National Park Service
U.S. Department of the Interior

San Juan National Historic Site
Puerto Rico

San Juan Historic City Wall

Cultural Landscape Report



Cultural Resources, Partnerships and Science Division

Interior Region 2—South Atlantic - Gulf

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San Juan Historic City Wall

San Juan National Historic Site, Puerto Rico

Cultural Landscape Report

September 2021

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About the front cover: San Juan Historic City Wall, West Wall, ocean side, looking northeast, July 2018. (Source: Wiss, Janney, Elstner Associates, Inc.)

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San Juan Historic City Wall

San Juan National Historic Site, Puerto Rico

Cultural Landscape Report

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Foreword

Tracing its origins back to 1640, the San Juan wall with its sentry boxes, embrasures, and open spaces is one of the main and most symbolic and identifiable characteristics of San Juan. Although these structures made this city one of the best defensive outposts in the Western Hemisphere, they have been transformed through time to become images that today adorn features ranging from license plates and tourism advertisements, to artworks that beautify countless nostalgic homes inside and outside of Puerto Rico. They are also important when they are to be symbols of memories of our childhood from the days when our parents, uncles, or grandparents, who perhaps are no longer with us, would bring us to these green spaces near the wall to spend the day and enjoy the friendly breeze and the imposing and colorful Atlantic Ocean. The value of this landscape is reflected in this City Walls Cultural Landscape Report by being the end result of years of research and consultation that will guide the park's efforts in maintaining and interpreting these important features of the fortification system.

The treatment plan included in this study intends to enhance the historic character of a unique cultural landscape while accommodating contemporary function and use. It also will establish how the areas should look and be maintained to protect and enhance historic integrity and character in conjunction with park management goals, such as access, sustainability, safety, as well as routine and cyclical maintenance measures necessary to perpetuate its character.

Several individuals contributed to the successful completion of this work. We would particularly like to thank the Project Team who authored the report and the staff of San Juan National Historic Site for their assistance throughout this project. Also, we would like to thank the staff of the Cultural Resources Branch of the Interior Region 2 of the National Park Service. Their input was particularly critical to this project.

We hope that this study will prove valuable in our ongoing efforts to preserve the historic landscape and to everyone in understanding, preserving, and interpreting this unique resource.

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Introduction



FIGURE 1. View from Castillo San Cristóbal towards San Sebastián Bastion, the easternmost work of the North Wall section of the San Juan City Wall, July 2018. (Source: all photos by CLR team, 2018, unless otherwise indicated)

Management Summary

The San Juan City Wall is a military defensive system built by the Spanish on the Isleta de San Juan, Puerto Rico, between circa 1540 and 1898 to protect the Harbor of San Juan and an associated settlement. The wall system edges the upper promontory of the isleta, a small narrow 615-acre island along the northern coast of Puerto Rico where the city of Old San Juan is located. The San Juan City Wall and associated features, including Castillo San Cristóbal to the east, Castillo San Felipe del Morro to the west, and El Cañuelo, which is situated on Cabras Island across the harbor entrance, constitute San Juan National Historic Site, the only unit of the National Park System in Puerto Rico. San Juan National Historic Site in conjunction with La Fortaleza, another feature of the early Spanish military occupation of the isleta, were designated a World Heritage Site in 1983 for the significance and integrity of the resources.

The components of the San Juan City Wall that fall within the boundaries of San Juan National Historic Site are the focus of this Cultural Landscape Report (CLR). The CLR documents the approximately 2-1/2-mile-long system of masonry walls, including a series of bastions connected by curtain walls, which edges the city to the north, west, and south, and the associated landscape both above and below the walls. Features of the San Juan City Wall (Figure 1),

which are built of sandstone blocks, brick, and rubble materials, include embrasures, or openings, through which artillery could be fired; sentry boxes or *garitas* to serve look-out needs; firing steps or banquettes for soldiers stationed behind the walls to use to see over the walls; drainage systems used to direct stormwater through the walls; and interior open spaces within the bastions.

San Juan National Historic Site and the San Juan City Wall are open and accessible to the public. Weather, public use, maintenance, and other factors affect the condition of the park's historic resources. The National Park Service (NPS) seeks guidance regarding maintenance and repair protocols, issues related to accessibility, interpretation, and treatment of the cultural landscape through the development of this CLR. Treatment recommendations provided as part of the CLR are based on careful documentation, analysis, and consideration of a range of possible management and maintenance techniques, approaches, and concepts. To prepare the CLR, the NPS engaged a consultant team of preservation professionals through an Indefinite Delivery Indefinite Quantity contract. Team members included Panamerican Consultants, Inc., of Buffalo, New York; Wiss, Janney, Elstner Associates (WJE) of Northbrook, Illinois; and Liz Sargent HLA, of Charlottesville, Virginia.

Several previous studies have guided the preparation of this CLR. These studies include: the "Historic Structure Report for San Juan Fortifications (1898-1958)" prepared by NPS Historian Edwin C. Bearss in 1984; a three-volume Historic Structure Report and Cultural Landscape Report prepared by the NPS in conjunction with the Center for Preservation Research at Columbia University in 1991; and a two-volume study of portions of the Collaborative, Inc., in 2014. These documents, along with the planning guidance afforded in the park's 1985 General Management Plan and a 2006 Long-Range Interpretive Plan, served as a foundation for this CLR. The CLR also takes into account the roles and responsibilities of the two agencies that co-manage areas associated with the West and South Walls—the Department of the Interior and the Commonwealth of Puerto Rico as outlined in a 1976 Cooperative Agreement.

Description of Study Area Boundaries

San Juan National Historic Site is located within the city of San Juan, the capital of the Commonwealth of Puerto Rico. Puerto Rico is a self-governing island located between the Caribbean Sea and the Atlantic Ocean, and it is a territory of the United States through a permanent union agreement.

San Juan National Historic Site consists of five distinct properties associated with Spain's military fortification system developed between the mid-1500s and 1898. These components include Castillo San Cristóbal (San Cristóbal), Castillo San Felipe del Morro (El Morro), El Morro Esplanade, San Juan City Wall, and Fortín San Juan de las Cruz, as known as El Cañuelo (Figure 2).

MURALLAS DEL VIEJO SAN JUAN

FROM THE BEGINNING OF SPANISH SETTLEMENT ON THE ISLAND OF PUERTO RICO (BY PONCE DE LEON IN 1508), THE GEOGRAPHIC AND STRATEGIC IMPORTANCE OF THE EXCELLENT PORT (THE "PUERTO RICO") AT SAN JUAN WAS RECOGNIZED. BY 1540 THE FIRST FORTIFICATIONS TO GUARD THE HARBOR HAD BEEN CONSTRUCTED, AT THE PRESENT SITES OF LA FORTALEZA AND THE FORT OF EL MORRO. THE ENGLISH ATTACKS OF 1595 AND 1598, AND THE DUTCH ATTACK OF 1625 PROVED THE USEFULNESS OF THESE FORTS. IN EACH OF THESE ATTACKS, HOWEVER, THE POPULATION RETREATED TO THE FORTS FOR PROTECTION, LEAVING THE ACTUAL SETTLEMENT OF SAN JUAN VULNERABLE TO PILLAGE AND ARSON BY THE INVADERS. THUS, FOLLOWING THE DUTCH ATTACK, A SUBSTANTIAL MASONRY WALL, ALMOST 60 FEET TALL IN PLACES, WAS CONSTRUCTED ALONG THE EAST, SOUTH AND WEST SIDES (THE HARBOR SIDE) OF THE CITY OF SAN JUAN FROM 1634-50. THIS WALL CONNECTED THE FORT OF EL MORRO WITH THE NEW FORT OF SAN CRISTOBAL (BUILT TO PROTECT THE LAND APPROACH TO THE CITY). THE NORTH (ATLANTIC OCEAN) SIDE OF THE CITY REMAINED UNFORTIFIED, HOWEVER.

WITH THE ASCENSION TO THE THRONE OF THE ENLIGHTENED SPANISH MONARCH CHARLES III IN 1759, A NEW EMPHASIS WAS PLACED ON UPGRADING THE DEFENSES OF THE SPANISH POSSESSIONS IN THE NEW WORLD. IN 1763 CHARLES DISPATCHED HIS INSPECTOR-GENERAL, AN IRISHMAN NAMED ALEXANDER O'REILLY, TO THE CARIBBEAN. IN 1765 O'REILLY ARRIVED IN SAN JUAN TO CONFER WITH THE CHIEF ENGINEER OF THE PRESIDIO, THOMAS O'DALY, ANOTHER IRISHMAN IN THE SERVICE OF SPAIN. TOGETHER THEY PLANNED IMPROVEMENTS AND EXTENSIONS TO THE SAN JUAN FORTIFICATIONS WHICH WOULD TRANSFORM SAN JUAN INTO PERHAPS THE STRONGEST FORTIFIED CITY IN THE WESTERN HEMISPHERE. CONSTRUCTION BEGAN IN 1766 AND LASTED FOR MORE THAN 25 YEARS, EMPLOYING MORE THAN 400 WORKERS AT TIMES. BY THE EARLY 1790s, A FORMIDABLE WALL HAD BEEN BUILT ALONG THE NORTH SIDE OF THE CITY, THUS COMPLETELY ENCLOSING THE CITY WITH FORTIFICATIONS. THE FORTIFICATIONS WERE PUT TO THE TEST DURING AN ENGLISH ATTACK IN 1797, PROVING THEIR WORTH WHEN THE INVADERS WERE REPULSED.

THE REVOLT OF SPAIN'S LATIN AMERICAN COLONIES IN THE EARLY 19TH CENTURY, HOWEVER, UNDERMINED SAN JUAN'S STRATEGIC IMPORTANCE, AND ITS FORTIFICATIONS WERE DOWNGRADED FROM OUTPOSTS OF EMPIRE TO LOCAL DEFENSES. MEANWHILE, THE CITY'S BURGEONING POPULATION RESULTED IN INTOLERABLE OVERCROWDING INSIDE THE WALLS. FINALLY, IN 1897, A SECTION OF THE WALLS ADJACENT TO SAN CRISTOBAL WAS DEMOLISHED TO ALLOW FOR EXPANSION OF THE CITY. THE FOLLOWING YEAR SAW THE BOMBARDMENT OF THE CITY BY THE AMERICAN NAVY DURING THE SPANISH-AMERICAN WAR. WITH THE TRANSFER OF PUERTO RICO TO THE UNITED STATES AS A RESULT OF THE WAR, THE FORTIFICATIONS OF SAN JUAN WERE CONVERTED TO AN AMERICAN MILITARY POST, FORT BROOKE. ALTHOUGH MILITARILY OBSOLETE, THE FORTS OF SAN JUAN NONETHELESS RETAINED THEIR STRATEGIC IMPORTANCE, SERVING AS OBSERVATION AND COMMUNICATIONS CENTERS DURING THE TWO WORLD WARS. IN 1949, THE FORTIFICATIONS WERE TRANSFERRED TO THE NATIONAL PARK SERVICE AS THE SAN JUAN NATIONAL HISTORIC SITE. THEY REMAIN TO THIS DAY THE FINEST EXAMPLE OF 17TH AND 18TH CENTURY FORTIFICATIONS IN THE WESTERN HEMISPHERE.

CONSTRUCTED OF LOCALLY-QUARRIED CORAL STONE, WITH BRICK EDGING DETAILS IN PLACES, THE WALLS OF SAN JUAN CONSIST A TALL, BATTERED SCARP TOPPED BY A VERTICAL PARAPET (APPROXIMATELY 3'-6" IN HEIGHT ON THE EXTERIOR) AT THE LEVEL OF THE GUN EMBRASURES. IN PLAN, LONG SECTIONS OF STRAIGHT WALLS ALTERNATE WITH SEMI-POLYGONAL, PROJECTING BASTIONS, DESIGNED TO TAKE ADVANTAGE OF LOCAL TOPOGRAPHY. ROUND, ORNAMENTED GARITAS (SENTRY BOXES) ARE LOCATED AT VARIOUS CORNERS FOR SURVEILLANCE PURPOSES.

DOCUMENTATION OF THE MURALLAS DEL VIEJO SAN JUAN WAS UNDERTAKEN BY THE HISTORIC AMERICAN BUILDINGS SURVEY / HISTORIC AMERICAN ENGINEERING RECORD (HABS/HAER) DIVISION OF THE NATIONAL PARK SERVICE (NPS), E. BLAINE CLIVER, CHIEF. THE PROJECT WAS SPONSORED BY THE SAN JUAN NATIONAL HISTORIC SITE (SAJU), NPS. PAUL HARTWIG, SUPERINTENDENT. PROJECT PLANNING WAS COORDINATED BY PAUL DOLINSKY, CHIEF, HABS; AND BY MARK HARDGROVE, ASSISTANT SUPERINTENDENT, SAJU. THE FIELD RECORDING WAS CONDUCTED AND THE DRAWINGS WERE PRODUCED BY PROJECT SUPERVISOR MARK SCHARA, HABS ARCHITECT; AND BY HABS ARCHITECTS NAOMI HERNANDEZ AND RAUL VAZQUEZ. THE LARGE FORMAT PHOTOGRAPHY WAS UNDERTAKEN BY HABS PHOTOGRAPHER JACK E. BOUCHER. ASSISTANCE WAS PROVIDED BY THE SAJU STAFF, ESPECIALLY ANGEL DIAZ AND HENRY LOPEZ.

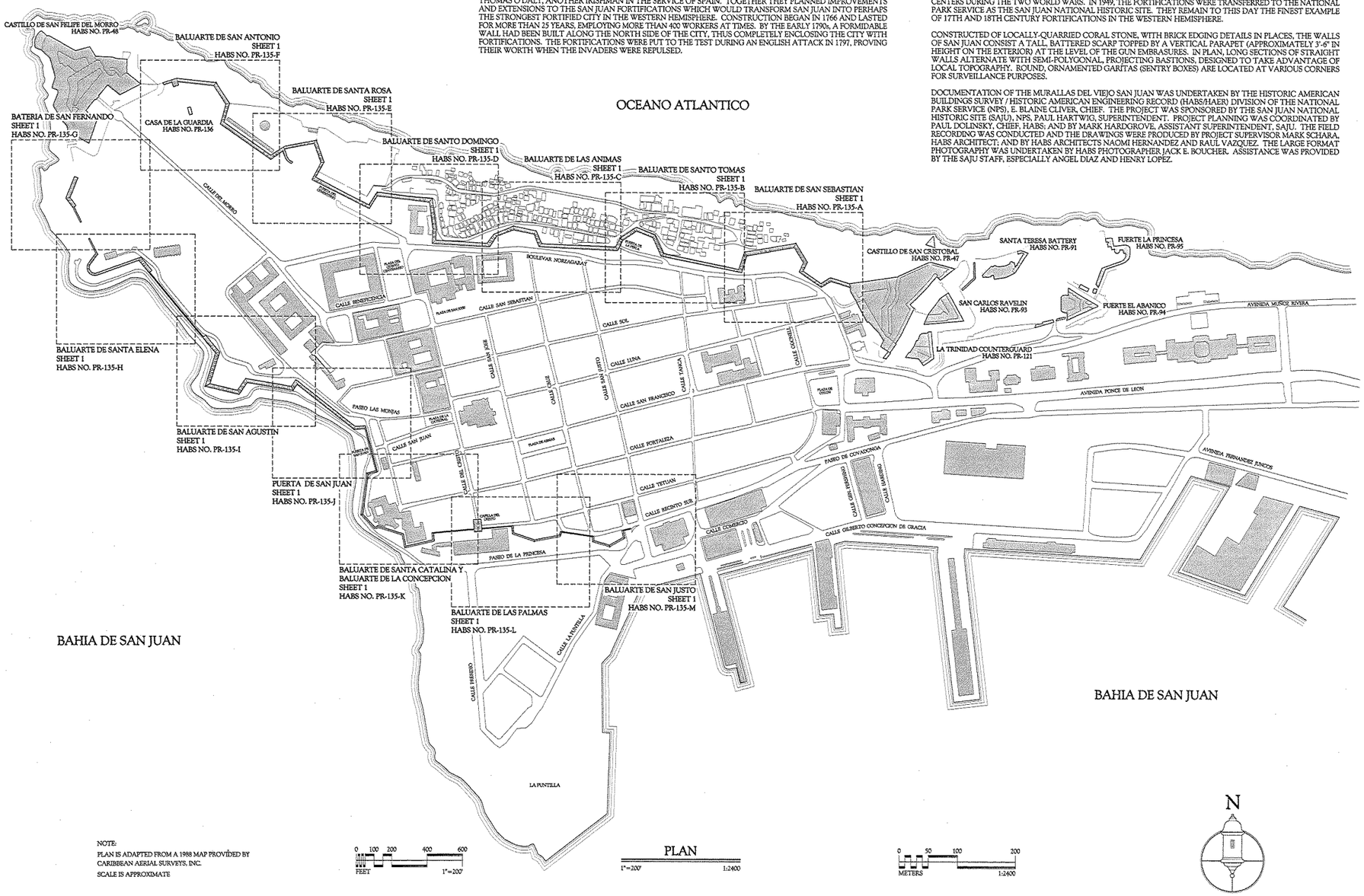


FIGURE 2. San Juan, Puerto Rico, City Wall with the most important bastions identified. (Source: Mark Schara, Naomi Hernandez, Raul Vazquez, and Jack E. Boucher, *Murallas del Viejo San Juan, San Juan, San Juan Municipio, Puerto Rico* [drawing]. HABS PR,7-SAJU,64- sheet 1 of 1)

Back of figure 2

The San Juan City Wall edges Isleta de San Juan to the north and west. Additional sections are located along the southern margin of Old San Juan. Sections that once edged the city to the east were demolished to facilitate expansion during the nineteenth century. For purposes of the CLR, the portions of San Juan City Wall that comprise the project area are discussed by their geographic location and organized as part of the North, West, or South Walls. The North Walls, which frame the higher ground, or promontory, of Isleta de San Juan along the north shore between El Morro and San Cristóbal, consist of six bastions—San Sebastián, Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, and San Antonio—and connecting curtain walls. The West Walls, which also follow the edge of the promontory, extend from El Morro to San Juan Gate, the historic guarded portal into the city from the harbor. The West Walls feature three bastions—San Fernando, Santa Elena, and San Agustín, and connecting curtain walls. Two bastions comprise the South Walls that fall within San Juan National Historic Site. These are La Concepción and Las Palmas Bastions. The walls of these bastions both contain urban parks known as Parque de las Palomas and Las Palmas. For the most part, the walls serve as a continuous edge to the promontory. Passage over and through the walls occurs through Santa Rosa Gate, associated with a tunnel that passes beneath the curtain wall between Santa Rosa and Santo Domingo Bastions, La Perla Gate, which occurs within the wall of Santo Tomás Bastion, a tunnel that passes beneath the curtain wall between Santo Domingo and Santa Rosa Bastions, and two concrete walks that span the North Walls to provide access to La Perla. One walk is along at the curtain wall between San Sebastián and Santo Tomás Bastions, and the other is located within Las Ánimas Bastion (refer to Figure 2).

The CLR considers the walls within their surrounding context, both at the upper level within the interior of the system and at the lower level at the base. Closely edging the North Walls are Santa María Magdalena de Pazzis Cemetery and the community of La Perla, reached via the gates noted above, and pedestrian bridge structures. The West Wall system is edged by a contemporary recreational walk known as the Paseo del Morro National Recreational Trail (Figure 3). The boundary of the project area is indicated in Figure 4 below.



FIGURE 3. View of the dramatic wall system that edges Old San Juan. Visible here is the sentry box associated with San Agustín Bastion, part of the West Wall system, from the recreational walk known as Paseo del Morro National Recreational Trail.



FIGURE 4. The project area for the San Juan City Wall Cultural Landscape Report is outlined in red on the map above. (Source: National Park Service)

Historical Summary

The City Wall was originally constructed to surround the old city of San Juan as a defensive measure. They are "one of the main features of San Juan, and one that gives it a sense of identity."[1] At present, the National Historic Site incorporates approximately 2.7 miles of City Wall, and the Commonwealth of Puerto Rico maintains the other 0.3 miles. The main portions of the wall were constructed between 1634 and end of the eighteenth century. Today, only the North, West, and a portion of the South Wall remain; the East Wall and a portion of the South Wall were demolished in 1897 to allow the city to expand eastward.

During the sixteenth century, to protect their holdings in the New World, the Spanish began to fortify what is now the small island of Puerto Rico, the first stopping point for Spanish ships coming west from Africa's west coast. In 1537, a small fortification, La Real Fortaleza de Santa Catalina (La Fortaleza), was begun but was quickly replaced by El Morro, the construction of which started in 1539 and continued for the next 200 years. El Morro, "the bluff," was created at the northwestern tip of the island projecting into the Atlantic Ocean. In 1595 and 1598, English attacks on the island were repelled; but in 1625, the Dutch attacked the island and entered the nascent city of

1. Joan Berkowitz, E. Baine Cliver, Richard Crisson, Billy Garret, Judy Jacob, Frank Matero, and Barbara Yokum, *Fortifications of San Juan National Historic Site Historic Structure Report*, volume III. Boston: Building Conservation Branch, Cultural Resources Center, North Atlantic Region, National Park Service and the Center Preservation Research, Columbia University, 1991), 1.

San Juan, ransacking and burning it, although they too were ultimately turned back.

The Dutch incursion alerted the Spanish government to the need to develop a second fortification to protect El Morro and the city from land invasion. The second fortification, San Cristóbal, and the city wall were begun in 1634.[2] Over the next 250 years, the wall around San Juan grew in fits and starts and underwent renovations even as it grew.[3]

Although the Spanish sought to fortify Puerto Rico beginning in the sixteenth century, their primary fortifications included only La Fortaleza, El Morro, El Fortín de San Juan de la Cruz (El Cañuelo; Fort of Saint John of the Cross) at the mouth of the harbor, and what is now known as the West Wall, facing San Juan Harbor. In 1631, King Phillip IV of Spain, believing Puerto Rico to be his vanguard in the West Indies and the most coveted of all his possessions in the Caribbean, decided to completely enclose the city of San Juan in defensive walls.[4] As a result of the king's decision, during the seventeenth century, the South Wall was completed and the West Wall was updated. The North Wall, between El Morro and San Cristóbal was still not fortified.

During the first half of the eighteenth century, Puerto Rico was almost forgotten as Spain entered a period of calm brought about by an alliance with the French Bourbon monarchy. This peace was broken in 1763 at the conclusion of the Seven Years War with renewed belligerency from Great Britain. Charles III, King of Spain, initiated a series of reforms and declared San Juan a "Defense of the First Order" in 1765 to block British incursions.[5] In order to protect his "foundation of true wealth," Charles approved a far-reaching plan for the improvement of the fortifications in San Juan. The plan, created by Field Marshal, General Alexander O'Reilly, and executed by Chief of Engineers Thomas O'Daly and Juan Francisco Mestre forever changed the character of the city of San Juan.[6]

The O'Reilly plan strengthened and upgraded all the existing fortifications and built the final element, the North Wall. The plan created San Juan's famous "Defense-by-Depth" system, making it one of the strongest fortified cities in the Caribbean.[7] This plan also essentially gave the Spanish military control of the city by placing the responsibility for city construction and growth outside the walls in their hands.[8] The execution of the plan ultimately led to the complete enclosure of the city by walls by the end of the eighteenth century.

By the end of the 1780s, the city was well fortified, and, in 1797, it was able to repel the attack by Sir Ralph Abercromby and his army of between 7,000 and 10,000 soldiers and a fleet of 68 warships under Admiral Sir Henry Harvey. Abercromby attacked from the east following the successful invasion by the Dutch, but the army was unable to penetrate the city's defenses. The defense-by-depth system had worked.[9]

The nineteenth century was a period of great change for the walls. This change had less to do with military defensive policy and more to do with the island's strategic, economic, and social policies. San Juan had become so large it was outgrowing the walls, which was beginning to interfere with economic growth in the city. The South Wall, which faced the port dockage, had already become defensively obsolete.[10]

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2. Berkowitz et al., volume I, 21.
3. Héctor Santiago Cazull, *Historic Fortification Walls of Old San Juan Historical Documentation, Existing Conditions, and Laboratory Technical Report* (Draft) (San Juan: Puerto Rico Department of Transportation and Public Works, Highway and Transportation Authority, 2003), Volume 1: i.
4. Berkowitz et al., volume III, 13; and Adolfo de Hostos, "Historia de la ciudad de San Juan de Puerto Rico," *Revista del Instituto de Cultura Puertorriqueña*, no. 53 (October-December 1971), 31, in Berkowitz et al., volume III, 13.
5. Berkowitz et al., volume III, 21.
6. Ibid.
7. Ibid.
8. Ibid., 23.
9. Ibid.
10. Ibid., 35.

After forty years of discussion between military authorities and San Juan leaders, it was finally decided that the East Wall and a portion of the South Wall would be removed so the city could grow eastwards, the only direction in which there was land. The threat of war seemed to have diminished, and Puerto Rico and Cuba were now the only Spanish holdings in the Caribbean.[11] Spain and San Juan felt secure in their military position in 1897 when the wall came down.

Nevertheless, this feeling of security was short lived when the US Navy sailed into San Juan Harbor on May 18, 1898. The United States had become embroiled in the Cuban War for Independence from Spain when the *USS Maine* exploded and sank in Havana Harbor under mysterious circumstances. The *Maine*, ostensibly there to protect American interests in Cuba, was believed by many in the United States to have been targeted and sunk by Spain. The United States declared war on Spain and over the course of ten weeks fought in Cuba, the Philippines, and Puerto Rico.

The surprise bombing and blockade of San Juan harbor, which caused little physical damage to buildings, resulted in the wounding of fifty-seven people and the death of seven Puerto Ricans and one American sailor.[12] A land campaign was launched on July 25, 1898, at Guánica, Puerto Rico, which began a march across country toward San Juan. The invasion was cut short, however, when US President William McKinley and French Ambassador Jules Cambon, acting for the Spanish government, signed a treaty ending the war. The United States took formal possession of Puerto Rico on October 18, 1898.[13]

The twentieth century ushered out almost 300 years of Spanish occupation in Puerto Rico and brought in the United States. When the US Army assumed control of the fortifications at San Juan, it began a full-scale evaluation of their fitness and usefulness for service as it moved into them. The walls in particular were a problem and one that would plague the army for its entire tenure.

Politicians and army officers started to look at the old Spanish fortifications as historic properties and began to urge their preservation. In 1932, the first true "restoration" project was undertaken by the US Army Corps of Engineers in the reconstruction of four sentry boxes, three at the West Wall at San Agustín, one at the curtain wall east of San Agustín, and another at Santa Catalina (within the grounds of La Fortaleza).[14] The idea of preserving portions of the fortification took on new urgency when First Lady Eleanor Roosevelt visited San Juan and toured the military installation in 1934. Therefore, probably not by coincidence, NPS officials were sent to investigate the significance of the San Juan fortification. The report which documented the condition of the San Juan walls found the fortification to be of "national significance but in danger of succumbing to systemic dilapidation and decay."[15]

It was more than ten years later, however, before the NPS came to San Juan. On September 4, 1948, a cooperative agreement was completed between the US Department of the Interior and the Department of the Army enabling the Secretary of the Interior to officially establish a portion of Fort Brooke as the San Juan National Historic Site. The Secretary of Interior established the park on February 14, 1949.[16] In 1949, the park, as

11. Ibid., 29.
12. Berkowitz et al., volume III, 41; and Hermann Jacobsen, *Sketches from the Spanish American War by Commander Jacobsen* (Washington, DC: Office of Naval Intelligence, War Notes No. III, 1899) in Mark R. Barnes, "The Puerto Rican Naval Campaign," Part 2, Spanish-American War Centennial War Website, National Park Service, 1996, accessed October 4, 2019, http://www.spanamwar.com/puertonaval2.htm.
13. Berkowitz et al., volume III, 41.
14. Ibid., 49.
15. Appropriation requests, Lieutenant Colonel Ward (Park Archives, San Juan National Historic Site [SJNHS]: US Army Ordnance and Artillery File) 1933, 256, in Berkowitz et al., volume III, 50.
16. Department of Interpretive Planning Harper's Ferry Center and San Juan National Historic Site, *San Juan National Historic Site Long Range Interpretive Plan* (NP: National Park

established, was not as large as it is today, and it did not include all the portions of the wall that it does today.

During the 1950s, the army began to reassess its position in San Juan and decided to close Fort Brooke. The army began negotiations with the DOI and the Commonwealth of Puerto Rico to dispose of the installation. On September 13, 1961, the Department of the Army transferred El Morro, the North Wall, San Cristóbal, and certain adjacent lands to the NPS. On December 31, 1966, the Department of the Army declared all lands under its jurisdiction at Fort Brooke as excess.[17] This action began the eventual transfer of properties from the army to the NPS and the Commonwealth.

From this point, the majority of the historic San Juan City Wall became the property of the NPS where it has been maintained, preserved, and interpreted to present.

Scope of Work and Methodology

Project Scope

Cultural Landscape Reports (CLRs) serve as the principal treatment documents and primary tools for long-term management of cultural landscapes. Treatment and management decisions related to the physical features, biotic systems, and use of the cultural landscape are guided by the comprehensive documentation, analysis, evaluation, and establishment of preservation goals presented in a CLR. The content of a CLR provides the basis for making sound decisions about management, treatment, and use. Information about the historical development, significance, and existing character of a cultural landscape is also valuable for enhancing interpretation and maintenance.

The CLR for San Juan City Wall is intended to provide park management with an assessment of the character-defining features of the cultural landscape and specific treatment recommendations designed to ensure the preservation of these significant resources. The treatment guidelines, recommendations for specific treatment projects, and implementation strategies provided in the CLR identify and prioritize the actions needed to ensure resource preservation, while balancing the goals of historic preservation with contemporary park use and management. The CLR is intended to facilitate inventory and evaluation of park resources, improve resource condition, and contribute to the satisfaction of key issues and needs identified by the park.

The statement of work provided to the project team by the NPS identified the following tasks to be completed as part of the CLR:

- provide a management summary, historical summary, scope of work and methodology, describe project area boundaries, and summarize the findings of the CLR
- describe the historical development of the project area
- document existing site conditions
- provide analysis of the landscape's potential National Register of Historic Places significance
- identify character-defining features
- assess the integrity of landscape characteristics and features
- document management objectives
- determine appropriate treatment strategies to address such issues as visitor use, accessibility, vegetation management, turf and grounds maintenance, erosion control, viewshed protection, and the potential impacts of increasing examples of severe weather

Service, US Department of Interior, September 2006), 7.

17. Ibid.

- develop treatment recommendations that facilitate preservation of these resources, address park management concerns, and inform ongoing and proposed management decisions

- provide a prioritized list of draft NPS Project Management Information System (PMIS) statements for landscape preservation/rehabilitation projects

Project Methodology

The CLR for the San Juan City Wall was prepared in accordance with the guidance offered in the most recent versions of various federal standards documents, such as:

- *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques*

- *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*

- NPS Director's Order 10A: *Design and Construction Drawings*

- NPS Director's Order 28: *Cultural Resources Management*

- NPS Director's Order 77-1: *Wetland Protection*

- NPS-SER-82: *Biotic Cultural Resources: Management Considerations for Historic Districts in the National Park System, Southeast Region*

- The Uniform Federal Accessibility Standard (UFAS) and Americans with Disabilities Act Accessibility Guidelines (ADAAG)

- The National Park Service's *Guiding Principles of Sustainable Design*

- National Register Bulletin: *How to Apply the National Register Criteria for Evaluation*

- National Register Bulletin: *How to Evaluate and Nominate Designed Historic Landscapes*

- National Register Bulletin: *Guidelines for Documenting and Evaluating Rural Historic Landscapes*

- National Register Bulletin: *Telling the Stories: Planning Effective Interpretive Programs for Properties Listed in the National Register of Historic Places*

The methodology used to prepare each component of this CLR is described below.

