sides, called lugs. Lugs served the purpose of allowing workers to more easily lay bricks with regular spacing.<sup>90</sup> It was not uncommon for companies to add their own names and logos to paving brick faces during the process of adding lugs, called repressing.

Given the great number of companies manufacturing brick in the early twentieth century, the industry understandably worked toward a set of sizing standards to permit interchangeability. The following specifications were printed by the American Public Works Association in 1936:

Size and Type. Repressed or wire-cut lug bricks shall be three and one half (3 1/2) inches in width, eight and one half (8 1/2) inches in length,

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<sup>87</sup> Baker, 475.

<sup>88</sup> *ibid*, 475.

<sup>89</sup> Baier and Walters, 6.

<sup>90</sup> *ibid*, 6.

and may be four or three (4 or 3) inches in depth, as may be specified on the plans.

Allowable variations. Brick shall not vary from the above dimensions more than one-eighth (1/8) of an inch in the width or depth, nor more than one-quarter (1/4) of an inch in length. Dimensions shall be determined by measuring the edges from the face to face of the brick.

Lugs. If the edges of the brick are rounded, the radius shall not exceed three-sixteenths (3/16) of an inch. They shall be provided on one side of the brick with not less than two (2) lugs which shall not be less than one-eighth (1/8) or more than the one-quarter (1/4) of an inch in height. The area of the projections or lugs, measured at the base of the lug, shall not exceed in total area three (3) square inches. No lug shall be continuous from the top to bottom of the brick but shall be of a type to allow free horizontal flow of the filler.<sup>91</sup>

In order to best withstand exposure to weather, paving bricks are typically made impervious through the process of vitrification. During vitrification, paving bricks are fired at such a high heat that the clay begins to fuse. This fusion is not dissimilar to the process used to make glass. When creating bricks, however, hardness is not the only desirable quality, and a brick that was fired until it vitrified fully would be so brittle that it would break apart when exposed to traffic.<sup>92</sup> Thus partial vitrification of bricks results in a product that is more durable and less porous than the architectural bricks that are traditionally used for building.

In order to be successfully used as pavement, bricks needed have enough “give” to avoid shattering under horse traffic, yet firm enough to avoid cracking, rutting, or wearing down and becoming slippery as a result of weather and wheeled traffic. Early twentieth century brick pavers were created through a process that was becoming somewhat mechanized but was still incredibly

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<sup>91</sup> American Public Works Association, “1936 Specification for Vitrified Brick Pavement,” as reprinted in Baier and Walters, 6.

<sup>92</sup> Spalding 121.



demanding in the early twentieth century. The process began by reducing clay to a powder and tempering it with water. The clay was then machine moulded and dried before the process of firing began. Firing generally lasted ten to fifteen days and started with low levels of heat that drove any remaining water out of the brick. The temperature was then slowly raised over a period of several days until the bricks reached the point of vitrification. Lowering the temperature very slowly created the toughest, most durable product.<sup>93</sup>

In the coal-powered kilns that were commonly in use in the late-nineteenth and early twentieth century, it was impossible to create a batch of bricks that was fired with total consistency. Because of the heavy amount of wear created by daily traffic, bricks fired to different degrees of hardness or toughness that are placed next to one another will wear at different rates and result in an uneven surface. To prevent this, paving bricks required sorting and were grouped by strength.<sup>94</sup>

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<sup>93</sup> Spalding, 121-122

<sup>94</sup> *ibid*, 124.

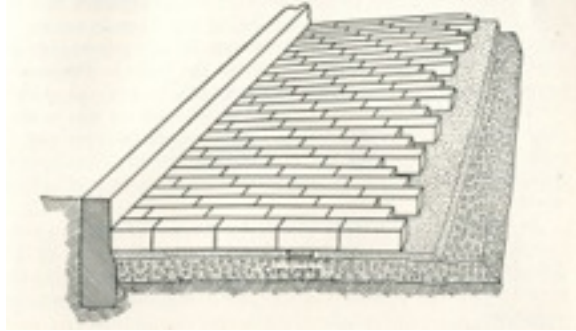


Figure 3: “Section of Brick Pavement with Sand Cushion and Concrete Foundation.”<sup>95</sup>

The foundation under brick roads typically consisted of a layer of cement, gravel, or lower-quality brick, topped by a cushion of sand usually between one half and two and one half inches thick. At times a “monolithic pavement” was created by applying a layer of mortar to the sand bed, into which the brick pavers would be laid while the cement was still wet.<sup>96</sup> Into this sand or cement cushion, courses, or rows, of bricks would be laid by hand. Alternating courses were begun with half-bricks in order to create a “running bond” which offset the bricks’ joints.

The final step in the process of laying brick roads was to fill the joints. While bituminous fillers or Portland cement can be used to fill the joints in brick roads,<sup>97</sup> the use of sand is more common. The process of filling joints with sand could take as long as several weeks, with layers of sand being spread over the surface and allowed to settle in the joints with the help of vibrations caused by traffic.<sup>98</sup>

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<sup>95</sup> Baker, 503.

<sup>96</sup> *ibid*, 521.

<sup>97</sup> Spalding, 156-157

<sup>98</sup> *ibid*, 145.



Figure 4: The construction of monolithic pavement as bricks are being laid into mortar<sup>99</sup>



Figure 5: Brick pavement featuring sanded joints, Saint Petersburg, Florida.  
Photo by author.

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<sup>99</sup> Baker, 514.

In his 1918 *Treatise on Roads and Pavements*, Ira Osborn Baker described the early twentieth century popularity of brick-paved roads by stating that

At present brick is the chief paving material employed in most of the smaller cities of the Mississippi Valley, and it is used extensively in many of the larger cities in that territory. In all parts of this country, the use of brick for residence streets and light traffic business streets is rapidly increasing... [I]n yardage of what may be called durable pavements, brick ranks second. There are in this country nearly two hundred plants devoted to the manufacture of paving brick, some having annual outputs of 60,000,000 to 100,000,000 bricks.<sup>100</sup>

The popularity of brick streets at the turn of the twentieth century was not only a result of advancement in brick-making technology, but of the desire of growing towns to present themselves as clean, modern spaces. Brick-paved streets, unlike the mud, gravel, and stone streets that preceded them, welcomed many modes of traffic and presented themselves as adaptable elements of the changing landscape as the twentieth century progressed.

Brick pavements were commonly applied to streets, roads, and highways until the 1940s, though their popularity as a highway surface faded during the 1920s as State Road Departments began to require wider surfaces. Despite their high initial costs, they promised low maintenance and long life spans. This promise seems to have held true, as many brick-paved streets have remained in use for nearly a decade with minimal maintenance efforts.

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<sup>100</sup> Baker, 474.



Figure 6: “Sand-Cushion Cement-Grouted Brick Pavement 28 Years Old.”<sup>101</sup>

### *Conclusion*

Despite the differences in the materials used and sophistication of the paths we’ve created, the desire to construct reliable routes for overland transportation has been a challenging goal for thousands of years. As the automobile has begun to shape our landscape and technology had made asphalt cement pavement less expensive, many historic methods of constructing and paving roads have been all but abandoned. Just as the study of historic architecture provides a deeper appreciation for each structure that comprises a cityscape, understanding the challenges that have come with constructing a reliable transportation network can provide insight into the significance of historic thoroughfares within the built environment.

Having become so interconnected by interstates and freeways, it is difficult to imagine that overland travel in what is now the United States could be

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<sup>101</sup> Baker, 528.

accomplished only by the use of narrow footpaths just a few centuries ago. Perhaps even more significant to note, however, is that so many of the technological developments that have allowed the evolution of the American highway system have occurred within the last 150 years. Although the need for reliable overland travel can be traced back to time immemorial, the period of urbanization following the American Civil War spurred unprecedented experimentation with roadbuilding and paving techniques. The following chapter will show that creating federal, state, and local systems with which to manage the construction and maintenance of the built during this period and beyond took decades to evolve. Complex as they may be, the development of these management tools shows not only the struggle of government to catch up to technology, but of the transformation of the perceived role of politics in transportation infrastructure.

## CHAPTER 3: HISTORY AND ADMINISTRATION OF FLORIDA'S BRICK-PAVED ROADS

As the previous chapter has shown, the need for safe and clean roads has been understood for centuries, though the degree of urgency with which this need has been addressed has varied. Increased densities of overland travel brought by the rapid urbanization that followed the Civil War strained existing roadways and fueled innovation in American roadbuilding and paving methods. Before the creation of federal and state offices charged with the task of managing a national system of highways, however, municipalities struggled to plan and fund their local streets, let alone their portions of through roads. Development in many areas of Florida lagged behind that of its neighboring east coast states. As building increased in the early twentieth century, the needs of the automobile were not far behind for the many newly-constructed cities and towns. This chapter will examine the roots of the modern hierarchy of responsibility for streets and roads in the United States and Florida, as well as the events, development goals, and trends that were shaping Florida's landscape at the time that most of the state's brick-paved roads were constructed.

### *Administration of Florida's Roadways*

The methods and materials with which roads are built have changed greatly in the 170 years since Florida became a state. So, too, has the manner by which their construction and maintenance is managed. Ideas of what role

government should play in the construction of public roads changed significantly during the twentieth century. As a result, it can be difficult to determine what agency is responsible for the upkeep of a roadway. The evolution of the present-day system, however, has had a significant effect on whether, and to what degree, historic roads have been altered.

In 1880, a number of locally-based bicycle clubs consolidated to form the League of American Wheelmen. This League then formed the basis of the Good Roads Movement, a national call for improved surfacing and labeling of rural highways. This movement would prove to be the beginning of a new view of roadbuilding. Instead of viewing the construction of each road as an individual solution to an individual problem, citizens began to address the condition of America's roads in a broader sense. The activism set forth by the Good Roads Movement inspired the creation of multiple statewide "road aid," or funding, laws, beginning with New Jersey's in 1891.<sup>102</sup> The law specified that one third of all road construction was to be paid for by the State, one tenth by adjoining property owners, and the remainder by the county.<sup>103</sup> This legislation set the precedent for multiple other states, which soon followed by passing similar laws.<sup>104</sup> Between 1890 and 1915 most states followed suit to create highway departments.

Although the Good Roads Movement was begun by bicyclists before influence from advocates of the automobile became a factor, leisure drivers fit

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<sup>102</sup> AASHTO, *Volume II*, 93.

<sup>103</sup> *ibid*, 94.

<sup>104</sup> *ibid*, 93.



well with this cause for road improvement and soon assumed control of the movement.<sup>105</sup> In 1902, the American Automobile Association (AAA) was formed from nine automobile clubs. AAA became a major supporter of legislation such as the Good Roads Bill of 1903, in addition to providing tourists with road maps and information on travel by automobile.<sup>106</sup> A total of twelve interstate roads connecting northern and southern states were constructed as a result of the Good Roads Movement, relieving rural isolation and promoting auto tourism between the two disjointed regions.<sup>107</sup>

During Florida's early history, roadways were generally seen as a responsibility of counties and cities. The state would not form its own State Roads Department until 1915, but the nongovernmental Florida Good Roads Association was created at the turn of the 20th century at a meeting in Orlando. This organization had the support of multiple counties throughout the state and would continue to push for improvements, but did not have the necessary power to create a network of roads that crossed county lines.<sup>108</sup> The fact that the construction of long-distance routes was so hindered by the lack of a statewide roads department was a mirror of the struggles faced by the national roadbuilding agency in determining what the federal government's role was in the planning, construction, and administration of the country's highways.

The quest for an answer to this conundrum began not long after individual states initially started forming their own highway departments. In 1893, an Office

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<sup>105</sup> McShane, 220.

<sup>106</sup> Kaszynski, 35.

<sup>107</sup> *ibid*, 42.

<sup>108</sup> Kendrick, 8.

of Road Inquiry was created within the United States Department of Agriculture. This office was organized by an act of Congress and approved by President Benjamin Harrison in one of his last actions as President.<sup>109</sup> In the years following the Office's establishment, its budget was far too small to fund construction projects; it was primarily responsible for compiling information on state laws, consult with state road departments, and to publish technical and promotional literature about roadbuilding. The Office also dealt closely with the Post Office Department, which was at the time experimenting with providing Rural Free Delivery to even remote areas.<sup>110</sup>

Within a decade of its operation in this role, however, it became clear that the Office of Public Road Inquiries, as the Office of Road Inquiry had been renamed in 1899, needed to be restructured to allow a more supportive role in roadbuilding. Automobile traffic had increased substantially since the Office's establishment, and an experiment in 1913 during which the Office worked directly with individual counties had seen limited success. It was determined that working instead with state highway departments, who would in turn collaborate with county and municipal governments, would be more effective. The resulting 1916 Federal Aid Road Act set aside \$75 million, to be divided among the state highway agencies of the Union's 48 states. This money was intended to fund 50 percent of the cost of constructing and maintaining rural post roads.<sup>111</sup>

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<sup>109</sup> AASHTO, *Volume II*, 96-97

<sup>110</sup> Richard F. Weingroff, "Highway Existence: 100 Year and Beyond" *Public Roads* Vol. 57 No. 2 (Autumn 1993) Accessed February 5, 2014, <http://www.fhwa.dot.gov/publications/publicroads/93fall/p93au1.cfm>.

<sup>111</sup> Weingroff.

Florida's State Road Department was formed shortly before this change in the Office of Public Road Inquiries' function. A report appearing in Dade County's Tropical Sun newspaper on February 22, 1915 highlighted the sentiment that such an organization was long overdue:

That a state highway department is essential to Florida's best interest was recently demonstrated to the Florida State Good Roads Association.

