City of St. Augustine, Florida

Archaeological Investigations Along the Seaward Side of St. Augustine's Historic 19th-Century Sea Wall

prepared by

Carl D. Halbirt
City Archaeologist

Planning and Building Department

January 20, 2004

Introduction

As part of its responsibility to determine whether or not the remaining portion of a still-functioning, nineteenth-century sea wall is eligible for nomination to the National Register of Historic Places, the City of St. Augustine undertook an archaeological assessment of the historic sea wall. The remaining portion of the wall is approximately 900 feet long and extends from the Santa Maria Restaurant south to the Florida National Guard property at the corner of Avenida Menendez and St. Francis Street.[1] This assessment was implemented as a result of the City's planned construction of a new sea wall, which will be built 10 feet farther out into the bay. The intent of this new wall is not only to protect the community from the affects of inclement weather—notably flooding of private and public properties—but also to ensure preservation of the old sea wall (Bae et al. 2003). Suggestions to rehabilitate the old sea wall (Nolan 2001) were considered detrimental to its preservation (Guinta 2002).

Pursuant to Section 106 of the National Historic Preservation Act of 1966 (modified 1990), the City's assessment involved examining both the physical composition of the wall, as well as historical records. National Park Service (NPS) historians compiled much of the historical documentation of the existing sea wall as part of the historic site structure report (Bearss and Paige 1983) and cultural landscape report (Sastre 2000) for Castillo de San Marcos National Monument. Archaeological assessment along the bay side of the historic sea wall occurred on November 24 and December 23, 2003, during low tide when the wall and overlying sediment could be evaluated using terrestrial archaeological methods.

A Brief History of Sea Walls along St. Augustine's Bayfront

Sea walls are extensive water-control systems constructed to ameliorate the effects of inclement weather and related storm surges as well as to improve the social and economic well being of a community. Throughout its 435-year history, St. Augustine has

been subjected to the vagaries of strong storms or hurricanes coming off the Atlantic Ocean. Often these storms flooded the town, leveling many of the structures in their path, such as with the Storm of 1599 (Manucy 1962:15), as well as separating the town's residents from the only secure structure in the community—the fort. Analysis of a LIDAR-generated (light detection and ranging) topographic image of the City (Halbirt 2003a) indicates that the area south of Castillo de San Marcos (herein referred to as Castillo) may have been especially troublesome (Figure 1). As a "calculated [means] to satisfy a long-felt demand" by the citizens of St. Augustine (Chatelain 1941:79) and to provide additional protection of Castillo, Governor Diego de Quiroga y Losada proposed to the Spanish crown in 1690 that a sea wall be constructed using coquina stone.[2] Within a year of its request, the crown formally approved the project by allotting 2,000 pesos for the construction (Arana n.d.: 78), with other sources of revenue coming from "public subscription" (Chatelain 1941:79). The source of this "public subscription" was soldiers and residents of the city who voluntarily donated money for part of the sea wall's construction (Arana n.d.:78).

> The inhabitants not only approved of his (Governor Quiroga y Losada) proposal, but began the work with so much zeal, that the soldiers gave more than seventeen hundred dollars of their wages, although they were very much behind, not having been paid in six years (Fairbanks 1858:128-129)

It was not until after the construction of Castillo was completed in August 1695 (Arana and Manucy 1977:36) that construction of the sea wall would commence in earnest; albeit, some activities were initiated in 1694 (Arana n.d.: 78). The new Spanish sea wall extended from Castillo south to the plaza, where it veered out into Matanzas Bay "terminating in a species [*sic.* series] of break-water at the public square" (Fairbanks 1858:130). Based on the accounts of Fairbanks (1858:130), the Spanish sea wall was

---

[1] Not included in this report is the water battery fronting Castillo de San Marcos, nor remnants of historic sea walls north of Castillo. This report is primarily concerned with that section of the wall between the Plaza de la Constitución and the St. Francis Barracks.

[2] Historical references allude to the presence of an earlier "flimsy" wall built during the administration of Governor Gonzalo Mendéz de Canzo (1596 to 1602) that had almost completely disappeared by the time the coquina-stone sea wall was built in the 1690s (Chatelain 1941:79). The possibility exists that part or all of what was perceived as Canzo's sea wall actually could have been an earlier "stockade" wall that extended along the bayfront from a triangular-shaped wooden fort to the town, as illustrated on the Hernando Mestas Map of 1593 (Manucy 1997:43; Chatelain 1941: Map 4).

approximately half the height of the later nineteenth-century American wall, which varied between six and seven feet. At the terminus of the early sea wall, in front of the plaza, was a wharf or dock that extended farther out into Matanzas Bay (Figure 2).