Background Research and Data Collection

Prior to the project start-up meeting held at the park in July 2018, CLR project team members began to collect documents and other materials pertaining to the project and site, including the 1991 Historic Structure Report and Cultural Landscape Report, draft National Register of Historic Places nominations, historic structures identified in the Cultural Resources Inventory System (CRIS HS) records, Geographic Information System (GIS) data, and documents and drawing files available from the NPS electronic Technical Information Center (eTIC) in Denver, Colorado. In preparation for field investigations, project personnel generated base maps for use in conducting site review from available GIS files.

Start-up Meeting

On July 17, 2018, project team members from Panamerican, WJE, and Liz Sargent HLA met on site with park and regional NPS personnel to initiate work on the CLR. Deborah Slaton of WJE joined the meeting by teleconference. Others participating in the meeting included:

Regional Office – Interior Region 2 – South Atlantic-Gulf of the National Park Service

- David Hasty, Senior Historical Landscape Architect/Contracting Officer's Representative

- Margaret Frisbie, Cultural Landscapes Program

San Juan National Historic Site

- Félix J. López, Cultural Resources Manager
- Eric López, Park Historian

Panamerican Consultants

- Kelly Nolte, Historian/Project Manager
- Armando Martí, Historian

Liz Sargent HLA

- Liz Sargent, Historical Landscape Architect
- Jen Trompetter, Landscape Architect

Research sources available to the project team were discussed during the meeting, including park planning documents, maps and drawings, aerial photographs, and natural resources. The NPS conveyed specific issues of interest to the project team for consideration as part of the CLR, including the following:

- Visitor use
- Tying park resources to the larger community
- Development along the park boundaries and the effect on the viewshed
- Proper management and preservation policies regarding historic structures
- Maintaining the cultural landscape while balancing natural resource issues
- Effects of severe weather events on the landscape

Following the start-up meeting, the team conducted field investigations. Félix López accompanied the group to several areas of the park, including the community of La Perla.

Field Investigations

CLR project team members conducted field investigations on July 17–20, 2018, documenting resources associated with San Juan City Wall through photography, annotations to base mapping, and notes to record the location, materials, and condition of landscape features (Figure 5). CLR team members also met with park personnel to gain insight into maintenance practices and concerns to be considered as part of the project.



FIGURE 5. Team members documenting the lower portion of the North Wall at San Sebastián Bastion, 2018.

Historical Landscape Documentation and Site Physical History

Project team members also conducted research at the park during the July 2018 site visit, collecting electronic mapping and document files related to the history of the region and the park with the assistance of Eric López and Félix J. López.

Preparation of historical landscape documentation, which comprises chapter two of the CLR, followed review of all available materials. The documentation is organized chronologically into a series of historic periods, illustrated with historic photographs, maps, and diagrams illustrating change over time.

Period Plans

Supporting the historical landscape documentation is a series of period plans that depict the site at snapshot moments in history. The period plans were drawn at a consistent scale and rendered similarly to facilitate comparison of site development over time. The period plans were

prepared consistent with the GIS mapping data provided by the NPS.

Existing Conditions Documentation

The project team prepared existing conditions documentation for the project area based on a compilation of base mapping, data collected during field investigation, and review of park planning documents, park files, and other relevant cultural and natural resource documents provided by the NPS. The existing conditions documentation is conveyed in chapter three of the CLR as cross-referenced narrative, graphic, and photographic information organized in accordance with the framework established in the NPS's *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques*. Sections describing the environmental and cultural context for the project area introduce the more site-specific documentation, composed of resource descriptions arranged by character area and landscape characteristic. Five character areas were identified for the project area—North Walls East of the Esplanade; North Walls associated with the Esplanade; West Walls; South Walls; and Paseo del Morro. For each character area, the individual features associated with the landscape were described within a system of landscape characteristics that included:

- Natural Systems and Features
- Responses to Natural Resources
- Land Uses
- Spatial Organization
- Cultural Vegetation
- Circulation
- Buildings and Structures
- Views and Vistas
- Small-scale Features
- Utilities
- Known and Potential Archeological Resources

Observations regarding the condition of individual landscape features were also recorded.

Evaluation of Significance

The CLR includes an evaluation of the resources for inclusion within the National Register of Historic Places (NRHP) as per the project scope of work. The evaluation was based on available NRHP documentation. The evaluation included in the CLR is consistent with the guidance provided in the National Register Bulletin *How to Apply the National Register Criteria for Evaluation*.

Comparative Analysis of Historic and Existing Conditions

To better understand the relationship between the existing landscape and the character of the landscape during the period of significance identified in the CLR, the project team prepared a comparative analysis of historic and existing landscape conditions by landscape characteristic. The three primary goals of the comparative analysis were to:

- Understand which features survive from the period of significance;
- Establish the basis for an integrity assessment; and
- Provide an understanding of the similarities and differences between historic and existing conditions that would contribute to the development of a well-grounded treatment plan for the cultural landscape.

The analysis narrative is illustrated with comparative photograph pairs that compare historic with existing conditions within the study area, and other graphics.

Identification of Character-Defining Features

As part of the development of the comparative analysis of historic and existing landscape

conditions, the CLR identified the character-defining qualities and characteristics of the cultural landscape. Character-defining qualities are the prominent or distinctive aspects or characteristics of a cultural landscape that contribute significantly to its physical character.

The comparative analysis identifies individual features contributing to the significance of the historic landscape. Contributing features are those surviving from the period of significance with integrity that can be tied to the site's associated historic contexts. The CLR also identifies non-contributing features, which are those that originated after the period of significance, have lost integrity, or are not associated with significant historic contexts for the historic landscape. Finally, the CLR discusses historic features of importance that are no longer extant. These are discussed as missing features.

Assessment of Integrity

In a CLR, the integrity of a historic landscape is evaluated to determine whether the characteristics and features that defined it during the period of significance are present, retain their historic qualities, and convey their historic associations. The CLR assesses the overall integrity of the park in accordance with the seven aspects—location, design, setting, materials, workmanship, feeling, and association—discussed in the National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*.

Treatment Plan

The CLR culminates in a treatment plan that provides preservation strategies and specific recommendations for the long-term management of the cultural landscape based on its significance, existing condition, and use. The CLR treatment plan also includes a discussion of the overall management objectives for the historic landscape as documented in planning studies or other management documents. The treatment plan is supported by the identification of implementation projects that prioritize and coordinate treatment recommendations into a series of discrete tasks. The implementation projects are conveyed in a format similar to PMIS so that they can be easily transferred to Facility Management Software System (FMSS) work orders, where applicable.

The treatment plan specifically addresses the management issues and concerns identified by the park and region during the start-up meeting.

Summary of Findings

The San Juan Historic City Wall system falls within the Old San Juan Historic District, designated a National Historic Landmark in 2013. National Register documentation is also currently being prepared for San Juan National Historic Site. The nomination in progress indicates the property to be significant under National Register Criterion A in the areas of Military History and Maritime History at the national level; under National Register Criterion C in the area of Architecture at the national level; under National Register Criterion A in the area of Ethnic Heritage-Hispanic at the national, state, and local levels; under National Register Criterion A in the area of Entertainment/Recreation at the state level; and under National Register Criterion D in the area of Archeology-Historic, Non-Aboriginal at the national level.[18] The nomination identifies a period of significance that extends between 1539 and 1971.[19] San Juan National Historic Site, together with the earlier fortifications of La Fortaleza, is also included in the World Heritage List. Based on review of historic periods of development and consideration of change over time within the landscape, the San Juan Historic City Wall system retains sufficient integrity to the period of significance to convey its historic associations.

Within the broad period of significance identified by the National Register nomination, San Juan Historic City Wall underwent several changes that reflect the evolution of Spanish defensive

18. Teresa Dujnic Bulger, Richard Grubb & Associates, Inc., Cranbury, New Jersey, *National Register of Historic Places Registration Form, San Juan National Historic Site, San Juan, Puerto Rico*, draft, May 1, 2020.
19. Ibid.

strategies as well as later US military occupation and use of the property as part of Fort Brooke. Under Spanish administration, the property evolved from a small outpost during the early sixteenth century to a First Order defensive emplacement in the late eighteenth century. Although the military defenses associated with the wall system would become obsolete during the second half of the nineteenth century due to advances in rifled artillery, the walls continued to surround the city until the late nineteenth century. At that time, portions of the East and South Wall were removed to allow the urban area to expand to accommodate a growing population. Also during the late nineteenth century, new artillery systems were added to address defensive deficiencies and military use of the walls continued until the property was acquired by the US military following the Spanish-American War of 1898. During the early twentieth century, the US Army adapted the site as a military reservation, adding roads, buildings, plantings, recreational facilities, walls, fences, and other small-scale features by 1940. While a few examples of these changes survive today, the majority have been removed and are no longer extant. Integrity to the US military occupation period is thus much diminished. With the removal of the US Army developments, which entailed changes to patterns of spatial organization, views, buildings and structures, circulation, small-scale features, and land uses, the San Juan Historic City Wall property was generally returned to the open space system and character present during the Spanish era of administration. Since the property became part of San Juan National Historic Site, the NPS has made several relatively minor changes to the landscape to accommodate visitors, such as the addition of site furnishings, signage, and El Paseo del Morro, a pedestrian path located at the base of the West Wall, as well as stormwater management improvements. While these changes detract from the property's integrity of setting, feeling, and association, they have had a relatively minimal effect on the cultural landscape and are designed to protect the integrity of the historic property. Based on this relatively minimal impact, and the information presented below, the San Juan Historic City Wall cultural landscape possesses integrity of location, setting, design, materials, workmanship, feeling, and association.

As relates to military occupation, the San Juan Historic City Wall cultural landscape continues to convey its historic associations with both Spanish and US military defense activities that occurred over more than 400 years. Numerous historic landscape features survive from the period of significance, contribute to the property's significance, and help to convey important historic associations.

The property today most closely approximates the wall and bastion system completed circa 1783 that surrounded and enclosed the city of San Juan and connected the fortified positions at La Fortaleza, El Morro, and San Cristóbal that fall outside of the CLR project area. The wall and bastion system remains relatively intact today, and it features the full complement of walls, bastions, embrasures, firing steps, banquettes, garitas or sentry boxes, drainage structures and systems, and gates present circa 1783. Associated circulation features also survive from the period of significance, although some reflect US military occupation period adaptations of the property rather than Spanish-era developments. Repair, replacement, and restoration of some original fabric has occurred since the early twentieth century, with work completed by the various federal government agencies and programs, including the US Army, US Army Corps of Engineers, Civilian Conservation Corps, and National Park Service. These efforts diminish to a degree the integrity of design, materials, and workmanship of the San Juan Historic City Wall cultural landscape. Neither the eastern walls that were removed during the late nineteenth century to allow San Juan to expand nor the segments of the South Walls that were deaccessioned at the same time fall within the CLR study area.

Numerous cultural landscape features survive at San Juan Historic City Wall to support an understanding of the property and its use during the period of significance. These include landform and topography; patterns of spatial organization; views and viewsheds; the curtain walls, parapets, sentry boxes, three gates, and bastions; late

nineteenth-century and World War I-era military additions; the pervasive use of turf lawn within the terreplein; city streets that provide access to and abut the wall system as well as military roads that include El Morro Road and San Agustín Road; bronze plaques identifying several bastions; and several early light poles.

To ensure protection of the many contributing landscape features, the CLR includes a treatment plan that presents a preservation strategy for long-term management of San Juan Historic City Wall. Based upon the goals for the property set forth by the General Management Plan (1985), the Historic Structure Report/Cultural Landscape Report (1991), and park and regional NPS personnel, which identify the need for changes to the cultural landscape to meet current and projected future interpretive, functional, and management goals, **rehabilitation** is recommended by the CLR as the most appropriate overarching treatment approach for the property. Because rehabilitation is defined as the act or process of making possible a compatible use for a property, this approach allows for protection of the site's historic character and resources while carefully addressing the need for limited enhancement of interpretive opportunities and circulation routes, sustainability, expanded access for all visitors to more of the park resources, and the improvement of visitor amenities. As part of rehabilitation treatment, stabilization, protection, and preservation of historic and natural resources are assumed even when new uses are accommodated.

The treatment recommendations and guidelines presented in the CLR outline actions and protocols for addressing such issues as stormwater management and drainage, vegetation management, visitor management and safety, signage and interpretation strategies, and universal accessibility. The CLR also provides guidelines for implementing the specific recommendations.

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Developmental History



FIGURE 6. Castillo San Felipe del Morro (El Morro) and adjacent walls, 2013. (Source: San Juan National Historic Site, Puerto Rico)

Introduction

The San Juan City Walls, now part of the San Juan National Historic Site, were originally constructed to surround the old city of San Juan as a defensive measure. They are "one of the main features of San Juan, and one that gives it a sense of identity."[20] At present, approximately three miles of the original walls remain; the National Historic Site incorporates 2.7 miles of the remaining walls, and the Commonwealth of Puerto Rico maintains the other 0.3 miles (refer to Figure 2). The main portions of the wall were constructed between

20. Berkowitz et al., volume III, section I, 1.

1634 and end of the eighteenth century. Today, only the North, West, and a portion of the South Walls remain; the East Wall and a portion of the South Wall were demolished in 1897 to allow the city to expand eastward. The North Wall faces the Atlantic Ocean and connects Castillo San Felipe del Morro with Castillo San Cristóbal. The West Wall extending from El Morro faces San Juan Bay and includes the earliest sections of masonry.[21] The remaining small portion of the South Wall cuts across the peninsula of land that is known as La Puntilla.

San Juan City Wall is also a contributing resource to the Old San Juan Historic District and is part of the La Fortaleza and the San Juan National Historic Site World Heritage Site.

The following is a general history of the city walls within a larger historical context. At the end of this general historical context is a yearly listing of known specific changes to the walls. The highlighting of specific changes to the walls from the historical narrative was to facilitate easy access to specific information related to historic changes to the walls.

San Juan City Walls *(Las Murallas)* Historical Background and Context

The island that is now Puerto Rico was first visited by Christopher Columbus in November 1493 during his second voyage to the New World. He found the island occupied by the Taíno Indians; possibly as many as 50,000 Taíno lived on the island in many scattered villages. The Taíno were friendly to Columbus, but they made the mistake of showing him the location of gold nuggets in the river and indicated he could take all he wanted. Columbus named the island San Juan Bautista, and he called the town *Puerto Rico* (Rich Port). These designations would eventually be switched.[22]

By 1508, the Spanish began colonizing the island. Soon thereafter, they began clashing with the Taíno, who the Spanish began to enslave without official sanction. The natives, at first, had considered the Spanish to be gods, but when they were able to kill a Spanish expedition leader, the Taíno revolted. The unsuccessful uprising led to the death of 6,000 natives and the dispersal of many of them into the mountains away from Spanish control.[23] In 1613, enslaved Africans were brought to the island, and in 1614, Spain granted the settlers permission to marry the native Taíno.[24] The island, which was now referred to as Puerto Rico, and the town, San Juan, continued to grow in importance for the Spanish Empire.

Throughout most of the sixteenth century Spain was the unrivaled master of the oceans with a mighty navy which brought the wealth of its conquests in the Americas back to Spain. As expected, Spain's discoveries and new-found wealth did not escape the attention of its European rivals. The Spanish navy and its New World lands were constantly tested and probed for weaknesses by its rivals who sought to pick off any piece of wealth.

By 1533, Spain, as a way of maintaining its control of the New World, began to fortify the small island of Puerto Rico. Puerto Rico was the first major island in the Atlantic Ocean with sufficient water, shelter, and supplies that Spanish sailing ships approached after the long voyage from Europe by way of Africa's west coast. It was an especially good place for large ships because the island had a deep-water port that could be defended easily.[25]

After the first defenses at the entrance to the port at San Juan were destroyed during a hurricane, the Spanish needed to construct additional defenses to

21. Ibid., volume I, 43.
22. Magley Rivera, "Puerto Rico's History," Welcome to Puerto Rico!, 1992, accessed January 28, 2019, http://welcome.topuertorico.org/history.shtml.
23. Rivera, n.p.
24. Ibid.
25. National Park Service, *San Juan* [brochure], San Juan National Historic Site, Puerto Rico, US Department of Interior (NP:n.d.).

protect the settlement against attacks by Caribe Indians and pirates. In response, in1533, the Spanish Crown authorized the establishment of a fortress on a rocky promontory fronting the entrance channel into the bay at San Juan. By 1537, construction of La Real Fortaleza de Santa Catalina (Royal Fortress of Saint Catherine; La Fortaleza) began as San Juan's first defensive fortification. To this point, houses were individually constructed as defensive units, and La Fortaleza was built on a bluff overlooking San Juan harbor just below Casa Blanca (White House), the former fortified home of the family of Juan Ponce de León, the first governor of San Juan/Puerto Rico.[26]

Concerns were soon raised by the inhabitants that La Fortaleza would be insufficient to protect the colony as the site was problematic from the beginning, and before La Fortaleza was completed, a second more formidable fortification was erected on the rocky northernmost point on the island, Castillo San Felipe del Morro. The fort was built on *el morro* (the bluff) overlooking both the Atlantic Ocean and San Juan Bay. This spot was a more strategic location that offered a broader view of the approach by sea, which would provide the inhabitants more time to respond to the threat and establish artillery to attack earlier than if the look-out was situated at the mouth of the harbor (Figure 7).[27] Despite the establishment of the fortified position, no army was based on site; the harbor was anticipated to be protected by a neighborhood militia of local residents, officers of the Crown, and *vecinos*,[28] who did not immediately have access to artillery or ammunition.[29]



FIGURE 7. A 1592 navigational map showing Puerto Rico. Note El Morro, the fortress tower (lower right), and the lack of walls along the water. (Source: Sepúlveda Rivera, 61)

The supremacy of the castillo was tested by attacks by the English in 1595 and 1598, both of which were repelled. In 1625, the Dutch, attacking by land, invaded the nascent city of San Juan, ransacking and burning it. This attack also was ultimately repulsed (Figure 8).

As a result of the Dutch incursion, Spanish planners decided that walls should be erected around the city and a second fortification should be created to protect El Morro and the city from land invasion. The second fortification, Castillo San Cristóbal, and city walls were begun in 1634.[30] Over the next 250 years, the walls around San Juan grew in fits and starts, and they underwent renovations even as they expanded.[31]

26. Berkowitz et al., volume III, section I, 5.
27. Jorge A. Rodríguez López, and Juan M. Rivera Groennou, SARQGIS LLC, *Archaeological Assessment Phase 1A-1B, Santa Elena Gunpowder Magazine Retaining Wall Project, San Juan National Historic Site. San Juan, Puerto Rico* (San Juan, Puerto Rico: National Park Service, September 2018), 22-23.
28. Vecinos were residents who owned property within the city limits. Property was defined as land, slaves, or buildings constructed of masonry.
29. Rodríguez López and Rivera Groennou, 23.
30. Berkowitz et al., volume I, section I, 21.
31. Santiago Cazull, volume 1, i.



FIGURE 8. *The Recapture of San Juan in Puerto Rico* [oil painting] by Eugenio Cajés, 1634-1635, Museum del Prado (in the public domain) features Juan de Haro y Sanvítores, governor of Puerto Rico, directing the battle against the Dutch as they are driven from San Juan in 1625. Note the nascent wall on the bay behind the governor's head.

Sixteenth-Century Walls (Figure 9)

The earliest defensive buildings in San Juan were the fortified houses of the settlers. The best remaining example is Casa Blanca, built by the family of Juan Ponce de León. Casa Blanca is located on a bluff that overlooks San Juan Harbor, and it became incorporated into the city's next constructed layer of defense, La Fortaleza, constructed between 1537 and 1540, which is now the home of Puerto Rico's governors.[32] Although La Fortaleza was the city's first permanent fortification, its location was not ideal, and a more formidable fortification was constructed on the bluffs at the northernmost point on the island.

Begun in 1539, Castillo San Felipe del Morro was almost continually reinforced and updated by the Spanish through the nineteenth century. After La Fortaleza and El Morro were constructed, the bluff along San Juan Harbor between the two began to be fortified with a wall and bastions. A gate to the city was installed at La Fortaleza (La Puerta de San Juan [Gate of Saint John], generally referred to as the San Juan Gate), and it is believed that El Baluarte de Santa Elena (Bastion of Saint Helena), generally called Santa Elena, was constructed on the wall by the mid-1580s.[33] What is now called the West Wall became an important part of the island's defensive system.

32. Berkowitz et al., volume III, Section [II], 5.

33. Ibid., 10.

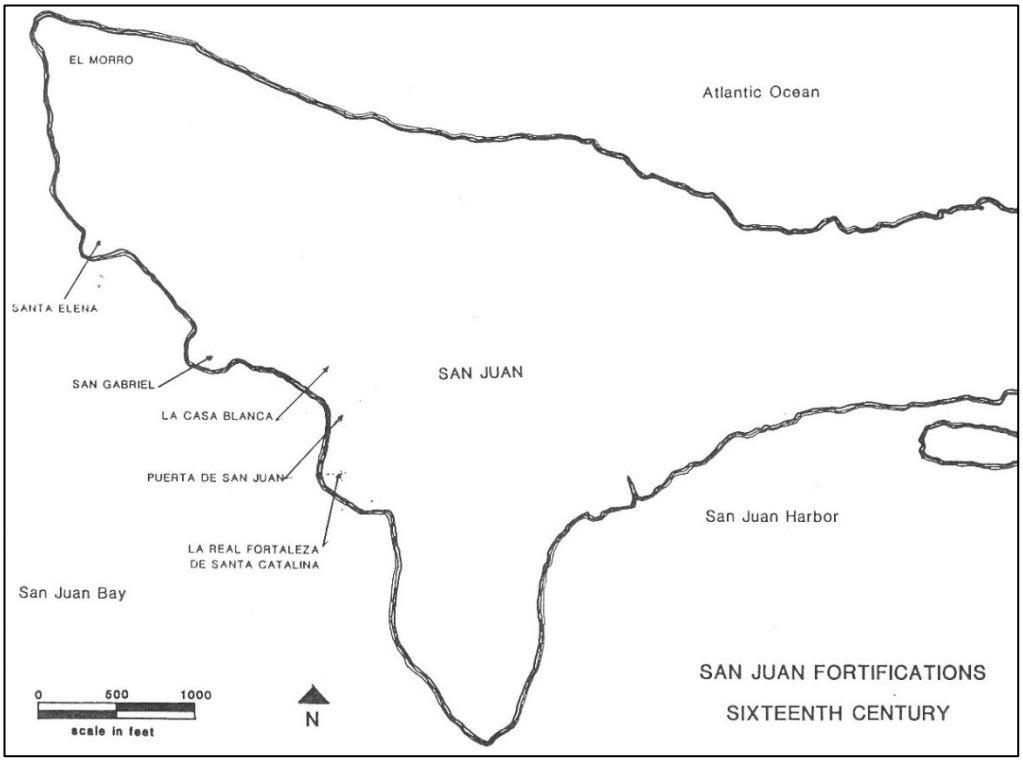


FIGURE 9. San Juan Fortifications in the sixteenth century, drawn by K. Faust and annotated by R. Crisson. (Source: Berkowitz et al., volume III, section III, 6)

A 1588 defensive plan conceived for King Philip II of Spain was executed by Juan de Tejeda and the Italian engineer Juan Bautista Antonelli for shore defenses. This plan took into consideration the rugged terrain of the harbor and placed walls and attached defenses, such as bastions, in those areas that were deemed susceptible to attack.[34]

The 1588 defensive plan was significant, but it did not address all the site's problems. Antonelli changed the configuration of the castle and began the construction and the reinforcement of existing wall structures along the west edge of the island. The fort was

> given a bastioned front facing the land, a long scarp wall connecting two semi-bastions, from which the land was defended by direct, flanking cross-fire. An open moat served as an obstacle to the enemy and a drawbridge was constructed over it to communicate the castle with its surroundings . . . a ravelin was the outerwork and there was a glasis [sic] whose slope provides a protective trench for the fortification.[35]

El Morro became a polygonal shape as opposed to the original tower structure, and the unstructured land extending between the village and the fort became the fort's glacis.

The island's defenses worked against an English attack led by Sir Francis Drake in 1595, but they

34. Ibid., 11.

35. Tamara Blanes Martín, "Comparative Study of the Works of the Antonellis: El Morro Castle, San Juan; El Morro Castle, Havana; and El Morro Castle, Cartagena de Indias," in *Third International Symposium of Historic Preservation on Puerto Rico and the Caribbean*, May 9-13, 1994, San Juan, Puerto Rico (San Juan, PR: San Juan National Historic Site, National Park Service, 1996), 43-44.

proved less reliable in 1598 against another English attack led by Sir George Clifford, Third Earl of Cumberland.[36] Attacking from the unfortified eastern side, Clifford took possession of the fledgling city of San Juan from June until August, 1598, leaving only because dysentery was decimating his troops. He left the city in ruins and provided a new lesson for Spanish planners in devising defenses for the island.[37]

By 1599, repairs to the easternmost sections of El Morro commenced and included a general upgrading of the entire fort. The government also created El Fortín de San Juan de la Cruz (Fort of Saint John of the Cross; El Cañuelo) at the mouth of the harbor as a further foil to possible invasion from the harbor. However, no attempts were made to fortify the north, south, or east fronts of the city.

Seventeenth-Century Walls (Figure 10)

The seventeenth century was a period of comprehensive construction related to San Juan's walls. It was during this century that Spanish planners decided that the city needed to be completely encircled with a fortified wall and began the undertaking.

The damages caused by the occupation of San Juan by Clifford at the end of the sixteenth century required extensive repairs and changes to the existing West Wall and fortifications, La Fortaleza and El Morro, that extended into the early seventeenth century. Nevertheless, fortification of the entire city was not taken seriously until after 1625. At that time, Dutch General Boudewijn Hendricksz (sometimes Hendrikszoon or Balduino Enrico to the Spanish) attacked, ransacked, and burned San Juan in a month-long siege in 1625. General Hendrickz sailed into the harbor, past the gun fire of El Morro and the new harbor fortification, El Cañuelo, and quickly attacked the fort by land across the glacis (the open expanse to the southeast of El Morro, now referred to as the esplanade). Ultimately, General Hendrickz and his forces were driven from the island, barely escaping (refer to Figure 8).[38]

Although the Dutch were finally routed, Hendricksz's attack sent a chill through the Spanish administration. In response to the Dutch attacks and the increasing threat posed by pirates and corsairs in the Caribbean, King Philip IV of Spain, recognizing the strategic importance of San Juan, poured money into city's defenses. Plans were then made to fortify the city by building a system of forts connected by walls. The plans built on an earlier proposal by Captain Diego Menéndez Valdés in 1587 to include curtain walls in addition to artillery batteries. As implemented beginning in the 1630s, the system included a continuous curtain wall between El Morro and La Fortaleza, following the edge of the promontory, which would establish a formidable vertical obstacle to attack given the precipitous drop between the promontory and the rocky shoreline. The wall was also to continue along the south side of the city. All told, the wall was to measure approximately 10,000 feet in length around the southern and western part of the city between El Morro and the highlands of San Cristóbal.[39] The curtain walls facing the bay were completed by 1639. Three artillery positions were located within this part of the system—San Agustín, San Fernando, and Santa Elena.[40] It was at this time that Santa Elena and San Agustín Bastions were established atop the promontory, presenting the form of a ravelin. In addition to these improvements, El Cañuelo at the harbor entrance was rebuilt, and San Cristóbal was begun.[41]

36. Ibid.
37. Ibid.
38. Revolvy, Battle of San Juan 1625, accessed March 21, 2019, https://www.revolvy.com/topic/Battle%20of%20San%20Juan%20(1625).
39. Berkowitz et al., volume III, Section [II], 13; Rodríguez López and Rivera Groennou, 30.
40. Ibid., 31-33.
41. Berkowitz et al., III, 11.

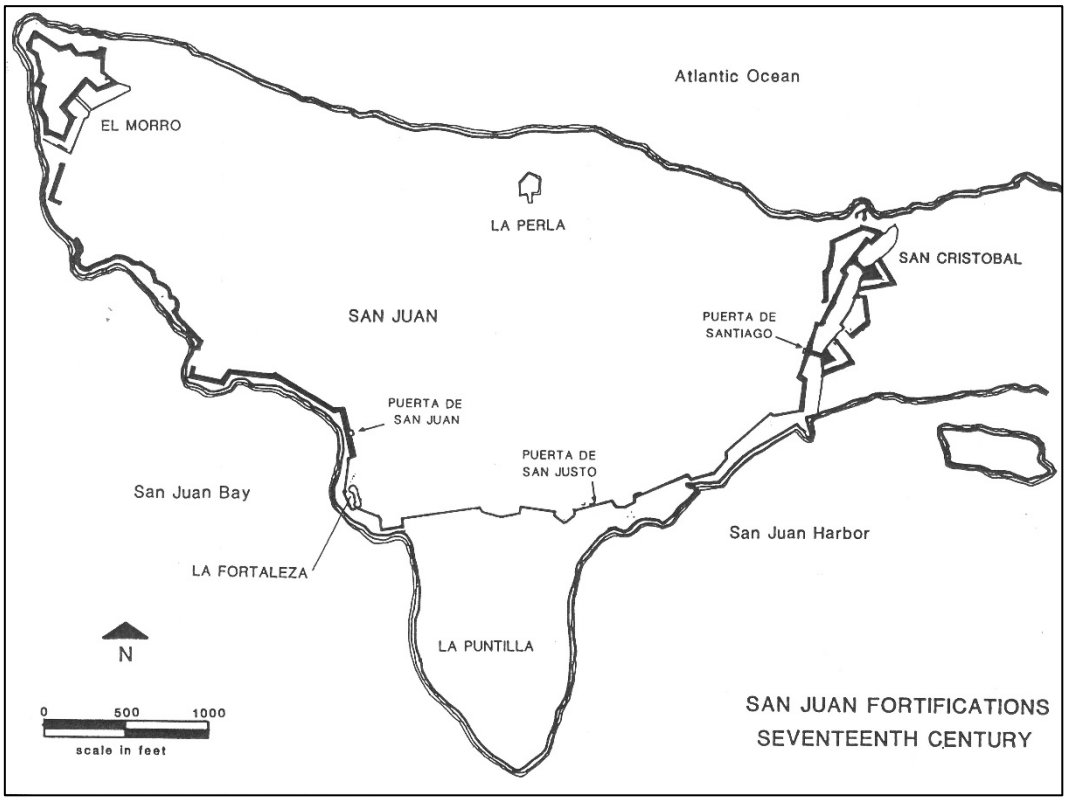


FIGURE 10. San Juan Fortifications in the seventeenth century, drawn by K. Faust and annotated by R. Crisson. (Source: Berkowitz et al., volume III, section III, 14)

A northern wall was not constructed at this time as it was believed that the high, rocky Atlantic bluff could be defended by the cross-fire from El Morro and San Cristóbal.[42] King Philip IV of Spain believed the island to be his vanguard in the West Indies and the most coveted of all his possessions in the Caribbean.[43] In 1631, he placed Governor Enrique Enríquez de Sotomayor in charge of enclosing and defending the city. Governor Enríquez described the defensive walls as

> having a terreplein surface, with a scarped exterior wall battered in a 3 to 1 slope. The walls and embrasures consisted of an earthen wall covered with stones and stucco. The mix was a mezcal real (one measure of lime and one of sand). The walls typically measured 5.9 meters (approximately 17 feet, 6 inches) thick at their highest point and averaged 7.5 meters (approximately 22 feet, 6 inches) high.[44]

During this century, the following fortifications were constructed along the South Wall: Baluarte de la Derecha de San Justo y Pastor (Right Bastion of Saint Just and Pastor; San Justo for both); La Cortadura de las Palmas de San José (Parapet of the Palmas of Saint Joseph); El Baluarte de las Palmas de San José (Bastion of the Palms of Saint Joseph; San José or Las Palmas); El Baluarte del Muelle (Bastion of the Wharf); El Baluarte de Nuestra Señora de la Inmaculada Concepción (Bastion of Our Lady of the Immaculate Conception; La Concepción); El Baluarte de San Pedro Martir (Bastion of Saint Peter the Martyr; San Pedro); and, La Cortina de San Rafael (Curtain Wall of Saint Raphael). On the West Wall, Battery San Gabriel was torn down and rebuilt as La Batería San Agustín (Battery of Saint Augustine).