A quantity of road material of inferior quality was properly rejected by the officials of the county to which it was sent on a report as to its quality by an expert county engineer. The same material which was rejected was at once shipped to another county and accepted and paid for because the accepting county had no expert engineer to inspect the material. With proper supervision by a state highway department, such an imposition would have been impossible.<sup>112</sup>

Not long after the article appeared, Florida's legislature passed the act which created the Florida State Roads Department.<sup>113</sup> A second bill, passed simultaneously, specified that 15 percent of the money collected from the issuance of automobile drivers' license was to be turned over to the state treasurer for the purpose of maintaining this new department.<sup>114</sup> The Office of Public Road Inquiries, which was renamed the Bureau of Public Roads in 1918, established nine regional offices, with Florida being part of the district headquartered in Montgomery, Alabama.<sup>115</sup>

Throughout the 1920s the Bureau of Public Roads continued to work with state highway departments to construct a unified network of roads throughout the United States. In cooperation with the American Association of State Highway Officials, the US Numbered Highway System was introduced during this

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<sup>112</sup> "Florida State Good Roads Association," *The Tropical Sun*, February 22, 1915.

<sup>113</sup> Kendrick, 8.

<sup>114</sup> *ibid*, 11.

<sup>115</sup> *ibid*, 14-15.

decade.<sup>116</sup> Another advancement during the 1920s was in Florida's decision to begin collecting a gas tax, which was initially three cents per gallon, to be divided between the state's counties and the State Roads Department.

The focus of both the State Roads Department and the Bureau of Public Roads would shift slightly during the Great Depression, when it was determined that roadbuilding could be the means by which jobs for the unemployed were created quickly. For this reason the Bureau's name was changed once more to the Public Roads Administration, and it was moved from the Department of Agriculture to the newly-created Federal Works Agency. America's involvement in the Second World War and the amount of men and material that the military had cause to move again underscored the nation's need for a network of high-speed interstates. In 1943 a national expressway study was begun.<sup>117</sup>

The large amounts of federal funding necessary for such a project were not approved until 1956, when a plan for a 41,000-mile National System of Interstate and Defense Highways to be funded by a Highway Trust Fund was approved by Congress under the presidency of the supportive Dwight D. Eisenhower.<sup>118</sup> The Federal Aid Highway Act of 1956 authorized about \$6.5 billion to be invested in this plan during fiscal years 1957, 1958, and 1959. Of these funds, Florida's share amounted to roughly \$110 million, for which just under \$80 million was to be invested in the Interstate System.<sup>119</sup>

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<sup>116</sup> Weingroff.

<sup>117</sup> Weingroff.

<sup>118</sup> *ibid.*

<sup>119</sup> Kendrick, 19.

The 1956 Act additionally created the Federal Highway Administration, or FHWA, with the Bureau of Public Roads becoming a department therein.<sup>120</sup> All of the nation's transportation agencies were placed under the leadership of the Department of Transportation (DOT), which was formed in 1967 and reorganized to eliminate bureaus, such as the Bureau of Public Roads, in 1970. The USDOT now contains agencies including the Federal Railroad Administration, the Federal Aviation Administration, and the Urban Mass Transit Administration, as well as the FHWA.<sup>121</sup> Florida's State Road Department, likewise, was reorganized in 1969, when it and several other state transportation agencies were consolidated into the Florida Department of Transportation, or FDOT.

#### *Florida's Convict Road Force*

One significant aspect of the construction of Florida's roads that should not be overlooked is that much of the labor used to build Florida's state highways was provided by imprisoned workers. Florida began leasing its State prisoners to farmers, phosphate and turpentine interests, and sawmill operators in the 1880s, but treatment at the hands of subcontractors who were often several times removed from the State Prison itself was at often so brutal that Florida began to develop a reputation as "Hell on Earth" for prisoners. Beginning in 1919, convicts were put to work on state farms, roadbuilding projects, or with other state institutions in lieu of being rented out to private companies.<sup>122</sup>

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<sup>120</sup> Kaszynski, 167.

<sup>121</sup> Kaszynski, 189.

<sup>122</sup> Kendrick, 44.



Figure 7: Postcard advertising brick pavers for use in conjunction with convict road forces<sup>123</sup>

By 1935, there were 33 road prisons in the State of Florida, of which 31 were dedicated to construction and two to road maintenance. Prisoners employed by the State Road Department's Convict Road Force were typically housed in temporary camps, which would stay in place for about a year and then be moved several miles down the road as work progressed.<sup>124</sup> Living conditions for the men and women working in these labor camps remained incredibly harsh, but legislation aimed at improving inmates' circumstances passed in the 1930s and '40s banned such brutal methods of control as whippings, leg chains, and sweat boxes.<sup>125</sup> The 1967 death of 38 shackled prisoners in a fire that destroyed a northwestern Florida road prison and the mistreatment of its inmates that came to light during the investigation that followed, however, is seen as the turning

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<sup>123</sup> Georgia Vitrified Brick and Clay Company, "View of State Highway #12," Undated Postcard.

<sup>124</sup> Kendrick, 49.

<sup>125</sup> *ibid*, 51.

point in the use of this type of labor.<sup>126</sup> The State of Florida presently makes use of convict labor in four operational road prisons,<sup>127</sup> though today the laborers are supervised by unarmed corrections officers or transportation officials.

### *Streets Owned and Operated by Local Governments*

Though the funding, planning, and maintenance of most large-scale roadbuilding projects has been shared by federal and state governments in recent years, the vast majority of today's roadways are owned and operated by local governments. Cities, towns, and counties own and operate 107,518, or over 88 percent of the 121,829 miles of roadways in the state of Florida.<sup>128</sup> Most cities have an established Public Works Department which is charged with managing local streets and roads.

In some cases, historic roads that were initially constructed and maintained by the State Road Department have since been transferred to municipal control. Such is the case of the original path of Florida's State Road 1, which later became a part of U.S. Highway 90. Improvements made in the 1930s and 1950s bypassed portions of the original road. Those portions, no longer required to carry through traffic, then fell under the jurisdiction of Santa Rosa County.<sup>129</sup> The history of this road will be discussed in further detail in a case study to follow.

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<sup>126</sup> "Florida Inmates Work on Chain Gangs Without Chains."

<sup>127</sup> "Frequently Asked Questions," Florida Department of Corrections.

<sup>128</sup> "Florida's Transportation System by the Numbers."

<sup>129</sup> Rucker, *Brick Road to Boom Town*, 23.

### *Growth in Florida Between 1880 and 1940*

Development in Florida, which became a United States territory in 1818 and a state in 1845, occurred primarily in the panhandle and northern region throughout the majority of the nineteenth century. The economy of this part of the state was dominated first by production of cotton, and later by tobacco. Functionally, the panhandle and northern portion of the Florida peninsula acted as part of the cotton belt of the south, with settlers commonly coming from Alabama and Georgia.<sup>130</sup>

Florida's period of aggressive development that climaxed with the land boom of the 1920s can be seen to have begun with Hamilton Disston's 1881 purchase of 4 million acres from the nearly-bankrupt state government.<sup>131</sup> The state's contract with Disston, a wealthy Philadelphian, specified that he was to undertake a large drainage project that would create land suitable for agriculture and later housing from the largely uninhabitable portion of the Florida peninsula that he had purchased for 25 cents per acre. He was then to return half of the reclaimed land to the state, though it appears that Disston was able to keep for himself the majority of the profitable acreage.<sup>132</sup> Nonetheless, "Disston's Drainage" marked the beginning of the large-scale land reclamation efforts that would drastically alter the Floridian landscape.

As habitable land was being created from the marsh, investors took advantage of the opportunity to establish agricultural and industrial efforts. The

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<sup>130</sup> William Frazer and John J. Guthrie, Jr., *The Florida Land Boom: Speculation, Money, and the Banks*, (Westport, CT: Quorum Books, 1995), 19.

<sup>131</sup> *The WPA Guide to Florida*, 59.

<sup>132</sup> William Frazer and John J. Guthrie, Jr., *The Florida Land Boom: Speculation, Money, and the Banks*, (Westport, CT: Quorum Books, 1995), 21-22.



construction of a railroad between Tampa and Jacksonville began in 1883, greatly opening up the state to new investment. During the same period there was rapid growth in the sugar, cigar-making, phosphate, and citrus industries throughout the state.<sup>133</sup> Rail connections reached further into the peninsula throughout the turn of the century, and by 1915 the rail lines in south Florida were dotted with resorts. Careful advertisement drew tourists, transients, and winter residents to growing coastal towns such as Tampa, Miami, and Fort Myers. These emerging metropolitan areas boasted million-dollar resorts and a life of leisure, a sharp contrast to the agrarian economy of the northern portion of the state.<sup>134</sup>

While the cities of southern Florida were creating their own images from scratch, many communities in the panhandle were attempting to recover from the departure of the once-thriving lumber industry by reinventing themselves as an “American Riviera.” Though a rail line connecting Jacksonville and Pensacola was constructed in the 1880s, much of the region’s transportation was reliant on water access. The road built during the 1820s by the U.S. military connecting Pensacola, at the western tip of Florida’s panhandle, with Saint Augustine on the Atlantic coast had fallen into disrepair and was barely passable by the turn of the twentieth century.<sup>135</sup>

Florida’s early twentieth-century highways were primarily composed of sand-clay that was compacted over graded earth. Surfaces of crushed stone,

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<sup>133</sup> Frazer and Guthrie, 22.

<sup>134</sup> *ibid*, 36.

<sup>135</sup> Rucker, *Brick Road to Boom Town*, 1.

pine-straw, and shell were also used as highway surface treatments. The first brick-pavement laid on a Florida highway was constructed beginning in 1911 and was part of the route that connected Jacksonville in Tampa.<sup>136</sup>

Shortly after Florida's State Road Department was organized in 1915, planning for the first State Highway was begun. This road, which loosely followed the colonial network of trails known as the Old Spanish Trail, was to connect Jacksonville and Pensacola and provide a direct link between most of the panhandle's county seats.<sup>137</sup> The road, like the colonial trails it mimicked, was eventually to reach California, providing a southern connecting route between the Atlantic and Pacific Oceans. A portion of this road, which became State Road 1, is now listed in the National Register of Historic Places and will be discussed in greater detail as a case study in Chapter 5. Throughout western Florida, numerous other bridges and roads were constructed during the 1920s to make the area accessible to automobile-bound tourists.<sup>138</sup>

The first brick-paved rural highway in Florida was a portion of the road connecting Jacksonville and Tampa built between 1911 and 1912.<sup>139</sup> The construction of rural brick highways peaked in the mid-1920s, at which point Florida had 337 miles. This was the third-largest amount of rural brick-paved highways of any state, following only Ohio and Pennsylvania.<sup>140</sup> By the

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<sup>136</sup> William R. Rucker and Dr. Brian R. Rucker, "Florida State Road No. 1," National Register of Historic Places Nomination Form, (Washington, D.C.: U.S. Dept of the Interior, National Park Service, 1994), 13

<sup>137</sup> Rucker, *Brick Road to Boom Town*, 7.

<sup>138</sup> *ibid*, 2.

<sup>139</sup> *ibid*, 10.

<sup>140</sup> *ibid* 22.

mid-1920s, brick pavement had lost popularity as a surface treatment for highways. Many of the highways constructed of brick throughout the state had been constructed as nine-foot, one-way roads.

Increased amounts of traffic and the roadbuilding requirements that followed forced counties to widen their brick highways, either by constructing shoulders alongside, or by entirely covering the brick pavements that they had often laid barely a decade before. In addition to the need for broader roads, brick pavement faced increasing competition from cement and lime-rock, which could be obtained locally and began to dominate highway construction.<sup>141</sup>

Brick-paved city streets was equally popular in Florida throughout the land boom. By 1926, Florida had 389.5 miles of county and local brick streets, which was the second largest amount of any state.<sup>142</sup> Speculators rushed to Florida's growing cities in the wake of World War I, resulting in population growth at four times the rate of any other state in the country.<sup>143</sup> Though many cities were reached first by the railroad, with highways only connecting them to the northern states later in the 1920s,<sup>144</sup> investment in local infrastructure grew rapidly during this time. Lots in some areas that had been covered by marshland were platted as quickly as land could be dredged. The construction of "modern," brick-paved streets was a sign of progress, though when land values dropped as the boom

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<sup>141</sup> Rucker, *Brick Road to Boom Town*, 22.

<sup>142</sup> *ibid*, 22.

<sup>143</sup> *The WPA Guide to Florida*, 61.

<sup>144</sup> Frazer and Guthrie, 32.

came to a “bust,” many communities were left with empty lots surrounded by roads, curbs, and gutters.<sup>145</sup>

Florida’s rapid development during the 1910s and ‘20s was coupled by a rebranding that made the use of brick pavements especially desirable. Brick was seen as a superior surface that, despite high initial cost, would last for generations. Though speculation slowed almost to a halt in 1926, the brick streets and highways that had been constructed remained as a symbol of this great period of expansion. When Florida began to experience growth again in the years following World War II, many of these resources would be paved over in an attempt to modernize further, but, as the following chapters will show, within only a few decades residents would begin to acknowledge the significance of their remaining brick pavements.

The years between the Civil War and the late twentieth century saw not only a transformation of the way roads are travelled, but a corresponding shift in the way that their construction and maintenance are funded. The desires of many groups have been intertwined with calls for roadway improvements, from early automobile owners seeking more comfortable scenic routes, to the quest to provide Rural Free Delivery to every American home, to the military-driven Interstate projects initiated in the wake of the Second World War. All areas of the nation have experienced growth during this time, and the state of Florida is no exception. Periods of boom and bust have had great effect on the funds available for road improvement. This has resulted in an unbreakable link between

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<sup>145</sup> Frazer and Guthrie,, 138.

the brick roads that remain scattered across the state and the frenzied development of the great boom years. Though a large proportion of these resources have since been lost, the following chapters will explore several methods by which Floridian communities have chosen to incorporate early twentieth century brick roads into their present-day landscape.

## CHAPTER 4: HISTORIC PRESERVATION AND BRICK-PAVED ROADS

Effectively preserving historic pavements is a challenging task that can require both creativity and the mindful use of existing local, state, and federal laws. The American historic preservation movement began with groups concerned for the protection and memorialization of buildings, but has long since grown to encompass individual property owners, activists, and legislators who are passionate about the survival of structures, landscapes, and even intangible components of cultural heritage. However, given the diverse methods of preservation currently available, it is feasible that public thoroughfares should also be considered an element of the built environment which is worthy of protection.