References indicate that more than 10 years were spent from the time the Spanish crown allotted funds for the construction of a sea wall to its completion in the early 1700s, at a cost of approximately 60,000 pesos (Chatelain 1941:161). This was about half of what was incurred to build Castillo, which amounted to 138,375 pesos (Arana n.d.: 88). This new sea wall facilitated various improvements in the community. First, it enabled the town's residents to "fill in the lower ground, much of which was swamp and marsh, thereby raising the elevation somewhat and eliminating to a certain extent the breeding places of the mosquitoes" (Chatelain 1941:79). Second, it provided easier access into the fort during severe storms. Third, it enabled development to occur along the bayfront. This third fact is support by recent City archaeological excavations at the site of the former Monson Motor Lodge, which indicates that widespread occupation of the property began in the early 1700s after the sea wall had been constructed (Halbirt 2003b). This area also became the commercial district for the City in the eighteenth century, and many of the structures were substantial coquina-stone residences and businesses.

Various historical eighteenth-century and early nineteenth-century maps show the Spanish coquina-stone sea wall, which probably occurred toward the center of the south-bound lane of Avenida Menendez based on the historical account provided by George Fairbanks.[3] In all likelihood, the early Spanish sea wall provided the City with some protection from tidal fluctuations, especially mild to moderate surges. Examples do occur of the City being flooded, however. In 1707, Governor Francisco Córcoles y Martínez mentioned that a storm (possibly a hurricane) lasting 24 hours had flooded the town.

[3] According to Fairbanks (1858:130), "the top of this old sea wall is still visible along the center of Bay Street, where it occasionally appears above the level of the street".

By the end of the First Spanish Period in 1763, the wall was described by then Royal Engineer Pablo Castelló as a "ruined, old wall." Prior to 1788, that portion of the wall that veered into Matanzas Bay had been either dismantled or destroyed for it is not shown on the Mariano de la Rocque Map (Figure 3) or subsequent maps. In its place, a wooden bulkhead of posts was established sometime in the initial decades of the nineteenth century to protect the market areas and plaza from erosion. This assessment is based on two anonymous illustrations: a pen-and-ink drawing of the bayfront in 1835 and a map in 1833 (Figure 4). The map shows the bulkhead abutting the sea wall. Remnants of this wooden bulkhead were found by the City while monitoring the installation of a directional-bore for water service from the mainland to Anastasia Island (Halbirt 2000).

When the United States took control of Florida in 1821, people observed that the "stone sea wall was beginning to tumble into the sea and had been pillaged for its stone in several places" (Graham 1978:9). It did little to protect properties along the bayfront from water intrusion (Arana 1986: 76-78), as illustrated in the following statement:

> The Old Spanish bulkhead along the bayfront had almost disintegrated when the United States took over, and the waves often rolled over the barrier into the streets and town. Storms washed away orange groves, undermined houses, sent water sweeping completely over the peninsula, and once deposited a large boat against the side of a building in town. Even the footings of Fort Marion [Castillo] were washing away (Graham 1978:49)

One St. Augustine resident feared that "there would soon be a storm bringing heavy loss of property and life," (Bearss 1983:47) especially after the affects of the 1826 hurricane. This storm created enough erosion along the bayfront so as to uncover buried human skeletal remains that were once part of a sixteenth-century cemetery located under what is now the Heritage House and Potter's Wax Museum on King Street.

With the consequences of a recent hurricane embedded in the town's collective memory, it is no wonder that in the autumn of 1832 residents of St. Augustine began actively lobbying the U.S. government for funds and assistance to repair the existing sea wall and construct a new addition (Bearss 1983:46). On March 2, 1833, President

Andrew Jackson signed into law an act that established engineering and ordnance departments within the military stationed in St. Augustine. Part of this legislation included $20,000 for the repair of Fort Marion and the construction of a new sea wall (Bearss 1983:48).[4] By the autumn of 1833, coquina stone from Anastasia Island was being quarried and by early 1834 construction of a new sea wall was taking center stage in the U.S. military effort to shore-up St. Augustine's defenses.

The next eight years proved to be tumultuous in building the sea wall, with three different superintending military engineers—all graduates of West Point—actively involved in its construction: Lieutenants Stephen Tuttle (1833-1834), Francis S. Dancy (1834-1839), Henry W. Benham (1839-1846), and Jeremy F. Gilmer (1849-1850). Charges of mismanaging funds, defective workmanship, dereliction of duties unbecoming an officer, and political intrigue all contributed to the sometimes-confusing construction history of the nineteenth-century sea wall. In one example, the 870-foot section built under the supervision of Lt. Tuttle in 1834 was torn down given that it was found to have "neither solidarity nor symmetry" (Bearss 1983:93).