42. Ibid., volume I, 41.
43. Berkowitz et al., volume III, section [II], 13.
44. Hostos, 31, in Berkowitz et al., volume III, section [II], 13.

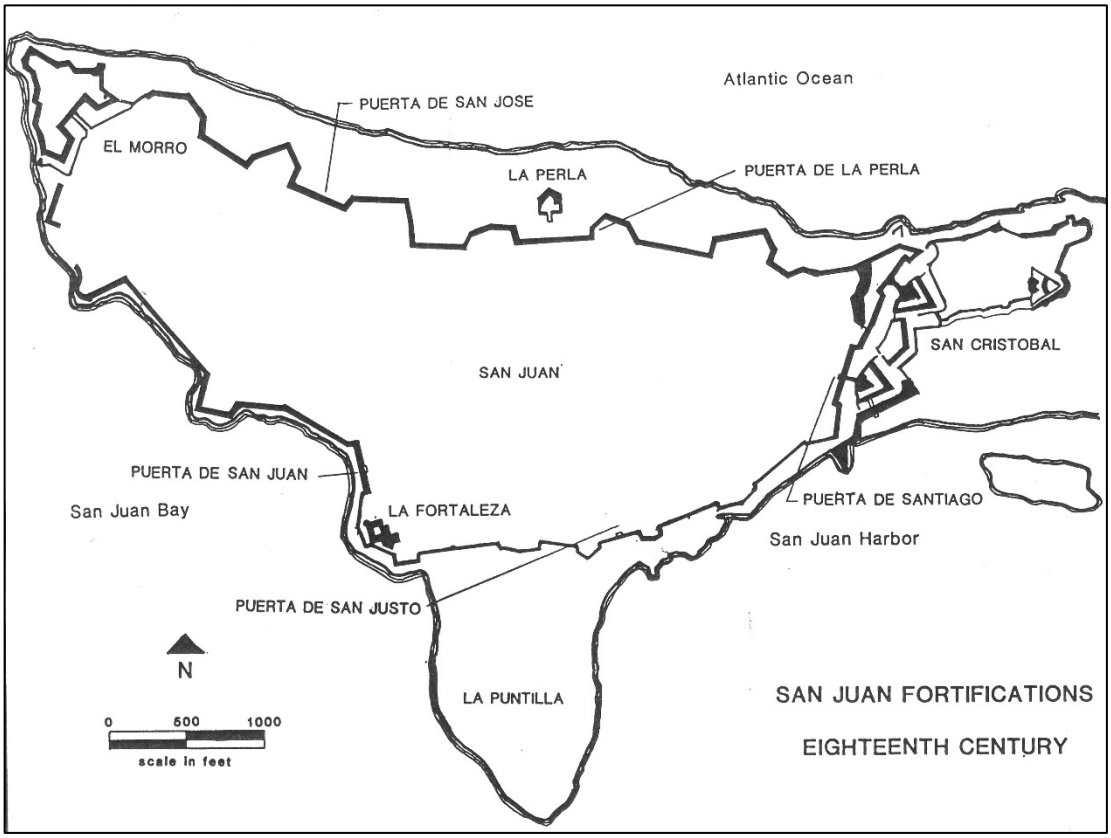


FIGURE 11. San Juan Fortifications in the eighteenth century, drawn by K. Faust and annotated by R. Crisson. (Source: Berkowitz et al., volume III, section III, 22)

There was no wall along the north face of the city between El Morro and San Cristóbal, but a defensive fortification, a small redoubt, El Fortín de la Perla (Fort of the Pearl; La Perla) was built on the north coast. In addition, La Puerta de San Justo (Gate of Saint Just) was constructed at the foot of present-day Calle San Justo on the South Wall. The gate was embellished with the phrase "*Dominus mihi adjutor quem timebo?*" (God is my helper who should I fear?). However, after this period the defenses at San Juan languished, although the heavy wood and bronze-studded doors were added to San Juan Gate by 1749.

A French map from 1764 depicted the fortifications around San Juan and does not show a completed North Wall (Bellin 1764).

Eighteenth-Century Walls (Figure 11)

During the first half of the eighteenth century, Puerto Rico was nearly forgotten as result of an alliance between the Spanish and French Bourbon monarchies that produced a period of calm for Spain. This period of calm was broken in 1763 at the conclusion of the Seven Years' War with renewed belligerency from Great Britain against Spain. Charles III, King of Spain, initiated a series of reforms and declared San Juan a "Defense of the First Order" in 1765 to block British incursions.[45] In order to protect his "foundation of true wealth," Charles approved a far-reaching plan for the improvement of the fortifications at San Juan. The plan, created by Field Marshal General Alexander (Alejandro) O'Reilly and executed by Chief of Engineers Thomas (Tomás) O'Daly and Juan Francisco Mestre, forever changed the character of the city of San Juan.[46]

45. Berkowitz et al., volume III, section [II], 21.

46. Ibid.

The O'Reilly plan strengthened and upgraded all the existing fortifications and built the final component, the North Wall. The plan created San Juan's famous "Defense-by-Depth" system, making it one of the strongest fortified cities in the Caribbean.[47] This plan also essentially gave the Spanish military control of the city by placing the responsibility of city construction and growth outside the walls in its hands.[48] The execution of the plan ultimately led to the complete enclosure of the city by walls by the end of the eighteenth century.

Major construction at San Cristóbal was completed by 1783, and major construction at El Morro was completed by 1790. The complete encircling of the city was accomplished by 1785 (Figure 12).[49] A map by Juan Francisco Mestre from 1792 showed the ravine had been filled and Calvary Hill had been removed; the esplanade had become a true fortification glacis (Figure 13). The large depression or hole at the southeast end was also gone. The ravine and Calvary Hill appear to have been marked on the map, not as landforms but likely as indicators of depressions, rough spots, or changes in elevation on the plain. Elevation changes remained but none were as significant as those shown on earlier maps.

The Mestre map also showed several pathways across the glacis with new paths in a circuit around the plain so that all the bastions and walls were reachable (refer to Figure 13).[50] The walls, except for a small area on the west near the fortress, were now completed around the glacis, and a powder house, or polvorín, had been erected near Santa Elena Bastion.

The North Wall complemented and accentuated the steep slopes at the base of the promontory as an obstacle to a potential enemy attack, extending as sheer masonry structures for 20 feet or more along the edge of the promontory, with an additional 4 feet or so of parapet above the esplanade. The parapet walls were designed to provide cover and concealment for the soldiers manning artillery at the openings in the wall known as embrasures. These and other walls in the system featured stormwater-management systems designed to channel and conduct flow through openings in the walls. The openings, referred to as scuppers, were set at intervals along the interior face of the bastion and curtain walls. Paved channels and grass swales often directed the flow toward the openings. There were openings left through the walls at the base of many firing steps where stormwater could be channeled to exit the esplanade.

This massive building project led to the creation of the following fortifications along the South Wall: Frente Marítimo (Maritime Front), the South Wall extended to the West Wall; and Capilla del Cristo de la Salud (Capilla del Cristo; Chapel of the Christ of Good Health). The newly completed North Wall, which now connected El Morro and San Cristóbal, included: El Baluarte de San Sebastián (Bastion of Saint Sebastian, San Sebastián); El Baluarte de Santo Tomás (the Bastion of Saint Thomas, Santo Tomás); El Baluarte de Santa Rosa (Bastion of Saint Rose, Santa Rosa); El Baluarte de San Antonio (Bastion of Saint Anthony, San Antonio); El Baluarte de las Ánimas (Bastion of the Souls, Las Ánimas); and El Baluarte de Santo Domingo (Bastion of Saint Dominic, Santo Domingo). The eastern defenses were extensively reinforced, and the East Wall now included: La Batería Provisional de San Francisco de Paula (Temporary Battery of Saint Francis of de Paula, San Francisco), which had a terreplein and parapet with four east-facing embrasures; El Revellín del Príncipe (Ravelin of the Prince); and La Puerta de Tierra (Land Gate).[51]

47. Ibid.
48. Ibid., 23.
49. Ibid.
50. Mestre, in Sepúlveda Rivera, 129.
51. Berkowitz et al., volume III, section [II], 27.

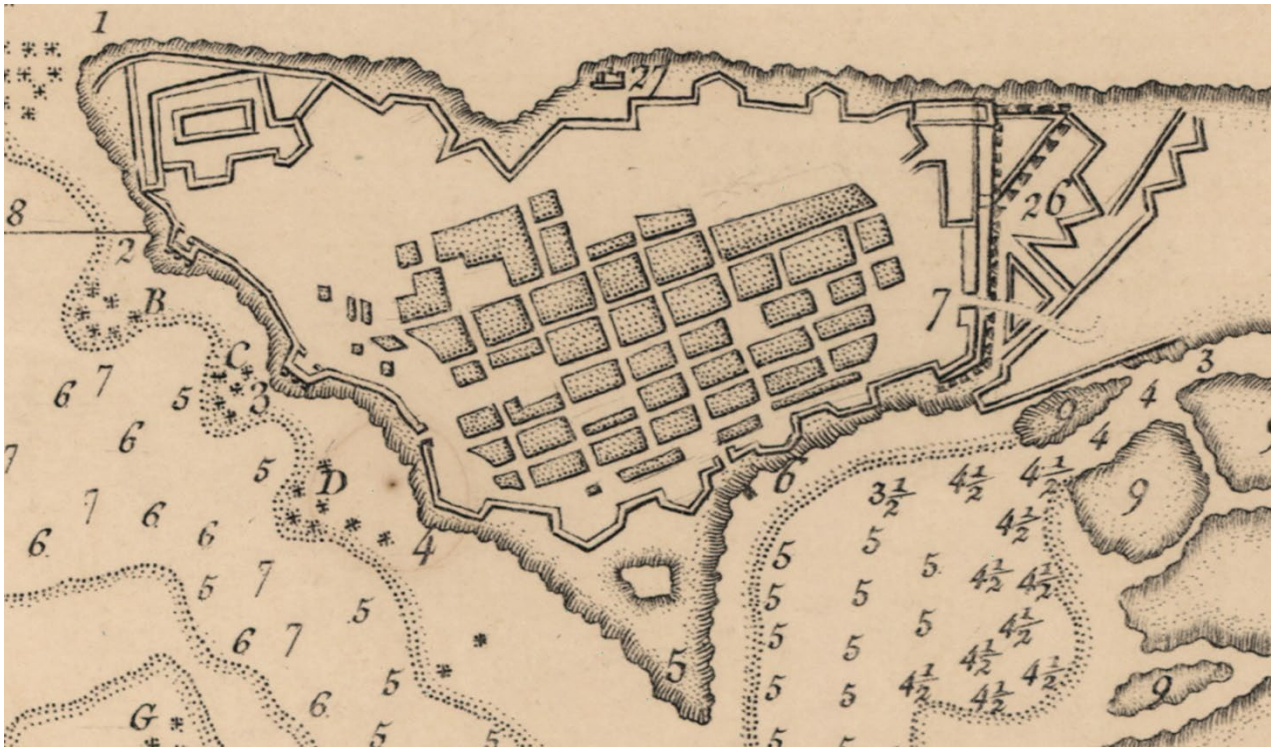


FIGURE 12. 1785 map of the fortifications at San Juan showing the walls encircling of the city. (Source: López de Vargas Machuca, *Plano de Puerto Rico: Dale a Luz*. Madrid, 1785, https://www.loc.gov/item/74690595)

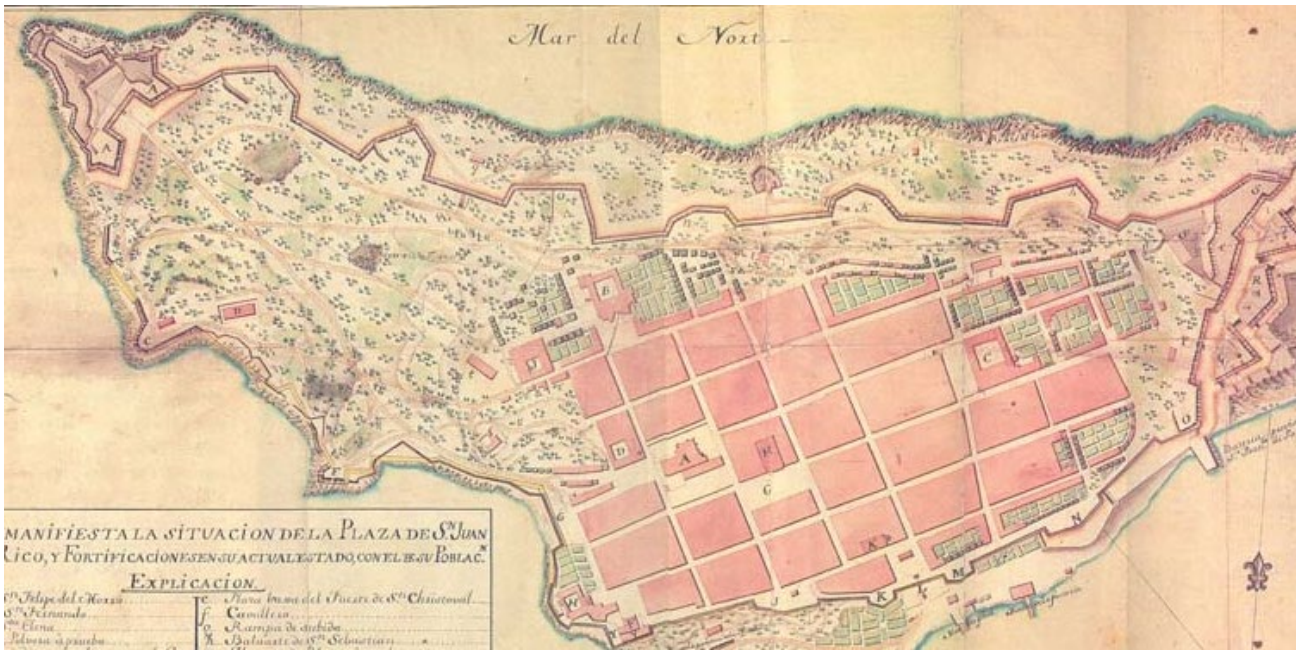


FIGURE 13. The walls and pathways associated with the fortifications in 1792 from Juan Francisco Mestre's map. (Source: *Manuscrito por Juan Francisco Mestre,* Servicio Histórico Militar Núm. 5795, Madrid)

The West Wall was redesigned and maintained both as a defensive wall and a massive retaining wall. Santa Elena Bastion was redesigned to include eight embrasures directed north and south providing 180 degrees of firing coverage. The wall south of Santa Elena was reconstructed as a straight expanse of curtain wall with twelve new embrasures facing north and south. San Agustín Bastion was rebuilt with a wider parapet and included banquettes, and four embrasures. The wall that followed the cove was redesigned as a straight curtain wall with seven embrasures. The West Wall

section adjoining the San Juan Gate was realigned, and three new embrasures were added. The outer wall of Santa Catalina Bastion was reconstructed probably to the height of the West Wall.[52]

By 1792, only two buildings were shown on the glacis, both were associated with Santa Elena, and both were used for storage, probably for explosives which were dangerous to store within the bastions or El Morro itself. There is one named building on the southeast edge of the glacis, but its name is not clear on the map.

Other work undertaken toward making San Juan a "Defense of the First Order" included the construction of Batería de San Fernando (Battery of Saint Ferdinand; San Fernando) on the West Wall south of El Morro. Batería San Gabriel (Battery of Saint Gabriel), also along the West Wall, was noted in poor condition with cracked and collapsed walls; when it was reconstructed it was renamed San Agustín. La Puerta de Salida (the Exit Gate) was constructed as part of Santo Tomás Battery.

In 1797, the new fortifications were tested by naval and land assaults by British forces under the direction of General Sir Ralph Abercromby and Admiral Henry Harvey. Harvey's ships were sighted off San Juan on April 17, 1797, and they sailed into the harbor on April 18. From April 18 until May 2, 1797, the British blockaded San Juan Harbor and proceeded to principally bombard San Gerónimo, a small defensive battery on Boquerón Beach, and the San Antonio Bridge connecting the island to the mainland.[53] The battering of San Gerónimo and the bridge was almost continuous, on some days it was exceptionally heavy. Repairs were constantly carried on the bridge and bastion.[54]

The British landed German and impressed French soldiers, but they never gained a foothold.[55] The Spanish, calling in reserves from the countryside, kept the British ships occupied without them ever scoring a victory. On the evening of April 30, the fleet began slipping away under cover of darkness, and by May 2, all the British had left.

The fortifications proved their worth. They would continue to be improved and upgraded until the end of the Spanish period in 1898.

At the end of the eighteenth century, the Spanish had created a walled and heavily fortified city in San Juan. The Spanish military was in control of the city, and construction was completed at their discretion. What is now the esplanade had become a true fortress glacis, and it would be maintained that way until 1898.

Figure 14 illustrates the battle between the Spanish forces and those of Abercromby and Harvey. It presents an unusual view of the East Wall, its named fortifications, the outlying perimeter fortifications, and the arrangement of armaments within those fortifications. Along the wall, the Bastions of Santiago (4 in the image), San Pedro (5), and Las Palmas (7) are shown. The next outward layer is the Battery of San Francisco de Paula immediately below Bastion of San Pedro. Farther out, the first layer of defense for the walls includes the Power Battery at Miraflores (10), San Gerónimo Battery (8), and the San Antonio Battery.

While the city walls are most often the object of intense scrutiny for their defensive nature, they were, essentially, that last line of defense for San Juan. The many small, scattered batteries, powder stores, and other types of fortifications surrounding the island were the immediate front line of defense. The plan for the defense of the city relied on these small outlying sites to stop, hold-off, or weaken the enemy before it ever got to the massive city walls. This defense-by-depth system, as illustrated by the drawing, worked well for the island until the end of the nineteenth century.

52. Ibid.
53. Sepúlveda Rivera, 151.
54. Maria M. Alonso and Malagros Flores, *The Eighteenth Century Caribbean & the British Attack on Puerto Rico in 1797: With Chronicles* (National Park Service, 1997), 176-206.
55. Ibid., 188.

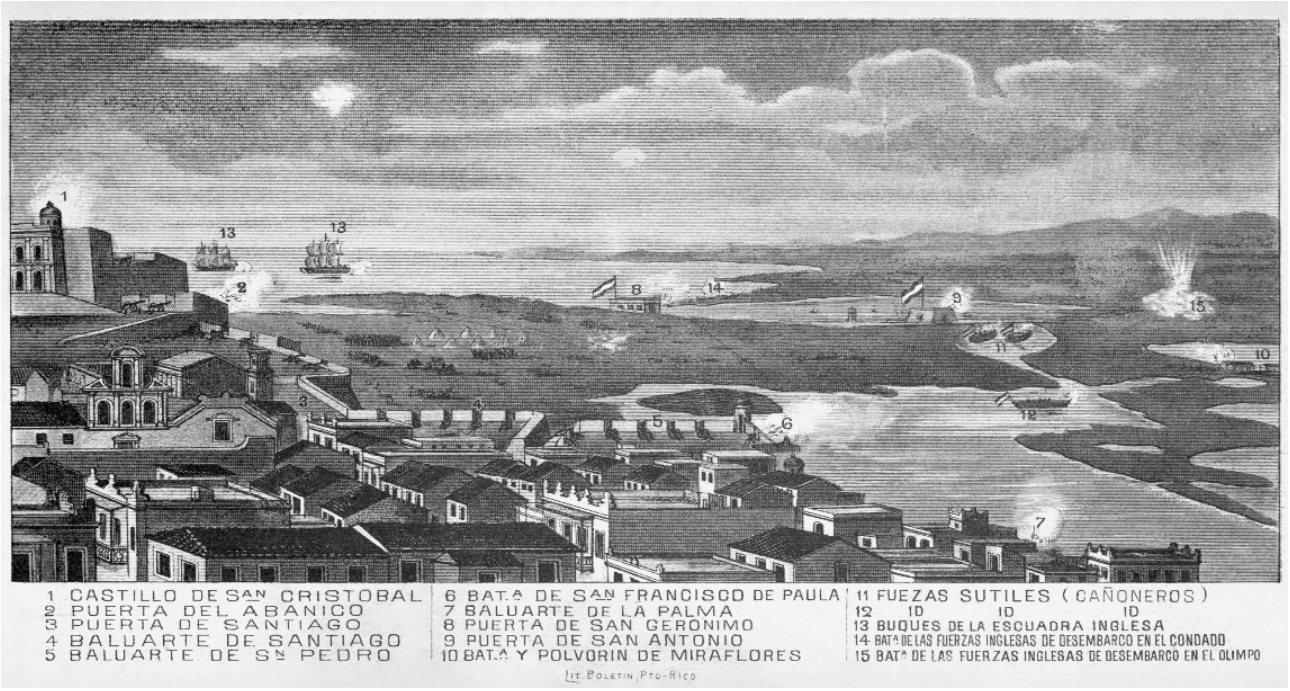


FIGURE 14. A drawing of the painting *Exvoto del sito de San Juan por los Ingleses* (or *Ex-voto del Ataque Británico a San Juan en 1797*)[56] by José Campeche y Jordán from *Lealtad y Heroismo de la Isla Puerto Rico, 1797-1897*, edited by Alejandro Ynfiesta. (San Juan, PR: A. Lynn é Hijos de Pérez Moris, 1897, in the Public Domain)

56. The painting is identified as *Exvoto del sito de San Juan por los ingleses* by Manuel Minero in *Asedio de San Juan pro los ingleses 1797* (San Juan: Museo de Mer, 2016) and as *Ex-voto del Ataque Británico a San Juan en 1797* by José Rigau Pérez (https://www.geoisla.com/2017/04/conferencia-sobre-la-pintura-de-jose-campeche-ex-voto-del-ataque-britanico-a-san-juan-en-1797/).

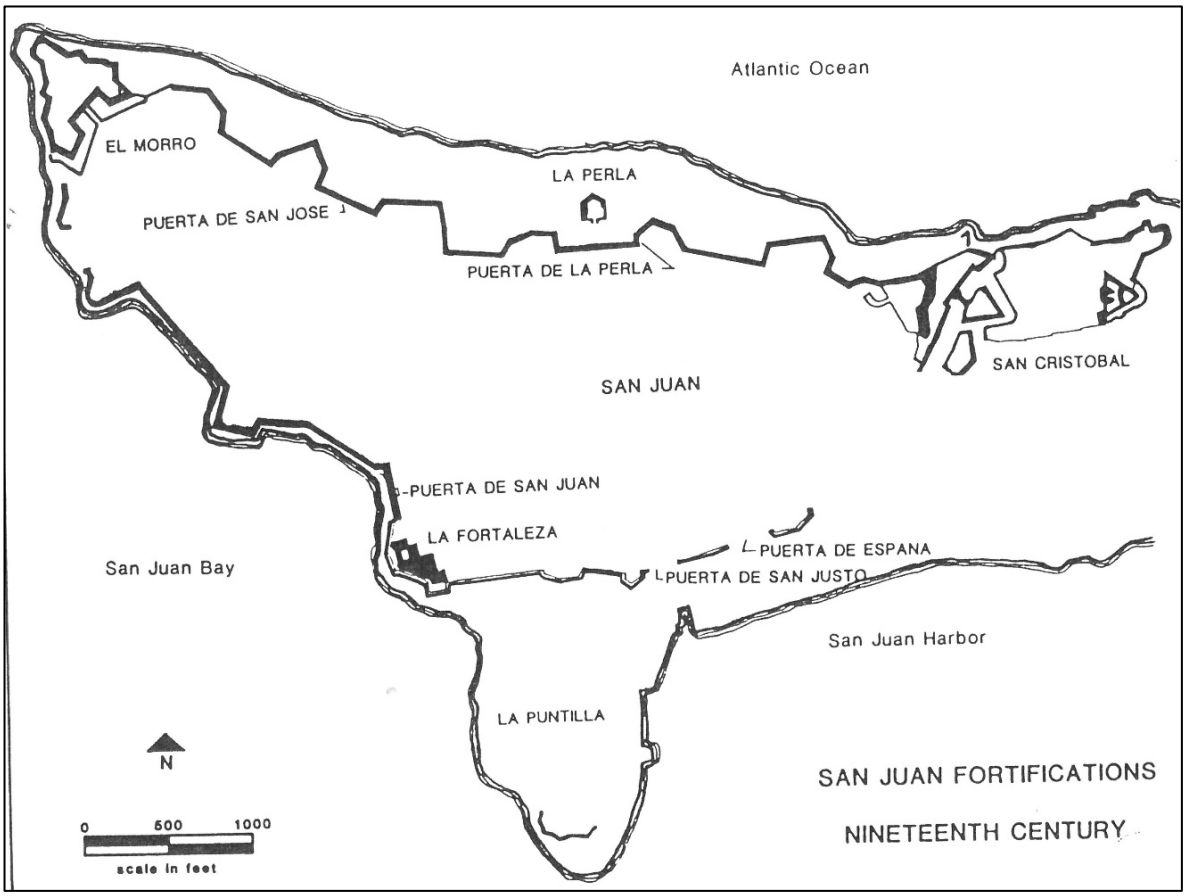


FIGURE 15. San Juan Fortifications in the nineteenth century showing the break made in 1897 to the east and south wall, drawn by K. Faust and annotated by R. Crisson. (Source: Berkowitz et al., volume III, section III, 30)

Nineteenth-Century Walls (Figure 15)

The nineteenth century was a period of great change for the walls. This change had less to do with military defensive policy, although changes were made to accommodate changes in weaponry, and more to do with the island's strategic economic and social policies. By the middle of the century, San Juan's growing population and construction needs were outgrowing the area circumscribed by the walls, and the walls were beginning to interfere with economic growth in the city. The South Wall, which faced the port dockage, had already become defensively obsolete.[57]

During the early nineteenth century, the West Walls underwent needed repairs. During the period 1808 through 1811, Ignacio Mascaró reported the curtain wall at Santa Elena, West Wall, had been undermined because of the "onslaught of the sea," and dressed and rubble stone were being prepared and stored until repairs were made. He noted other unspecified West Wall failures and the rehabilitation of the San Juan Gate.[58] In addition, the North Wall from El Baluarte de Santa Rosa to San Cristóbal was covered with "fine smooth stucco to include all of the parapet interiors, embrasure sides."[59]

The effort to maintain the walls was continuous, and the Spanish completed stucco and plaster work on them periodically during the eighteenth and nineteenth centuries, including 1771, 1783,

57. Berkowitz et al., volume III, section [II], 35.
58. Ibid., 29.
59. Ibid., 36.

1808, and 1832. By 1832, it was reported repairs, cleaning, and restuccoing of the walls and fortifications necessitated by the British attack had been completed, but it is unclear how much of the walls had been stuccoed.[60] In 1839, the Spanish completed a years-long effort to "clean and resurface with white stucco" those surfaces then covered with stucco.[61]

The Spanish applied stucco to the exterior walls as a protective coating that shed rainwater from the wall surfaces and reduced penetration of moisture into the wall.[62]. Over a period of years, the stucco on the top horizontal surfaces of the wall eroded from rainfall, and the wall thereafter became vulnerable to water penetration that contributed to the deterioration of the mortar and stone masonry as well as the erosion of the stucco on the vertical surfaces of the wall.[63] Maintenance of the walls seemed to decline after midcentury, and it was largely neglected and deferred by the United States during the early twentieth century.[64] Nevertheless, during much of the century, the walls were repaired and kept defensively ready with new armaments and men.

Changes also occurred outside the wall. In 1814, the city placed its municipal cemetery outside the North Wall, and, by 1820, the area around what had been La Perla fort was now occupied, although it, too, was outside the wall.[65] In 1879, La Puntilla, the peninsula south of the fortified walls, was partially filled to create a new station for the military (La Marina).

Civilian life within the wall surrounding San Juan was exceptionally crowded and was lived under military dictatorship.[66] Later, during the nineteenth century, but especially during the period from about 1840 to 1870, Spanish military architecture within the city served as a way of controlling the civilian population through a system of visual and physical experiences. Military buildings, especially barracks, were strategically placed across the city to ensure a constant intermingling of military personnel and the public. The Spanish government sought to maintain order within the civilian population of San Juan by showing them the order maintained by military personnel and the might of Spanish authority.[67]

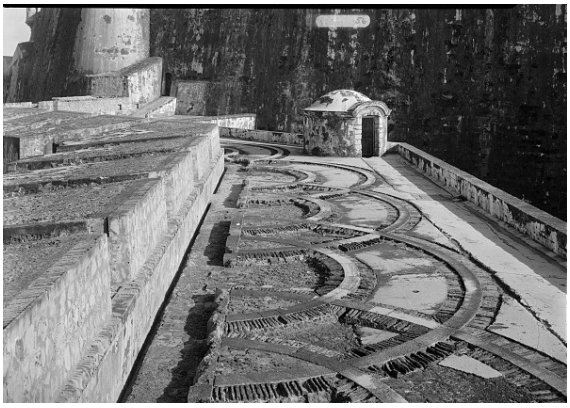


FIGURE 16. Tracks for modern guns at Santa Barbara Bastion showing modifications to the walls to accommodate changing military technology. (Source: SJNHS, Park Archives)

Some alterations to the walls were the result of accommodating new types of gun emplacements. Figure 16 shows tracks for modern guns that were wheeled and could be pivoted to face different directions, which were installed at Santa Barbara Bastion during the 1850s.[68]

60. Ibid., volume III, section III, 24.
61. United States Committee. International Council on Monuments and Sites (US/ICOMOS), *Report on the Conservation of the Masonry Fortification Walls, San Juan, Puerto Rico, 7 to 11 June 1999* (Washington, DC: US/ICOMOS,1999), 1-3.
62. Ibid., n.p.
63. Ibid., n.p.
64. Berkowitz et al., volume III, section [ii], 45.
65. Berkowitz et al., volume III, section I, 42.
66. Library of Congress, "Radicalism and Repression."
67. Juan Blanco, "A Study of the Morphological Structure of the System of Fortifications of San Juan de Puerto Rico," pp. 773-864, in *Historic Structure Report Quarters 209* (New York: The Center for Preservation Research, Columbia University, 1989), 8-13.
68. Berkowitz et al., volume III, section [II], 35.