### *Recognition of the Significance of Historic Roads and Pavements*

The following story appeared in a column in the Tampa Bay Area's Saint Petersburg Times in 1967.

Many years ago there lived in St. Petersburg a prosperous brickyard owner named Phineas T. Block. He had a ravishing red-haired daughter named Augusta, a spoiled beauty, if there ever was one. Phineas was so crazy about her that he had her name printed on all his bricks. Well, disaster struck—in the form of a San Francisco corset salesman who swept Augusta off her feet and across the state line, never to be seen again. Phineas was heartbroken. Wherever he walked, her name stared up at him—Augusta Block, Augusta Block, Augusta... At last the poor man, unable to forget, bricked himself in his closet and died of grief.<sup>146</sup>

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<sup>146</sup> Dick Bothwell, "Of All Things: Legends of Saint Petersburg," *Saint Petersburg Times*, October 12, 1967.

The column's focus was not the city's brick paved streets, of which the majority bore Georgia Vitrified Clay Company' "Augusta Block" stamp. The column, titled "Legends of Saint Petersburg," urged readers to spread the above story, even though the author knew it to be untrue. A legend, Bothwell argued, "gives a community's image depth and color." The fact that Bothwell turned to the city's remaining brick pavements as a source for town lore displays the high degree of nostalgia that residents had for these resources, even in the interstate-frenzied 1960s. Over a decade later, in June of 1980, the same story was printed in the *Milwaukee Sentinel* after being brought back by a man who had visited Saint Petersburg. The visitor, upon returning to Wisconsin, noted that "to this day, if you walk in downtown St. Petersburg, you, too, will see the name of AUGUSTA BLOCK."<sup>147</sup>

This sense of connection with historic brick pavements is not confined to residents of, or visitors to, Saint Petersburg. A 1973 incident in which a contractor mistakenly spread asphalt slurry over a historic brick-paved intersection in Wilmington, North Carolina resulted in an act of civil disobedience when members of local resident and historic organizations scraped the bricks clean with rakes, shovels, and garden hoses before the slurry hardened. Wilmington has since passed local ordinances protecting its remaining brick pavements.<sup>148</sup>

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<sup>147</sup> Alex Thien, "Look down and you'll see 'Augusta Block,'" *The Milwaukee Sentinel*, June 5, 1980.

<sup>148</sup> Seapker.



Figure 8: Residents of Wilmington, NC remove asphalt from a residential brick street, 1973.<sup>149</sup>

### *Protection within Historic Districts*

A municipal government may choose to protect its historic resources through the creation of historic districts or landmarks. This form of overlay zoning allows historic district commissions, which are quasi-judicial bodies, to make recommendations that city council designate structures and sites with historic or cultural significance as local historic districts or landmarks. When approved, these local districts and landmarks are overseen by the historic district commission, which has the power to review changes such as modification, new construction, and demolition.<sup>150</sup>

The changes that need to be reviewed by the commission are approved through the issuance of a Certificate of Appropriateness when the property owner

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<sup>149</sup> Janket K. Seapker, "Preserving brick streets adds to historic appearance," *Star News Online*, January 18, 2013. Accessed February 7, 2014. <http://www.starnewsonline.com/article/20130118/ARTICLES/130119660?p=1&tc=pg#gsc.tab=0>

<sup>150</sup> "Historic District Commission Best Practices," *New Hampshire Division of Historical Resources*.



has made the case that modifications to their property are necessary and will not harm the overall character of the district. The alterations that are permitted within a historic district are generally illustrated through a set of “design guidelines” that specify what is and is not appropriate for the district.<sup>151</sup> The particulars of design guidelines can vary widely from one district to another and should be written with the aesthetic, historic and cultural significance, and modern use of a district in mind.

Historic pavements within historic districts can be, but are not automatically, protected. Historic districts that are primarily residential, in particular, often protect historic brick pavements as a character-defining element. The historic district discussed earlier in Wilmington, North Carolina, in which a brick-paved road was mistakenly covered to the horror of residents, provides a useful example of a district in which the protection of historic pavement was desired by residents and understood by city administrators. It was, however, an informal guideline that was not officially part of Wilmington’s policy for its historic districts until 1986, over a decade after residents took the pavement’s preservation into their own hands.<sup>152</sup>

### *The National Register of Historic Places*

The catalogue of buildings, sites, districts, structures, and objects that hold national, state, or local significance known as the National Register of Historic

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<sup>151</sup> Salsich, 168.

<sup>152</sup> Seapker.

Places was created by the National Historic Preservation Act of 1966.<sup>153</sup>

Resources such as roads and trails are typically listed as structures, though there is no hierarchy in place that gives any one classification more importance than another. The Register contains over 80,000 listings, both publicly and privately owned. These listings represent over 1.4 million individual resources.<sup>154</sup>

The National Park Service is responsible for managing the National Register of Historic Places, but nominations to the Register are submitted to the applicable State Historic Preservation Officer (SHPO).<sup>155</sup> If the nomination makes a satisfying case for the resource's significance and integrity, the SHPO will make a recommendation to the Secretary of the Interior that the resource be listed, a recommendation that is typically upheld.

Nominations are evaluated by addressing their "integrity of location, design, setting, materials, workmanship, feeling and association."<sup>156</sup> In the case of roads surfaced with historic pavements, the spans that are nominated can often be relatively short due to a loss of integrity after years of repairs or replacement with asphalt. Even when small or disconnected portions of historic pavement remain along roads that have been altered elsewhere, the portions that retain integrity can be nominated.

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<sup>153</sup> Charles B. Hosmer, Jr., "Preservation — A Historical Perspective," in *Cultural Resources Management*, ed. Ronald W. Johnson and Michael G. Schene, (Malabar, FL: Robert E. Krieger Publishing, 1987), 12.

<sup>154</sup> "National Register of Historic Places Register: About Us," last modified June 13, 2011, <http://www.nps.gov/nr/about.htm>

<sup>155</sup> Gary W. Wilburn, "Bureaucracy, Preservation and the Law: How to Untangle the Knots," *Overland Journal* (Winter 1984): 27.

<sup>156</sup> National Park Service, "National Register Bulletin: How to Apply the National Register Criteria for Evaluation," Accessed February 14, 2014, [http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15\\_2.htm](http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm).

In addition to the requirements for integrity, a National Register nomination must argue the resource's significance according to one of four Criteria for

Evaluation:

- a. [Resources] That are associated with events that have made a significant contribution to the broad patterns of our history; or
- b. That are associated with the lives of significant persons in our past; or
- c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. That have yielded or may be likely to yield, information in history or prehistory.<sup>157</sup>

Historic brick-paved roads have been successfully nominated to the National Register using Criterion A, Criterion C, and a combination thereof. Criterion D may also be suitable for use in the nomination of certain brick-paved resources.

#### Criterion A

In addition to their significance as examples of once-popular surface treatments, historic pavements can also serve as strong symbols of past events, in which case they are eligible for nomination under Criterion A. Davenport's Broadway Avenue in Lincoln County, Oklahoma was added to the National Register of Historic Places under Criterion A for its significance to the evolution of Davenport's transportation infrastructure. This road serves as an example of how brick pavements can be protected through listing on the National Register while remaining in use as commercial arteries.

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<sup>157</sup> "How to Apply the National Register Criteria for Evaluation."

During the early twentieth century, Davenport's commercial district benefitted from traffic along the Ozark Trail, a network of roads that brought travelers to the town's edge, though not through its center. However, in the mid-1920s, the State Highway System proposed to the incorporation of portions of the Trail into U.S. Route 66, a cross-country road system stretching from Illinois to California. During initial phases of planning, the State Highway Commission selected a route that would pass through downtown Davenport, in conjunction with other Lincoln County towns. In anticipation of this increase in traffic, several cities, including Davenport, paved their central streets with bricks.

Despite this public commitment to improving Lincoln County's infrastructure, the Office of Public Roads later dictated that Route 66 should follow a different path, bypassing Davenport. This change of plans sparked a heated dispute between the City of Davenport and the Highway Commission, resulting in a lawsuit, a case that was eventually heard by Oklahoma's Supreme Court. The State Highway Commission won the case and continued with their plans to construct Route 66 outside of Davenport, leaving the newly-paved Broadway Avenue devoid of the through traffic it had expected.<sup>158</sup>

Though it is the debate over the construction of Route 66 that ultimately led to Broadway Avenue's nomination as a significant structure, it is the street's brick pavement, rather than its route, that gives it modern significance and integrity. Of the .5 mile portion that was originally paved in bricks, .425 miles of

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<sup>158</sup> Dianna Everett, "Davenport Broadway Avenue Brick Street," National Register of Historic Places Nomination Form, Washington, D.C.: U.S. Department of the Interior, National Park Service, 2004, 20-22.

the historic pavement are present.<sup>159</sup> The remaining portion, like those brick-paved streets of neighboring towns, has been covered by asphalt. This makes Davenport's Broadway Avenue the only visible reminder of the battle over the path of Route 66. Therefore, this half-mile brick road serves as a compelling example of how one can nominate brick pavements based on the events surrounding the decision to use brick pavers, rather than solely on the significance of the materials themselves.

### Criterion C

Criterion C is most commonly used for brick-paved roads listed in the National Register, typically listing significance in the area of engineering. The nomination for a brick-paved portion of Walworth Avenue in Delavan, Wisconsin, for example, emphasizes the fact that examples of the once-common brick-paved main street are no longer easy to find:

Delavan's brick street is a rare surviving example of a once quite common method of roadway engineering and as such is significant to understanding the development of transportation infrastructures in a broader historical sense.<sup>160</sup>

The laying of brick pavers was an important part of the city's development as it began to compete with neighboring towns to prove it was ready to enter the age of the automobile. The use of Criterion C enables the statement of significance to place Walworth Avenue into a larger context. The road is listed

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<sup>159</sup> Everett, 11.

<sup>160</sup> W. Gordon Yadon, "Delavan's Vitrified Brick Street," National Register of Historic Places Nomination Form, Washington, D.C.: U.S. Department of the Interior, National Park Service, 1995, 6.

with local significance, rather than statewide or national, but its construction is acknowledged as part of a trend of main street improvements.

Likewise, the brick-paved residential streets in the Fifteenth Street and Oklahoma Avenue neighborhood of Mattoon, Illinois are listed in the National Register of Historic Places under Criterion C, again with significance in the area of engineering. The exact construction date and circumstances of some of the road segments discussed in the nomination are unknown in this case.<sup>161</sup>

Locating information about costs, sources of materials, contractors, and other details of road improvements is not always possible nearly one hundred years after the fact. This nomination made use of available sources, while providing context through the history of the area and a broader history of brick paving to satisfactorily argue significance despite the absence of some details.

#### Criterion D

Although Criterion D is often associated with prehistoric sites or ruins, it may be a suitable argument for the nomination of historic brick roads. Making the argument that a building or structure is significant using Criterion D is stating that it contains information not yet fully understood, collected, or analyzed. In the case of historic brick pavements, this can be beneficial for municipalities that have not maintained records of the locations of all brick streets covered by asphalt, the origin or labor source of their brick streets, or the details of the streets' construction and foundation.

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<sup>161</sup> Alice Larrabee and Joyce St. Michael, "Fifteenth Street and Oklahoma Avenue Brick Street," National Register of Historic Places Nomination Form, Washington, D.C.: U.S. Department of the Interior National Park Service, 1999, 8.

### *Protection Afforded by Federal Laws*

The inclusion of a property in the National Register of Historic Places, while providing documentation and recognition of its value as a historic resource, does not place restrictions on its future use, modification, or demolition.<sup>162</sup> In the case of privately-owned buildings and structures, National Register listing does not offer protection from an owner's desire to alter or even demolish their property. Improvements to and maintenance of historic roads, like all transportation projects, are often affected by projects involving federal funding and licensing.<sup>163</sup> As such, they can be afforded additional protection through several means.

The National Historic Preservation Act (NHPA) of 1966, which created the National Register of Historic Places, established several protective measures designed to protect resources that are listed, or eligible for listing, in the National Register from adverse effects caused by federal agencies. The language protecting eligible properties in addition to those that have been listed is incredibly significant, as it puts the responsibility of determining eligibility on the agency, not the property owner. Determinations of Eligibility can be completed by the SHPO, an easier process than the completion of a full nomination to the National Register of Historic Places.<sup>164</sup>

Section 106 of the NHPA, quite simply, requires that all federal agencies consider the effects of their actions on historic resources, meaning properties

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<sup>162</sup> "National Register of Historic Places Program: Fundamentals," Last modified June 13, 2011, [http://www.nps.gov/nr/national\\_register\\_fundamentals.htm](http://www.nps.gov/nr/national_register_fundamentals.htm).

<sup>163</sup> Marriott, 42.

<sup>164</sup> *ibid*, 40.

listed in or eligible for the National Register, are taken into account. Whether the agency's action is granting a permit or license, or providing funding, the relevant SHPO must be consulted to determine a course of action that will avoid or limit harm to the resource in question.<sup>165</sup> Although Section 106 can be an incredibly useful tool, it does not obligate agencies to follow the SHPO's suggestions. If it is determined that the alteration or removal of a historic building or structure will be of public benefit, the agency is free to proceed.

Additionally, the Department of Transportation Act, another set of laws enacted in 1966, contains a section that affords protection to historic, natural, and cultural resources. It specifies that transportation projects may not make "use" of these resources without first making all attempts possible to avoid or minimize negative impacts. This law, known as Section 4(f), goes beyond the NHPA's Section 106 in two ways. It uses language allowing for a broader definition of "resource" that can include recreational sites, wildlife refuges, and historic resources that are not necessarily eligible for the National Register of Historic Places. Section 4(f) also allows for the word "use" to go beyond meaning actual taking of the land, but to include indirect but substantial impacts that projects might create.<sup>166</sup>

### *The Costs and Benefits of Preservation*

Pavements created from vitrified bricks almost always become uneven not because of failure of the bricks themselves, but because the supporting

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<sup>165</sup> Marriott, 41.