Eventually, a sea wall made from coquina stone and cemented with tabby was built that extended from Fort Marion to a point 500 feet south of the St. Francis Barracks—a distance of approximately 3,800 feet (Figure 5). The wall was hewed and pointed and the rear trimmed. Only the area between the fort and plaza was plastered due to it paralleling one of the City's principal streets. Granite blocks were placed atop the coquina for both practical as well as aesthetic purposes, although no attempt was made to level the wall or dress the coquina stone given that "it was considered a waste of time" (Bearss 1983:139).[5] The wall was essentially completed in 1842, although filling and leveling the area behind the wall south of the plaza was not completed until after a compromise had been reached with the city to "lay out a broad street parallel to and

[4] The name Castillo de San Marcos was changed to Fort Marion on January 7, 1825, to resolve the confusion of there being two Fort St. Marks—the other was in Pensacola (Bearss 1983:44). The name honored the memory of Revolutionary War leader, General Francis Marion. Congress restored the fort's original name to Castillo de San Marcos on June 5, 1942, to revive its Spanish heritage.

[5] This would explain the elevational discrepancies observed by the City, as part of its study for the new sea wall.

adjacent to the sea wall" (Bearss 1983:145). This was done so that those property owners between Bridge Street and Green Street (Artillery Lane) could not assert their property claims, which extended to the "edge of the sea" or "low water," thus potentially claiming ownership of the new sea wall. The finished product, which included two partially enclosed basins for small craft (Figure 5), became one of St. Augustine's prized landmarks (Graham 1978:49). A more comprehensive history of the sea wall's construction and the various problems associated with this historic landmark can be found in Bearss (1983:46-151).

The effectiveness of the sea wall was tested in October 1846, when a hurricane struck St. Augustine. The wall was able to minimize the effects of tidal surges and only those areas on either end of the system, which also included the water battery fronting the fort, were affected. In 1849, legislation was passed to repair the portion of the sea wall south of the plaza that had collapsed. This breach was repaired by

> removing some of the defective stones and inserting new ones in their stead. To provide greater stability at this point, he [Lieutenant Jeremy F. Gilmer] recommended construction of a thin wall, resting against the inner surface of the sea wall, and extending a sufficient distance to lap at each end upon solid portions of masonry. The foundation of this inner wall was to be (sic) sunk to the same depth as those of the sea wall (Bearss 1983:241).

In addition to this action, Lt. Gilmer suggested that the sea wall foundation be protected from erosion and undercutting by either the addition of coquina stone along the embankment or by excavating a trench along the face of the foundation and filling it in with concrete (Bearss 1983:241, 250). Other maintenance and repair activities at this time included pointing cracks in the wall with "concrete" and bringing in additional fill and grading behind the sea wall.

It was not until the 1890s, 50 years after its construction, that activities other than maintenance and repair were undertaken along the sea wall—all in the name of progress. In 1895, the boat basin fronting the plaza—an important component in St Augustine's economy as well as a distinctive landmark—was filled and the coquina-stone walls

demolished (Halbirt 2000). Although petitions had been circulating for a few years requesting the basin be filled and the opening along the sea wall connected, the construction of St. Augustine's first wooden bridge that connected the City to Anastasia Island sealed its fate. Subsequent building activities, including the construction of the Bridge of Lions in the mid-1920s and later the St. Augustine Municipal Marina and associated facilities (e.g., the miniature golf course), covered additional sections of the historical sea wall.[6] The outline of the nineteenth-century wall and its granite coping stones was still evident even after these modifications. Widening of Bay Street (now Avenida Menendez) between 1957 and 1959 resulted in the removal of the historic sea wall between Castillo and the Bridge of Lions. What is left of the wall is buried beneath the street's median. The only section of the historic sea wall still exposed is that portion between the Santa Maria Restaurant and the Florida National Guard property at the intersection of Avenida Menendez and St. Francis Street.

Physical Characteristics of St. Augustine's 19th-Century Sea Wall

According to calculations derived from Lt. Benham's 1842 illustration of the sea wall (Figure 5), the wall varied from 6 to 7 feet high and was approximately 6 feet wide at its base. In cross-section, the wall becomes progressively narrower from base to top, eventually becoming 3 feet wide at the granite coping stone. The leeward side of the wall (i.e., the side facing the city) is characterized by a series of steps. The seaward side is essentially vertical. Supporting the wall was a massive coquina-stone foundation that appears to be in excess of 2 feet thick by 7 feet wide. This foundation was placed in marsh sediments that occur approximately 2 feet above the average low water mark for 1842. According to Benham's 1842 illustration, the average high water mark would occur approximately 4.5 feet below the top of the wall and common gale force winds would be 2 feet below the top of the wall. Only during severe gale force winds (e.g., the Gale of 1804, which probably was a hurricane) would tides overflow the wall. According

[6] Several granite coping stones were removed in 1993 when the new City marina and associated service facility were constructed. These stones were given to the St. Augustine Historical Society and are presently used as a walkway.

to Benham's illustration, tides associated with the Gale of 1804 were a foot higher than the sea wall.