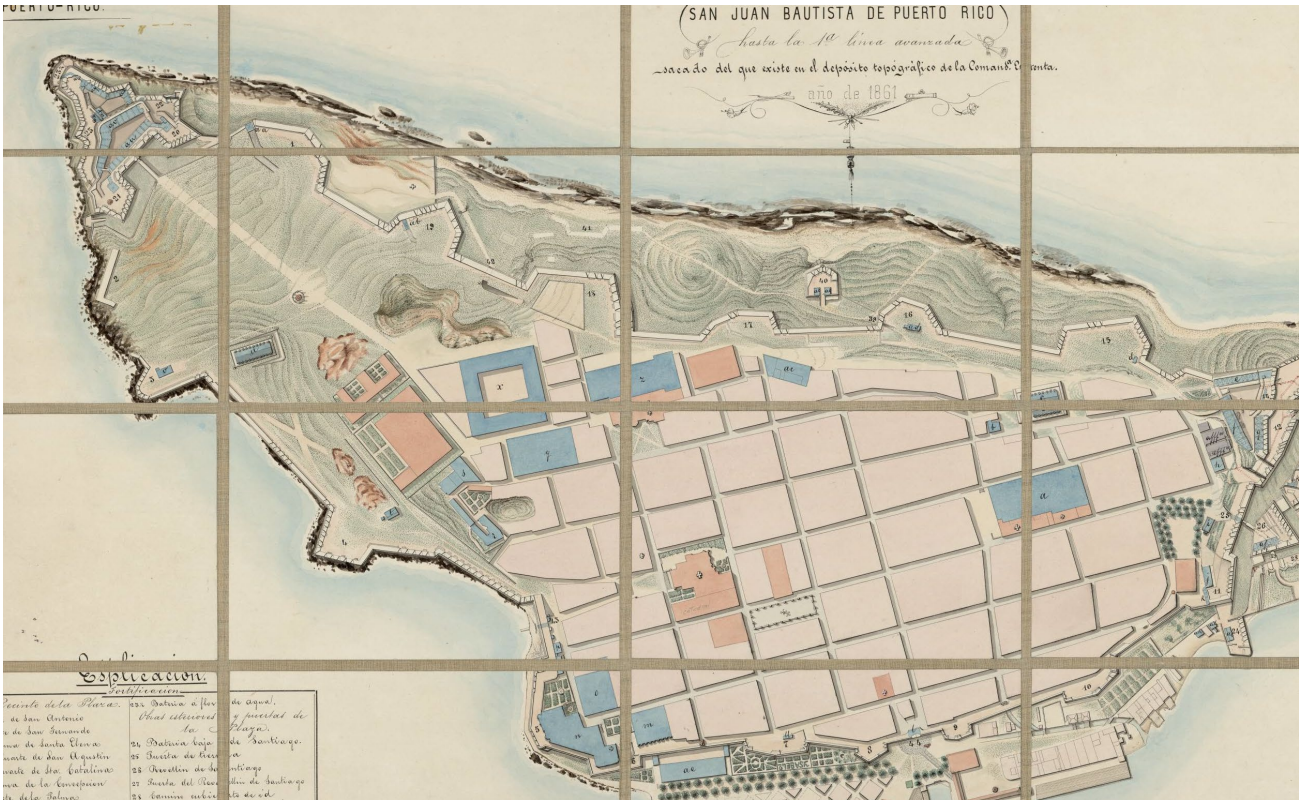


FIGURE 17. Detail from Plan of the Square of San Juan Bautista, Puerto Rico, 1861. (Source: Park Archives, SJNHS ARJT4C2601 1861)

By 1861, the glacis, what is now the Esplanade, was filled in and leveled (Figure 17).[69] There was just one pathway through it—the path straight through the middle of it that is now El Morro Road. Certainly, pathways to the various bastions must have existed, but these were not shown on this map.

During the nineteenth century, buildings and structures were increasing erected on the open space between El Morro and the city. While there had always been a scattering of small houses along the edge of the glacis, the houses at this time had been replaced by military and governmental buildings. By the 1860s, maps indicated that roads were being formalized that provided access to El Cuartel de Ballajá (or the Ballajá Barracks), El Asilo de la Beneficencia (the Welfare Asylum), built circa 1841, and el Manicomio (the Insane Asylum) built in 1854. Calle de Cementerio (Cemetery Road) and an associated tunnel that extends beneath the North Walls were added to provide access to Old San Juan Cemetery by 1864 (refer to Figure 17).

The new Ballajá Barracks was erected into the glacis, forming a new edge. The Santa Elena guard and powder house were still on the western edge and remained there for the next 150 years. In 1876, earthquakes rocked the city of San Juan and highlighted the need to eliminate overcrowding in the city. Discussions subsequently ensued regarding the military infrastructure in the city and the need for the city to expand.

69. Detail of *Plan of the Square of San Juan Bautista, Puerto Rico*, 1861, in Sepúlveda Rivera, 158.



FIGURE 18. Detail from map by F. Roldán, *Levantado por el Cuerpo de Ingenieros Militares: Plano de Plaza de San Juan, 1889*. (Source: Park Archives, SJNHS, ARJT4C262

A Spanish map by F. Roldán illustrated the completed walled fortification of San Juan in 1889 (Figure 18).[70] During the late nineteenth century, the Spanish established a concrete coastal defense battery on the promontory overlooking San Juan Harbor to the south of El Morro as part of an effort to modernize the complex. Known as Batería de San Fernando, the structure was used to emplace Ordóñez cannon, a type of gun designed by Spanish Army artillery officer Salvador Diaz Ordóñez. Other structures include a massive retaining wall located behind El Polvorín built in conjunction with the powder magazine, and a stone wall that follows Casa Rosa Road near the former guardhouse.

An 1897 Department of the Interior map of San Juan, which was then partially updated in 1940, appears to show portions of the city walls on the southeast removed and all the Spanish military buildings on and surrounding the glacis (Figure 19).[71] By this date, the military had placed *Parabellones Militares* (military pavilions), probably barracks, headquarters, and mess halls, just north of el Manicomio. At the San Agustín Bastion, several new, associated military pavilions also sprang up, and there was a scatter of small buildings between Santa Elena and San Agustín Bastions. An area close to San Fernando Bastion was fenced off, and it is not clear whether this was part of the 1897 map or the later edited map. This area appeared to be vacant.

70. F. Roldán, *Levantado Por el Cuerpo de ingeniéros Militares: Plano de la Plaza de San Juan, 1889.* On file, SJNHS, Park Archives, ARJT4C262.

71. Detail from *Plano del Recinto Amurallado de la Cuidad de San Juan, P.R. 1897* (updated 1940), accessed March 21, 2019, https://www.geoisla.com/2018/07/plano-de-san-juan-antes-del-derribo-de-las-murallas-en-1897-1940/). The map shows the addition of three US military quarters at the entry to EL Morro but no other US military additions.



FIGURE 19. Detail from Plan of San Juan before the Demolition of city Walls 1897 (1940) showing the Spanish buildings that have crept onto the esplanade. (Source: https://www.geoisla.com/2018/07/plano-de-san-juan-antes-del-derribo-de-las-murallas-en-1897-1940)

Back of Figure 19

The 1897 map also identified the central road leading to El Morro as simply Camino Afirmado (confirmed path). The wall between San Antonio and Santa Rosa Bastion was now called Galería de Nichos (gallery of the niches) and seemed to have acquired a more substantial wall section. The name probably relates to the wall of burial crypts, niches, below in the Cementerio María Magdalena de Pazzis. It is not clear if the new gallery was part of the old 1897 map or was a new addition.

In addition, the powder magazine at Santa Elena appeared to be fenced, and the Santa Elena Guardhouse had become "L"-shaped. The Cementerio María Magdalena de Pazzis was situated on the shore below the north wall between San Antonio and Santa Rosa Bastions. Named for a long defunct fortification, the area of La Perla, where the cemetery is located, had been in the process of being settled for almost a decade by the time this map was created, despite the area being just outside the city walls.[72]

An earthquake in 1876 reinforced the idea the city was overcrowded, and discussion between military authorities and municipal leaders about removing the East Wall was renewed. By the 1890s, it was finally decided that the East Wall and a portion of the South Wall would come down so that the city could grow eastward, the only direction in which there was land. The threat of war seemed to have diminished, and Puerto Rico and Cuba were now the only Spanish holdings in the Caribbean.[73] Spain and San Juan felt secure in their military position in 1897 as portions of the walls came down. The entire section of the South Wall from the San Justo Gate eastward was demolished to open the city. Further, on the East Wall, every structure south of *La Trinidad at San Cristóbal*, including *El Ravellín del Príncipe*, *La Puerta de Tierra*, curtain wall of Santiago, Santiago Gate, and Santiago Bastion, were demolished to open the city eastward.[74] The celebrated opening of the wall was short lived, however. In May 1898, the US fleet arrived.

It is somewhat surprising that the Spanish military at San Juan did not consider the possibility of US military intervention in the Caribbean, especially since American politicians had long expressed a desire to see the construction of a trans-isthmus canal, and the United States had a new, all-steel warship navy.[75] American business interests had extensive investments in Cuba, and the government had adopted sympathetic views towards Cuban independence from Spain as early as 1895.[76] American policymakers had become much more militarily belligerent in the 1890s, and American entrepreneurs had expressed interest in establishing operations in the Caribbean and Central and South America. Further, the US press was not afraid to rabble rouse for military causes and American expansionism. These events seemed to have escaped the attention of Spanish military officials in San Juan, much to their detriment.

The arrival of the US fleet at San Juan was a consequence of the United States declaring war on Spain on April 25, 1898, after the mysterious explosion of the *USS Maine* in Havana Harbor (Cuba). The United States in its declaration of war did not limit itself to fighting just in Cuba and expanded its reach to include the Philippines, Guam, and Puerto Rico. The assault on Puerto Rico was certainly inevitable since it was a Spanish-held Caribbean Island just 661.56 nautical miles away from Cuba.

72. Berkowitz et al., volume I, 42.
73. Ibid., volume III, section [II], 29.
74. Ibid., volume I, 35, 36.
75. Smithsonian Museum of American History, "A New Navy, A New War [Spanish-American War]," Price of Freedom: Americans At War, nd, accessed January 2, 2020, https://amhistory.si.edu/militaryhistory/printable/section.asp?id=7.
76. Library of Congress, "The Spanish-American War: The United States Becomes a World Power," *Historical Background,* nd, accessed January 2, 2020, https://www.loc.gov/teachers/classroommaterials/primarysourcesets/spanish-american-war/pdf/teacher_guide.pdf; and David McCullough, *The Path Between the Seas: The Creation of the Panama Canal, 1870—1914* (New York: Simon & Schuster, 1977), 698.

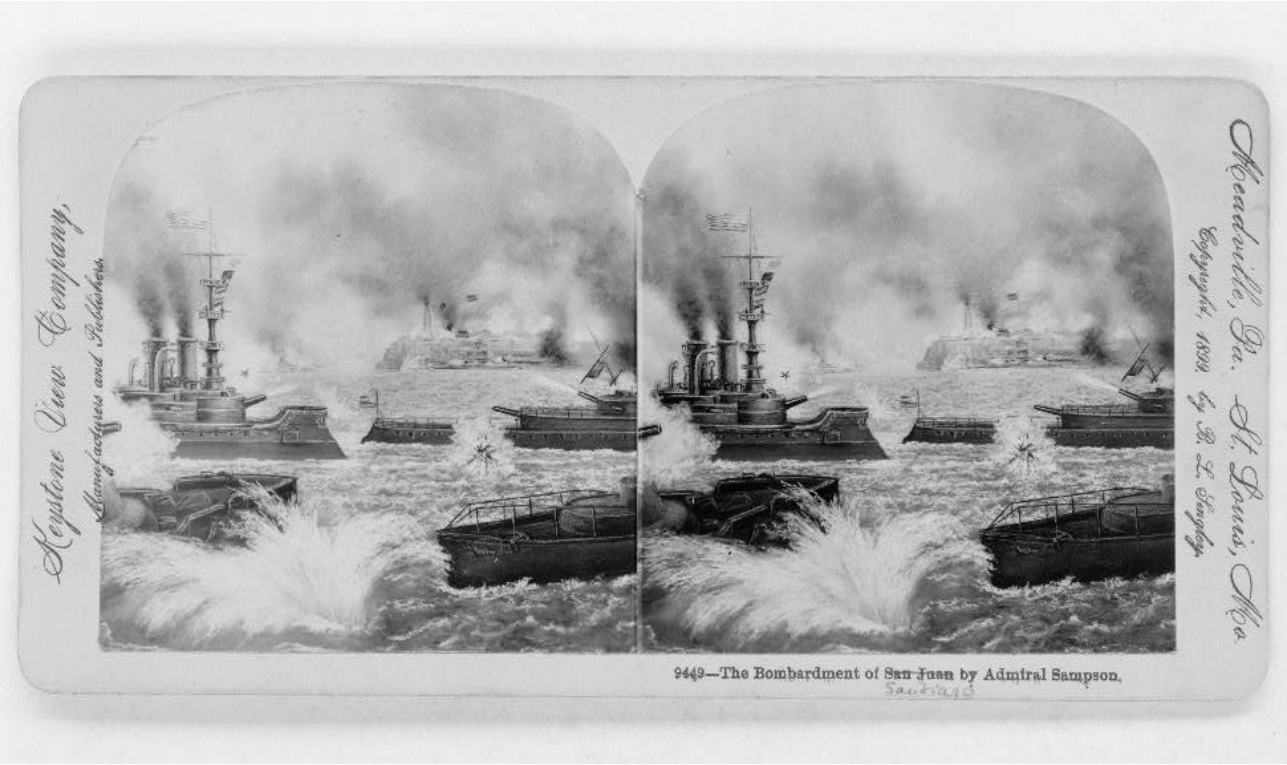


FIGURE 20. "The bombardment of San Juan by Admiral Sampson," Keystone View Company, 1898. (Source: Library of Congress, LC-USZ62-104742)

Rear Admiral William T. Sampson believed that the Spanish fleet of Rear Admiral Pascual Cervera y Topete would be sheltering at San Juan, and he was determined to engage and defeat the Spanish admiral. Admiral Sampson also wanted to completely demolish the Spanish fortifications at San Juan, which served as a watering, coaling, and safe haven for all Spanish ships.[77] He hurriedly gathered the monitors *Terror* and *Amphitrite*, unprotected courier *Detroit*, the battleships *Iowa* and *Indiana*, armored cruiser *New York* (Sampson's flagship), protected cruiser *Montgomery*, torpedo boat *Porter*, armed tug *Wompatuck*, and supply ship *Niagara* to serve as his fleet.[78] When they arrived at San Juan after an arduous trip from Cuba, the Spanish fleet was not there as anticipated. Nevertheless, Admiral Sampson decided to bombard and destroy the fortifications of San Juan.

The bombardment began at 5:00 am on May 12, 1898, and lasted until 8:30 am (Figure 20). The US fleet concentrated its fire on El Morro and San Cristóbal, but the rough seas made their aim difficult. German Admiral Hermann Jacobsen wrote of the engagement:

> The guns in the fortifications [at San Juan] are all medium caliber and their piercing power is not such that a single hit could be expected to cause serious injury to a modern ship. The losses on the American side were one dead and seven wounded. The number of American projectiles fired is out of proportion to the

77. US Naval History and Heritage Command, "Introductory Essay: Spanish-American War," Documentary Histories, nd, accessed January 3, 2020, https://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/bombardment-of-san-j.html.

78. Ibid.

> material damage caused by them. Many shells are said not to have exploded. Of course, the fortification works were injured to some extent, but not one of the guns was put out of action. A few of the buildings visible at a great distance, like the [Ballaja] barracks, the jail, the hotel Inglaterra, and few private residences, suffered from the bombardment. Many projectiles fell into the harbor. Some of them even reached the little town of Cataño, on the other side of the harbor.[79]

While the bombardment and blockade of San Juan were occurring, the United States undertook a land action. On July 25, 1898, US ground forces landed in Guernica, Puerto Rico, and began a march across the country toward San Juan. Some towns offered heavy resistance, but many were gladdened by the presence of American soldiers (and the departure of the Spanish). In just thirteen days, the United States occupied twenty-three of seventy Puerto Rican towns and cities.[80] The invasion was cut short, however, when President William McKinley and French Ambassador Jules Cambon, acting for the Spanish, signed a treaty ending the war. The United States took formal possession of Puerto Rico on October 18, 1898.[81]

Admiral Jacobsen's report was accurate; minimal damage was done to the Spanish fortifications at San Juan. El Morro and San Cristóbal were both engaged in combat but suffered only slight damage. One of the breech-loading rifles in San Antonio Bastion, north wall, was knocked out after an American shell opened a breech block and tore it off its hinges.[82] The walls did take some shells and holes filled the glacis (Figure 21). Nevertheless, while the 1,300 US projectiles fired did little damage to the fortifications or the city, they inspired terror among the citizens of San Juan and ultimately wounded fifty-seven people and killed seven.[83]

Figure 22 depicts the layout of the North Wall. It shows a building in Santo Tómas Bastion as well as a five-side structure identified as "La Perla." Some of the damage noted during the initial American inspection of the walls included:

- Curtain walls of Santa Elena, West Wall, and San Agustín, West Wall, "outer surface of wall weather worn and chipped but quite solid"[84]
- San Fernando, West Wall, where "the cliffs show bare layers of sand shows no damage but eventually there will be . . . [engineer did not see] how in the hell to fix it![85]"
- Santa Elena, West Wall, immediately south, the rocky cliff was exposed and eroding but posed no immediate danger[86]
- Santa Elena, curtain wall, West Wall, where the sandstone cliff sat on a rock and sand base, exhibited areas of undercutting, and a large drain north of the curtain had a "2-foot section of the wall breaking away." The curtain wall had a huge crack on its south end which the San Juan garrison had been using as a trash dump [87]
- San Agustín, curtain wall, West Wall, was undercut at the toe of the wall[88]
- Fort of La Perla in ruins

79. Hermann Jacobsen, *Sketches from the Spanish American War by Commander Jacobsen* (Washington, DC: Office of Naval Intelligence, War Notes No. III; GPO, 1899), n.p.
80. Clemente, n.p.
81. Berkowitz et al., volume III, section [II], 41.
82. Ibid.
83. Ibid.
84. Ibid., section [II]:44.
85. Ibid., section [II]:45.
86. Ibid.
87. Ibid.; Edwin C. Bearss, *Historic Structure Report: San Juan Fortifications, 1898-1958.* Historical Data Section (San Juan: US Department of the Interior, 1984), 157.
88. Bearss, 157-158.



FIGURE 21. *"Morro" Castle Wall struck by a 13-inch shell from Sampson's guns, San Juan, Puerto Rico,* Stereoscope Card. (Source: Library of Congress: Stromeyer & Wymann, August 22, 1899, LC-USZ62-117179)

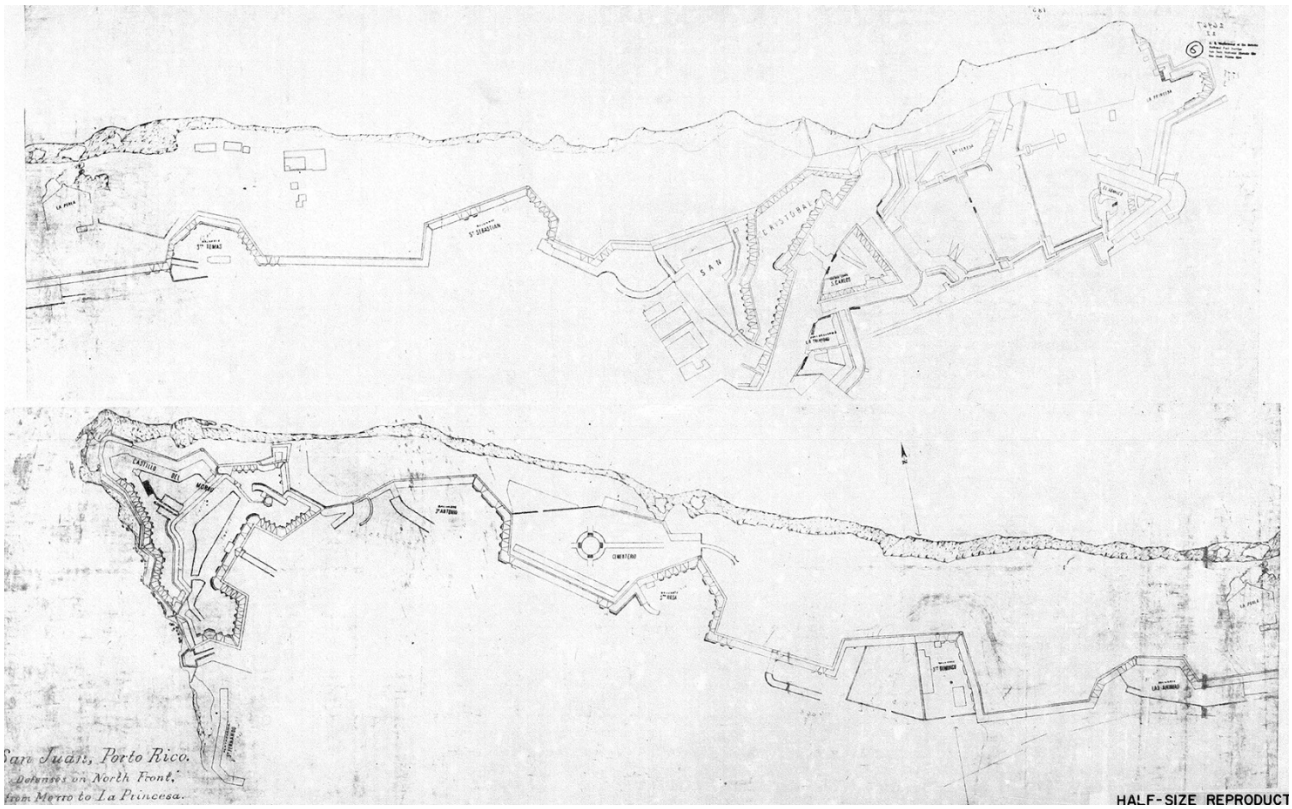


FIGURE 22. North Wall as shown in *Historic Base Map – San Cristobal & El Morro – U.S. Army – 1899 (US DOI NPS Division of Design and Construction, 1960).* (Source: NPS, item SAJU-393-3007)



FIGURE 23. 1899 US Quartermaster map showing the existing walls and the locations of buildings associated with bastions as well as the Esplanade. (Source: USDOI, *Historic Base Map – San Cristobal & El Morro, US Army, 1899*, Washington, DC, 1960; SJNHS, Park Archives)

Figure 23 shows the array of buildings and the existing walls at the time of Army's takeover of the San Juan fortifications. Single structures are noted within San Sebastián, Santo Tomás, SantoDomingo, and San Antonio Bastions. Additional structures are shown in Santa Elena and San Agustín Bastions. While the map does not have a key to identify these structures, Bearss identifies some of the structure in these areas at the time of the transfer of ownership. The San Antonio Bastion supported four 15-cm Ordóñez rifles; the Santa Elena Bastion held three 15-cm breech-loading rifles, and a guardhouse/powder magazine; San Agustín Bastion contained two 21-cm muzzle-loading mortars, two 15-cm breech-loading rifles, and a masonry powder magazine.[89] In addition, SantoDomingo Bastion held a municipal animal pound, and San Sebastián Bastion contained the pescadero (a hospital and inspection station for prostitutes).[90]

Twentieth-Century Walls (Refer to Figures 2 and 4)

The twentieth century was a period of repair, renovation, restoration, preservation, and interpretation of the walls. This period is marked by the assumption of the US Army for their care and, later, by the National Park Service (NPS) by the middle of century. President Theodore Roosevelt established the San Juan Military Reservation in July 1903.[91]

As was to be expected, the US Army began a full-scale evaluation of the fortifications and their fitness and usefulness for service after it assumed control of the fortifications at San Juan. In the first survey in 1900, just five months after the island was turned over to the United States, Captain A. Flagler, an army engineer, wrote that all of the

89. Ibid., 32-34.
90. Ibid., 58.
91 Bearss, 1984, 59.

"walls were in fair condition."[92] Nevertheless, problems with Santa Elena and San Agustín Bastions at the West Wall and in front of San Fernando Bastion were so dramatic that Flagler declared he "didn't know how the hell to fix it!"[93] Although Flagler attempted to devise a plan for maintaining and repairing the city walls, only sporadic work to the walls was completed during the first quarter of the twentieth century.[94]

The condition of the walls, especially the West Wall, would continue to be a problem for the army throughout the twentieth century. In 1912, when a bubonic plague outbreak occurred in San Juan, the city walls became a focus of the Insular Board of Health's recommendations for ending and preventing the disease. The board recommended that the walls be made "rat-proof" by parging the lower four feet with cement to eliminate nesting places. Colonel Bailey K. Ashford, US Army physician and pioneering physician in the treatment of tropical diseases, noted the West Wall "was more infested with rats than any other in the Military Zone . . .[and the North Wall] was pierced in every direction by tiny natural drains and large artificial openings."[95] The walls were never parged in an effort to eliminate the rats.

By 1905, El Morro Road had been rebuilt to address artillery damage and repaved. It was also during the early twentieth century that the Pabellones Militares was repurposed as a yellow fever hospital, and an incinerator was built 60 feet south of the El Polvorín retaining wall to dispose of the belongings of infected individuals due to the contagious nature of the disease.[96]

During World War I, the US Army sought to modernize the coastal defenses of the military reservation. In 1917, it added a concrete gun emplacement structure within Santa Elena Bastion to protect San Juan Harbor from German incursions. Designed to support a 4.72-inch Armstrong rifle mounted *en barbette*, the emplacement was supported by a nearby concrete ammunition locker or bombproof.[97]

All planned work on the walls was halted when the United States entered World War I in 1917. Although the United States did not enter the first World War until 1917, the first actual American shot fired during that conflict occurred on March 21, 1915, by the Puerto Rican Infantry from the Santa Rosa Battery of El Morro. The US Congress authorized the creation of a body of native troops in the US territory of Puerto Rico on March 2, 1899. On June 30, 1901, the Puerto Rico Regiment of Volunteer Infantry was organized. This regiment was attached to the US Army in May 1908. In March 1915, the German supply ship *Odenwald* was attempting to leave San Juan Harbor to resupply German U-boats which had been terrorizing the Atlantic Ocean. Lieutenant Colonel LT Teófilo Marxuach y Plumey in command of the infantry ordered his unit to open fire on the ship. The *Odenwald* was forced back into the harbor, and the ship and its supplies were seized by the United States. Later, the Jones-Shaforth Act of 1917 was passed making Puerto Ricans statutory citizens of the United States.[98]

On October 11, 1918, the largest earthquake in Puerto Rican history, the San Fermín Earthquake, occurred causing 116 deaths and losses estimated at four million dollars, two times the annual

92. Captain A. Flagler, "Defenses of San Juan: el Morro and Outworks," December 31, 1900. (SAJU NHS9797), quoted in Bearss, 77, in Berkowitz et al., volume III, section [II], 44.
93. Ibid.
94. Berkowitz et al., volume III, section [II], 45.
95. Colonel Bailey K. Ashford as quoted in Bearss, 181, in Berkowitz et al., volume III, section [II], 45-46.
96. Crisson et al. 22; Bearss, 115.
97. Bearss, 144-148.
98. Bearss, 181; Daniel Ramos, "The Borinqueneers: 65th Infantry Regiment." Military History Online, last updated September 2013, https://www.militaryhistoryonline.com/Modern/Borinqueneers; History, "March 2, 1917, Puerto Ricans become US Citizens and are Recruited for the War Effort," This Day in History, accessed June 12, 2020, https://www.history.com/this-day-in-history/puerto-ricans-become-u-s-citizens-are-recruited-for-war-effort.

budget of the entire island at that time.[99] The earthquake was centered in the northwestern portion of the island where it caused severe damage, and in San Juan it caused damage to some of the historic buildings. The West Wall between Santa Elena and San Agustín Bastions, which encloses the southwest portions of the glacis, partially collapsed because of the shaking. Cracking and deterioration on this wall had been noted during a 1913 inspection. It was subsequently rebuilt to prevent cliff erosion.[100]

In June 1920, the Puerto Rico Regiment of Volunteer Infantry was reorganized as the 65th Infantry Regiment, popularly known as "The Borinqueneers" for the original Taíno Indian name for Puerto Rico (Borinquen). Although this unit had the honor of firing the first US shot during the war from El Morro, little changed at the installation as a result of the reorganization. The war motivated a defensive reactivation of the San Juan fortification and the updating of some weaponry. Three modern gun emplacements and guns, one on Santa Elena Bastion on the southwestern edge of the original glacis, were added to protect the harbor. The Santa Elena Bastion gun was never used.[101] In addition, by 1921, quarters for housing officers of the 5th Infantry had been constructed in Santo Tomás and San Sebastián Bastions.[102]

After the war, the army continued to study the wall system and noted the poor condition of it in some areas, particularly on the West Wall. In 1922, Horace Mann Towner, Governor of Puerto Rico, addressed the problem of the walls by stating they should be "preserved for their great historic value and beauty, but also for their use, in part, as retaining walls."[103] Governor Towner's remarks heralded a cascade of significant work to the walls (Figure 24). By 1925, work was completed on the West Wall between San Agustín and San Juan Gate, and work continued in 1925 on the South Wall at San Justo and Las Palmas. Norzagaray Street was elevated by 1929. In 1930, repair work was completed at Santo Domingo Bastion.[104] Much of the work completed at these bastions and gates included the clearing of vegetation that was threating the stability of the fortifications, the stabilization of wall sections, and development of new drainage systems.[105]

While the work on the walls during the early part of the twentieth century proved to be successful, the funds to pay for them lagged.

99. Seismic Network, "Earthquake of 1918 [Puerto Rico]," Seismic Information, Online Puerto Rico, accessed August 30, 2020, http://www.prsn.uprm.edu/English/information/quake1918.php.
100. Crisson et al., 136; Bearss, 185.
101. Ibid.
102. Bearss, 183.
103. Inspection study by Colonel W.B. Ladue, 1925. Park Archives, San Juan NHS: U.S. Army Ordnance and Artillery File, 1925, in Berkowitz et al. volume III, section [II], 48.
104. Berkowitz et al., volume III, section [II], 48-49.
105. Ibid.