<sup>166</sup> *ibid*, 42-43.



foundations cannot support and evenly distribute the load of traffic. Since several types of foundations have been used in concert with brick pavements an understanding of what type of maintenance or restoration a historic brick-paved street needs should begin with an assessment of its foundation.

Brick pavements can be laid directly into a sub-grade and bed of compacted and rolled native sand. Though not suitable for all regions, this method was used commonly throughout southern Florida.<sup>167</sup> Only low-traffic streets and alleys constructed with a lack of foundation like this tend to have survived. When they begin to bow, these brick pavements should be lifted so that the sand bed beneath them can be evenly distributed and re-compacted. Though labor-intensive, this process should be required rarely if the sub-grade drains properly and the street is not being subjected to excessive traffic.

Joints between bricks must be kept filled for several reasons. Well-filled joints keep bricks from shifting out of place and creating bumps, they reduce the risk of chipping edges and corners, and they prevent water from penetrating the cement and eroding or otherwise damaging the foundation beneath.<sup>168</sup> Joints can be filled with either sand or mortar. Brick pavements featuring joints filled with sand have the benefit of being able to be taken up for repairs or utility maintenance without causing damage to the pavers themselves. Sand, however, can wash away as a result of exposure to weather or street cleaning machines, and needs to be maintained to prevent chipped brick edges.<sup>169</sup>

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<sup>167</sup> Bradley Keeler, "Brick Highways in Orange County, Florida: A Report for the Orange County Historical Museum." (Orlando: Orange County Historical Museum, 1995), 17.

<sup>168</sup> Baier and Williams, 7.

<sup>169</sup> *ibid*, 7.

Holes in brick pavements where individual pavers have broken or been removed have, in the past, been patched with asphalt concrete.<sup>170</sup> This practice creates a visible disruption in the brick pavement and a loss of historic integrity. It is, however, an improvement over a brick pavement surface marred by large holes. A lack of surplus bricks to be used as infill in the years after brick pavement's heyday appears to be at least partially responsible for the unsightly use of asphalt patches. In a 1961 survey conducted by the American Public Works Association, 62 percent of responding cities and counties in the United States and Canada reported that paving bricks were not readily available for patching. This difficulty that cities have faced in locating patching materials underscores the importance of saving bricks that have been removed, a practice that will be discussed further within a case study to follow.

As resources that are often in daily use by changing types and amounts of traffic, historic brick pavements can be incredibly vulnerable. Their advocates, however, have a number of avenues down which to travel to arrive at the end goal of preservation. Many factors, ranging from setting to significance, must be taken into account when determining which measure will work best to protect a historic brick-paved street. The case studies to follow will demonstrate that making use of the correct method can not only ensure the survival of historic brick pavements, but help them remain a well-utilized element of their landscape.

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<sup>170</sup> Lloyd A. Dove, Project Director, *Street and Urban Road Maintenance*, Street Maintenance Committee, American Public Works Association (Chicago: Public Administration Service, 1963), 209.

## CHAPTER 5: CASE STUDIES

As has been suggested by the numerous potential approaches to preservation discussed in the preceding chapter, there is no single method through which all historic brick pavements can be appropriately protected. The modern treatment of a historic road must take into account not only its historic use and significance, but the current needs of its surrounding community. The following two case studies explore the history, preservation, and current functions of two very different spans of early twentieth century brick pavement. These two cases differ in nearly every way. The first, Old State Road 1, was constructed as a rural highway and became unable to support the necessary amount of traffic within just a few decades. It has since been listed in the National Register of Historic Places and serves the community not as a vehicular road, but as a path for pedestrians and cyclists. In the second case study, the preservation of remaining brick streets in the City of Saint Petersburg is explored. Unlike State Road 1, these streets have remained in constant use for nearly a century. Despite the numerous differences between these two situations, both are stories of relatively successful preservation through methods that have been tailored to fit the needs of the residents and travelers that each road can now serve.

### *Old State Road 1*

Milton, Florida, is a small town of slightly less than 9,000 in the Florida panhandle and is the county seat of Santa Rosa County, FL.<sup>171</sup> The town grew from a trading post located where an old Native American trail met tidal access to the Gulf of Mexico,<sup>172</sup> to be incorporated shortly before Florida gained statehood in 1845.<sup>173</sup> Growth during the 1840s and '50s was largely motivated by the promise of a railroad line to be constructed by the G. and P. (Georgia and Pensacola) Railway Company which would have connected it with cities as far away as Charleston, South Carolina, Savannah, Georgia, and New Orleans, Louisiana. Even though the railroad was never built, Milton's access to the Gulf of Mexico made it a fairly important cotton market for nearby cities in the southern portions of Alabama and Georgia.<sup>174</sup>

Road transportation in Santa Rosa County, as throughout the panhandle, remained difficult as the twentieth century began. The town of Milton, however, experienced marked growth over the course of the first twenty years of the century, its population doubling between 1900 and 1910. In the wake of two disastrous fires occurring in 1909 and 1911, wooden structures were replaced with brick, and the town gained an opera house, a grand hotel, and a grade school.<sup>175</sup>

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<sup>171</sup> "Milton, FL," U.S. Census Bureau, 2010 Census, <http://www.census.gov/popfinder/>.

<sup>172</sup> M. Luther King, *History of Santa Rosa County: A King's Country*, (Micanopy, FL: Micanopy Publishing Company, 1973) 37.

<sup>173</sup> *ibid*, 37.

<sup>174</sup> *ibid*, 40-41.

<sup>175</sup> Rucker, *Brick Road to Boom Town*, 3-5.



Figure 9: This image, taken just outside of Milton in 1900, shows the tumultuous dirt roadways that were the norm at the time.<sup>176</sup>

As discussed in Chapter 4, the need for a road connecting the eastern and western portions of north Florida had been felt for quite some time. As automobile traffic increased and towns like Milton struggled to attract tourists and be less economically reliant on the lumber industry, discussions calling for a road spanning the width of northern Florida became more and more serious. Planning for State Road 1 began in 1916, only one year after the formation of Florida's State Road Department. Florida's segment of road was to roughly follow the colonial "Old Spanish Trail" that had connected Saint Augustine and Pensacola. Eventually, the highway was to continue across the continental United States, connecting the Atlantic and Pacific Oceans.

In Florida, the highway would pass through over a dozen counties in its course from the border with Alabama to the Atlantic Ocean. Given the tiny

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<sup>176</sup> King, 44.

budget of the fledgling State Road Department, however, each county was responsible for the cost of its portion of the road. Initial cost estimates assumed that the road would be unpaved, but Milton's leaders felt that paving the portion of the road connecting their city to the Okaloosa County line to the east in brick would be worth the extra expense.<sup>177</sup> \$Eighty thousand dollars in road bonds were sold by the county, and in 1919 federal aid was made available for the road's construction. Although the cost of brick pavement extending as far as the county line was determined to be too high, a six-mile span extending eastward from Milton would be paved in brick. This portion of the road would run parallel to the nearby L. & N. (Louisville and Nashville) Railroad tracks.<sup>178</sup>

The cost of the project, which was to include the replacement of a damaged bridge over the Blackwater River as it passed through Milton as well as six miles of paved road, was to total \$113,000. The brick pavement was planned to measure nine feet wide and be flanked by concrete curbs and 3 1/2-foot wide sand clay shoulders. The winning bid for the project came from Chattanooga, Tennessee's Southern Clay Manufacturing Company, which provided most of the laborers as well as the materials for the project.<sup>179</sup>

The composition of the road was described to the *Milton Gazette* as construction neared completion in 1921:

...this is one of as fine a pieces of road as can be found in the State, being constructed of wire lug cut brick, especially designed for this class of work, laid on a hard packed sand-clay bed, and thoroughly grouted. The road bed is nine feet eight inches wide with heavy clayed shoulders

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<sup>177</sup> Rucker, *Brick Road to Boom Town*, 8.

<sup>178</sup> *ibid* 10.

<sup>179</sup> *ibid*, 11.

of three feet two inches on each side, bringing the entire width up to sixteen feet. A grade of four feet on each side of this makes the entire road twenty four feet in width...there is no question but this will be one of the best pieces of road in West Florida, and a monument to the ability of the State as a road builder.<sup>180</sup>

This quote exemplifies the desire to build a road that would last and create a sense of pride among the citizens of Santa Rosa County. The choices to use cement grout instead of sand fill and to create broad shoulders along each side of the road further demonstrate the planners' confidence in the ability of brick pavement laid in this manner to stand up to decades of fairly heavy traffic. Not only was this portion of the road built to last, but it was the Florida panhandle's first stretch of modern pavement.<sup>181</sup> The project's completion was celebrated on Labor Day, 1921, an event that drew people from across the Florida panhandle as well as southern Alabama and Georgia.<sup>182</sup>

Unfortunately, within only a few years, the nine foot width of the brick pavement became insufficient. In 1925, statewide requirements were set for wider roads to accommodate increased amounts of traffic brought by the state's booming tourism industry. The following year, concrete shoulders were added to each side of the brick pavement to create separate lanes for two-way traffic.<sup>183</sup> Still later in the 1920s, Florida State Road 1 was renamed and became a part of U.S. Highway 90.<sup>184</sup> Within less than a decade, Florida's first State Road, and the panhandle's first paved highway, had seen a name change and been flanked with concrete.

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<sup>180</sup> *Milton Gazette*, February 15, 1921. As quoted in Rucker, 12.

<sup>181</sup> Rucker, *Brick Road to Boom Town*, 20.

<sup>182</sup> *ibid*, 17.

<sup>183</sup> *ibid*, 20.

<sup>184</sup> *ibid* 22.

Beginning in 1936, through traffic was routed away from the brick-paved section of Old State Road 1 when a new approach to the Blackwater River Bridge was constructed. Instead of being repaved or destroyed, however, the brick section that was bypassed remained in use by the area's residential traffic. Another portion of the original brick pavement faced the possibility of being repaved in the 1950s, when the State Road Department began improvements to U.S. 90. Again saved from destruction, a stretch of road was built to parallel the historic brick pavement. The brick-paved portion of the road was abandoned but remained intact.<sup>185</sup>

An early attempt to preserve the first paved portion of the road that followed the Old Spanish Trail, though perhaps slightly misguided by modern preservation standards, began in the 1970s when the *Pensacola News-Journal* began to seek permission to use pavers from Old State Road 1 in the construction of a memorial sidewalk. The *News-Journal* obtained permission to remove the historic pavement from a roughly half-mile stretch of the old road directly from the governor. The bricks were taken from the easternmost portion of the abandoned road and laid into a memorial sidewalk that was part of the newly constructed News-Journal Plaza in downtown Pensacola. At a dedication ceremony in July of 1977, a marble plaque was unveiled with an inscription hailing the significance of the Old Spanish Trail for its relationship to European colonization:

Original bricks from West Florida's first paved highway (six miles in Santa Rosa County, 1920-1926 [*sic*]) along the route of Old Spanish Trail were

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<sup>185</sup> Rucker, *Brick Road to Boom Town*, 23.



moved to the sidewalks of News-Journal Plaza in 1977 in tribute to the pioneering spirit and vision of early builders of the region. Old Spanish Trail from Pensacola to St. Augustine (later the route of Highway 90) is symbolic of European colonization that began in 1559 and brought five flags to Pensacola and West Florida. The State of Florida presented the bricks to the News-Journal as a memorial to the state's highway builders. Dedicated in 1977 by Gov. Reubin O'Donovan Askew, a Pensacolian.<sup>186</sup>

Though it was surely well-intentioned, this first attempt at preservation involved the destruction of a significant portion of the historic road and the relocation of its paving materials to an urban setting nearly 25 miles southwest of the stretch of highway into which they were originally laid. The inscription additionally neglects the significance of the bricks' connection with the first paved highway in the region, of the civic improvements that were made by Santa Rosa County residents in an effort to welcome the age of the automobile, as well as to promote tourism in the panhandle. In response, Santa Rosa County's Commissioners petitioned Florida's Department of Transportation in 1981, urging action to prevent further destruction. Having diverted through traffic from the historic brick pavement decades earlier, however, the FDOT claimed no responsibility for the abandoned road.<sup>187</sup>

A movement calling for the protection of the historic pavement led to the nomination of the original six miles of brick pavement in the National Register of Historic Places. The road was successfully listed under both criteria A and C for its significance in the areas of transportation and engineering.<sup>188</sup> The historic brick pavers, cement mortar, and concrete shoulders appear to have proven to be as durable as their designers envisioned; with the exception of a few asphalt

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<sup>186</sup> Rucker, *Brick Road to Boom Town*, 24.

<sup>187</sup> *ibid*, 30.

<sup>188</sup> Rucker, "Florida State Road No. 1," 5.

patches and the portion of pavement that was removed for the Pensacola News-Journal Plaza, the road remained in usable shape despite years of neglect.

Since its listing in the National Register of Historic Places, Santa Rosa County has successfully restored much of the historic brick pavement. The Blackwater Heritage Trail, Inc., a local group of citizens, began seeking funding for restoration from the FDOT's Transportation Enhancement Program in 2003. The project they proposed would both increase bicycle and pedestrian traffic in the area and preserve the road as a historic resource. Funding was secured in 2007 through an agreement between FDOT and Santa Rosa County. The restoration project would restore the existing brick road and construct an asphalt path to provide a connection to existing multi-use trails through the Blackwater State Forest.<sup>189</sup>

Designs approved by the Federal Highway Administration, Florida's State Historic Preservation Office, and the U.S. Department of the Interior were agreed upon in 2010, after surveys pinpointed nearly 500 repair areas.<sup>190</sup> Work on the project began in 2011. In addition to restoring the historic structure of the brick-paved road, the project fulfills the proposals for two proposed DOT projects by adding pedestrian and bicycle paths to Highway 90.<sup>191</sup>

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<sup>189</sup> Chris Phillips, "S.R. 1 Historic Restoration/Multi-Use Trail: FPID 420623," Presentation, Date and location unknown, Slides 3-4.