Lt. Benham's map illustrates the major components of the sea wall: the curtain and its foundation stone. Not illustrated are any of the subsequent modifications carried out along the wall to minimize the effects of tidal erosion as stated by Lt. Gilmer. These activities would entail the emplacement of a coquina-stone or concrete barrier in front of the wall. As such, the historic fabric of the nineteenth-century sea wall is more extensive than the current visible monument. To determine the extent of this important historical landmark, especially subsequent erosional control mechanisms, required an archaeological investigation.

Archaeological Evidence

Archaeological documentation at two locations along the seaward side of the historic sea wall by the City (Figure 6) provides information useful in assessing the accuracy of the historical documents. Those documents are the physical depiction provided by Lt. Benham in his 1842 illustration and statements provided by Lt. Gilmer pertaining to steps taken to ensure the stability of the wall.

The two locations were selected based on differences in the aquatic terrain adjacent to the wall. Site A was placed in an area containing extensive oyster beds and associated shell debris, which are exposed during low tide. The oyster bed and shell debris enabled sediment to accumulate along the seaward side of the wall, thus forming an extensive tidal flat during low tide. Site B was placed just south of a bend in the sea wall. This location is outside the oyster bed area, but is still within the tidal flat during low tide. The extent of the tidal flat at Site B is less than half that of Site A. In each location, a 10-foot long by 3-foot wide test trench was excavated that exposed the historic fabric of the sea wall along the shoreline (Figure 7). No attempt was made at this time to determine the physical characteristics of the sea wall along the leeward side. Previous archaeological monitoring in locations where the City installed new storm basin back-

flow valves revealed that the upper portion of the wall consisted of a vertical face to a depth of 3 feet (Halbirt 2000).

Historical documentation of the sea wall's physical characteristics, as provided by Lts. Benham and Gilmer, is supported by the City's archaeological investigation. Measurements show that the wall height from the top of the foundation stone to the top of the granite coping stone is 6 feet 4 inches and 6 feet 6 inches, respectively (Figure 8); both are within the estimates calculated from Benham's drawings. The foundation stone on which the wall rests is in excess of 1 foot 8 inches, which also is in agreement with the historical illustration. At this time, no attempt was made to determine the thickness of the foundation stone due to the potential impacts that such activity would have on the existing sea wall.[7]

Two types of erosional support mechanisms are found along the sea wall, neither of which is mutually exclusive. The first is a series of large coquina blocks placed directly adjacent and parallel to the foundation stones. The blocks extended an average of 2.5 feet from the foundation stone and were 7 inches lower than the foundation stone. The function of this alignment was probably similar to the concrete-filled trench proposed by Lt. Gilmer to protect the foundation. No attempt was made to determine the thickness of this component of the sea wall, as per the reason given for the foundation stone. In front of the blocks was a 5 ½ foot pavement of broken coquina stones, which were intentionally laid flat along the sloping edge of the Matanzas River. These stones are assumed to represent recycled building debris used as a rip-rap to limit the surface displacement of marsh deposits in front of the sea wall. The paver stones vary in size (Figure 9), but were on average 6 inches thick.

No in situ coquina stone was found beyond this approximate 10-foot barrier. What was apparent was a thick deposit of shell debris within a coarse-grain, sandy clay

[7] None of the foundation stones or coquina-stone paving along the embankment was disturbed at this time given the erosional uncertainties that may have ensued from daily bimodal tidal fluctuations.

matrix (Figure 8). Below this matrix were the fine-grain marsh sediments over which the historic sea wall had been constructed.

The preservation of these erosional support mechanisms is more pronounced toward the south end of the existing historic sea wall and not at the north end, where the stones have been either displaced or scoured by tidal currents. This is clearly a function of the relationship between the sea wall and the tidal currents of the Matanzas River. At Site A, sediment and shell debris varies from 5 inches to 15 inches thick and provides a cover protecting that portion of the sea wall in the bay. At Site B, the amount of sediment and shell debris is substantially less, and many of the paver stones have been displaced or up-ended and the coquina blocks in front of the foundation stone are covered in algae (Figure 10).