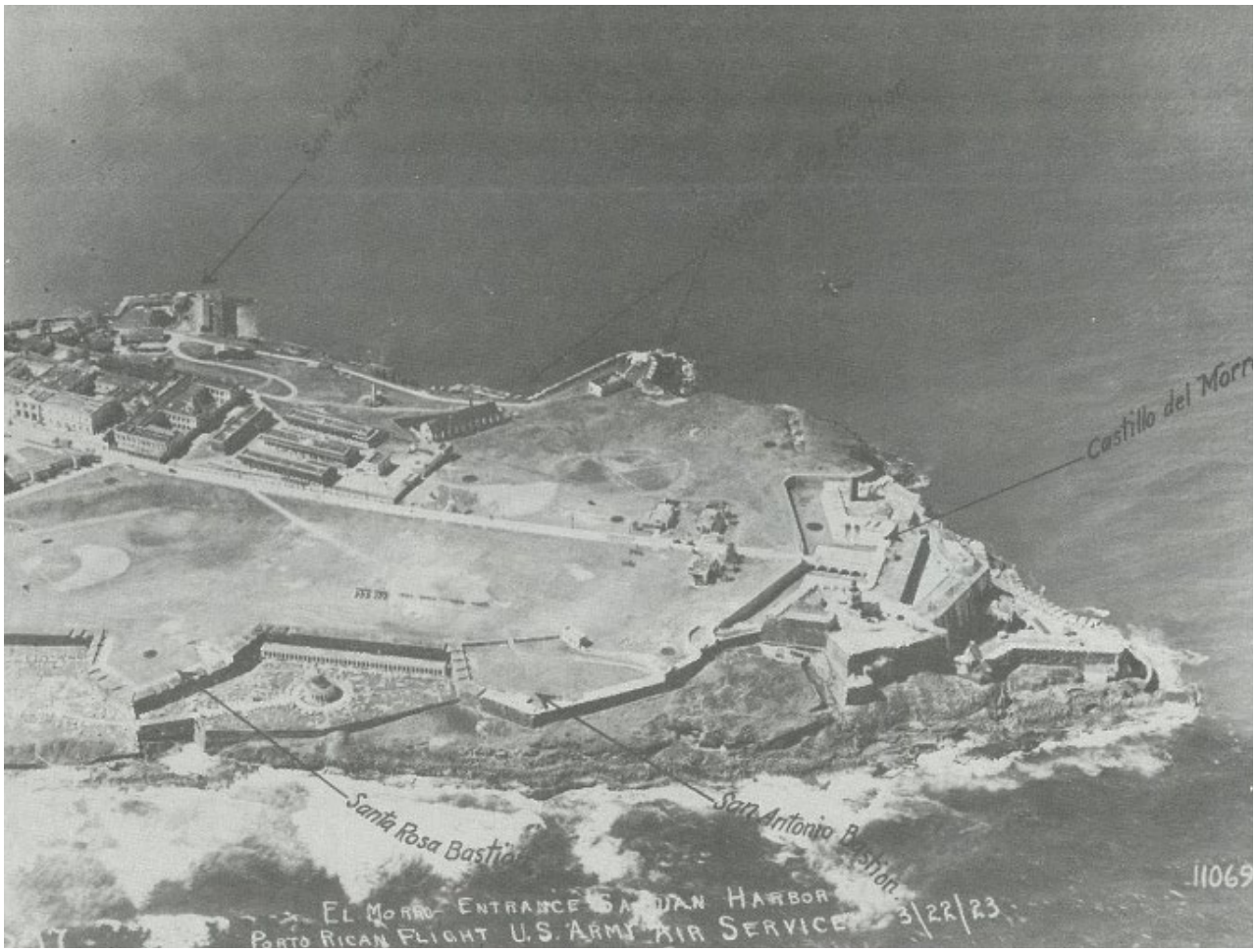


FIGURE 24. El Morro, the Esplanade, and portions of the North and West Walls in1923 prior to the construction program initiated in the mid-1920s. (Source: SJNHS, Park Archives)

From the middle of the 1920s to approximately 1930, the US Army initiated a period of significant repairs to city walls. In 1925, Robert R. Prann won the bid for "Reconstructing and Remodeling Sections of the Wall East of San Agustín Battery"; a total cost was $27,825.00. Specifications included: reuse of coral blocks salvaged from collapsed wall between Santa Elena and San Agustín Bastions; bedding mortar of one-part cement and three parts clean screen sand; and pointing mortar of equal parts clean screen sand and Portland cement. Also in **1925, a co**ntract was awarded to Luis Rexach for $15,925.00 to continue repairs to West Wall for lowering the curtain wall west of San Agustín Bastion to uniform height and repairing a section of the West Wall between San Agustín and San Juan Gate.[106]

A variety of materials were used to repair the walls, including coral block, Portland cement, sand, and broken stone. The costs were shared between the US government and the local government.[107] In addition to addressing issues resulting from deferred maintenance, new breaks and additional deterioration surfaced in new locations on the walls, and repairs included:

- Between San Justo Bastion, South Wall, and San Juan Gate, remove trees and vegetation and repair and grout all cracks and joints;

106. Bearss, 197-207.

107. Ibid., 138, 186.

- The sea wall between San Agustín Battery and Santa Elena Bastion, West Wall;
- San Justo Bastion sentry box had a small crack due to two small trees;
- Las Palmas, South Wall, superior slope and breast-height wall, had split because of tree growth and a short section of the wall needed to be replaced; and
- A small break at the bottom of the wall in front of La Fortaleza needed repair as well as an area under the bastion.
- Extensive work on Las Ánimas Bastion, North Wall, including: removing a broken section of the old wall and constructing a gravity section concrete retaining wall; bonding the new wall to the adjacent walls and back filling; repairing a cavity at the bottom of the wall east of the gravity section and reinforcing it with concrete; grouting or pointing all cracks and joints where necessary, including 350 feet of wall faced with coral blocks.[108]

In 1932, the first true "restoration" project was undertaken by the US Army Corps of Engineers with the reconstruction of four sentry boxes, three of which were situated along the West Wall: one at San Agustín, one at the curtain wall east of San Agustín, and one at Santa Catalina (within the grounds of La Fortaleza).[109] The boxes were patterned after a sentry box considered "well-preserved" on the grounds of La Fortaleza. Associate Engineer W.J. Truss summarized the work:

- Material used in reconstruction is concrete, in the form of hollow blocks . . . to simulate the grey-brown appearance of the old walls, mineral coloring matter (brown oxide and lamp black in equal parts) was added to the mix in an amount equal to 8% (by volume) of the cement. . . . Reconstructed boxes, in all cases, were erected on existing bases, remaining from the original construction.[110]

Later, work at Santo Domingo Bastion included: removing vegetation from the top and face of the walls; repairing vertical faces with concrete; repointing cracks; reconstructing merlons within concrete and salvaged coral blocks; repairing the stormwater drain at the southwest base of the bastion by cleaning it and filling the cavity with concrete; and refacing the wall with salvaged coral blocks[111].

In addition to repairs and maintenance of the walls, the flat, open space of the Esplanade (glacis) experienced development of military housing and recreational structures.[112]

A circa 1931 photograph of the El Morro fortifications illustrates the results of the repair and maintenance activities occurring around El Morro since the middle of the 1920s (Figure 25). Several areas of wall appear to exhibit new repairs and/or coatings. Also in evidence are new military construction for recreational activities, such as a golf course, baseball field, and swimming pool.

108. Bearss, 209-211, 218-221.
109. Ibid., 49.
110. Specifications and Completion Report at Park Archives, San Juan NHS: U.S. Army Ordnance and Artillery File, 1932, in Berkowitz et al., volume III, section [II], 49.
111. Bearss, 238-240
112. Crisson et al., 136.



FIGURE 25. The El Morro fortifications complex about 1931. Note areas along the North Walls look recently repaired or maintained. (Source: SJNHS, Park Archives)

In 1937, as Europe was moving to war, the United States hoped to stay neutral, but it did go into "Protective Mobilization," a period of heighten manufacturing and war preparation activity. During this period, restoration work continued at Fort Brooke, but in late 1939 work began on upgrading and adding to the harbor defenses.[113]

Between 1938 and 1940, the US War Department allocated $100,000 to be used for maintenance and repairs for the fortifications; the work was designated as "restoration and preservation," and much of it was focused on the walls.[114] The initial work prioritized maintenance for San Agustín Bastion, West Wall, and Santo Domingo Bastion, North Wall, and reconstruction of sentry boxes. Immediately after this small allotment, a more extensive project was funded called "Repair of Historical Fortifications." The initial cost for this work was estimated to be $858,817.59. This work was completed in six phases and included the demolition and reconstruction of some areas of

113. Bearss, 343-345.

114. Bearss, 257-260; Berkowitz et al., volume III, section [II], 52. The army's "restoration and preservation" work of the late 1930s likely does not meet the current Secretary of Interior standards for such work, however, these are the terms used by the army for the work they were completing.

the wall. Drainage, cleaning, and strengthening of walls was also completed. During this round of restoration and preservation, some fortifications on the wall were eliminated and others were completely reconstructed. The areas specifically addressed under this program are listed below. [115]

Restoration at San Agustín Bastion

- Installation of 450 feet of 18-inch concrete storm sewer pipe at the West Wall to prevent excessive stormwater from passing through the original drain holes of the West Wall. The drains were close to the embrasures and were causing disfigurement and unsanitary conditions in the bastion
- Removal and replacement of 100 feet of cracked and undermined curtain wall west of San Agustín, West Wall
- Rebuilding a collapsed wall at San Agustín using old foundations where possible and adding new concrete counterforts
- Reconstruction of embrasures destroyed earlier by the Spanish during the installation of the rifles *en barbette*
- Facing the new curtain wall with 23.9 square feet of irregular sandstone block backed with mortar and other stones
- Restoration of the wall at the salient angle northwest of San Juan Gate and construction of new counterforts
- Repair of walls, embrasures, counterforts form San Juan Gate to San Agustín
- Reconstruction of toe of curtain wall
- Construction of new parapet with embrasures and faced with coral stone block
- Possible repairs to the sentry box when the parapet was repaired

Reconstruction of eight sentry boxes: San Juan Gate (at La Fortaleza), and San Sebastián, Santa Rosa, and San Antonio Bastions

Restoration of San Antonio Bastion

- Removal of debris, patching of wall surfaces, and facing with sandstone sections of the walls, firing steps, and embrasures
- Removal of several "unsightly structures of more or less recent construction," including the bastion and masonry casements within dating from about 1897
- Installation of about 9,000 square feet of sod on the terreplein of San Antonio

Restoration of Santa Rosa Bastion

- Patching 950 square feet of wall surfaces, firing steps, and embrasures, as well as debris removal
- Northwest corner of bastion covered with a coat of "sand, cement, and broken brick"
- Patching the north wall, facing San Juan cemetery between Santa Rosa and Santo Domingo Bastions
- Restoration of revetment wall on north side of Santo Domingo with new reinforced concrete counterforts and facing this wall with 2,200 square feet of sandstone blocks

Restoration of the wall and firing steps at Las Ánimas Bastion and along Boulevard del Valle (now Calle Norzagaray) from Santo Domingo to Las Ánimas, with 17,419 square feet of stone facing and 1,841 lineal feet of salvaged brick paving and edging.

115. Berkowitz et al., volume III, section [II], 52-59; see also Bearss, 257-306.

Miscellaneous activities

- Cleaning 52,000 square feet of the West Wall between San Agustín Bastion and San Juan Gate of the West Wall and between San Juan Gate and curtain wall between La Concepción and Las Palmas

- Patching 8,000 feet of the same stone walls, removal of debris and remains of the old wall northwest of San Juan Gate to form a revetment at the base of the San Agustín curtain wall

- At San Sebastián Bastion, repair embrasures by installing 1,500 square feet of [illegible], 3,000 feet of stone facing, and 1,550 lineal feet of brick edging

- At Santo Tomás Bastion, repair two embrasures by installing 1,000 square feet of [illegible], 500 square feet of stone facing, and 1,200 square feet of brick

- At Las Ánimas Bastion, repair embrasures by installing 1,000 square feet of stone facing, cleaning, pointing, and patching the interior of the sentry house, and repairing the roof[116]

As World War II loomed, the fortifications were reassessed once again for their potential defensive use, and their restoration and preservation were set aside. During the 1940s, little work was conducted on the walls except in emergencies.[117]

In December 1941, after the Japanese bombed the naval station at Pearl Harbor, the United States declared war and updated its plans for Fort Brooke.[118] The dry moat of El Morro Castle, at the westernmost edge of the Esplanade, was used for the location of both a Caribbean Defense Command subterranean "man-hole-type" control post and a Navy "splinter-proof, reinforced concrete" "man-hole type" general surveillance subterranean structure.[119] The Navy general surveillance and Army control posts both used antennas located within the casemates of El Morro. During World War II, the army designated the San Juan fortifications Fort Brooke (1943).

During the early 1940s, much of the activity within the fortifications involved installation and/or upgrading of a variety seacoast weaponry, and installation of air-raid tunnels at Las Palmas, for example.[120] In addition, utility lines were installed at the Non-Commissioned Officers quarters on the San Sebastián and Santo Tomás terreplein. The road at the base of Las Ánimas, North Wall, was regraded in 1944, which caused the interior walls to crack and foreshadow future problems. A scarp wall was established by US Army engineers by underpinning the flooring, the road was regraded, and the sentry box and adjacent parapet were reconstructed.[121]

Also altered during the mid-twentieth century was the relationship between the urban landform and Santo Tomás and San Sebastián Bastions when Norzagaray Street (formerly Del Valle Boulevard) was elevated and a retaining wall was constructed at the southern margins of the interior open space (Figure 26 and Figure 27).

116. Berkowitz et al., volume III, section [II], 52-59; see also Bearss, 257-306.
117. Ibid., 60.
118. Bearss, 356.
119. Ibid., 367-370.
120. Ibid., 336-339
121. Berkowitz et al., volume III, section [ii], 59; Bearss, 381.

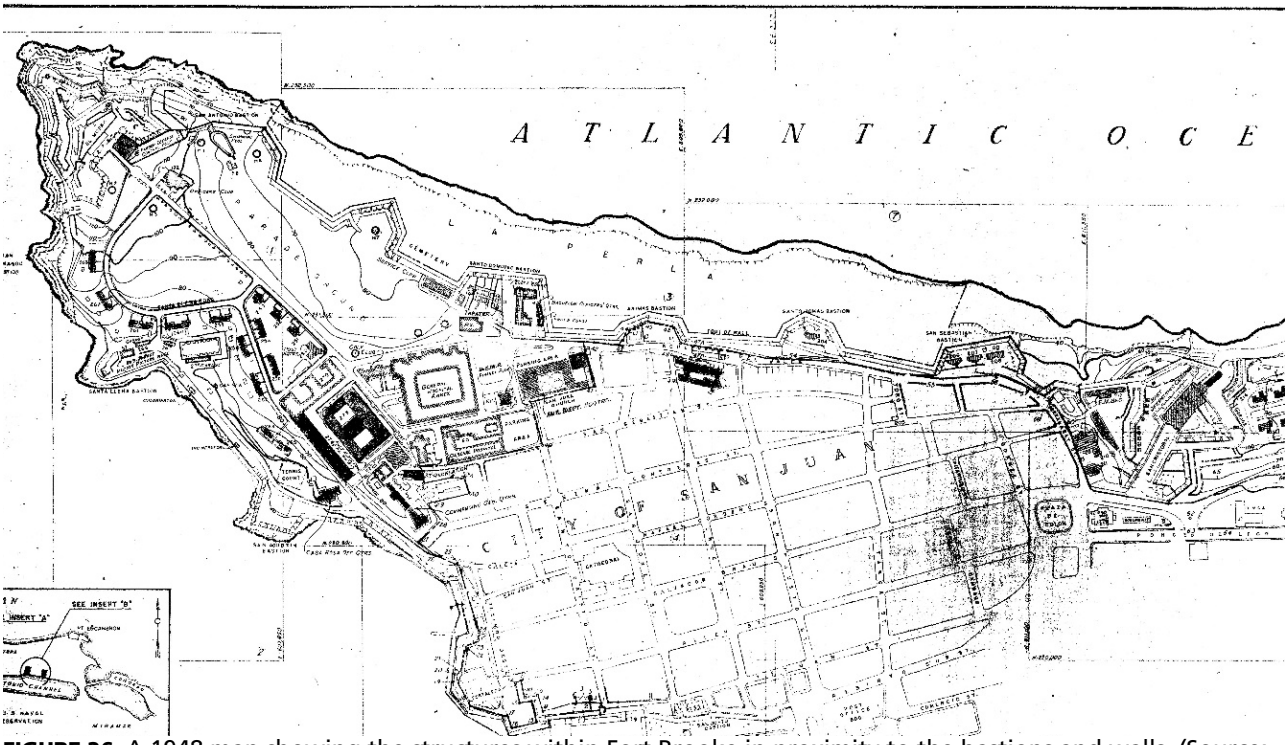


FIGURE 26. A 1948 map showing the structures within Fort Brooke in proximity to the bastions and walls. (Source: US Army Corps of Engineers, Basic Information, Regional Base Map Fort Brooke, San Juan, Puerto Rico. Washington, DC: US Army, 1946; SJNHS, Park Archives, SAJU 393_9002 page 3)

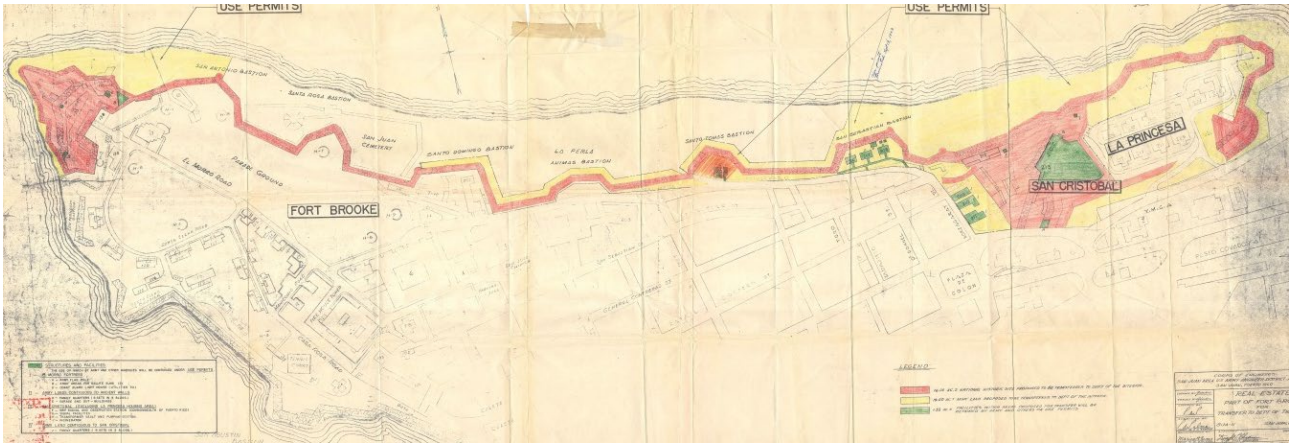


FIGURE 27. US Army map of Fort Brooke, circa 1951, showing the land to be transferred the Department of the Interior. (Source: US Army Corps of Engineers, San Juan Area, US Army Engineer District Jacksonville, September 22, 1960, revised September 5, 1961; SJNHS, Park Archives, 20141212130416073)

On September 4, 1948, a cooperative agreement was made between the US Department of the Interior and the Department of the Army enabling the Secretary of the Interior to officially establish a portion of Fort Brooke as the San Juan National Historic Site. The Secretary of Interior established the park on February14, 1949.[122] In 1949, the park, as established, was not as large as it is today and did not include all the portions of the wall that it does today (refer to Figure 27).[123]

As a result of tight military budgets, the 1950s were not much better for the maintenance of the walls. Hurricanes, storms, and water scouring

122. *San Juan National Historic Site Long Range Interpretive Plan,* 7.

123. Bearss, 379-381, map between 388 and 389.

undermined the West and South Walls, which were in extremely poor repair.[124] For example, a December storm caused the collapse of a 10-foot-by-40-foot section of the West Wall in front of San Agustín Bastion. Subsequent undermining causes a much larger section to crack, and a washout behind the wall exposed the base of the wall. The US Army Corps of Engineers stabilized the walls by 1953, but both walls would continue to be a problem.[125] Las Ánimas Bastion, North Wall, and the wall in the area affected by grading during World War II cracked in 1954 and was undermined by washouts. The wall was stabilized through "reinforced concrete pile wall extending five feet out and 10 feet below the footing,"[126] replacing the northwest corner with concrete, plating large cracks with concrete, and regrading the terreplein to include installation of a drainage ditch and concrete culvert, repairs to the catch basin, and cleaning of the existing drain.[127]

In February 1956, *El Club Cívico de Damas* (the Ladies Civic Club) donated funds for the restoration of the San Juan Gate, a sixteenth-century West Wall feature, and initiated a contretemps over the term "restoration." The controversy arose between the NPS Eastern Office of Design and Construction and the park superintendent over whether or not sufficient documentation existed to restore the gate (Figure 28). The park superintendent contended that the work was intended to "repair and preserve the existing character," and the work was completed.[128] This work included the replacement of the existing wooden doors with "the same type of lumber" and "all new hardware was . . . patterned on extant hardware, but wherever possible the original hardware would be salvaged and used."[129]

In 1956, the Jacksonville (Florida) Corps of Engineers undertook a significant study of the entire fortification system, *Survey Report on Fortification Walls, Fort Brooke, San Juan, Puerto Rico*, which recommended work on the walls on a massive scale.[130] The report found:

- West Wall: Santa Elena and San Agustín exhibited erosion and undermined foundations; Santa Elena Bastion was the highest priority for repair.[131]



FIGURE 28. San Juan Gate as it appeared in the 1930s. (Source: Library of Congress, Historic American Buildings Survey (HABS), Puerto Rico (PR)-7-SAJU, 3-1; Accessed April 17, 2019. http://www.loc.gov/pictures/item/pr0006.photos.143807p/)

124. Berkowitz et al., volume III, section [ii]: 57-59.
125. US Department of the Interior, NPS, Division of Architecture, *Master Plan Topographic Base, Map of San Juan, Puerto Rico, San Juan National Historic Site* [Reduced size] Field Office San Juan, November 27, 1953 (San Juan National Historic Site, NHS-SJ-2058).
126. Berkowitz et al., volume III, section [II]:59
127. Ibid., 58-60
128. Bearss, 141, in Berkowitz et al., volume III, section [II], 60.
129. Ibid.
130. Ibid.
131. Berkowitz et al., volume III, section [ii], 60-62; Bearss, 408-410, 414-415.

- South Wall: San Juan Gate to San Justo Bastion wall was accessible and structurally sound; San Juan Gate and San Justo exhibited deteriorated stucco and mortar, eroded foundation bases aggravated by poor drainage, and excessive vegetation; Las Palmas Bastion air-raid tunnels, installed circa 1940, considered to be in poor condition and recommended to be sealed; San Juan Gate area corrective work given top priority.[132]

- North Wall (Coastal Wall System): Entire wall considered relatively sound though eroded and weathered in places and in need of repointing and restuccoing. The erosion was aggravated by excessive vegetation and water seeping through the wall; Santo Domingo being eroded probably due to the regrading of the street but was outside of the jurisdiction of the federal government; no work on the North Wall was given a high priority.[133]

This extremely systematic approach to care for the fortification marked a new point in how wall restoration, preservation, and maintenance was thought about and prioritized.[134] The report was followed up in 1957 with a study, *Foundation Conditions, Appraisal and Improvements, Recommended,* which warned of some wall "conditions that are considered critical from viewpoint of imminent, or even early, failure."[135] It is not clear, however, if any actual projects were created from these studies.

After World War II, the US Army began to consider the relevance of a military installation in San Juan. The upkeep of the facility was enormous, and Fort Brooke was no longer strategically important to the Army's Cold War focus on the Soviet Union. The army began negotiations with the Department of the Interior and the Commonwealth of Puerto Rico to dispose of the installation. On September 13, 1961, the Army transferred El Morro, the North Wall, San Cristóbal, and certain adjacent lands to the NPS. A 1963 map of Fort Brooke delineated the areas in administered by the NPS at that time, areas scheduled to be transferred by the Army to the NPS, and future areas recommended for transfer to the NPS (Figure 29). Future areas to be transferred to the NPS included areas in proximity to San Agustín and Santa Elena Bastions on the west and to Santo Domingo Bastion on the north.

On December 31, 1966, the Army declared all lands under its jurisdiction at Fort Brooke as excess.[136] This action began the eventual transfer of the remaining properties from the Army to the NPS and the Commonwealth.

In 1971, *La Rogativa,* a commemorative statue, was installed at a plaza along the West Wall at the intersection of Casa Rosa Road and Caleta de las Monjas. The bronze sculpture, which serves as the focal point of the plaza of the same name, was designed by artist Lindsay Daen. It features four figures marching and is set on a concrete base inset with a bronze identification plaque. The statue commemorates the siege of 1797. During the naval blockade of the city on April 30, 1797, the governor of San Juan ordered a "rogativa." In response, women of the city and the bishop marched through the streets that night, singing hymns, carrying bells and torches, and praying. Apparently, the British mistook the march as a sign of the arrival of reinforcements and abandoned the city. Four bronze statues mark this event in Plazuela de la Rogativa, paying tribute to the efforts of the townspeople and their Bishop.[137]

132. Berkowitz et al., volume III, section [ii], 60-62; Bearss, 408-408, 415-416.
133. Berkowitz et al., volume III, section [ii], 60-62; Bearss, 408-408, 411-413.
134. Berkowitz et al., volume I, 42.
135. US Army Corps of Engineers, Jacksonville District, *Foundation Conditions, Appraisal and Improvements, Recommended,* 1957, in Berkowitz et al., volume III, section [II], 64.
136. *San Juan National Historic Site Long Range Interpretive Plan,* 7.
137. A Rogativa is a large procession of people making a plea to God for help; Tour Old San Juan, The Legend of La Rogativa, January 25, 2013, accessed June 2, 2021, https://www.touroldsanjuan.com/the-legend-of-la-rogativa/.



FIGURE 29. A 1963 map showing the fortifications at San Juan with NPS and Army areas delineated. (Source: SJNHS, Park Archives, SAJU_393_2001B)

During the 1970s, several wall projects were undertaken by the Corps of Engineers, especially at the West Wall. In 1977 and 1978, rip-rap was added to the front of Santa Elena Bastion and the "Jeep Trail," an access road for maintenance along the West Wall, was created between San Juan Gate and Santa Elena.[138] During the 1980s, work continued on the restoration and renovation of the walls particularly the West Wall.[139] Between 1981 and 1983, the Casa Rosa Scarp Wall project involved removal of the upper half of scarp wall and its five embrasures, reconstruction of the sentry box, installation of parapets and utilities, and landscaping.[140] Collapse of a tunnel near Santo Domingo Bastion, and failing slopes near San Sebastián Bastion and south of El Morro were treated by the National Park Service during the mid-1980s through 2005.[141] Figure 30 shows a portion of the North Wall a little after the date of the collapse of a portion of the wall. The wall looks in good condition in the photograph.

In 1983, San Juan National Historic Site and the earlier fortifications of La Fortaleza were inscribed in the World Heritage List in 1983 as resources of outstanding universal value. The listing notes that the fortifications:

> . . . outstandingly illustrate the adaptation to the Caribbean context of European developments in military architecture from the 16th to 20th centuries. They represent the continuity of more than four centuries of architectural, engineering, military, and political history.[142]

The World Heritage List citation for the fortifications also notes:

138. Berkowitz et al., volume III, section [II], 64.
139. Ibid.
140. Ibid., volume III, section [II], 63-65.
141. James L. Garland, *Memorandum for Record: Collapse and Undermining of a Portion of Historic Wall at East End of Cemetery (Santo Domingo Bastion)* (Jacksonville, FL: US Army Corps of Engineers, 1988); Eric López, digital photographs from 2005 provided in email dated August 6, 2020.
142. UNESCO World Heritage List, "La Fortaleza and San Juan National Historic Site in Puerto Rico," accessed October 4, 2019, https://whc.unesco.org/en/list/266.

> These fortifications, which retain the general appearance of advanced 18th-century defense technology, clearly illustrate both a transfer of technology from Europe to America over a long period and its adaptation to the topography of a strategically significant yet difficult tropical site. Reflecting Italian Renaissance, Baroque, and French Enlightenment designs, the defenses express successive techniques and technologies in fortification construction. The varied examples of military architecture from the 16th to 20th centuries in the fortifications of San Juan are evidence of the imperial struggles that defined the development of the Americas. As one of the first as well as one of the last of the numerous seats of power in Spain's American empire, these structures are now potent symbols of the cultural ties that link the Hispanic world.[143]

The boundary for the World Heritage Site identified in the 1983 documentation was revised in 2016 in a letter. The letter articulating the boundary expansion noted the extension accurately reflected the boundaries of San Juan National Historic Site and was the intended basis for the 1983 nomination.

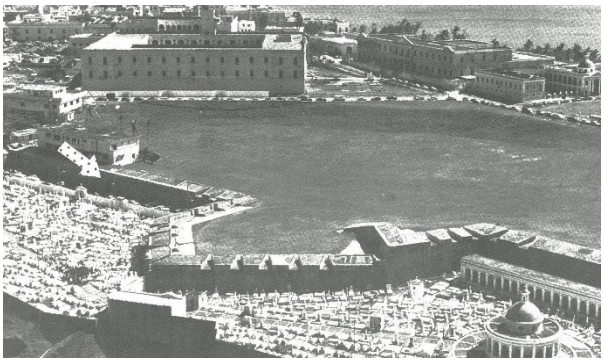


FIGURE 30. View of the North Wall in 1989, showing Santo Domingo and Santa Rosa Bastions as well as the cemetery in the foreground. The arrow indicates a tunnel to the cemetery. (Source: SJNHS, Park Archives)

In 1991, a three-volume Historic Structures Report (HSR) was created for El Morro, San Cristóbal, and the city walls for the Southeast Regional Office of the NPS by the Building Conservation Branch, Cultural Resources Center, North Atlantic Region, NPS and Columbia University Center for Preservation Research. The report covered all known changes to the city walls to 1991 and relied heavily on the 1984 Edwin Bearss report, *Historic Structure Report: San Juan Fortifications, 1898-1958*.