<sup>190</sup> *ibid*, Slides 6-7.

<sup>191</sup> Chris Phillips, "S.R. 1 Historic Restoration," *Santa Rosa District 2 News*, January 2011, 4.

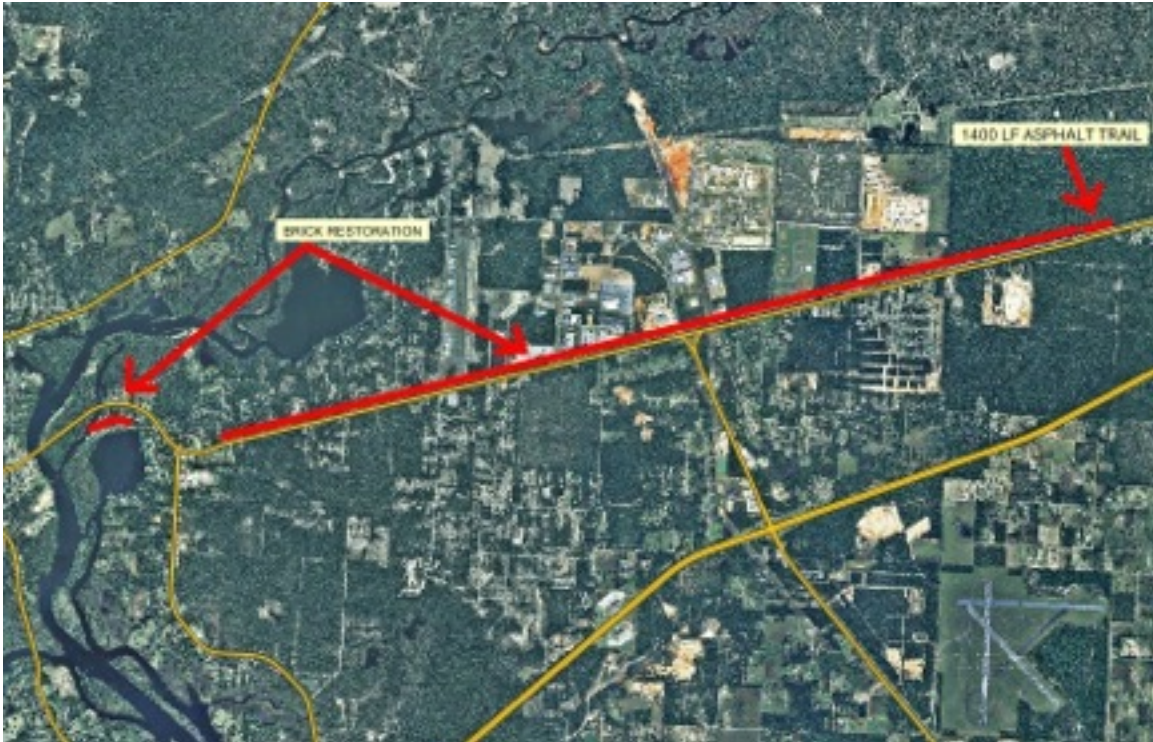


Figure 10: Map showing the scope of the S.R. 1 restoration project<sup>192</sup>

One major element of the restoration project was the patching of potholes, cracks, and areas missing bricks. Spans of historic brick pavement that had been removed for the purpose of utility maintenance and the relocation to the News-Journal Plaza, as well as some bricks that had been stolen over time amounted to nearly 3,000 feet of missing bricks when the project started.<sup>193</sup> Locating appropriate brick pavers to be used to patch the road proved to be difficult.

The initial plan had called for the installation of modern pavers where bricks were missing or damaged pieces were removed, but the size discrepancy between the original vitrified brick pavers and modern pavers posed a problem. When possible, disrupted but undamaged bricks were salvaged, cleaned, and

<sup>192</sup> Phillips, "S.R. 1 Historic Restoration/Multi-Use Trail: FPID 420623," Slide 4.

<sup>193</sup> "Red Brick Road Project," *Santa Rosa District 2 News*, July, 2012, 3.

relaid, but additional pavers were still needed. Santa Rosa County engineers worked to find salvaged bricks from nearby areas without success. Multiple test patches were laid in portions of the road to determine the least damaging method for removing damaged bricks and the best-suited replacements. The new pavers that were ultimately used as replacements were selected by the State Historic Preservation Office in accordance with the Secretary of the Interior's Standards for rehabilitation of historic structures.<sup>194</sup>

With cooperation between SHPO and Santa Rosa County employees, the most sensitive and appropriate methods of laying infill were agreed upon. The patches were laid in such a way as to give a "woven" appearance instead of a harsh line between the old and new materials. Additionally, it was decided that the use of sand to fill joints between the new courses of brick pavers would not be appropriate in the midst of the historic bricks with their joints filled with cement mortar.<sup>195</sup>

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<sup>194</sup> "Project Narrative: S.R. 1 Historic Restoration/Multi-Use Trail," 3.

<sup>195</sup> Phillips, "S.R. 1 Historic Restoration/Multi-Use Trail: FPID 420623-1." Slides 10-12.

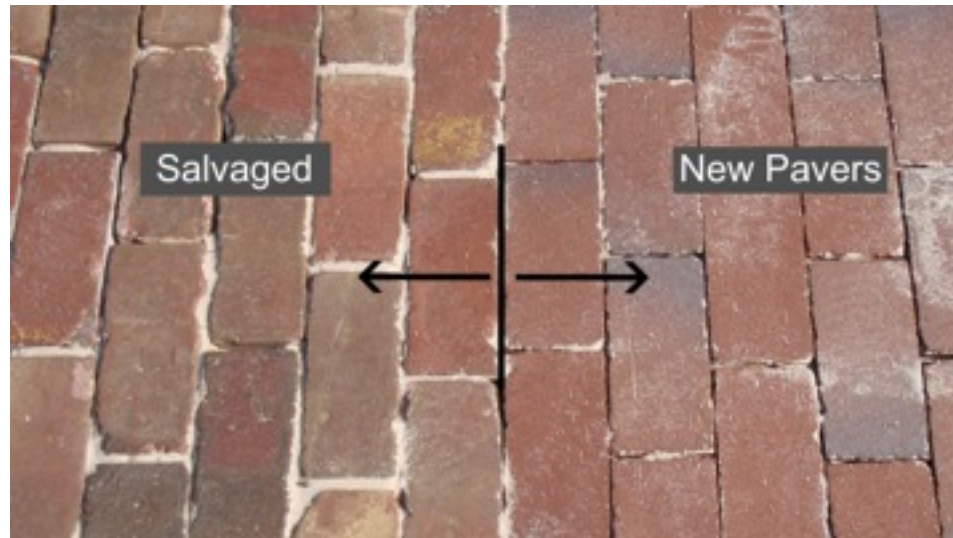


Figure 11: Patch filled with both salvaged historic and contemporary pavers<sup>196</sup>



Figure 12: Patch showing the method of “weaving” replacement material into existing pavement<sup>197</sup>

The historic State Road 1 provides an excellent example of sensitive yet creative historic preservation. Though no longer open to vehicular traffic, the road is once again able to serve an important function in the community. Today,

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<sup>196</sup> Phillips, “S.R. 1 Historic Restoration/Multi-Use Trail: FPID 420623-1.” Slide 11.

<sup>197</sup> *ibid*, Slide 11.

it is in frequent use by bicyclists, walkers, and joggers.<sup>198</sup> Its careful restoration has preserved the historic aesthetic of its vitrified brick pavement, even in cases where modern pavers had to be added. By opening State Road 1 up to pedestrians and bicyclists, Santa Rosa County is not only providing a safe space for active recreation, but is allowing its residents to become closely acquainted with this historic resource. Despite the change in use caused by the discontinuation of vehicular traffic, the road has largely maintained its setting and integrity and serves as an excellent model of a historic brick-paved street in the National Register of Historic Places.

### *Saint Petersburg*

Like the town of Milton, Saint Petersburg, Florida experienced marked growth at the turn of the twentieth century, culminating with the 1920s Florida land boom. Unlike Milton, it was a city that invented itself from nearly nothing during this period. Instead of using tourism as an opportunity to diversify its economy, Saint Petersburg welcomed tourists and seasonal residents as the drivers of its first industry, recreation.

When the railroad line connecting Saint Petersburg to Lakeland and Tampa was opened in 1888, the unincorporated, remote community was home to only thirty people.<sup>199</sup> The town's early development and identity were fueled by a statement made at the 1885 national meeting of the American Medical Association: Saint Petersburg, which lay on a peninsula between the Gulf of

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<sup>198</sup> Rucker, "Florida State Road No. 1," 54.

<sup>199</sup> Del R. Marth and Martha J. Marth, *St. Petersburg: Once Upon a Time*, (Branford, FL: Suwanee River Press, 1996) 6.

Mexico and Tampa Bay, was “the healthiest spot on earth.” This conclusion was reached after a London physician had charged investigators and surveyors with the task of finding the spot with the best climate to relieve the symptoms of ailments such as asthma and a nervous condition dubbed “neurasthenia”.<sup>200</sup> People from across the country, having been advised by their physicians to seek a “healthier climate,” began to take note of Saint Petersburg. By 1890, the population had grown to 273, according to the Federal census.<sup>201</sup>

As the town’s tiny population began to swell, early developers viewed the creation of an orderly grid of broad streets as a high priority. Saint Petersburg was planned around streets up to one hundred feet wide.<sup>202</sup> As was common for young communities, the first street surfaces consisted of dirt or crushed shell. The city’s first brick roads were laid in 1903, but the city could only afford to pave the stretch of three blocks in which a quagmire would form during the wet season.<sup>203</sup>

Throughout the first decade of the twentieth century, a culture of orienting activity toward the streets emerged. When, in 1908, a real estate salesman began to place orange benches with painted advertisements along Central Avenue, other merchants followed suit. Fearing that the business of these mismatched benches were creating a gaudy and cluttered street scape, the

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<sup>200</sup> Hampton Dunn, *Yesterday’s St. Petersburg*, (Miami: E.A. Seemann Publishing, 1973), 19-20 and Marth, 4.

<sup>201</sup> Dunn, 9.

<sup>202</sup> *ibid*, 19.

<sup>203</sup> “Brick Streets & Granite Curbs,” Saint Petersburg city policy.

mayor ordered a standardized size and color for all such street furniture.<sup>204</sup>

Instead of confining recreational strolls to parks or the nearby waterfront, the city had begun actively promoting the use of its streets as spaces in which leisure could coexist with business traffic.

By 1910, the young city's population had increased to 4,127. The following year, the peninsula broke away from Tampa's Hillsborough County to form Pinellas County, with Clearwater as its county seat. Shortly thereafter, Saint Petersburg's City Council began actively pursuing infrastructure improvements such as the replacement of dirt streets with longer-lasting brick pavement. A resolution to pave seventy-five miles of streets with brick was passed.<sup>205</sup> Between 1909 and 1913, the city allocated \$202,000 for paving and improving streets.<sup>206</sup>

Bids from brickwork companies were accepted, and it appears that the Georgia Engineering Company emerged quickly as the company with the ability to transport its bricks to Saint Petersburg via railroad for the lowest price. Georgia Engineering Company was a subsidiary of Georgia Vitrified Brick and Clay Company, which manufactured "Augusta Block" paving bricks in Harlem, Georgia (which neighbors the industrial city of Augusta). The words "Augusta Block," printed in capital letters, occupy nearly this entire face of each brick paver, written with one word per line. When walking down a street paved with

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<sup>204</sup> Marth, 10.

<sup>205</sup> *ibid*, 10-11.

<sup>206</sup> "Brick Streets & Granite Curbs."



Augusta Blocks, there is never a question of who manufactured the bricks, so bold is the logo.

Saint Petersburg's daily *Evening Independent* reported in September of 1912 that the funds to pave forty-eight city blocks had been raised from the sale of improvement bonds and that bids for this job were being accepted.<sup>207</sup> In 1914, as plans were being made for another wave of sixteen miles of brick streets to be paved, the *Independent* estimated that eight bids for the job would be submitted before City Council made the decision of what company to hire and predicted "lively" competition between the bidders. Georgia Engineering Company, the paper noted, had done all of the city's paving up to that point. The company was able to deliver bricks to Saint Petersburg at a lower cost than to most Florida cities.<sup>208</sup> It appears that other companies were unable to provide the low price that Council Members sought, as Georgia Vitrified was awarded the contract<sup>209</sup> and would remain the dominant supplier of street bricks for over a decade.

By 1916, Georgia Vitrified was confident in its local success, boasting in a full-page advertisement in the *Independent* that "The Augusta Block Way Is The Only Way." The advertisement featured photographs of paved brick roads and mentions the contracts that it has already won with in Pinellas and Hillsborough Counties as well as other Florida municipalities. Interestingly, the advertisement lists an address for a Saint Petersburg office and its language appears to be

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<sup>207</sup> *The Evening Independent*, "Street Paving on Many Blocks," September 6, 1912.

<sup>208</sup> *The Evening Independent*, "Many Companies Hungry for Work in St Petersburg," January 19, 1914.

<sup>209</sup> *The Evening Independent*, "The Augusta Block Way Is The Only Way," April 18, 1916.

targeted toward visitors to the city more than Saint Petersburg residents. After singing the praises of the local roads that the Georgia Engineering Company has laid, the blurb states that

The Georgia Engineering Company desires that the thousands of visitors that visit the city from various parts of the Union closely inspect the paving in St. Petersburg and tell their own community of it when they return home. Urge them to pave the streets in your town the same way.

Remember, "THE AUGUSTA BLOCK WAY IS THE ONLY WAY."