Conclusion

St. Augustine's historic nineteenth-century sea wall is not limited to the visible component that residents or tourist view on any given day. Rather, the historic fabric of the wall extends another 10 feet east along the slopes of the Matanzas River where a system of coquina-stone blocks and pavers were placed to control the affects of tidal erosion. Although this system was observed at Sites A and B, the historic fabric of the sea wall is better preserved at Site A—the south end of the wall. At Site B, which is near the bend in the wall, preservation is poorer.

During the City's investigation, numerous locations within the coquina-stone wall contained cavities where the stone had been removed and the opening scoured through tidal action. Most of the cavities occur toward the base of the wall, near the foundation stones (Figures 7 and 10). In some areas, these cavities are 3 feet deep—approximately half the thickness of the wall. Although these cavities were not measured, the one near Site B is very large. This site also happens to be near the location were the wall collapsed into the Matanzas River (Lewis 2001). The cause of this failure was attributed to tropical storm Gabrielle. Although conjectural, another cause for this failure may be

attributed to the sloping nature of the wall and the poorly preserved erosional control system along this section of the wall.

Development of the City of St. Augustine's planned construction of a new wall in front of the historic sea wall will need to take into consideration those other elements of the wall that are part of the erosional control system. As such, the 10-foot distance, which was originally proposed between the old sea wall and the new sea wall in community workshops and to the city commission, will need to be changed if these additional elements are considered. An alternative distance—one that would protect the historic fabric of the sea wall from adverse construction activities—is 12 feet. This is beyond the limits of the coquina stone pavers.

It is recommended that additional archaeological investigations be carried out along the historic sea wall in conjunction with construction activities, especially after a coffer dam system has been constructed. This system will enable archaeological investigations to occur without impediment by daily tidal fluctuations. Work is especially recommended for those locations adjacent to known historic docks. The information recovered has the potential for addressing questions regarding maritime industry in St. Augustine.

References Cited

Arana, Luis R.
1986 Conservation and Reutilization of the Castillo de San Marcos and Fort Matanzas. *Florida Historical Quarterly* 65(1):72-91.

n.d. Castillo de San Marcos: First Spanish Period, 1668-1763. MS on file, Castillo de San Marcos National Monument, St. Augustine, Florida.

Arana, Luis R., and Albert Manucy
1977 *The Building of Castillo de San Marcos*. Published by Eastern National Park and Monument Association for Castillo de San Marcos National Monument, St. Augustine.

Bae, Connie, Kimberley Fisher, Carl Halbirt, Nakeir Nobles, Stephanie Walsh
2003 Policy Analysis at the Municipal Level: An Examination of Alternatives to Preserve St. Augustine's Historic Sea Wall. Class paper, Public Policy (PUP 6007), University of North Florida, Jacksonville, Florida.

Bearss, Edwin C.
1983 The Castillo de San Marcos: The War Department Years, 1821-1933. In *Historic Structure Report for Castillo de San Marcos National Monument, St. John County, Florida*, prepared by Edwin C. Bearss and John C. Paige, pp. 124-417. Denver Service Center, National Park Service, Department of Interior, Denver, Colorado.

Bearss, Edwin C., and John C. Paige
1983 *Historic Structure Report for Castillo de San Marcos National Monument, St. John County, Florida*. Denver Service Center, National Park Service, Department of Interior, Denver, Colorado.

Chatelain, Verne E.
1941 *The Defenses of Spanish Florida, 1565 to 1763*. Carnegie Institution of Washington Publication 511, Washington, D.C.

Fairbanks, George
1858 *The History and Antiquities of the City of St. Augustine, Florida* (a facsimile reproduction). The University Presses of Florida, Gainesville.

Graham, Thomas
1978 *The Awakening of St. Augustine*. The St. Augustine Historical Society, St. Augustine, Florida.

Guinta, Peter
2002 State Limits Seawall Options. *St. Augustine Record*, October 24, 2002.

Halbirt, Carl D.
2000 Archaeological Investigations at Ponce Circle: The Search for the Historic 19th-century Boat Basin. MS on file, Planning and Building Department, City of St. Augustine, Florida.

2003a New Evidence for St. Augustine's 16th-Century Cultural Landscape. Paper presented at the 55th Annual Conference of the Florida Anthropological Society, Tallahassee, Florida.

2003b Synopsis of Archaeological Excavation at the Monson Motor Lodge, St. Augustine, Florida, and a Description of Three Trash Deposits. MS on file, Planning and Building Department, City of St. Augustine, Florida.

Lewis, Ken
2001 City Picks Up After Storm. *St. Augustine Record*, September 17, 2001.

Nolan, David
2001 Preserving the Seawall's History. *St. Augustine Record*, October 14, 2001.

Manucy, Albert
1962 *The Houses of St. Augustine, 1565 – 1821*. The St. Augustine Historical Society, St. Augustine, Florida.