The barge *Morris J. Berman* ran aground on a reef off Punta Escambrón and released approximately 925,000 gallons of fuel oil into waters near San Juan in 1994. The oil quickly spread along the coastline, damaging resources, and impairing their use for a significant period.[144] Tourism was greatly affected as was the El Morro site. The settlement for the damages was $10 million in compensatory restoration projects divided among the NPS, the National Oceanic and Atmospheric Administration (NOAA), and the Puerto Rico Department of Natural and Environmental Resources (PRDNER). The compensatory restoration projects were divided into three injury categories: grounding-related reef injuries (NOAA), lost recreational beach use (PRDNER), and lost visitor use of national historic site resources (NPS).[145]

The oil spill and the grounding of the *Berman* caused a reduction in visitor services at San Juan National Historic Site for approximately six weeks, and more than 123,000 visitors to El Morro and San Cristóbal were affected. Approximately $1.8 million was made available for three NPS projects: the improvement and extension of the coastal Promenade at El Morro, the restoration of the El Morro Water Battery, and the cleaning and stabilizing of the exterior walls of El Morro.[146] The improvement and extension of the coastal Promenade, the *Paseo*, a National Recreational Trail, at El Morro involved

143. Ibid.
144. Morris J. Berman Trustee Council, *Final Report: Morris J. Berman Oil Spill, San Juan, Puerto Rico,* with funds from the 2000 Morris J. Berman Oil Spill Settlement, April 2015, 2.
145. Ibid.
146. Ibid., 8-11.

several subprojects: (1) extending the Promenade from its current terminus at the Water Battery eastward to connect with an existing stairway accessing the upper levels of the fort; (2) completing the overlook at the Water Battery; and (3) applying a non-slip treatment to the existing walkway. This project was the highest priority of all the lost visitor use projects.[147]

The steep slope of the embankment southwest of El Morro overlooks Paseo del Morro. The hillside, which has been subject to slumping and other failure, was stabilized using shotcrete in the 1990s.[148] The shotcrete, a cementitious material that is typically sprayed onto a vertical surface for purposes of reinforcement, remains evident in 2019. Paseo del Morro National Recreational Trail is a paved public walk that follows the shoreline at the base of the West Walls. The entry to the walk occurs from San Juan Gate. The walk continues for three-quarters of a mile to the northern front of El Morro. The linear corridor of land at the base of the West Walls now associated with Paseo del Morro formerly served as a maintenance access route. The original walk was **constructed circa 1995.** An extension of the Paseo del Morro was built in 2013–2015, using mitigation money from the damage caused by the *Morris J. Berman* oil spill of 1994. In 2001, Paseo del Morro was designated a National Recreation Trail. The walk is surfaced with concrete scored with wave-related imagery.[149]

Paseo del Morro provides a natural resources experience for those visitors using the trail as well as providing the unique experience of seeing the fortification walls from the Atlantic Ocean front (Figure 31 and Figure 32).



FIGURE 31. Construction of *Paseo del Morro,* a project undertaken with compensatory restoration funds from the oil spill and grounding of the barge *Morris J. Berman* in 1994. (Source: Berman Trustee Council, *Final Report Morris J. Berman Oil Spill*, 2015, 9)



FIGURE 32. Completion of *Paseo del Morro,* an extension of the existing coastal Promenade, which is a National Recreational Trail. (Source: Berman Trustee Council, *Final Report Morris J. Berman Oil Spill*, 2015, 9)

Records dating to the late twentieth century, specifically the Superintendent's Annual Narrative reports from the late 1990s and 2000s, provide insight into the preservation efforts conducted by the NPS for the city walls. For example, the 1997 Superintendent's Annual Narrative records work completed to improve safety railings and iron grates associated with the walls and bastions, as well as ongoing efforts to restore San Fernando Bastion and portions of the West Wall, to repair the cemetery tunnel wall, to restore the San

147. Ibid., 8.
148. NPS, *San Juan National Historic Site Superintendent's Annual Narrative* (1997).
149. NPS, Developing El Paseo del Morro Extension from the Bottom Up, September 22, 2010, https://www.nps.gov/saju/learn/news/developing-el-paseo-del-morro-extension-from-the-bottom-up.htm; Berman Trustee Council, 10.

Agustín sentry box, to preserve the Santa Elena World War I bunker, and to conduct emergency repairs at San Agustín Bastion. In addition, PVC railing was installed at Santa Elena Bastion.[150]

Twenty-First-Century Walls

The new millennium continued to bring challenges for the care of the walls. In 2002, the Puerto Rico Department of Transportation and Public Works, Highway and Transportation Authority began performing condition studies on the portions of the city walls for which they have responsibility. The agency published its findings in 2003 in a five-volume study which included: historical research, materials analysis, vegetation analysis, laboratory studies, threat analysis, and preservation recommendations.[151] Although this study looked specifically at the Commonwealth-maintained walls, the research and findings are applicable to all the city walls.

The 2001 Superintendent's Annual Narrative noted repairs were made to the walls, including stucco work, rehabilitation of sentry boxes, historic brick emplacement, and restoration of historic gates.[152] The 2002 narrative noted that additional work was conducted to rehabilitate the walls, including repair of the stucco coatings, replacement of the Santa Elena Bastion brickwork and repair of the floor, and rehabilitation of the Santa Elena World War I gun emplacement.[153] The 2003 narrative noted the San Antonio sentry box, previously rebuilt in 1933 using concrete blocks and metal rebar, was rebuilt. The Santa Elena Bastion brickwork project continued on the circa 1760 bastion. Using brick and traditional lime mortar, the National Park Service repaired the bastion and opened it to the public.[154] In 2004, portions of the North Wall collapsed (Figure 33 and Figure 34). The 2004 Superintendent's Annual Narrative noted wall repair and additional rehabilitation projects were conducted.[155]



FIGURE 33. A portion of the North Wall collapsed. (Source: Eric López, digital image provided August 6, 2020)

In 2011, as part of the rehabilitation of Quarters 208, a small educational site was constructed between Quarters 208 and Quarters 209 for the *Little Masons Program*. This project included the removal of 235 square meters of dirt which was overseen by an archeologist. A concrete slab of no higher than four inches with rubber pavers was laid on its surface was placed in the rear closest to Quarters 208. A small concrete theater-style seating area was created. This area was designed for educational programs related to the preservation and maintenance of the walls of the National Historic Site.[156]

150. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (1997).
151. ConservAcción, Inc., *Historic Fortification Walls of Old San Juan, Historical Documentation, Existing Conditions Report, and Laboratory Technical Report*, Volumes 1-V, San Juan, Puerto Rico, January 29, 2003.
152. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (2001).
153. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (2002).
154. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (2003).
155. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (2004).
156. Walter Chavez, Superintendent, Letter to Carlos A. Rubio Cancela, State Historic Preservation Officer, Puerto Rico, re:



FIGURE 34. A portion of the North Wall collapse revealing the inner foundation. (Source: Eric López, digital image provided August 6, 2020)

In January 2012, the Discovery Center for the National Historic Site was opened in Quarters 208. The center was developed to be a hands-on learning environment created to arouse curiosity and interest of children in the fortifications of Old San Juan and to provide a way for them to connect to their shared heritage. The Discovery Center was described by NPS in a press release as

> Includ[ing] several rooms each designed to engage young people in a variety of ways. In the navigation room, computers are available to conduct research. The adventure room, designed to give the feel of being on a ship's deck, children can listen to stories, imagine, and read about days gone by. The highlight of the Discover Center is the *Little Masons* program, where kids can get their hands dirty applying stucco in much the say what the masons of the fortifications did centuries ago [Figure 35].[157]

The Discovery Center was opened to much fanfare but was closed after Hurricane Maria in September 2017.



FIGURE 35. Little Masons program, a part of the Discovery Center, in Quarters 208. (Source: NPS photograph)

On September 20, 2017, Category 4 Hurricane Maria, struck Puerto Rico just a few weeks after Hurricane Irma had hit the island. The San Juan National Historic Site had closed in anticipation of the hurricane. A 95-mph wind gust was recorded at Luis Muñoz Marín International Airport.[158] The day after Maria, the entire island was without power and water, and it would stay that way for months.[159] The hurricane damaged parts of the original Spanish fortification wall, and El Morro did not reopen until late November.

Beginning on December 28, 2019, and continuing sporadically through 2020, the southwestern part

Rehabilitation of Building 208 and Little Masons Program details, June 28, 2011, Box 88, Folder 96, Park Archives, San Juan National Historic Site, San Juan, Puerto Rico.

157. Dilcia González," Grand Opening of Discovery Center at San Juan National Historic Site," Park Archives, San Juan National Historic Site, Last updated 2015, accessed February 4, 2019, https://www.nps.gov/saju/learn/news/grand-opening-of-discovery-center-at-san-juan-national-historic-site.htm.

158. Ibid.

159. Brian Donegan, "Puerto Rico is now the largest blackout in US history," The Weather Channel, October 26, 2018, https://weather.com/news/news/2017-10-26-puerto-rico-day-36-largest-blackout-united-states-history.

of the island of Puerto Rico was struck by an earthquake swarm, including eleven that were stronger than magnitude 5. The strongest and most damaging of this sequence was a magnitude 6.4 quake that occurred on January 7, 2020.

City Walls (Las Murallas) Changes, Additions, Rebuilding Specifics by Date

Sixteenth Century

1537 - 1540 *La Real Fortaleza de Santa Catalina* (Royal Fortress of Saint Catherine; *La Fortaleza*) constructed facing San Juan Harbor, first of San Juan's defensive fortifications

1539 *El morro*, "the bluff," the rocky northernmost point on the island, chosen for *Castillo San Felipe del Morro* (El Morro) as the new defensive fortification

By 1540 *La Puerta de San Juan* (Gate of Saint John [San Juan Gate]) on West Wall, directly below La Fortaleza, built

By 1570 La Fortaleza lost its defensive role became the official residence of Puerto Rico's chief executive

Circa 1586 *El Baluarte de Santa Elena* (Bastion of Saint Helena; Santa Elena), the only remaining feature of West Wall dating to the sixteenth century, built

1588 Defensive plan conceived by King Philip II of Spain for shore defenses using only western defenses executed by Juan de Tejeda and Juan Bautista Antonelli

1595 English attack by Sir Francis Drake repelled by fortification system

1598 English forces under George Clifford, the third Earl of Cumberland, avoiding the West Wall, attack from San Juan's unprotected eastern front and occupy the city

1599 Rebuilding defenses undertaken, including the refortification of El Morro and the repair of far easterly defenses; no work begun on the north, south, or east sides of the city. *El Fortín de San Juan de la Cruz* (Fort of Saint John of the Cross; *El Cañuelo*) begun at the mouth of the San Juan Harbor

It is possible that *La Batería San Gabriel* (Battery of Saint Gabriel), on the West Wall, was constructed after Bastion of Santa Elena. Battery Saint Gabriel was torn down and subsequently rebuilt in the nineteenth century as *La Batería San Agustín* (Battery of Saint Augustine).

Seventeen Century

1625 Dutch General Boudewijn Hendricksz attacks and ransacks San Juan

1630-1635 *El Baluarte del Derecha de San Justo y Pastor* (Right Bastion of Saint Just and Pastor; San Justo for both) constructed on the South Wall

1630-1638 *La Cortadura de las Palms de San José* (Parapet of the Palms of Saint Joseph) and *El Baluarte de las Palmas de San José* (Bastion of the Palms of Saint Joseph; San José or Las Palmas) both constructed on the South Wall

1630-1639 *La Puerta de San Justo* (Gate of Saint Just) constructed at the foot of present-day Calle San Justo, on the South Wall (It is embellished with the motto *Dominus mihi adjutor quem timebo?* "God is my helper who should I fear?")

El Baluarte del Muelle (Bastion of the Wharf) built on the South Wall to defend the Gate of Saint Just

La Cortina de San Rafael (Curtain Wall of Saint Raphael), final portion of the South Wall, a curtain wall, constructed

1630-1660 General Hendricksz's lesson was not lost on King Philip IV of Spain, who recognized the strategic importance of San Juan and poured money into its defense. La Fortaleza and El Morro rebuilt; city walls on all sides constructed; *El Cañuelo* at the harbor entrance rebuilt; *Castillo San Cristóbal* begun

1634-1650 *El Baluarte du San Pedro Martir* (Bastion of Saint Peter the Martyr; San Pedro) constructed at the southeast corner of the South Wall

El Fortín de la Perla (Fort of the Pearl; La Perla), a small redoubt, constructed on the north coastal side of the city

1635 Santa Elena, West Wall, reinforced

Circa 1640 Battery Saint Gabriel, West Wall, torn down and subsequently rebuilt as *La Batería San Agustín* (Battery of Saint Augustine)

El Baluarte de Nuestra Señora de al Inmaculada Concepción (Bastion of Our Lady of the Immaculate Conception; La Concepción), South Wall, constructed

San Fernando Battery, West Wall, may have been constructed during this century.

Most of the South Wall, *Frente Marítimo* (Maritime Front) that was included in the West Wall, was constructed during this period.

Eighteenth Century

1701 French monarchy (Bourbons) and Spanish monarchy (Bourbons) politically aligned

1749 San Juan Gate acquire heavy wood and bronze-studded doors

1760-1783 *Puerta de Salida* (Exit Gate) associated with the curtain wall adjoining the Battery of Santo Domingo constructed; the exit gate also known as *La Puerta de San José* (Gate of Saint Joseph)

1765 Charles III declares San Juan a "Defense of the First Order" and approves a plan designed by Field Marshal Alexander O'Reilly and executed by Chief of Engineers Thomas O'Daly and Juan Francisco Mestre that begins an ambitious plan of remodeling and recreating San Juan's defenses

1766-1792 Eastern defenses extensively reinforced

By 1769 *Batería de San Fernando* (Battery of Saint Ferdinand; San Fernando), L-shaped, West Wall, south of El Morro, narrow parapet was thickened, and eight embrasures reduced to six

Batería San Gabriel (Battery of Saint Gabriel), West Wall, noted in poor condition with cracked and collapsed walls; when reconstructed it is renamed, San Agustín

1772-1783 *Baluarte de San Sebastián* (Bastion of Saint Sebastian; San Sebastián) with seventeen embrasures constructed on the North Wall

El Baluarte de Santo Tomás (the Bastion of Saint Thomas; Santo Tomás) constructed on North Wall and includes a gate

La Puerta de Salida (the Exit Gate) constructed as part of Santo Tomás Battery; Santo Tomás exit gate also called *La Puerta de la Perla* (the Gate of La Perla). The Pearl Fort by this time was outside of the city's walled fortifications

The ravine on El Morro's glacis that opened toward the Atlantic Ocean to the east of El Morro's outer walls was filled to complete the western end of the North Wall

1775 Reports of construction of the North Wall, Maritime Front of the North, indicate stone was quarried from *El Calvario*, *La Perla*, *Casa Blanca*, and *Isla de Cabras* (site of *El Cañuelo*)

1776-1783 *El Baluarte de Santa Rosa* (Bastion of Saint Rose; Santa Rosa) with seventeen embrasures constructed on the North Wall

	Segment of curtain wall with four embrasures between Santa Rosa and San Antonio constructed
	El Baluarte de San Antonio (Bastion of Saint Anthony; San Antonio) with six embrasures constructed on North Wall
1778-1783	*El Baluarte de las Ánimas* (Bastion of the Souls; Las Ánimas) with nine embrasures constructed on the North Wall
	El Baluarte de Santo Domingo (Bastion of Saint Dominic; Santo Domingo) with seven embrasures facing northeast and separated by a curtain wall from Las *Á*nimas constructed on the North Wall
1778-1792	Significant work undertaken toward making San Juan a "Defense of the First Order" including:
	focus of defensive front changes from sea to land
	redesign and reconstruction of the West Wall
	West Wall maintained both as a defensive wall and a massive retaining wall
	San Juan Gate, West Wall, probably acquired its present look at this time
	North Wall constructed
1787	Second Proposal for the island's defense includes more changes:
	Santa Elena, West Wall, redesigned with eight embrasures directed north and south providing 180 degrees of firing coverage, irregular wall south of Santa Elena reconstructed as a straight expanse of curtain wall with twelve new embrasures facing north and south
	San Agustín, West Wall, rebuilt with a wider parapet, banquettes, and four embrasures; irregular wall that followed the cove redesigned as a straight curtain wall with seven embrasures
	West Wall section adjoining the San Juan Gate wall realigned and three new embrasures added; wall section holding San Juan Gate, West Wall, realigned; outer wall of Santa Catalina Bastion reconstructed probably to the height of the West Wall
1792	**T**he Mestre plan of the city devised and includes:
	Walls at southwestern end of the city were probably raised six to ten feet to meet the elevated West Wall,
	Capilla del Cristo de la Salud (Chapel of the Christ of Good Health; Capilla del Cristo) constructed east of La Concepción, South Wall,
	La Batería Provisional de San Francisco de Paula (Temporary Battery of Saint Francis of de Paul; San Francisco), an unusual battery on the East Wall that projected into the harbor and had a terreplein and parapet with four east-facing embrasures, constructed at the site of the earlier *Baluarte de la Cortadura*,
	El Revellín del Principe (Ravelin of the Prince), East Wall, formerly Revellín de Santiago, constructed to defend the Bastion of Santiago and the Gate of Santiago at the East Wall,
	La Puerta de Tierra (Land Gate), the gate for the Ravelin of the Prince, East Wall, constructed,
	East front of San Cristóbal completed,

"numerous outer works" completed[160]

1797 **British** attack by Sir Ralph Abercromby foiled

By the end of the century, with the completion of the North Wall, the entire city of San Juan enclosed.

Nineteenth Century

1808-1811 Mascaró reports the curtain wall at Santa Elena, West Wall, was undermined because of the "onslaught of the sea" and dressed and rubble stone are being prepared and stored until repairs can be made

Multiple other West Wall failures also documented

North Wall from *El Baluarte de Santa Rosa* to San Cristóbal covered with "fine smooth stucco to include all of the parapet interiors, embrasure sides"[161]

Circa 1809 San Juan Gate, West Wall, rehabilitated

1814 Municipal Cemetery established outside the North Wall near El Morro

1818 Las Palmas, South Wall, equipped with one piece of artillery and five infantrymen

San Justo Gate, South Wall, stationed with fifteen infantrymen

Santiago Gate, East Wall, reconstructed using ausubo (a local hardwood tree) beams and planking to avoid continual maintenance due to heavy traffic; twenty-one infantrymen and one artillery piece posted at the gate

San Fernando, North Wall, stationed with five infantrymen and no artillery, but later in the year, the battery is not listed as a defensive work

Santa Elena, West Wall, equipped with thirty infantrymen and two cannons (one bronze and one iron)

San Agustín, West Wall, equipped with twenty-three infantrymen and one piece of artillery

San Sebastián, North Wall, stationed with eleven infantrymen

Santo Tomás, North Wall, and the Slaughterhouse Gate (La Perla) equipped with fifteen infantrymen and one piece of artillery

Las Ánimas, North Wall, stationed five infantrymen

Santo Domingo and San José Gate, North Wall, equipped with fourteen infantrymen and one artillery piece

Santa Rosa, North Wall, stationed with five infantrymen

San Antonio, North Wall, stationed with five infantrymen

Circa 1820 Area outside the North Wall, today known as *La Perla* after the fort that had been located there, began to be populated

1824-1834 Repairs and replastering to walls and fortifications after English attack completed

160. Berkowitz et al., volume III, section [II]:27.
161. Ibid., volume III, section [II]:29.

1835	Battery Santo Toribio constructed at the southern tip of *La Puntilla* and equipped with two 8cm bronze cannon
1838	Bastion of San Pedro, South Wall, equipped with one 24cm bronze cannon, and the San Rafael curtain wall, of which San Pedro is a part, equipped with five 14cm bronze mortars
	Santiago Gate, East Wall, equipped with two 12cm bronze cannon and three 24cm iron cannon
	San Francisco de Paula, East Wall, equipped with one 24cm bronze cannon
	Bastión Del Principe, East Wall, equipped with three 12cm bronze cannon
	San Agustín, West Wall, equipped with one 12cm and one 24cm bronze cannon
	Santa Domingo, North Wall, equipped with one14cm bronze cannon
1876	Earthquakes rock the city of San Juan and highlight the need to eliminate overcrowding; discussions regarding military infrastructure in the city begin[162]
1879	*La Puntilla*, the peninsula south of the fortified walls, partially filled and developed as *La Marina*, a support station for the military
1887	The *San Francisco de Paula Battery*, East Wall (the bastion jutting south into the harbor), now called *Batería Baja de Santiago* (the Lower Battery of Santiago), reflecting the proximity of the Santiago Bastion
Circa 1895	San Justo Gate eliminated and replaced with *Le Puerta de España* (the Gate of Spain) or *La Puerta de San Rafael,* one block east at the center of the curtain wall of San Rafael
1897	The entire section of the South Wall from the San Justo Gate eastward demolished to open the city
	On the East Wall, every structure south of *La Trinidad* at San Cristóbal, including *El Ravelin del Principe*, *La Puerta de Tierra*, curtain wall of Santiago, Santiago Gate, and Santiago Bastion, demolished to open the city eastward
	San Antonio Guardhouse at north wall constructed, and San Antonio Bastion reinforced
1898	La Concepción becomes an extension of Santa Catalina Bastion, South Wall, and equipped with a 15cm Ordóñez gun mounted on a center-pintle carriage; the sentry box at La Concepción removed
	Goethals and Crosby Batteries, South Wall, become one
	San Fernando, North Wall, equipped with four howitzers, but not improved
	Santa Elena, West Wall, equipped with three 13cm breech-loading rifles on center pintle carriages, which are serviced by a small concrete magazine with a thin earthen covering with a ten-foot concrete parapet fronting the guns on the superior slope
	San Antonio equipped with four 13cm breech loading rifles on front-pintle carriages
May 12, 1898 –August 15, 1898	
	US Navy bombards and begins a blockade of the city as part of the American involvement in the Spanish-Cuban War. On July 25, the US Army begins a land offensive that is cut short when President

162. Center for Preservation Research 1998.

William McKinley and French Ambassador Jules Cambon, acting for the Spanish, sign a treaty ending the war

South Wall defensively obsolete

1899-1900 Immediately after the Spanish-American War, the United States assesses the damage to the walls, fortifications, and citizens during the naval bombardment:

San Antonio Bastion lost one breech-loading rifle

El Morro suffered damage, 1,300 US projectiles and 400 Spanish projectiles were fired

Seven citizens are killed; fifty-seven citizens were wounded during the bombardment

Twentieth Century

1900 Transfer of assets to United States from Spain lists the following:

Santa Catalina, South Wall, one 15cm gun

San Agustín, two 15cm guns

La Concepción, South Wall, one 15cm gun

Curtain walls of Santa Elena, West Wall, and San Agustín, West Wall, "outer surface of wall weather worn and chipped but quite solid"[163]

San Fernando, West Wall, where "the cliffs show bare layers of sand shows no damage but eventually there will be … [engineer did not see] how in the hell to fix it!"[164]

Santa Elena, West Wall, immediately south, the rocky cliff was exposed and eroding but posed no immediate danger

Santa Elena, curtain wall, West Wall, where the sandstone cliff sat on a rock and sand base, exhibited areas of undercutting, and a large drain north of the curtain had a "2-foot section of the wall breaking away." The curtain wall had a huge crack on its south end which the San Juan garrison had been using as a trash dump[165]

San Agustín, curtain wall, West Wall, was undercut at the toe of the wall

Fort of La Perla in ruins

1903 President Theodore Roosevelt establishes San Juan Military Reservation.

1912 Bubonic plague outbreak causes an assessment of the walls; parging of them with cement recommended on the lower four feet, but this work is never carried out. The military made note that the West Wall was more infested with rats with any other in the military zone with the exception of the wall that overlooks the area known as La Perla*;* North Wall pierced in every direction by tiny natural drains that offer the rats a place to shelter

1914-1918 World War I, the Great War, causes the reactivation of the San Juan fortifications. A gun is mounted on the city wall at Santa Elena, West Wall; a 4.42-inch Armstrong gun mounted *en barbette* required the

163. Berkowitz et al., volume III, section [II]:44.
164. Ibid.
165. Ibid., volume III, section [II]:45.

	construction of a platform of enough size to include a blast apron and filling in front of the parapet wall; the gun is never fired
	An earthquake causes damage to some historic buildings
	A wall section between Santa Elena and San Agustín Bastions, West Wall, collapsed (due to an earthquake) and was on the verge of settling into the harbor; the wall is recommended to be rebuilt to prevent erosion of the exposed cliff into the harbor
By 1921	Houses (quarters) constructed within the Bastions of Santo Tomás and San Sebastián for use by US military
1921	Near San Juan Gate and curtain wall, South Wall, a new break occurs
1922	Governor Horace Mann Towner states the walls should be "reserved for their great historic value and beauty, [and] also for their use, in part, as retaining walls"[166]
1924-1925	As a consequence of Governor Towner's letter, the US Army begins its first significant repairs to city walls (a section of the West Wall between San Agustín and San Juan Gate):
	Robert R. Prann won the bid for "Reconstructing and Remodeling Sections of the Wall East of San Agustín Battery"; a total cost was $27,825.00
	Specifications included: reuse of coral blocks salvaged from collapsed wall at Santa Elena and San Agustín; bedding mortar of one-part cement and three parts clean screen sand; and pointing mortar of equal parts clean screen sand and Portland cement
1925	Contract awarded to continue repairs to West Wall for lowering the curtain wall west of San Agustín to uniform height to Luis Rexach for $15,925.00; work completed in November 1925
	New breaks and additional deterioration surface in new locations on the walls including:
	Between San Justo Bastion, South Wall, and San Juan Gate, due to growth of small trees and vines; San Justo Bastion sentry box had a small crack due to two small trees; Las Palmas, South Wall, superior slope and breast-height wall, had split because of tree growth and a short section needs to be replaced; and a small break at the bottom of the wall in front of La Fortaleza needs repair as well as an area under the bastion
1927	Four contracts prepared to remedy the problems at San Justo, Las Palmas, and La Fortaleza identified in 1925. The four contracts titled "Preservation of the Historical Fortifications," included:
	Repointing 1,600 square feet of the South Wall,
	Repointing 500 square feet of Santo Domingo Bastion, North Wall,
	Extensive work on Las Ánimas Bastion, North Wall, including: taking down broken section of the old wall and construction of a gravity section concrete retaining wall; bonding the new wall to the adjacent walls and back filling; repairing a cavity at the bottom of the wall east of the gravity section and reinforcing it with concrete; grouting or pointing all cracks and joints where necessary, including 350 feet of wall faced with coral blocks
1930	Santo Domingo Bastion addition work includes: removing vegetation from the top and face of the walls; repairing vertical faces with concrete; repointing cracks; reconstructing merlons within concrete and

166, Berkowitz et al., volume III, section [II]:48.

salvaged coral blocks; repairing the stormwater drain at the southwest base of the bastion by cleaning it and filling the cavity with concrete; and refacing the wall with salvaged coral blocks

1932 First restoration project at city walls by US Army Corps of Engineers – reconstruction of four sentry boxes using Insular Funds. Boxes were San Agustín, West Wall, one at the curtain wall at San Agustín, and one at Santa Catalina (within the grounds of La Fortaleza), and San Juan Gate.

1934 Eleanor Roosevelt visits Puerto Rico. Shortly thereafter, an NPS official comes to the islands to investigate the significance of the San Juan fortifications. The NPS finds the fortifications to be nationally significant but in danger of succumbing to systematic dilapidation and decay

1938-1940 In response to public opinion and perhaps the enlightened view of some military leaders, the US Army attempts to document and make much needed repairs to parts of the fortification. Funding was limited to $100,000, and work was prioritized for: San Agustín, sentry box reconstruction, and Santo Domingo Bastion

Immediately afterwards, a more extensive project, "Repair of Historical Fortifications," for a theoretical cost of $858,817.59 was approved. The projects include:

Restoration at San Agustín

- Installation of 450 feet of 18-inch concrete storm sewer pipe at the West Wall to prevent excessive stormwater from going through the original drain holes of the West Wall
- Removal and replacement of 100 feet of cracked and undermined curtain wall west of San Agustín, West Wall
- Rebuilding collapsed wall at San Agustín using old foundations where possible and adding new concrete counterforts
- Reconstruction off embrasures destroyed earlier by the Spanish during the installation of the rifles *en barbette*
- Facing the new curtain wall with 23.9 square feet of irregular sandstone block backed with mortar and other stones

Reconstruction of eight sentry boxes: San Juan Gate (at La Fortaleza), San Sebastián, Santa Rosa, and San Antonio

Restoration of the wall at the salient angle northwest of San Juan Gate and construction of new counterforts

Repair of walls, embrasures, counterforts form San Juan Gate to San Agustín

Reconstruction of toe of curtain wall

Construction of new parapet with embrasures and faced with coral stone block

Possible repairs to the sentry box when the parapet was repaired

Restoration of San Antonio Bastion

- Removal of debris, patching of wall surfaces, and facing with sandstone sections of the walls, firing steps, and embrasures

Removal of several "unsightly structures of more or less recent construction," including the bastion and masonry casements within dating from about 1897[167]

Installation of about 9,000 square feet of sod on the terreplein of San Antonio

Restoration of Santa Rosa Bastion

Patching 950 square feet of wall surfaces, firing steps, and embrasures, as well as debris removal

Northwest corner of bastion covered with a coat of "sand, cement, and broken brick"[168]

Patching the north wall, facing San Juan cemetery between Santa Rosa and Santo Domingo

Restoration of revetment wall on north side of Santo Domingo with new reinforced concrete counterforts and facing this wall with 2,200 square feet of sandstone blocks

Restoration of the wall and firing steps at Las Ánimas Bastion and along Boulevard del Valle (now Calle Norzagaray) from Santo Domingo to Las Ánimas Bastions, with 17,419 square feet of stone facing and 1,841 lineal feet of salvaged brick paving and edging

Miscellaneous activities

Cleaning 52,000 square feet of the West Wall between San Agustín and San Juan Gate of the South Wall and between San Juan Gate and curtain wall between La Concepción and Las Palmas

Patching 8,000 feet of the same stone walls, removal of debris and remains of the old wall northwest of San Juan Gate to form a revetment at the base of the San Agustín curtain wall

At San Sebastián, repair embrasures by installing 1,500 square feet of [illegible], 3,000 feet of stone facing, and 1,550 lineal feet of brick edging

At Santo Tomás, repair two embrasures by installing 1,000 square feet of [illegible], 500 square feet of stone facing, and 1,200 square feet of brick

At Las Ánimas, repair embrasures by installing 1,000 square feet of stone facing, cleaning, pointing, and patching the interior of the sentry house, and repairing the roof

Circa 1940 Installation of air-raid tunnels at Las Palmas at its lowest level

1941-1945 World War II; US Army preservation efforts stops but World War II military work includes:

Utility lines installed at the Non-Commissioned Officers quarters at San Sebastián and Santo Tomás terreplein

Road at base of Las Ánimas, North Wall, regraded in 1944 causing the interior walls to crack

The scarped wall established by US Army engineers by underpinning the flooring

Road regraded and the sentry box and adjacent parapet reconstructed

Army Caribbean Defense Command and the US Navy placed a subterranean "manhole type" structure in the moat at El Morro for surveillance activities

US Navy and Army general surveillance antennas were placed within the casemates of El Morro

167. Berkowitz et al., Volume III, Section [II]:57.
168. Ibid.

Circa 1950 The landform to the south of San Sebastián and Las Ánimas Bastions was altered to shift Norzagaray Street to the south and elevate the road. A retaining wall was built to support the road during the 1950s that altered the bastion interiors by establishing a more contained and isolated space

1950 The seawall and road at the base of Santa Catalina Bastion, West Wall, extending from San Juan Gate southward to La Puntilla reconstructed

1951 **A** December storm causes the collapse of a 10-foot-by-40-foot section of the West Wall in front of San Agustín; subsequent undermining causes a much larger section to crack and a washout behind the wall exposed the base of the wall

1953 Repair of the December 1951 storm damage completed by the US Army Corps of Engineers

1955 Las Ánimas, North Wall, and the wall in the area affected by grading during World War II cracked in 1954 and suffered general wall failures caused by washouts on the northeast side

The wall was stabilized through "reinforced concrete pile wall extending five feet out and 10 feet below the footing"[169]; replacing the northwest corner with concrete; filling large cracks with concrete; and regrading the terreplein to include installation of a drainage ditch and concrete culvert, repairs to the catch basin, and cleaning of the existing drain