The "visitors" to whom the advertisement is referring, were among a growing number of winter tourists and temporary residents who were being enticed by the marketing of Saint Petersburg as a healthful city. Not only was Saint Petersburg promoting itself as a sanitary and health-restoring winter destination by replacing its dirt and shell streets with clean, neatly-laid brick, but Georgia Vitrified seems to have considered Saint Petersburg a showcase of sorts, a place through which residents of other states could be exposed to the benefits of its brick pavers and return home with a desire for similar improvements.



Figure 13: Brick pavers being laid by a street-paving crew in Saint Petersburg, circa 1925<sup>210</sup>

In the 1920s, introduction of machinery such as drum mixers and the development of refined asphalt began to reduce the cost of paving roadways with asphalt and cement. A 1923 *Evening Independent* article entitled “Type of Paving Question up of the City Commission” documents this encroaching competition. The city by this point was taking bids not only from brickworks but from sheet asphalt and asphalt block companies. The article cautions that only twenty percent of the streets to be paved were suitable for sheet asphalt paving due to the drainage problems it would create. The article also notes the difficulty that the city was facing in finding companies able to provide the amount of labor required to install brick streets.<sup>211</sup> Though less expensive, asphalt was sometimes difficult to obtain, as was demonstrated in 1926 when contractors

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<sup>210</sup> Raymond Arsenault, *St. Petersburg and the Florida Dream, 1888-1950*, (Gainesville, FL: University Press of Florida, 1996), 219.

<sup>211</sup> *The Evening Independent*, “Type of Paving Question Up to the City Commission,” May 16, 1923.

were forced by limited supply to use brick surfaces on most of the roads they paved.<sup>212</sup> Through the 1920s, brick-surfaced streets would slowly become less competitive as asphalt and cement became easier and less expensive to acquire.



Figure 14: Saint Petersburg train depot circa 1926, showing broad, brick-paved streets<sup>213</sup>

The Florida Land Boom of the 1920s came to bust in 1926, and Saint Petersburg's development slowed nearly to a halt through the depression and Second World War, but by 1941, 339 miles of brick streets had been laid within the city limits.<sup>214</sup> By the time that Saint Petersburg began to grow again in the late 1940s, asphalt had secured its role as the dominant surface for new roads. Because of the high cost of their repairs, many of the roads laid by Georgia Engineering Company were covered with asphalt in the postwar years. In 1960, only 113 miles of brick streets remained.

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<sup>212</sup> *The Evening Independent*, "Street Paving Cost in City is \$3,000,000," August 18, 1926.

<sup>213</sup> Arsenault, 244.

<sup>214</sup> "Brick Streets & Granite Curbs."

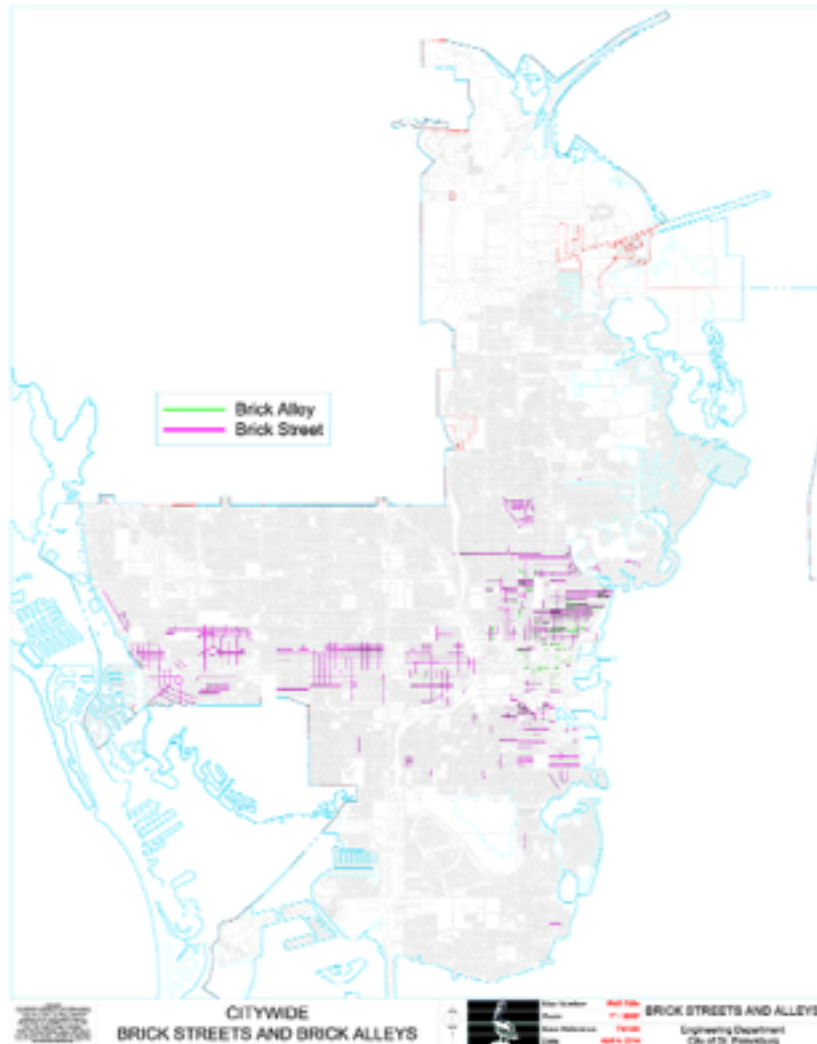


Figure 15: Map of extant brick streets and alleys in St. Petersburg<sup>215</sup>

See Appendix A for more detail.

<sup>215</sup> “Citywide Brick Streets and Brick Alleys,” Engineering Department, City of St. Petersburg, 2014. Edited for visibility by author.

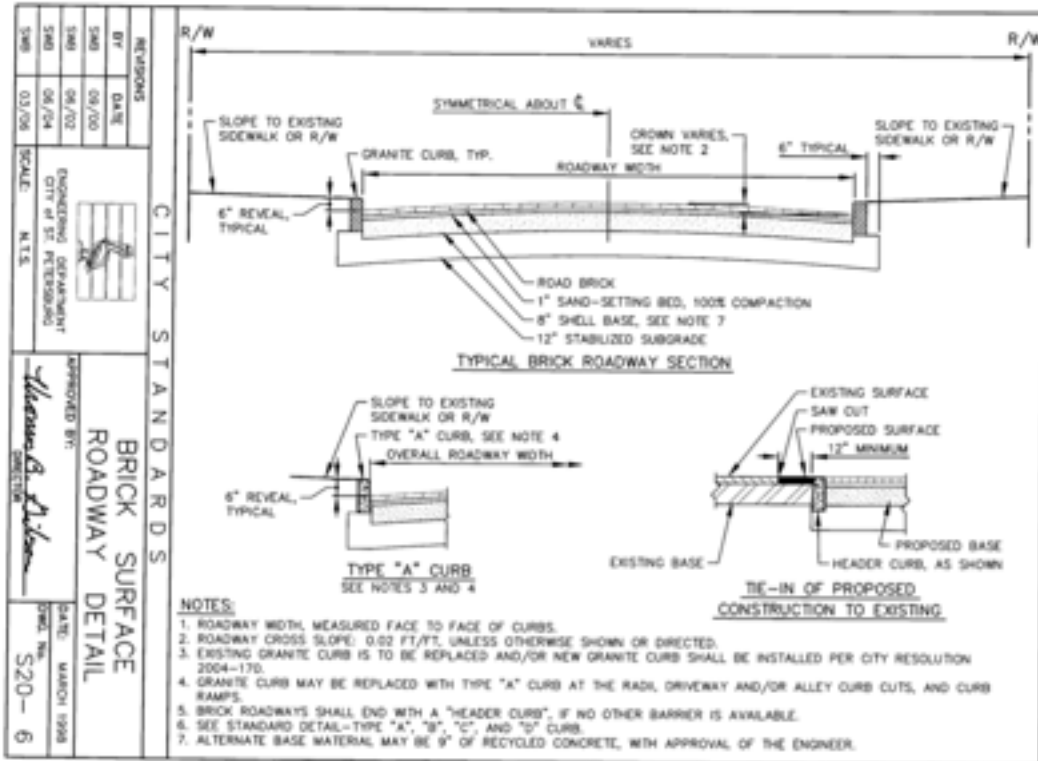


Figure 16: Section of typical brick roadway in Saint Petersburg<sup>216</sup>

Though a brick stamped “Augusta Block” has not been laid in over seventy years, the extant brick pavements in Saint Petersburg remain in use on many of the city’s residential streets and alleyways. A survey conducted in 1992 found that approximately ninety three miles of brick streets remained intact. The same year, a Brick Street and Granite Curb Preservation Policy was passed by City Council to prevent any further paving of brick streets and alleys or removal of granite curbs. This sentiment was upheld by additional City Council resolutions passed in 2004 protecting the “traditional streetscape,” which was defined to

<sup>216</sup> Engineering Department of St. Petersburg, “Brick Surface Roadway Detail,” Drawing No. S20-6, March 1998.

include historic brick pavements, granite curbs, and “hexblock” sidewalks constructed of six-sided concrete tiles.<sup>217</sup>

Yet another resolution was passed in 2008 to “restate the city-wide brick street preservation policy:”

1. All unpaved brick streets or any portion thereof, within the City shall remain and be maintained as brick streets, unless City Council by resolution determines otherwise after conducting a public hearing and providing notification by mail to affected property owners of the public hearing.
2. Brick streets which have been paved over may be converted back to brick by resolution of the City Council on its own motion or if fifty-one percent (51%) of the owners of abutting properties petition the City, as set forth in City assessment policy, requesting that abutting property owners be assessed the total cost of converting the street back to brick, less any cost that might be incurred if the existing street needs repair, and City Council approves the petition as being in the best interest of the City.
3. For the purpose of this resolution, “brick streets” shall mean any street surface constructed of brick and shall include any existing granite curbing and “affected property owners” shall mean those abutting the brick street.
4. Traffic calming devices on all unpaved brick streets within the City are exempt from the requirements of this resolution.
5. For the purpose of this resolution, “traffic calming devices” shall mean changes in street alignment, installation of barriers and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of traffic safety, liability or other public purposes and shall include but not be limited to speed humps, speed bumps and plateaus.<sup>218</sup>

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<sup>217</sup> Thomas B. Gibson, “FDOT Compliance with City Traditional Streetscape Preservation Policy,” Memorandum: City of St. Petersburg, Engineering and Capital Improvements Department, November 17, 2009.

<sup>218</sup> “A Resolution Restating the Citywide Brick Street Preservation Policy and Providing for an Effective Date,” Saint Petersburg, FL No. 2008-419, September 4, 2008.

An additionally updated resolution was adopted by the City Council in 2010 and includes several slight but noteworthy changes to the resolution above.

The first item remains the same except for the addition of the following sentence:

Notwithstanding the foregoing, the reconstruction or resurfacing of any intersecting area of an existing brick street or alley with a non brick street or alley within the City is exempt from this subsection.<sup>219</sup>

Items two through five are unchanged, but a sixth section is also included, stating that,

The intersecting area of an existing brick street or alley with a non-brick street or alley within the City that is reconstructed or resurfaced may be reconstructed or resurfaced with like materials of the non-brick street or alley. The intersecting area to be resurfaced or reconstructed shall be limited to only that area necessary to enhance pedestrian safety across the existing brick street or alley and to promote safety as determined by the POD.<sup>220</sup>

Although these two changes do not remove much protection for the City's brick streets and alleys, they do indicate an evolving attitude toward the appropriate boundaries of brick street preservation. The two additions both address the treatment of the transition between historic and modern surface treatments.

The condition of the meeting point between historic brick pavement and modern asphalt may seem like an unimportant detail. Saint Petersburg, however, is dominated by a gridiron street pattern. Given that collector streets<sup>221</sup> have often been widened and paved with asphalt, even in neighborhoods

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<sup>219</sup> "A Resolution Restating the City-Wide Traditional Streetscape Preservation Policy; Adding Review by the Community Preservation Commission; Superseding All Other Resolutions On This Topic; and Providing for an Effective Date," Saint Petersburg, FL No. 2010-282.

<sup>220</sup> 2010-282.

<sup>221</sup> The hierarchy of streets within a gridiron pattern is commonly divided into three categories based on the amount and speed of traffic they serve. Primary, or arterial, roads serve fast-moving through traffic. Collector streets serve a medium volume of traffic as it is directed toward arterials. Finally, local streets serve low volumes of traffic, and are often residential in nature.



featuring large numbers of historic brick-paved local streets, the intersection of brick and asphalt surfaces can easily occur over a dozen times within the span of a mile. The creation and maintenance of smooth transitions between surface treatments is essential, not only to prevent a bumpy ride but to protect the condition of the bricks closest to the asphalt connection. If a gap or grade change occurs at the juncture between brick and asphalt pavements, bricks can become susceptible to chipped corners. Additional damage can be done to historic pavement if the gap allows water to erode the sand filling joints or even the underlying foundation.



Figure 17: Intersection of asphalt and historic brick pavements. New ordinances permit the removal of such bricks to create smoother transitions between modern and historic pavement. Photo by author.

Not long before the City Council updated its resolution to allow for limited brick removal when necessary to create gentle transitions and safe intersections, Florida's State Historic Preservation Officer reviewed plans for improvements to

State Road 595 through Saint Petersburg. The project included the replacement of some historic hexblock sidewalks and the resetting of historic granite curbs, as well as the removal of some bricks to create a smoother transition from SR595 to the local roads that intersected it. A total of nine intersections joining brick and asphalt pavements were affected, and the FDOT planned to remove bricks from these intersections to create safer pedestrian crossings and smoother transitions for vehicles. In his August, 2008 statement, Frederick P. Gaske emphasized that although “brick removal should be limited as much as possible,” that the application of asphalt to the entirety of these nine intersections would “not adversely affect significant historic properties.”<sup>222</sup> In this statement, it can be seen that Florida’s SHPO is in agreement with the most recent ordinance put for by Saint Petersburg’s City Council on the necessity of limited brick removal when necessary to create safe intersections.