1997 *Sixteenth-century St. Augustine, The People and Their Homes*. University Press of Florida, Gainesville.

Sastre, Cécile-Marie
2000 Castillo de San Marcos NM, History of the Cultural Landscape for the Cultural Landscape Report. MS on file, Castillo de San Marcos National Monument, St. Augustine, Florida.

Figure 2. A Section of the Pablo Castelló 1763 "Plano de Presidio de Sn. Agustín" Illustrating the Dock Extending off the Sea Wall.

Figure 3. Mariano de la Rocque 1788 "Plano General de la Plaza de Sn. Augstín de la Florida."

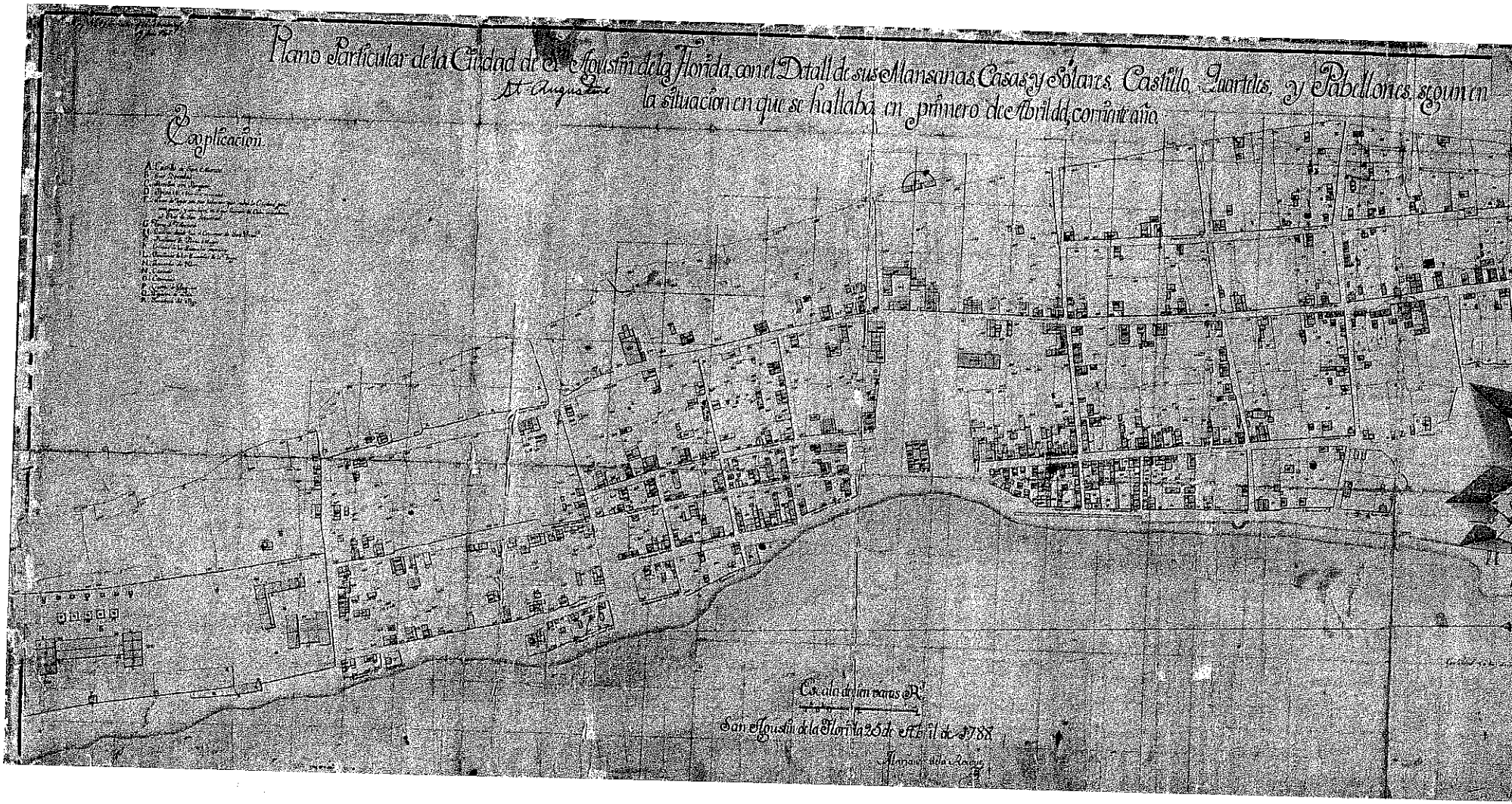
Plano Particular de la Ciudad de S.t Agustin de la Florida con el Detall de sus Mansanas Casas y Solares. Castillo, Cuartles, y Pabellones segun en
S.t Augustine
la situacion en que se hallaba en primero de Abril del corriente año.
Esplicacion.
Escala de cien varas R.s
San Agustin de la Florida 25 de Abril de 1788
Almanzar delin.t

Figure 4. 1833 Plan of the City of St. Augustine, Florida. Arrow points to location of wooden bulkhead.