1956 The seawall in front of San Juan Gate undercut and partially reconstructed and reinforced to prevent the sentry box at San Juan Gate from collapsing into the harbor

El Club Cívico de Damas (The Ladies Civic Club) donates funds for the restoration of the San Juan Gate, which ignites controversy between the NPS Eastern Office of Design and Construction and the park superintendent over whether or not sufficient documentation existed to "restore" the gate. It was decided that the work was intended to "repair and preserve the existing character" of the gate.[170] Work completed included: patching cobblestone-paved road, repairing wooden doors, removing vegetation, restuccoing walls, removing exposed wiring and conduit, and landscaping; original hardware was used when possible, and new hardware was patterned after old hardware. Contract price was $5,980.00 and was completed by F. W. Loesche

Report, *Survey Report on Fortification Walls, Fort Brooke, San Juan, Puerto Rico*, completed by Jacksonville, Florida, Engineer District of the US Army Corps of Engineers. The report found:

> West Wall: Santa Elena and San Agustín exhibited erosion and undermined foundations; Santa Elena was the highest priority for repair
>
> South Wall: San Juan Gate to San Justo Bastion wall was accessible and structurally sound; San Juan Gate and San Justo exhibited deteriorated stucco and mortar, eroded foundation bases aggravated by poor drainage, and excessive vegetation; Las Palmas Bastion air-raid tunnels, installed circa 1940, considered to be in poor condition and recommended to be sealed; San Juan Gate area corrective work given top priority
>
> North Wall (Coastal Wall System): Entire wall considered relatively sound although eroded and weathered in places and in need to repointing and restuccoing. Erosion was aggravated by excessive vegetation and water seeping through the wall; Santo Domingo being eroded probably due to the regrading of the street but was outside of the jurisdiction of the federal government; no work on the North Wall was given a high priority

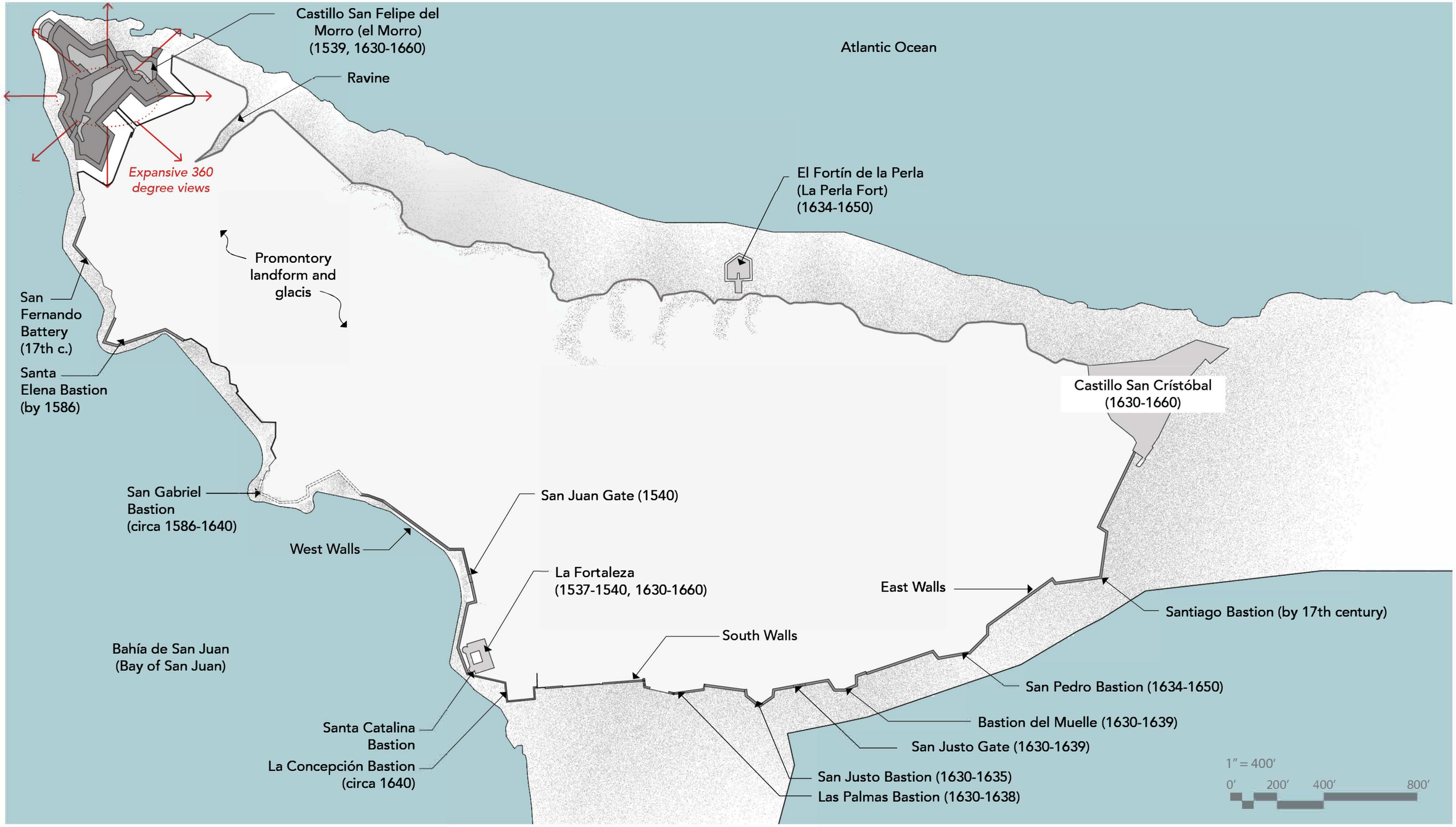
169. Berkowitz et al., volume III, section [II]:59.
170. Ibid., volume III, section [II]:60.

1957	Follow-up study, *Foundation Conditions, Appraisal and Improvements Recommended*, also conducted by the Jacksonville Corps; the walls showed: various levels of disrepair and erosive conditions; some severe conditions of deeply eroded foundation rock; a need for extensive and costly repair and protective work; heavy vegetal growth on the masonry walls; evidence of seepage through masonry in some areas contributing to deterioration to mortar joints and parging; masonry exhibits weather of agent, masonry, joints in small and larger patches throughout the fortifications; and many conditions were considered critical from the viewpoint of imminent, or even early, failure
1977	For Santa Elena, West Wall, the US Army Corps of Engineers completed, *Emergency Project Works* including the placement of a rip-rap revetment in front of the bastion and borings along this stretch of the wall
1978	Santa Elena to San Juan Gate project, *Foundation Treatment (and Access Trail)*, portrays what is commonly known as the "jeep trail" extending northward from San Juan Gate to the base of Santa Elena situated above the rip rap revetment allowing for access and maintenance of the West Wall
1980	Santa Elena to south end of El Morro, *Project Stone Revetment from Santa Elena Bastion to South End of El Morro West Wall*, included the continuation of the revetment begun in 1977 at the base of Santa Elena
1981	Casa Rosa scarp project, *Subsurface and Structural Exploration at Casa Rosa Scarp*, included removal of upper half of scarp wall and its five embrasures flanking the sentry box; sentry box removed and reconstructed
1983	Casa Rosa scarp project completion project, *Rehabilitation of Casa Rosa Scarp Wall*, including: subsurface work and the installation of parapets, sentry box, stone facing, utilities and landscaping; a new hollow parapet was created within a reinforced concrete wall faced with 2-inch sawed stone facing; interior of parapet contained reinforce concrete counterforts behind the face wall; new reinforced concrete retaining was built parallel to the wall; walls supported a new "roof slab: terreplein consisting of precast concrete slabs topped with backfill and sod[171]; entire parapet regraded, drained by new drain outlets
1994 -1996	Barge *Morris J. Berman* ran aground spilling 925,000 gallons of fuel oil into the waters near San Juan leading to a $10 million settlement. Part of the oil spill money used to create a walking trail, *Paseo del Morro*, around the tip of island at El Morro so that portions of the wall that had not previously been visible by land to visitors could now be seen.
2002	Puerto Rico Department of Transportation and Public Works, Highway and Transportation Authority, begins performing condition studies on the portions of the city walls for which they have responsibility. In 2003, it publishes a five-volume study of their findings including: historical research; materials analysis; vegetation analysis; laboratory studies; threat analysis; and preservation recommendations.
2013-2014	Condition Assessment Report on the San Agustín and Santa Elena Bastions
2013	The retaining wall between El Morro Esplanade and El Polvorín collapsed as a result of the root system of the seagrapes undermining the wall.
2016	Grass swales to direct water to catch basins connected to PVC pipes emptying beyond or below the walls are added above Santa Elena Bastion, south of El Polvorín, as well as within San Agustín Bastion to prevent further damage to the walls.

171. Berkowitz et al., volume III, section [II]:65.

2017	September 20; Hurricane Maria, on the heels of Hurricane Irma, is the largest hurricane to ever hit Puerto Rico. It causes extensive damage throughout the island closing the park for three months.
2019-2020	The southwestern part of the island of Puerto Rico are struck by an earthquake swarm, including eleven that were stronger than magnitude 5. The strongest and most damaging of this sequence was a magnitude 6.4 quake that occurred on January 7, 2020.

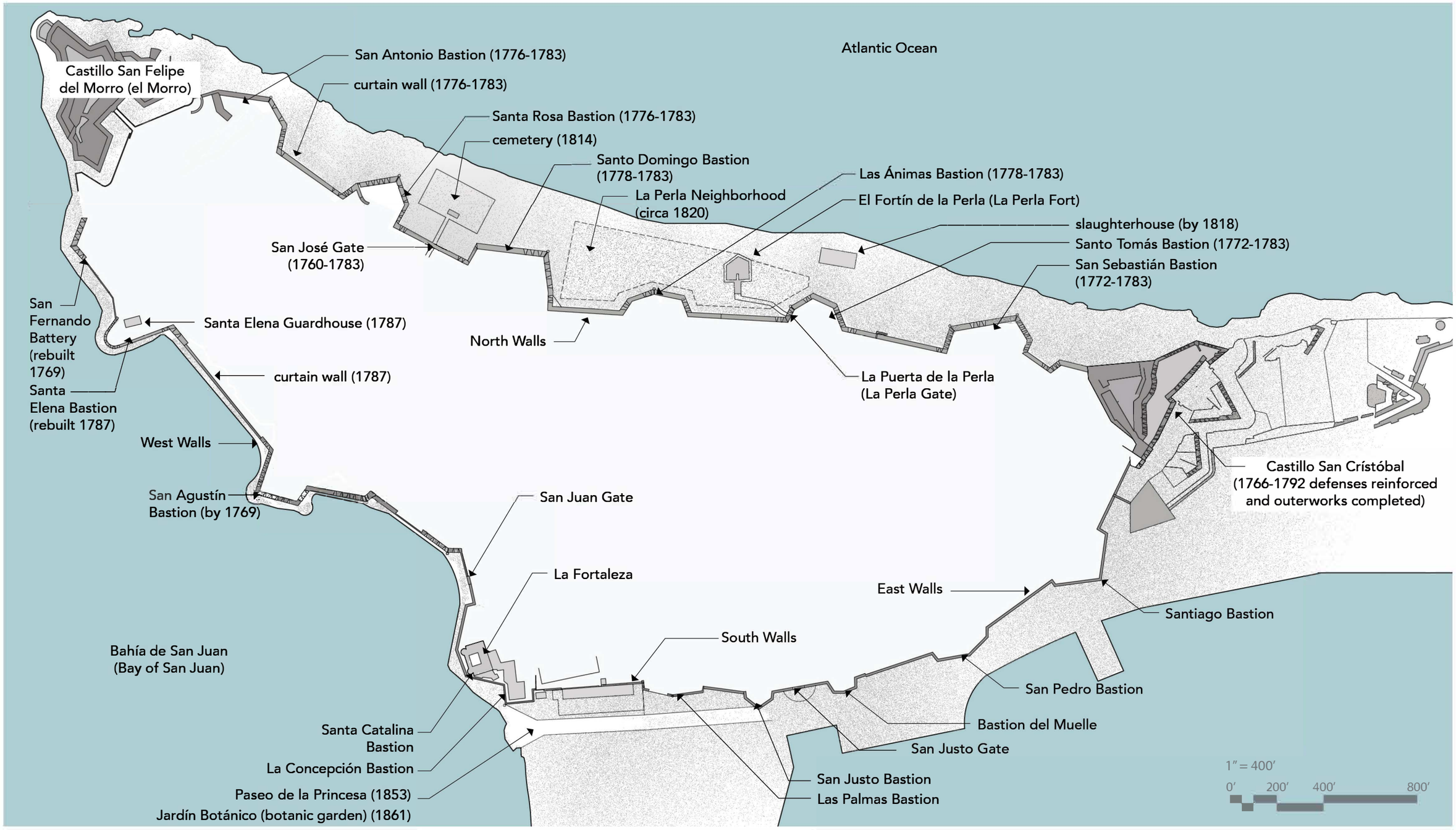
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San Juan Historic City Wall Cultural Landscape Report
San Juan, Puerto Rico

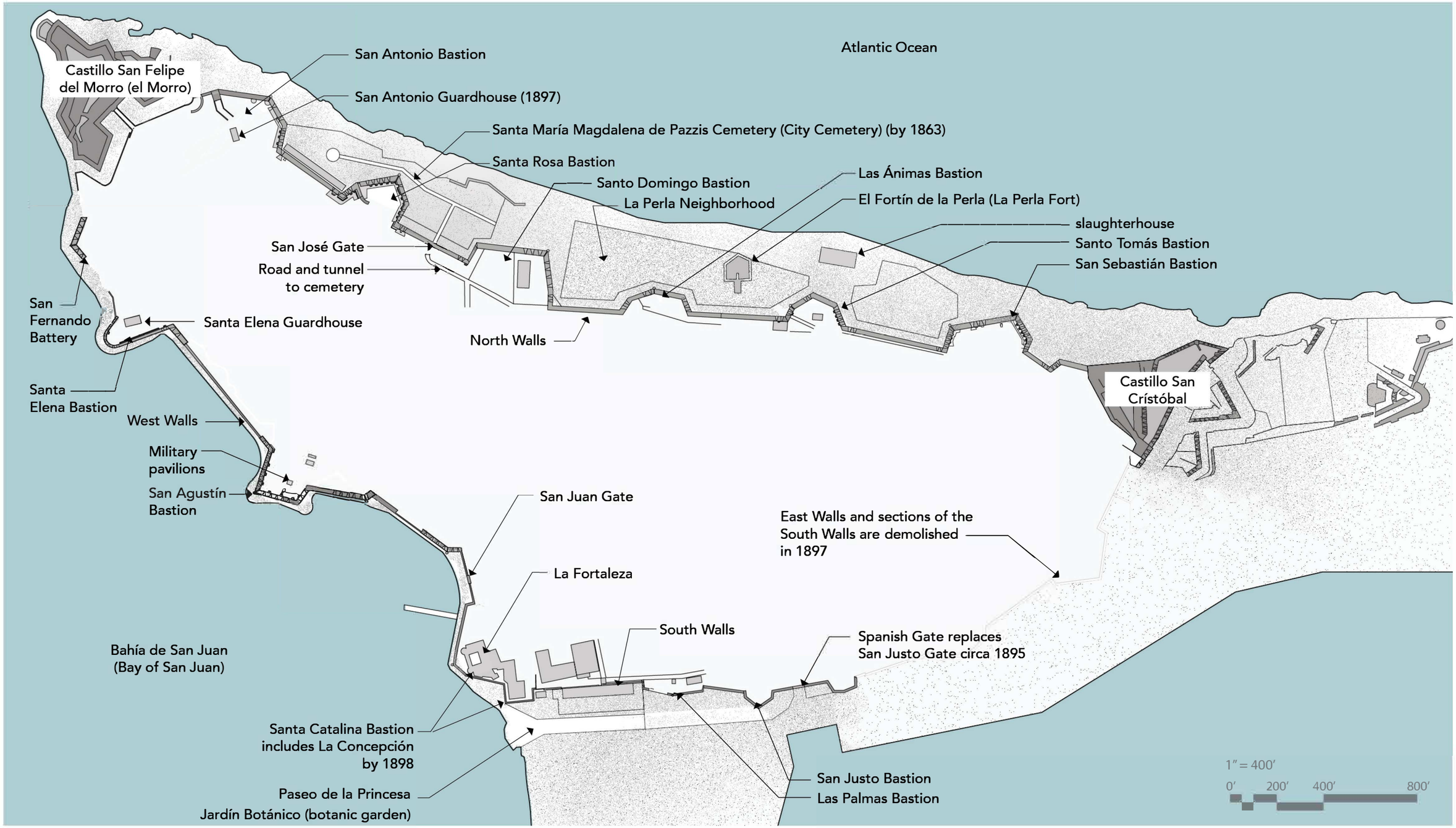
FIGURE 36. Period Plan 1 - circa 1540-1760



1540 1600 1700 1800 1900 2000

San Juan Historic City Wall Cultural Landscape Report
San Juan, Puerto Rico

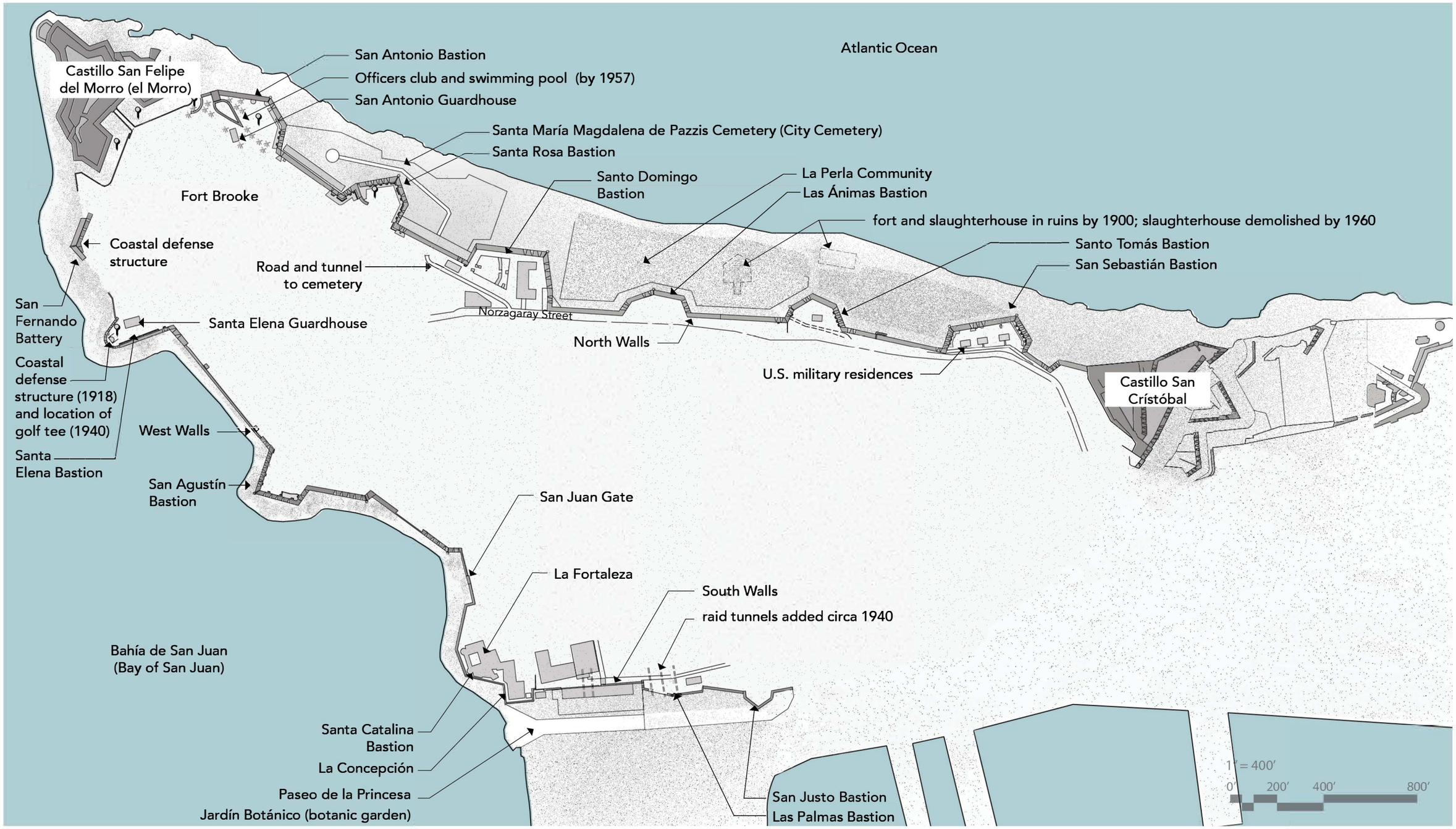
FIGURE 37. Period Plan 2 - circa 1760-1861



1540 1600 1700 1800 1900 2000

San Juan Historic City Wall Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 38. Period Plan 3 - circa 1861-1898



1540 1600 1700 1800 1900 2000

San Juan Historic City Wall Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 39. Period Plan 4 - circa 1899-1961

Existing Conditions Documentation

Introduction

This chapter describes, through narrative text, photographs, labeled base mapping, and analytical diagrams, the current conditions and extant landscape features associated with the San Juan City Wall associated with San Juan National Historic Site.

The chapter consists of five sections. The first section – Environmental Context and Setting – sets the San Juan City Wall within a regional and local context by discussing the larger systems that surround and encompass the project area. The second section – Cultural Context and Setting – describes regional elements such as major road corridors, planning and zoning districts, demographics, and local attractions that provide a cultural framework for the project area. The third section – Landscape Systems and Features – describes the San Juan City Wall CLR project area as a whole to establish the sense of place and way in which individual features contribute to the whole. The fourth section – Landscape Character Areas – identifies a system of land bays developed for the CLR to organize the presentation of more detailed information into manageable units. The units are Landscape Character Areas, defined as discrete geographic areas that contain concentrations of related cultural resources or a similar character based on a shared history of development or use. The fifth and final section – Existing Conditions Documentation by Landscape Character Area – inventories and describes each of the landscape features present within the project area at the time the CLR was prepared. Feature descriptions are organized by landscape characteristic, the tangible and intangible aspects of a site that collectively convey its historic character and aid in the understanding of its cultural importance.

Landscape characteristics range from large-scale patterns and relationships to site details and materials. Feature descriptions are organized into the following landscape characteristic categories:

- **Natural systems and features**. Natural systems and features are the environmental resources and qualities that have influenced the development and physical form of a landscape. They include the underlying landform and topography, soils, and water resources, as well as attendant native plant communities.

- **Response to natural resources.** Responses to natural resources describe the physical connections between the built and natural environment, such as the siting of buildings and structures and the use of native materials in construction.

- **Land uses.** Land uses are the principal activities in a landscape that form, shape, and organize it as a result of human interaction.

- **Spatial organization.** Spatial organization is the three-dimensional organization of physical forms and visual associations in a landscape, including the articulation of ground, vertical, and overhead planes that define and create spaces.

- **Cultural vegetation.** Cultural vegetation is composed of the deciduous and evergreen trees, shrubs, vines, ground covers, and herbaceous plants that have been introduced in a landscape by cultural activities.

- **Circulation.** Circulation represents the patterns, features, and applied material

finishes that constitute the systems of movement in a landscape.

- **Buildings and structures.** Buildings are elements constructed primarily for sheltering any form of human activity in a landscape, while structures are elements constructed for functional purposes other than sheltering human activities.

- **Views and vistas.** Views are generally defined as being expansive and panoramic prospects, whether naturally occurring or designed, while vistas are deliberately designed views often meant to orient the gaze to a linear feature or particular focal point.

- **Small-scale features.** Small-scale features are the elements providing detail and diversity for both functional needs and aesthetic concerns in a landscape.

- **Known and potential archeological resources.** Archeological resources are the traces, or deposited artifacts in a landscape, evidenced by the presence of either surface or subsurface features.[172]

Appendix A located at the end of the CLR provides a list of all inventoried landscape resources documented in this chapter.

Environmental Context and Setting

Situated in the northeastern Caribbean Sea, Puerto Rico is the easternmost island of the Greater Antilles archipelago that includes Cuba, Jamaica, Hispaniola, and the Cayman Islands (Figure 40). Puerto Rico lies at the boundary between the Caribbean and North American tectonic plates. As such, it is prone to stresses caused by the interaction of the plates. The island is also located less than 100 miles south of a deep depression in the Earth's crust, a submarine feature of the Atlantic Ocean known as the Puerto Rico Trench. This depression descends to more than five miles below sea level and represents the deepest point in the Atlantic Ocean. The tectonic forces that created the Puerto Rico Trench occasionally cause earthquakes that impact Puerto Rico.[173]

The island of Puerto Rico is composed of Jurassic to Eocene volcanic and plutonic rocks, which are overlain by younger Oligocene to recent carbonates and other sedimentary rocks. The oldest rocks are approximately 190 million years old (Jurassic) and are located at Sierra Bermeja in the southwest part of the island. Most of the caverns and karst topography on the island occurs in the northern Oligocene to recent carbonates.

Mainland Puerto Rico is generally mountainous and hilly. Nearly one-quarter of the island is marked by steep slopes. The Caguas Basin in the Loíza River Valley south of San Juan is the largest of several basins in the mountains that provide level land for settlements and agriculture.[174] The mountains are the easternmost extension of a tightly folded and faulted ridge that extends from the Central American mainland across the northern Caribbean to the Lesser Antilles.[175] Cordillera Central is Puerto Rico's highest mountain range, exceeding 3,000 feet in height in many locations. The lowlands and northwestern foothills are characterized by karst features, including sinkholes and caverns.

172. Derived from Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports; Contents, Processes, and Techniques* (Washington, DC: Department of the Interior, 1998), 53; and Linda Flint McClelland, J. Timothy Keller, Genevieve Keller, and Robert Z. Melnick, National Register Bulletin 30: *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (Washington, DC: Department of the Interior, 1990), 53.
173. "Puerto Rico," *Encyclopaedia Britannica*, accessed June 1, 2021, https://www.britannica.com/place/Puerto-Rico.
174. Ibid.
175. Ibid.



FIGURE 40. Greater Antilles Archipelago.

Although none of Puerto Rico's rivers is large or deep enough for navigation, several of the rivers that flow northward have been harnessed to generate hydroelectric power, for irrigation, and for municipal water supplies. Precipitation mainly falls on the north-facing slopes of the mountains and flows from the interior toward the north and west coasts, including the Grande de Loíza, Grande de Arecibo, Grande de Añasco, and La Plata rivers. Along the southern coast, where irrigation is important to agriculture, most of the rivers remain dry except following a rainfall.

Many of the soils in the San Juan area are material formed in place and derived from plutonic rocks, mainly granodiorite and quartz diorite, and from extrusive volcanic rocks such as lava, tuff, breccia, and dune deposits, swamp and marsh deposits, and blanket pre-weathered deposits. Soil forms rapidly in the San Juan area because of the warm tropical climate. This warm climate is favorable throughout the year for rapid chemical and physical reactions, for the decomposition of organic material from plants and animals and for other soil-forming processes.[176]

176. Rafael A. Boccheciamp, *Soil Survey of San Juan Area of Puerto Rico* (Washington, DC: US Department of Agriculture Soil Conservation Service, 1978), 67.

Throughout the island, plant life is abundant and varied. The island includes several tropical rainforests on its north side, while thorn and scrub vegetation characterizes the drier south side. Little of the island's original vegetation survives in the vicinity of Old San Juan today. Elsewhere on the island, native vegetation was removed over centuries in support of agricultural uses and as part of harvesting coastal forests for lumber. Much of the present-day vegetation consists of introduced species. There are more than 200 bird species that can be spotted on Puerto Rico. Animals are limited to nonpoisonous snakes, lizards, mongooses, and the coquí frog.

Puerto Rico's climate is tropical, with little seasonal variation. Local conditions, however, vary due to differences in elevation and exposure to rain-bearing winds. Mountains separate the island of Puerto Rico into two climatologically distinct regions. The northern two-thirds of the island has a relatively humid climate whereas the southern one-third of the island is semi-arid. Temperatures vary little throughout the year, but they are warmest in August and coolest in January and February. Daily temperatures throughout the year average 78^0 F, with higher elevations slightly cooler. High humidity often makes the temperatures seem higher.

The predominant weather generator is the northeast trade wind that brings heavier rainfall to the north coast and leaves the south coast in a rain shadow. San Juan averages 60 inches of rain per year, while El Yunque Peak to the east receives an average of 180 inches of rain per year. In contrast, Ponce, on the south coast, receives only 36 inches of rainfall per year. Although rainfall occurs throughout the year, the rainiest period is May through December. Hurricanes are most prevalent in the Atlantic between June and November, and often pass over the island, wreaking havoc. The effects of Hurricane Maria in 2017 continue to be felt on the island in 2021. Other hurricanes that have heavily impacted the island over the past century or more occurred in 1899, 1928, 1932, 1956, 1989, and 1998.

Cultural Context and Setting

Puerto Rico is an unincorporated territory of the United States. Old San Juan, a district of Puerto Rico's capital at San Juan, is the island's oldest settlement. Old San Juan is a popular destination for local and international tourists. The city occupies the Isleta de San Juan, a 3-square-mile island situated off the north coast of Puerto Rico (Figure 41). The small island is connected to the mainland and the modern city of San Juan by three bridges at its east end. Waterbodies surround the 615-acre island: the Atlantic Ocean is located to the north, while San Juan Bay (Bahía de San Juan) is located to the west. San Antonio Canal (Caño de San Antonio) separates Isleta de San Juan from the mainland city of San Juan. The canal contains the largest grouping of marine facilities in the San Juan area (Figure 42). The metropolitan area of San Juan hosts the largest industrial and processing center on the island, with facilities for petroleum and sugar refining, tobacco processing, brewing and rum distilling. San Juan is also the island's financial capital with many US banks and corporate offices or distributing centers. In addition to tourism and industry, shipping is an important aspect of San Juan's economy.