A final element of Saint Petersburg’s policy on the preservation of historic brick pavements that must be discussed is to be found in the resolution’s second item, which gives abutting property owners, or “abutters” the power to request the removal of asphalt covering historic brick streets. Fifty-one percent of property owners must be in favor of such a project. At the project’s completion, abutters are responsible for paying for a portion of the cost determined based on the length of their property’s street frontage. In cases where repairs to the street are already necessary, such as badly damaged asphalt, the City is responsible for the amount it would have had to spend if not for the asphalt removal. In 2002,

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<sup>222</sup> Frederick P. Gaske, Director and State Historic Preservation Officer to Rebecca Spain Schwarz, PBS&J Engineering, August 29, 2008.

469 feet of asphalt were replaced by reclaimed “Augusta Block” brick pavers using this option. The cost to the nine property owners ranged from \$1,992 to \$6,752.<sup>223</sup>

Although the option of restoring historic brick streets is used rarely, it is an important element of Saint Petersburg’s protective policy. The restoration of historic brick pavements is a fairly expensive process, as can be seen by the total cost of nearly \$40,000 for the single block discussed above. The City’s promise of cooperation in these projects despite its inability to fund them itself shows a concern for historic brick streets as a resource in and of themselves, and not just as a contributing resource when they exist within historic districts. The City additionally maintains a storehouse of excess bricks from areas where they could not be preserved in place. These surplus bricks can be used to replace missing and damaged bricks, an important factor in continued preservation. Considering the City Council’s Preservation Policy and commitment to maintenance, the city will likely be able to retain the majority of its remaining brick streets for decades to come.

Historic brick pavements remain in a wide array of modern settings and can be expected to serve greatly varied purposes as functional resources within today’s communities. The above two case studies have shown that the approach to preservation of brick-paved streets and roads must be sensitive to both past and present surroundings. There is no “one size fits all” approach to historic roads of any origin, and brick roads are certainly no exception.

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<sup>223</sup> “Brick Paving 14th Ave NE from North Shore Dr to Beach Dr,” City of St. Petersburg Engineering, Stormwater & Transportation Department Design Division, August 2, 2002.

## CHAPTER 6: ANALYSIS AND CONCLUSION

### *Analysis of Preservation Methods*

Of the approaches to preservation discussed in the preceding chapters, no one can be applied to all historic brick streets and roads indiscriminately. Although the method of protecting historic pavements as contributing resources within local historic districts has effectively prevented many brick streets from being covered or replaced by asphalt, this approach still skirts the issue of historic pavement's significance. Historic brick-paved streets and roads are more than just contributing parts of a landscape when they are surrounded by historic properties. They are historic resources in and of themselves and should be considered as such.

The amount of brick-paved streets and highways that have been successfully nominated to the National Register of Historic Places is indication that they can be valuable resources on their own. As more historic brick streets and roads are listed, one can hope that historic pavement will begin to be considered an eligible resource, and Section 106 and 4(f) reviews will become the norm for projects involving federal funds.

The use of local ordinances is paramount given the high proportion of these resources that are the responsibility of municipal public works departments. With street surfaces, the safety of drivers and pedestrians will always be an issue, but ordinances must be clear about the degree of flexibility

that is permissible when altering historic pavements for safety's sake. Saint Petersburg's recent addition to its protective ordinance is wise to accept the fact that some amounts of historic bricks will have to be removed in order to promote smooth intersections and safe pedestrian walkways. Council members must, however, be clear about the extent to which these alterations are acceptable.

Finally, cases like Santa Rosa County's restoration of State Road 1 should absolutely be promoted. Though unable to meet modern standards for vehicular traffic, the old road is able to fill a need of the community and promote outdoor recreation while keeping its integrity as a historic and cultural resource. Many cities are working to make a break from the completely auto-reliant idea of planning that dominated the decades following the Second World War, and the repurposing of historic roads that are no longer able to serve vehicular traffic is an excellent opportunity to combine preservation and the promotion of alternative modes of commuting.

#### *Recommendations for Future Research*

As is so often the case when researching a topic that has only begun to be explored, multiple opportunities for future research have arisen over the course of writing this thesis. To begin, it is difficult to fully grasp the significance of extant brick pavements without having a deeper understanding of the resources that have been lost, and those that remain. Archival research further exploring the locations where brick streets and highways have been in the past should be done. A survey identifying extant brick pavements and their conditions, when combined with a better understanding of where brick streets and roads have

been in the past, can not only help identify especially vulnerable resources, but can help paint a better picture of the most successful preservation methods.

In addition to mapping where brick streets and roads have been, are now, and their level of protection, more research is needed to better understand the capacity for historic brick pavements to withstand modern traffic. A study to determine best practices to for modern use can help communities make informed decisions about how to treat their historic brick streets. Further evaluation of the amount of daily vehicular traffic that brick streets still in use receive would be highly useful for cities attempting to preserve their brick streets while efficiently moving traffic.

There are two claims commonly made about brick streets by their fans: that they “calm” or slow traffic without the use of unsightly speed bumps, and that their historic appearance increases property values in residential areas. In the course of research for this thesis, evidence could not be found for either of these claims. A large number of the brick streets that remain in urban areas appear to be located within residential or densely-developed commercial areas where slowing traffic is desirable. An examination of the calming effects of historic brick pavements in comparison to modern asphalt streets with speed bumps or traffic tables might therefore result in a strong argument for preservation advocates. Likewise, an evaluation of whether or not there truly is a connection between abutment to brick pavement and increased property value may provide further incentive for property owners to take it upon themselves to prevent the destruction of these resources in their own neighborhoods.

### *Recommendations for Preservation*

As has been mentioned repeatedly throughout this thesis, the study of the significance and preservation of historic brick pavement has primarily been limited to small-scale, often reactionary efforts. Assembling these studies into a single source for communities and individuals who value their brick streets and roads is an important next step if these resources are to be protected on a larger scale. The creation of a nonprofit organization whose mission it is to research and advocate for the preservation of historic brick pavements is one potential method of increasing awareness and providing tools for municipal governments, SHPOs, and local nonprofits.

The brick streets and highways that were constructed in Florida represent the state's desire to welcome a new image at the dawn of the age of the automobile, and hold exceptional significance that should be considered on a statewide level. One way of ensuring that remaining brick pavements are identified and protected is to create a multiple property submission to the National Register of Historic Places.

When a large number of resources are related by "themes, trends, and patterns of history,"<sup>224</sup> a Multiple Property Documentation Form may be created, and, when combined with individual nomination forms, will form a multiple property nomination. This allows for the organization of information when a large number of properties are significant due to their similar origins, styles, or

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<sup>224</sup> "Guidelines for Completing National Register of Historic Places Forms, Part B: How to Complete the National Register Multiple Property Documentation Form," (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1999). 2.

association with historic trends. Additionally, because Multiple Property Documentation Forms must take a general approach to their research and analysis of relevant historic contexts, they provide broader information on the type of resource than individual nominations.<sup>225</sup>

A multiple property nomination would be beneficial for Florida's historic brick-paved roads by documenting the similarities between resources spread across the state. The Multiple Property Documentation Forms are broken into four primary sections: Multiple property listing name, Associated historic contexts, Associated property types, and National Register Registration Forms.<sup>226</sup>

A Multiple Property Documentation Form for "Florida's Historic Brick-Paved Streets and Roads" might include such historic contexts as "The rise of automobile tourism in Florida, 1915-1929" and "The Florida Land Boom, 1915-1926." Florida's extant brick-paved streets and roads can be seen to fall into two primary property types: highways and streets.

In addition to recognition at statewide level, individual communities should take advantage of their ability to preserve their historic brick pavements. While Saint Petersburg's approach has preserved many of its brick streets, it would be wise to update its surveys of extant streets and to better promote and record its brick street recovery option. Though the city's streets are protected, few residents are aware of these efforts or of the significance of these resources. The streets elicit a deeply sentimental response in long-term residents, and this

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<sup>225</sup> "Guidelines for Creating National Register of Historic Places Forms," 3.

<sup>226</sup> *ibid*, 2.



connection must be documented, celebrated, and nurtured if the streets are to remain a cherished part of this rapidly-changing community.

### *Conclusion*

Florida's remaining brick streets have the potential to be a source of civic pride, much as they were at the time of their construction. Despite the fact that these resources are connected by significance and historic context, however, their preservation must be approached with sensitivity to each road's setting and use. This thesis has explored several options for the preservation of brick pavement. As public thoroughfares, historic brick-paved streets and roads remain an incredibly vulnerable resource. There is no single solution to this vulnerability. By considering each community's needs and resources, implementing one of the methods discussed herein can ensure that historic brick pavements continue to contribute to Florida's landscape.

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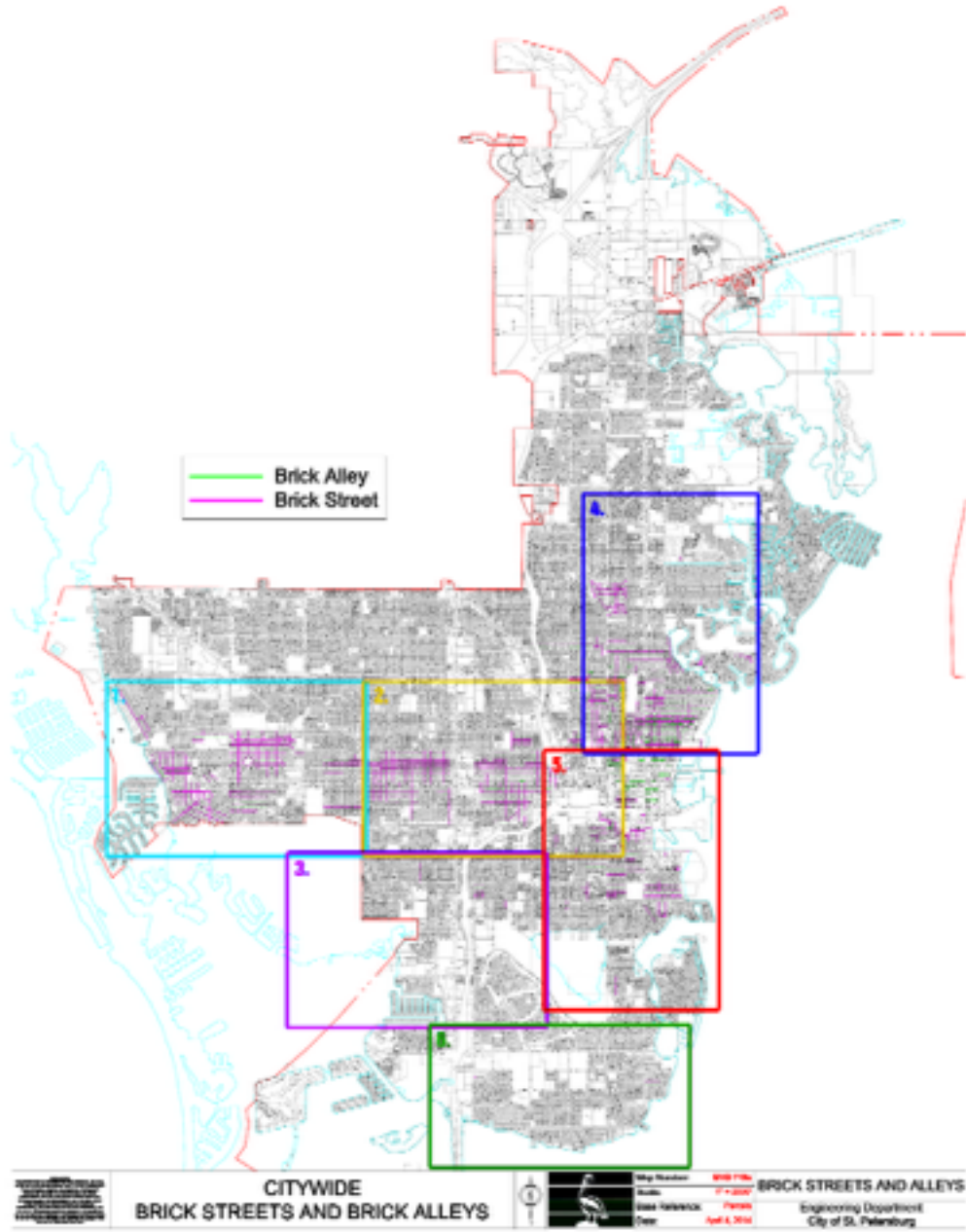
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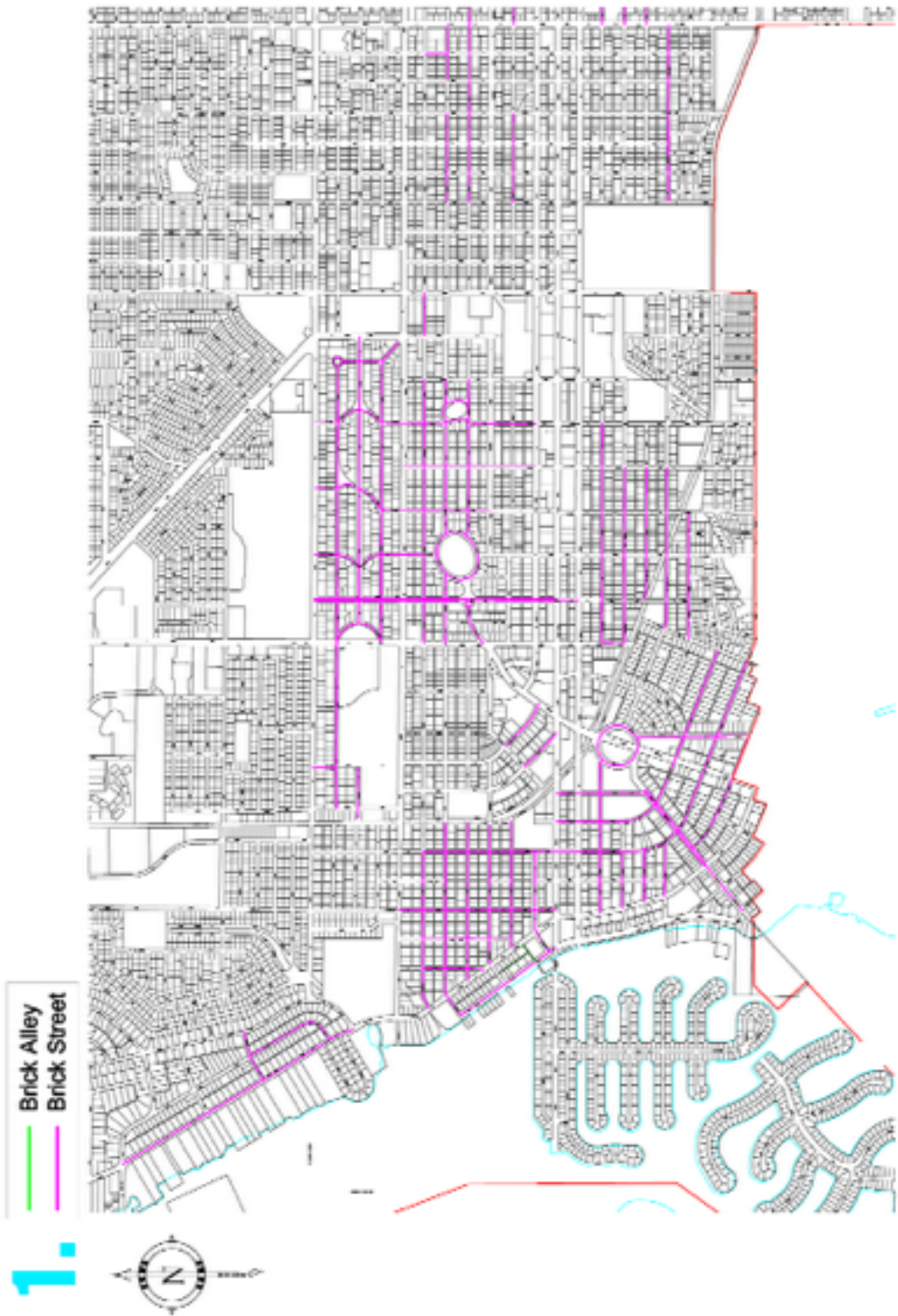
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APPENDIX A: LOCATION OF BRICK STREETS AND ALLEYS IN ST. PETERSBURG, FLORIDA