References

Black numbers 1 to 16 designate the numerous ordinary & squares within the City

1. Court or Government House
2. Lot & buildings of the Episcopal Church
3. Episcopal Church
4. Presbyterian "
5. St Francis' Barracks
6. Mercantile Warehouse
7. Public Market
8. Well " "
9. House belonging to the City
10. Present Council meeting house
11. Old Hospital Lot
12. Smithy
13. Old Dragoon Barracks
14. " Powder House
15. Negros Barracks destroyed
16. Colours burnt ground
17. Mulatto hospital
A. Public Square
B. " "
C. Bridge over Navy Branch & road
D. Magazine

private store houses are coloured with red & stone houses with yellow ink

Names of Streets

a. Marine street
b. Charlotte "
c. St George "
d. Spanish "
e. Tolomato "

Cross streets & Lanes

f. St Francis' street
g. Bridge "
h. Cross lane
i. Artillery lane
k. Treasury "
l. St Hipolito "
m. Cuna "
n. Hospital "

Chart of a Plan of the City of St Augustin, Florida with some additions for the year 1783

Scale 200 feet to the Inch

ORIGINAL:
Cartographic Branch
National Archives
Record Group 77
L-96, Headquarters Map File

Figure 5. Lt. Henry Benham's 1841 Plan of the Sea Wall at St. Augustine.

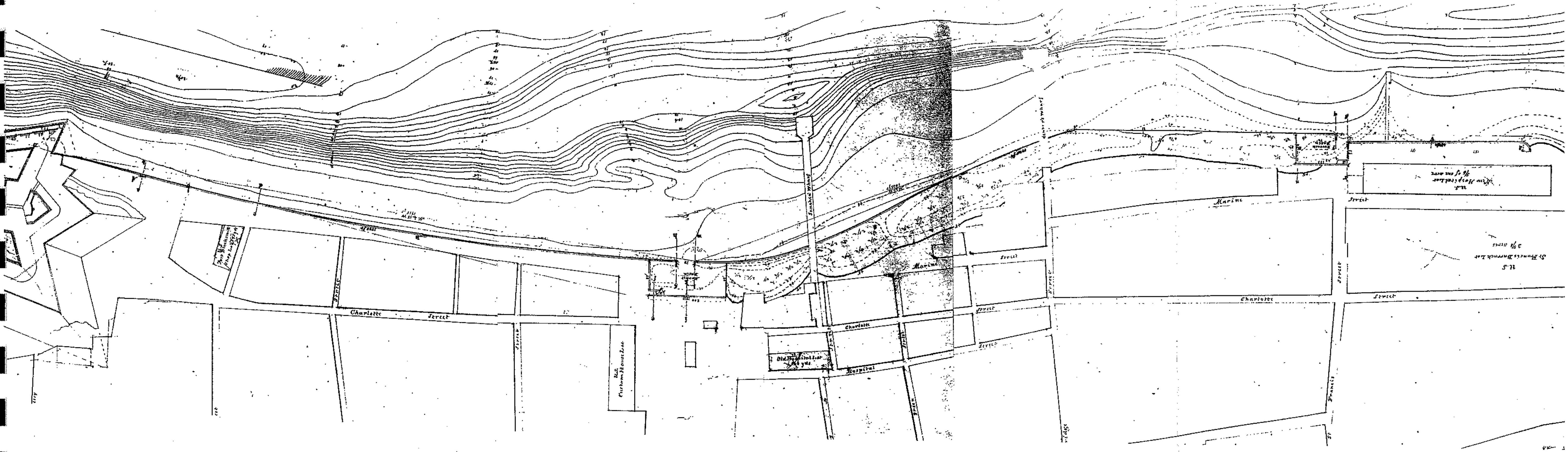
Charlotte Street
Charlotte
Marine
Hospital
Charlotte
Street
Street
Marine

Figure 6. Location of Trenches Used in the Archaeological Assessment of the Historic Sea Wall. Locations are designated as Sites A and B.

Archaeological Investigations along the Historical Seawalk

Figure 7. Photograph of Site A Trench and Historic Sea Wall.


VACCIN

Figure 8. Profile of Historic Sea Wall Elements and Associated Sediments at Site A. This is the field drawing.

Nov 25, 2003

a 3m x 1m trench excavated on seaward
to determine nature of sea wall and sediments
The wall formation extended 3m east of granite
coping stone. The pavers were sloped and averaged
15 cm in thickness. Pavers appear to occur directly
atop marsh sediments. Above and extending east of
the pavers was a dense deposit of oyster, with
some clam, shell. Cultural debris consisted of one
ginger beer bottle fragment and one brass furniture
tack. Excavation occurred during at the lowest
tide level (ca. 3 pm). Excavation carried out by
means of shovel, pick, water spray, and vacumm
to remove shell overburden.

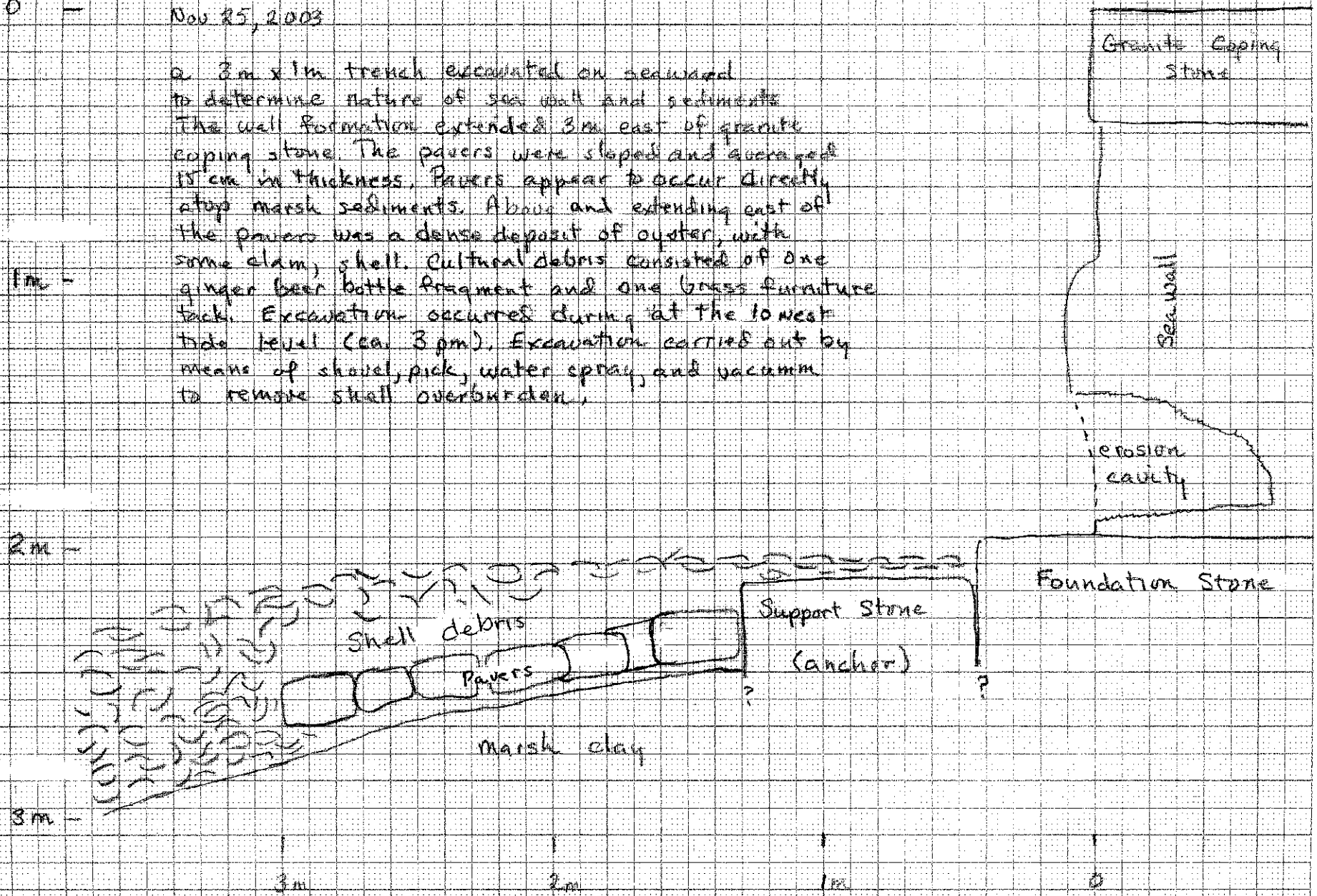

Figure 9. Photograph of Pavement at Site A and Surrounding Marsh Deposits.

Figure 10. Photograph of Trench and Sea Wall at Site B.

Figure 1. LIDAR-Generated Topographic Map of the Colonial Downtown District, St. Augustine, Florida.

Topographic Elevations of Downtown St. Augustine based on LIDAR