Original map courtesy of the City of St. Petersburg. Edits to show insets in detail by author

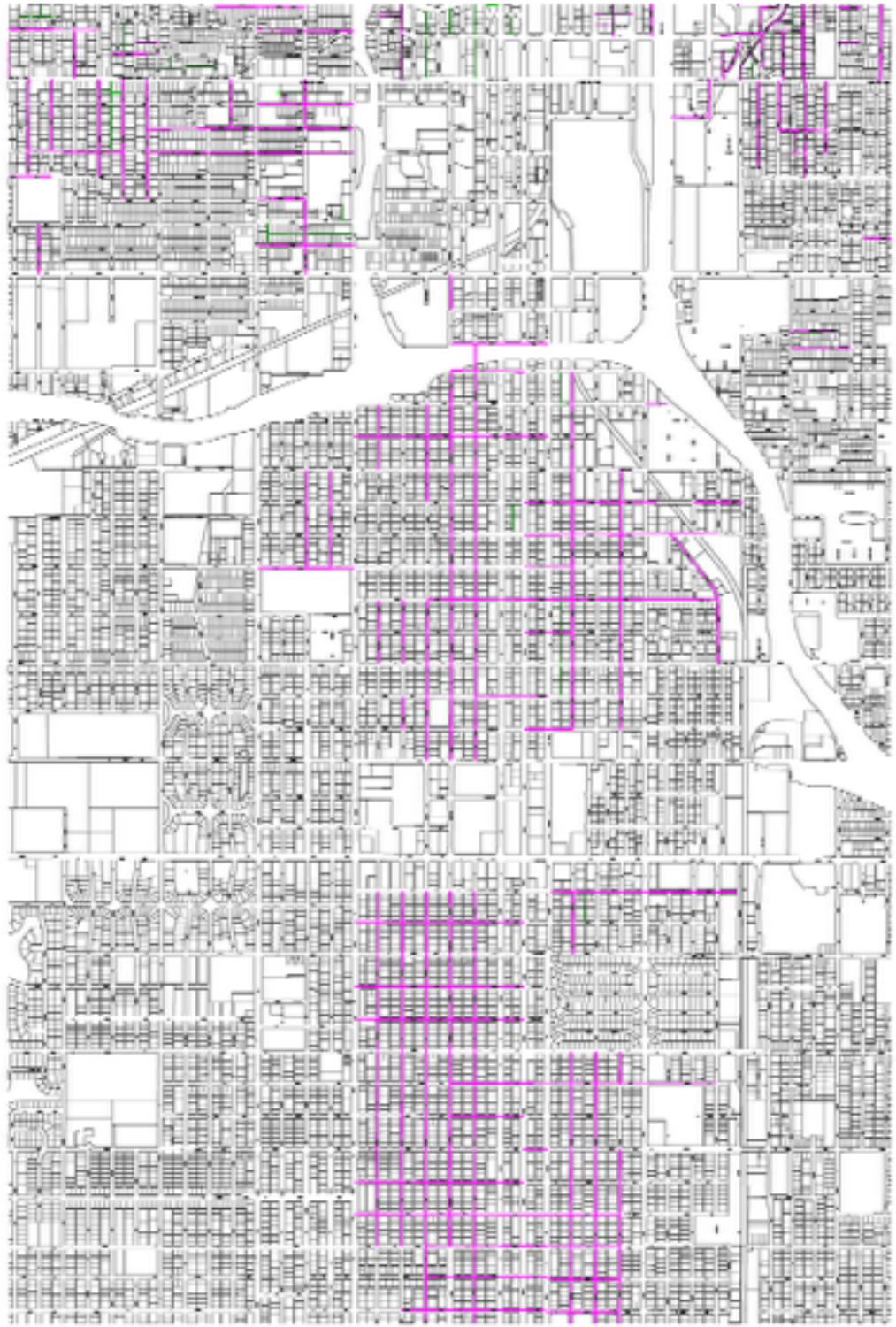




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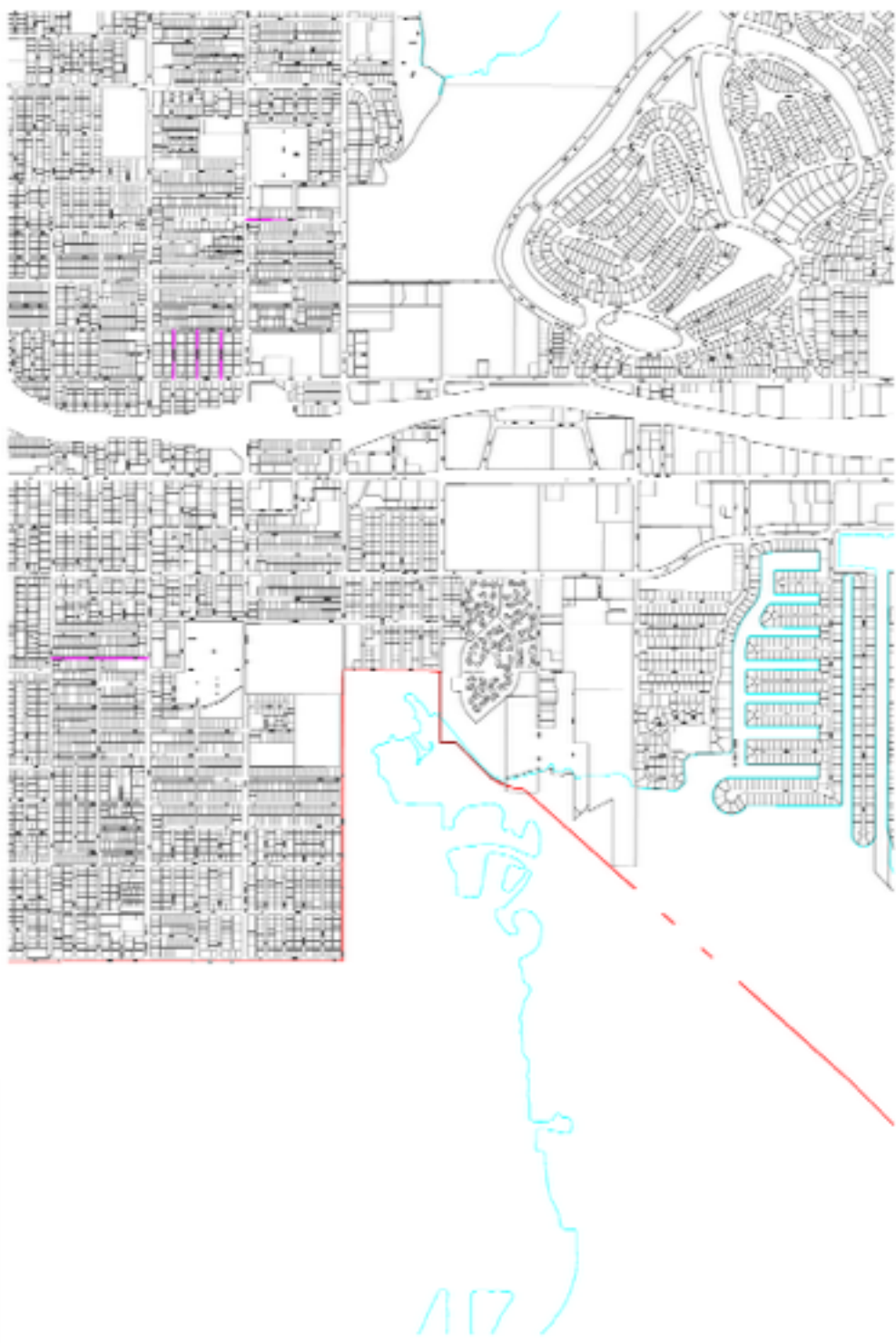


Brick Alley  
Brick Street



**3.**

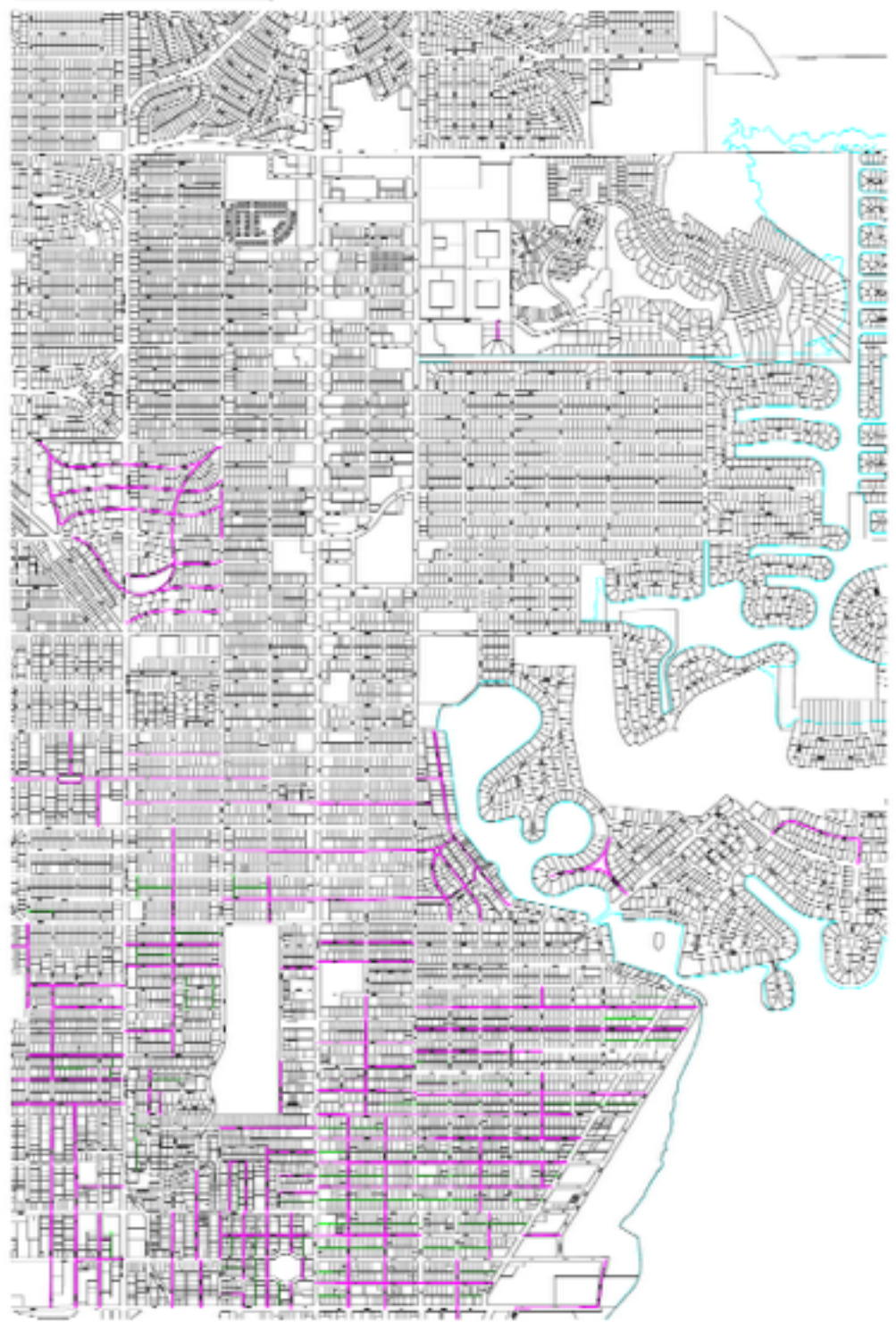
- Brick Alley
- Brick Street



# 4.



— Brick Alley  
— Brick Street





# 5.

- Brick Alley
- Brick Street