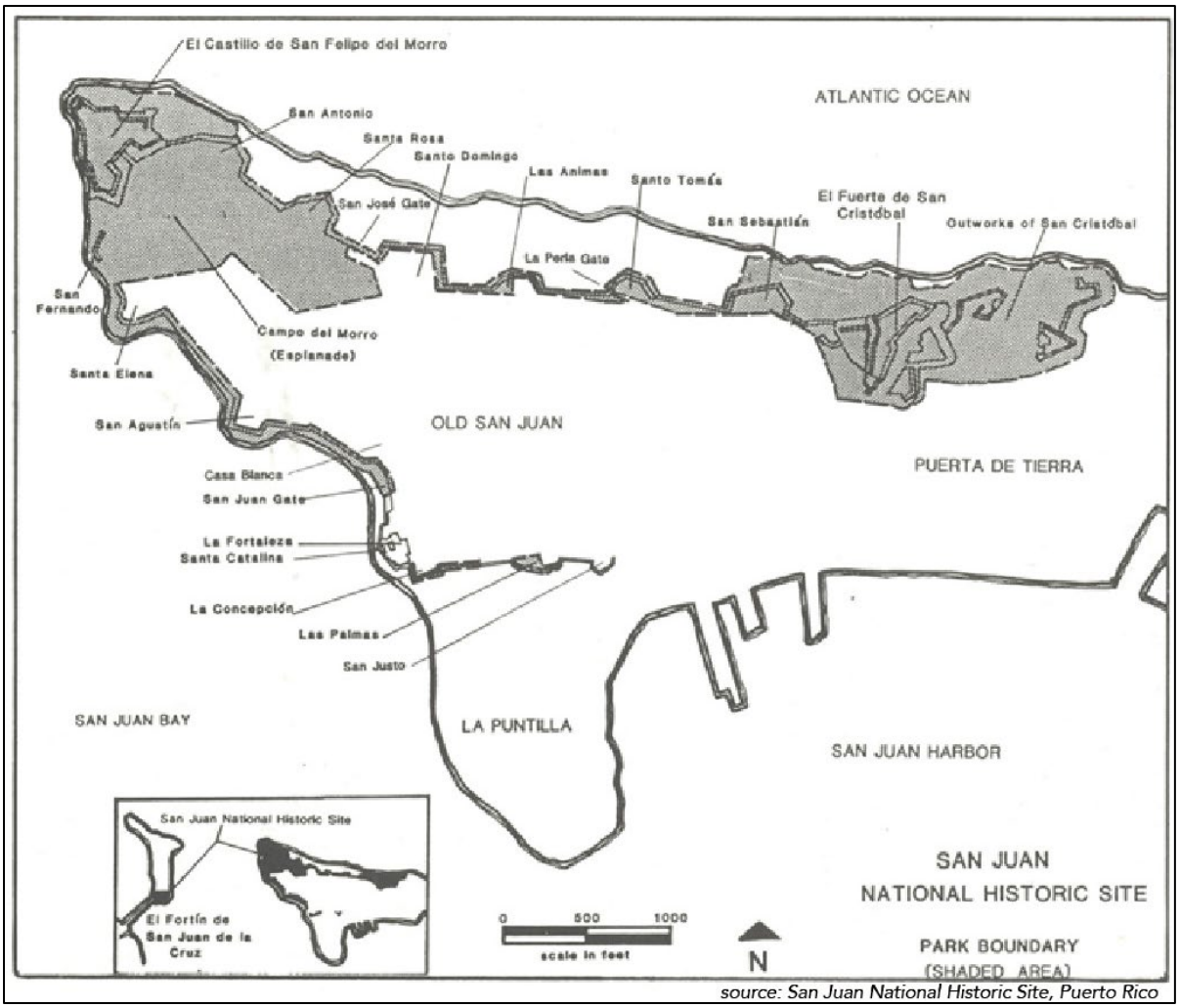


FIGURE 41. Site Context and Location Map.



FIGURE 42. Isleta de San Juan.

The San Juan City Wall project area that is the focus of this CLR is part of San Juan National Historic Site, a unit of the National Park System that preserves elements of a fortification system built by the Spanish beginning circa 1540 to defend the city. Portions of the fortification system are also managed by the Commonwealth of Puerto Rico. Portions of the wall system continued to evolve through the late nineteenth century, when Puerto Rico was acquired by the United States as a result of the Spanish-American War. Walls that fall within the park edge Old San Juan to the north between Castillo San Cristóbal and Castillo San Felipe del Morro, while bastions and walls extend along the western edge of the isleta south from El Morro as far as San Juan Gate. Two additional segments of the original wall system are located at the south of the early city of Old San Juan west of La Fortaleza, another sixteenth-century component of the Spanish military complex on the isleta. Altogether, the San Juan City Wall system extends along the Atlantic Coast shoreline and the San Juan Bay shoreline for a distance of approximately 2-1/2 miles. The San Juan City Wall system remains largely intact, except for a section 7,000 yards south of San Cristóbal, which was removed during the late nineteenth century to allow for expansion of the city of San Juan eastward. Other components of the park include the fortifications of La Princesa, the El Morro Esplanade, and San Juan de la Cruz Fort (Fortín San Juan de la Cruz), also known as El Cañuelo, a military emplacement on Cabras Island at the western entrance to San Juan Harbor (Figure 43).



source: San Juan National Historic Site, Puerto Rico

FIGURE 43. San Juan National Historic Site, Isleta de San Juan.

The San Juan City Wall are massive structures built from calcareous sandstone laid up as rubble masonry and parged with lime plaster (Figure 44). The walls form broad parapets to protect the city within. The parapets are pierced with embrasures or slotted openings that were historically fitted with artillery to fire on an advancing enemy.[177]



FIGURE 44. San Juan City Wall.

San Juan National Historic Site was designated in 1949 for the surviving evidence of fortifications established to defend San Juan Harbor and the fleet that Spain used to control trade within the Caribbean region beginning in the early to mid-sixteenth century. Much of the land was transferred from the US Army to the NPS and the Commonwealth of Puerto Rico in 1961. The park was administratively listed in the National Register of Historic Places in 1966, with documentation prepared in 1973. Along with La Fortaleza, the park property was designated a UNESCO World Heritage Site on December 6, 1983, and a National Historic Landmark in 2013. La Fortaleza was the first fortification built in San Juan Harbor in 1533. It is owned and administered by the government of Puerto Rico, and it serves as the residence of Puerto Rico's governor. (Although it does not fall within the CLR project area, it is mentioned here as the property relates to the World Heritage Site.) The UNESCO web site articulates the outstanding universal value of the property:

> La Fortaleza, along with the later fortifications of Castillo San Felipe del Morro, Castillo San Cristóbal and San Juan de la Cruz (El Cañuelo), and a large portion of the original San Juan City Wall, were built between the 16th and 20th centuries to protect the city and the Bay of San Juan. They are characteristic examples of the historic methods of construction used in military architecture over this period, which adapted European designs and techniques to the special conditions of the Caribbean port cities. La Fortaleza has served as a fortress, an arsenal, a prison, and residence of the Governor-General, and today as the seat and residence of the Governor of Puerto Rico.
>
> These fortifications, which retain the general appearance of advanced 18th-century defense technology, clearly illustrate both a transfer of technology from Europe to America over a long period and its adaptation to the topography of a strategically significant yet difficult tropical site. Reflecting Italian Renaissance, Baroque, and French Enlightenment designs, the defenses express successive techniques and technologies in fortification construction. The varied examples of military architecture from the 16th to 20th centuries in the fortifications of San Juan are evidence of the imperial struggles that defined the development of the Americas. As one of the first as well as one of the last of the numerous seats of power in Spain's American empire, these structures are now potent symbols of the cultural ties that link the Hispanic world.[178]

Sitewide Landscape Systems and Features

The San Juan City Wall CLR project area encompasses the linear system of masonry walls that edge Old San Juan to the north between San Cristóbal and El Morro, to the west between El Morro and San Juan Gate, and are associated with two city parks known as Las Palmas and Las Palomas. Throughout the CLR, the San Juan City Wall are described in accordance with geographic orientation, including North, West, and South

177. National Park Service, "Description of the Site; San Juan National Historic Site," Drawing 393/60068-5606.
178. United Nations Educational, Scientific, and Cultural Organization (UNESCO), "La Fortaleza and San Juan National Historic Site in Puerto Rico," accessed June 1, 2021, https://whc.unesco.org/en/list/266.

Wall sections. Also included within the CLR project area is el Paseo del Morro National Recreational Trail, a pedestrian route that follows the shoreline at the base of the West Walls between San Juan Gate and El Morro.

The North Walls (CRIS HS #006065, HS-201) extend from El Morro to San Cristóbal. The wall system was built between 1766 and 1782 and was altered in 1897 and 1930–1940. The NPS rehabilitated portions of the North Wall in 2001. The North Wall features massive curtain walls, composed of stone, brick, and stucco, that rise from the cliff-like landform of the terraced edge to Old San Juan. Set within the walls are six bastions that face the Atlantic Ocean. From east to west, they include San Sebastián (Figure 45), Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, and San Antonio. The walls are cut with embrasures for the positioning of artillery and edged to the rear by firing steps and ramps in several locations. Many of the bastions also feature a concrete sentry box or *garita* at a forward position. These are replacements for historic structures. Drainage is accomplished through openings in the lower portion of the walls fed by stone-lined gutters and grass swales.



FIGURE 45. View of the North Walls associated with San Sebastián Bastion and an associated sentry box from San Cristóbal.

The West Walls (CRIS HS #006068; HS-206) extend from El Morro to San Juan Gate (Figure 46). The walls are composed of stone, brick, concrete, and stucco. The system includes three bastions. From north to south, they are San Fernando, Santa Elena, and San Agustín. In deteriorated condition, San Fernando Bastion was altered through the addition of a later concrete gun emplacement circa 1897. Portions of the West Wall system were constructed circa 1586, altered between 1630 and 1650, and altered again between 1766 and 1790. Final alterations conducted by the Spanish occurred in 1897 to address advances in artillery technology. In 1917, in response to the threat of German armed raider ships, the US War Department ordered three 4.7-inch Armstrong guns to be sited and emplaced in positions that could fire on approaching lightly armed raiders and U-Boats. One of these was emplaced behind Santa Elena Bastion, along with a bombproof magazine.[179] The gun emplacement and bombproof magazine survive within Santa Elena Bastion today.

A portion of the curtain wall between Santa Elena and San Agustín Bastions collapsed between 1918-1922 and was rebuilt by the US Army. The NPS completed additional preservation and repair treatments in 2001; conservation efforts continue as of 2020.

Edging portions of Santa Elena and San Agustín Bastions are firing steps and ramps. Drainage is accomplished through openings in the lower portion of the walls fed by stone-lined gutters and grass swales, in addition to later catch basins linked to PVC (polyvinyl chloride) pipe extended through the masonry walls. Many of the embrasures have been rehabilitated through the addition of railings to protect visitors. The interior of San Agustín Bastion features turf grass and tree plantings, benches, and trash receptacles, while Santa Elena Bastion includes Santa Elena Guardhouse, a gun emplacement and a bombproof magazine added in 1917, and a fenced yard that protects ongoing work on historic artillery and ordnance by a NPS Cannon Conservation Workshop.

179. Bearss, 143-150.



FIGURE 46. View of the West Walls associated with San Sebastián Bastion, with San Cristóbal beyond.

The South Walls (CRIS HS #006069; HS-207) include the remains of two bastions—La Concepción and Las Palmas—that edge two contemporary city park spaces. The walls are constructed of stone, brick, and stucco. They feature embrasures and banquettes or firing steps. La Concepción is encompassed by Las Palomas Park (Figure 47), while Las Palmas edges a city park of the same name. These two bastions were first built circa 1630–1650, and altered between 1766 and 1790, and again in 1897. They were further altered by the US Army between 1930 and 1940. Associated with the two parks and the bastions are paved walks and plazas, benches, lighting, safety fencing along the wall margins, trees and tree boxes, and commemorative markers. Las Palomas park includes several feeding stations for pigeons.



FIGURE 47. View of the South Wall associated with La Concepción Bastion at Las Palomas Park.

The CLR project area includes the western face of San Juan Gate (CRIS HS #091741; HS-242) (Figure 48). The gate was initially constructed in 1635 to provide access to the city through the wall system. The gate was altered in 1749 and again in 1809. The NPS addressed preservation needs associated with the gate in 1956. The gate is composed of stone and wood with a painted stucco coating on the west face that is an iconic red color. Heavy wood doors hang in the gate. The San Juan Gate now provides access to Paseo del Morro, a recreational public walk that follows the western shoreline of Isleta de San Juan at the base of the West Wall to El Morro. The walk is concrete and designed with etched wave-related imagery. Boulders frame the walk along the shoreline to protect visitors. Bollard lights are provided for night use. The walk is also edged by information, identity, and interpretive signs, benches, trash receptacles, and plantings. Cat-feeding stations also edge the walk in several locations.

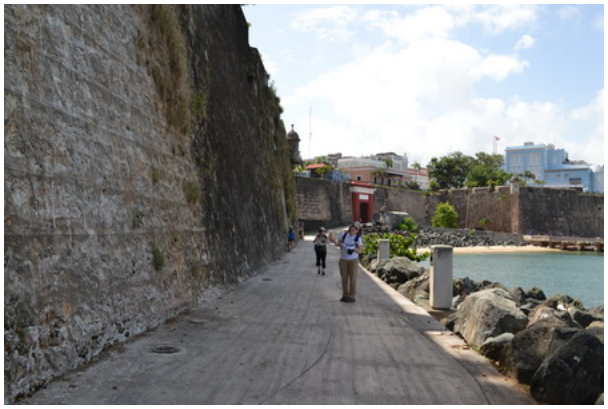


FIGURE 48. View of the West Wall toward San Juan Gate along Paseo del Morro.

Sitewide Condition Assessment

Field investigations conducted on behalf of the CLR in July 2018 yielded observations about condition issues of concern within the project area. While the San Juan City Wall CLR project area appears to be in good condition overall, the following specific condition issues of concern were noted, and repairs of the problems are considered as part of the CLR treatment plan:

- The grass has been killed, and the soil has been compacted and subject to erosion in places that experience heavy visitor use (Figure 49). Areas that experience heavy use occur along the margins of the walls and bastions, particularly in front of the embrasures that

afford dramatic views of the water and nearby cultural features. The bastions along the North Wall are used by local residents to walk their dogs. Areas of turf associated with the interior of these bastions are worn and eroding. Other problem areas include the margins of the sidewalk that parallels Norzagaray Street where people step off the pavement, as well as the ground near benches, waysides, and trash receptacles.



FIGURE 49. Example of a worn area resulting from heavy visitor use associated with the curtain wall between Santo Tomás and Las Ánimas Bastions.

- Although the NPS provides trash receptacles at regular intervals within the park, overflowing bins and heavy winds contribute to a problem with litter on the ground, particularly in association with the North Walls along Norzagaray Street (Figure 50). Visitors also leave litter within the sentry boxes. The litter problem is also associated with the popularity of kite flying within El Morro Esplanade. Kite string and broken kite parts are often picked up in the breeze, carried southwest by the wind, and lodge in the branches of cliffside vegetation above Paseo del Morro.



FIGURE 50. View of litter that has been deposited within or blown into the park along Norzagaray Street.

- The NPS regularly contends with the removal of vegetation that takes hold and grows within openings of the perimeter walls and paving (Figure 51). Vegetation regularly finds a toe hold on the wall within joints and crevices associated with the paving units, along drainage channels at the base of walls, and along the top of the walls. Much of the wall area is affected by biological growth, either growing on the face of the wall, at open joints between masonry units, or immediately adjacent to the wall. Biological growth present on the wall includes moss, small-rooted plants, and various types of grasses. The grass at the base of many of the walls is allowed to grow taller as the mowers are unable to reach these areas, and there are concerns that string trimmers might damage the masonry. Vegetation has begun to colonize the riprap used along the shoreline at the edge of Paseo del Morro and to block views to San Juan Harbor.



FIGURE 51. View of vegetation growing on the North Walls associated with the curtain wall east of San Sebastián Bastion.

- Paved walks and landings are deteriorated in some places, and exhibit problems with chipping, spalling, and cracking (Figure 52). These areas are subject to weed growth.



FIGURE 52. Example of broken pavement within Santo Tomás Bastion.

- Some areas at the base of the walls are chipped, potentially as a result of maintenance and mowing equipment (Figure 53) or due to the action of stormwater.

- Stormwater is particularly problematic in association with the West Wall between Santa Elena and San Agustín bastions. The flow often exceeds the capacity of drain systems. Sandbags and erosion control fabric have been used to slow and direct the flow within the southern walls of San Agustín Bastion. Evidence of new closed systems, composed of swales directing overland flow to drop inlets that collect stormwater into pipes that flow through or beneath the West Walls (Figure 54), is present north and east of Santa Elena Bastion.



FIGURE 53. Example of a wall section within Santo Domingo that has been impacted near its base by mowing.



FIGURE 54. Example of a drop inlet near Santa Elena Bastion associated with a swale and piping that carries the water through or beneath the West Walls.

- Some of the bollards that edge roads and parking areas have been damaged by cars.

- Wayside exhibits and signage along the northern terminus of Paseo del Morro are damaged or the information panels are missing. A sign near Santo Domingo Bastion is also missing the information panel.

- Portions of the cable safety railing along the northern end of Paseo del Morro are missing (Figure 55).



FIGURE 55. Metal posts associated with a safety railing at the northwest end of Paseo del Morro where the cables are missing.

- The sentry boxes are often used by visitors for urination. The odor is difficult to remove.

- The safety railings that have been added to the embrasures of the West Wall are bolted into the walls. The bolts are rusting and there are rust stains at the tie-in locations (Figure 56).



FIGURE 56. Corrosion staining where safety railings tie into the wall.

- Paseo del Morro is also stained where the steel edging is rusting (Figure 57).



FIGURE 57. Metal edging used to separate concrete patterns of Paseo del Morro is rusting due to the salt air and water and is staining the concrete.

- Much of the wall area is affected by biological growth, either growing on the face of the wall, at open joints between masonry units, or immediately adjacent to the wall. Biological growth present on the wall includes moss, small-rooted plants, and various types of grasses.

- Throughout the walls, a parging was applied to the face of the rubble masonry (Figure 58). The parging varies from smooth to textured, to replicate stone coursing. At many locations, the parging has spalled, and the underlying rubble masonry is exposed.



FIGURE 58. Parging applied to the face of the masonry wall. Note that the parging has spalled in some areas, exposing the underlying masonry.

- Erosion has occurred at the face of the composite masonry tiles. The tiles are faced with stone fragments set in mortar. Distress conditions include erosion of the mortar and spalling of the face of the tile. Where the mortar has eroded, stone fragments remain. Where the tile has spalled, the underlying rubble masonry is sometime exposed to view. Typically, the mortar at the joints between the composite tiles remains intact.

- Severe erosion was observed at the brick masonry, specifically where installed as coping units and at corners of embrasures and at landings and steps at the esplanade, adjacent to the wall (Figure 59 and Figure 60). Where observed, the face of the brick had deteriorated, and the softer body of the brick was exposed. The mortar joints between the brick units typically remain more intact than the brick, suggesting that the mortar is harder than the adjacent brick.



FIGURE 59. Erosion of brick masonry at a corner.



FIGURE 60. Erosion of brick masonry coping units.

- At a few locations, the parging applied over the masonry has cracked. The location of cracking typically corresponds to the bed joints below brick coping units at the wall (Figure 61). Some horizontal cracking was also observed at the base of walls and appeared to be associated with joints between different periods of construction.

- Open mortar joints were observed at coursed ashlar masonry at sentry boxes. The most significant deterioration was typically located at the lower bed joint of the sentry box that aligns with the interior floor. At this location, moisture staining was also present (Figure 62).



FIGURE 61. Cracking at the bed joint below brick coping units.



FIGURE 62. Inside of sentry box. Note the staining at the base of the wall.

- In general, the joints between rubble masonry units have been parged over with mortar and stone aggregate, leaving small portions of the stone exposed to view. However, where visible, joints between rubble stone units were observed to be eroded and open. These joints are often associated with biological growth.

- Graffiti was observed at numerous areas along the wall, especially at the entrance and interior of accessible sentry boxes. Graffiti included markings of chalk, indelible marker, pencil, spray paint, or etchings into the face of the stone.

Landscape Character Areas

For the purposes of organizing the documentation of existing conditions below, the CLR project area has been divided into five character areas (Figure 63). The character areas are geographic zones that share similar traits or are unified by ownership, land use, topography, vegetative character, or historic associations. The five character areas comprising the San Juan City Wall CLR project area include:

- Character Area 1: North Walls East of the Esplanade

- Character Area 2: North Walls Associated with the Esplanade

- Character Area 3: West Walls

- Character Area 4: South Walls

- Character Area 5: Paseo del Morro National Recreational Trail



1" = 400'

0' 200' 400' 800'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 63. Character Area Key

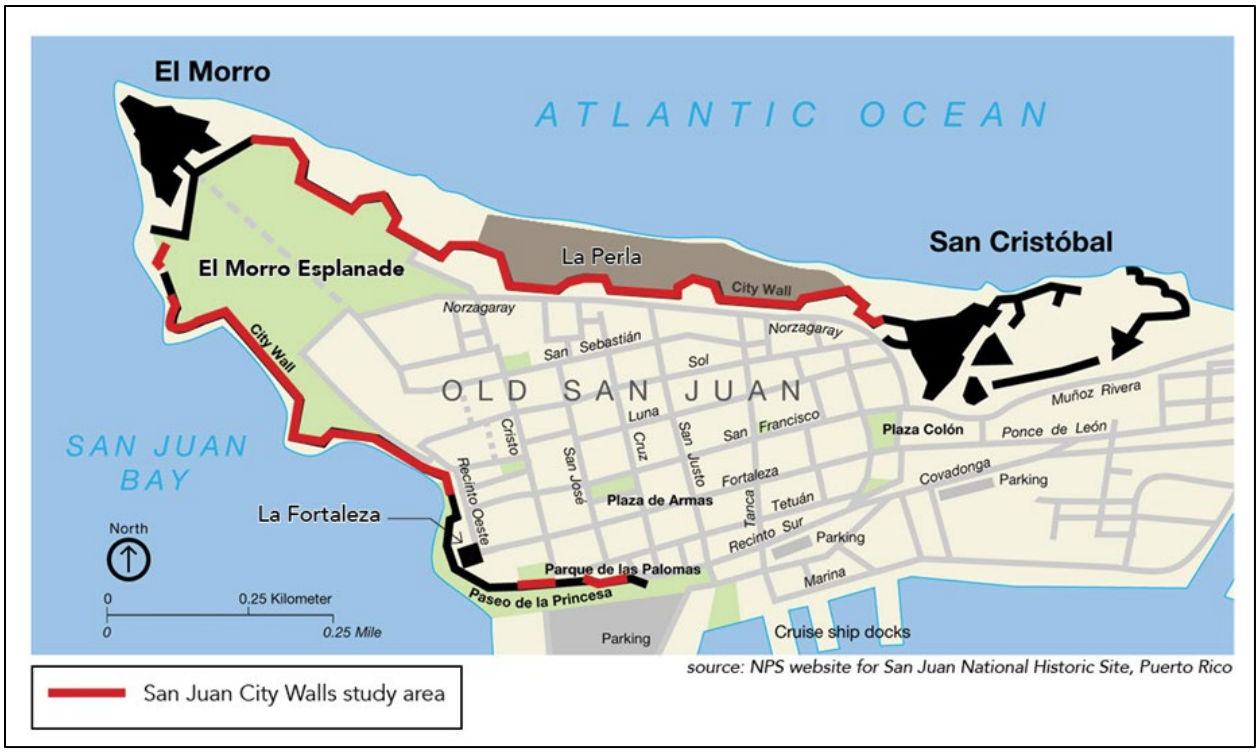


FIGURE 64. San Juan City Wall.

Character Area 1: North Walls East of the Esplanade

Character Area Description

This character area includes the North Walls as they extend from the El Morro Esplanade to San Cristóbal. The character area is edged to the north by the community of La Perla and to the south by Norzagaray Street. Set within this section of the North Walls are four forward projections or bastions. From east to west, they include San Sebastián, Santo Tomás, Las Ánimas, and Santo Domingo. Within each bastion, the landscape comprises turf grass, firing steps, ramps and landings, wayside exhibits, trash receptacles, retaining walls associated with the adjacent streetscape and roads, gates, and bridge systems that provide vehicular and pedestrian access to La Perla. The hillside at the eastern end of the North Walls collapsed and has been stabilized using a spray application of gunite (pneumatically applied concrete) (refer to Figure 65). A paved sidewalk follows the wall and bastion systems east of Norzagaray Street. Light poles, bench and table enclaves, safety railings, and signage edge the sidewalk within the project area. A large colorful concrete sign marks the community of La Perla at the walk that leads to a concrete stair accessing the community by traversing the wall. At the base of the North Walls, the community of La Perla occupies a portion of the park zone that extends 33 feet from the masonry structure. These features include roads, paved plazas, a basketball court, and residential buildings. The features that comprise the landscape of the North Walls east of the Esplanade character area are individually described below by landscape characteristic.

Natural Features and Systems

Refer to Figure 106, Natural Features and Systems.

Promontory landform. The San Juan City Walls follow the edge of the promontory landform that characterizes the northwestern end of Isleta de San Juan. The promontory rises steeply above the shoreline within a narrow band at the edge of the isleta.

Lower terrace along the shoreline. The natural landform of the promontory slopes from the center of Old San Juan toward the ocean. A more steeply sloped hillside marks the transition

to a lower terrace along the shoreline. The lower terrace is occupied within this character area by the community of La Perla.

Responses to Natural Resources

Refer to Figure 107, Responses to Natural Resources.

Military defensive walls along the edge of the promontory. San Juan City Wall reflect the military defensive needs of Spain in protecting the community of San Juan. The wall system responds to the defensive opportunities afforded by the promontory landform and the need to defend San Juan Harbor. The walls were designed by Spanish military engineers and completed by circa 1792 to connect larger fortifications at El Morro and San Cristóbal. The military walls follow the edge of the promontory landform to establish a protective parapet, with embrasures that provide a clear field of fire in all directions for the artillery emplaced behind them. The tall, sheer masonry walls were also designed to serve as an obstacle to an attacking military force.

Use of drains, culverts, swales, scuppers, and paved channels to control stormwater associated with perimeter walls and bastions. Drainage structures, including pipes, culverts, swales, scuppers, gutters, and paved channels, collect and direct stormwater from the base of the San Juan City Wall and bastions through openings within the wall system. These were built in response to flooding that could potentially undercut and destabilize the walls designed by the Spanish military engineers. Some of the drainage structures are built into the firing steps and wall bases allowing water to move directly through the walls. The structures and systems discharge stormwater through scuppers and simple openings to the exterior façade, where the water is dispersed and eventually discharged into the ocean along the shoreline.

Use of shotcrete to stabilize a failing hillside. The steeply sloped hillside at the east end of La Perla has been subject to slumping and other failure. The National Park Service stabilized the hillside in the 1990s using a spray application of shotcrete. The treatment remains viable as of 2020 (Figure 65).



FIGURE 65. View of the hillside at the eastern end of La Perla stabilized with shotcrete.

Land Uses

Recreation. The San Juan City Wall property is currently used by visitors and residents for several recreational land uses, including walking, picnicking, dog walking, and sports such as kite flying and basketball. Basketball is played on a court at the base of the North Walls within the community of La Perla (Figure 66).



FIGURE 66. A basketball court is located at the base of the North Walls in La Perla. This reflects a recreational use associated with the character area.

Museum/Interpretation/Education. The City Walls are also associated with a museum/interpretation/education land use due to the presence of wayside exhibits placed by the National Park Service to interpret the history of the walls and fortification system.

Santa María Magdalena de Pazzis Cemetery. North of the North Walls is Santa María Magdalena de Pazzis Cemetery. The cemetery closely edges the walls, with some burials actually abutting or occurring within the walls themselves.

Residential. Within the community of La Perla, which extends in several places to the base of the North Walls, are dwellings that serve a residential land use (Figure 67).



FIGURE 67. The community of La Perla includes numerous dwellings, some of which sit within the park boundary, which extends 33 feet from the base of the walls. These represent a residential land use.

Spatial Organization

Refer to Figure 108, Spatial Organization, Character Area 1.

North Wall System. The North Wall system forms a spatial edge to Old San Juan along Norzagaray Street, while also forming a strong vertical boundary to the community of La Perla. The wall system includes linear segments and polygonal outward projections referred to as bastions (Figure 68). The bastions form interior open spaces, while the linear segments are edged by the city sidewalk along Norzagaray Street. Within this character area there are four bastions—San Sebastián, Santo Tomás, Las Ánimas, and Santo Domingo. Ranging in acreage from roughly a half acre to just over one acre, the bastions are composed primarily of open lawn that slopes toward the perimeter walls. From the interior space, views through the embrasures open to the Atlantic Ocean and features of the La Perla community. Each of the bastions is marked at the forward-most projection with a concrete sentry box, or *garita*, which has accessible interior space providing views to the ocean beyond. Along the base of the walls, a mix of stone and concrete paving provides access to the walls and the firing steps that abut them. Santo Tomás Bastion is cut by a paved road that angles through the interior open space to Santa Rosa Gate (also known as La Perla Gate or Puerta del Matadero), a tunnel-like corridor that leads beneath the walls to La Perla. This feature was constructed as part of the North Walls as completed by 1792. It originally provided access to the La Perla fortification located along the shoreline outside the North Walls. Both San Sebastián and Santo Tomás Bastions are edged to the south by a retaining wall built to elevate Norzagaray Street by 1929. The wall further contains the interior space of these two bastions.



FIGURE 68. View east along the North Wall system toward San Sebastián Bastion with San Cristóbal beyond.

Each of the bastions possesses a distinct interior spatial quality as a result of adjacent conditions and features located within. The bastions and linear masonry wall system also form spaces at the base of the walls. These conditions occur as follows from east to west:

West of San Cristóbal, the walls form a nearly 90-degree angle at the edge of the parking court. The North Walls closely edge Norzagaray Street before extending northward at San Sebastián Bastion. The walls help to form a narrow linear corridor along the sidewalk in this section.

At the base of the walls in this section, the landscape is relatively level, with coarse meadow vegetation occupying a large open area. The eastern end of the open area is edged by the steep slopes of the escarpment on which San Cristóbal is built. The hillside is also vegetated with coarse meadow vegetation.

San Sebastián Bastion is edged to the north by four wall segments of varying lengths that create an irregular polygon north of Norzagaray Street. The interior of the polygon is maintained in mown turf composed of Bermuda grass, Zoysia grass, and weeds. The bastion interior is accessed via the remains of a former road edged by a low retaining wall. Norzagaray Street and the adjacent sidewalk sit perched more than 10 feet above the bastion interior. A concrete retaining wall forms the southern spatial edge of the space. From the interior of the bastion, views are afforded to the east/northeast through two embrasures in the short east wall and five embrasures in the longer northeast wall. The longest wall forms the northern edge of the bastion. It contains three embrasures. Sentry boxes are located at either end of the wall. From inside, the sentry boxes afford long views of the surrounding landscape. Buildings associated with La Perla are visible to the north through these embrasures, and the five located within the western wall. Firing steps and ramps edge the bastion wall interior, along with drainage structures.

A long section of parapet wall edges Norzagaray Street between San Sebastián and Santo Tomás Bastions. The elevated road continues within this section and overlooks the wall. A strip of turf occupies the ground between the sidewalk and the parapet wall. Visitors climb onto this turf and walk at the lower level between the two bastions. The wall features two embrasures at either end that afford views to La Perla.

Below, the wall forms a tall and formidable edge to the features of La Perla. At the eastern end, the space contains a basketball court edged by bleachers that is set parallel to the wall system. A concrete walk follows much of the remainder of the base of the wall. It is accessed via a stair system and bridge structure that connect La Perla with Norzagaray Street. The stair leads down the hill from the road to span the top of the wall in this location. The western end of the wall is edged by turf.

Santo Tomás Bastion is edged to the north by four walls that form an irregular polygon. This bastion interior is much smaller than San Sebastián Bastion. It is accessed via Bajada Matadero Street, which leads from Norzagaray Street to La Perla. The road is a paved corridor edged by retaining walls that cuts through the southern portion of the bastion. The remainder of the bastion interior is open turf lawn. The eastern wall features five embrasures that afford views of the buildings associated with La Perla. The northern wall does not contain embrasures, while there are two set within the northwest wall. The west wall contains two additional embrasures. A sentry box is between these two walls. Behind the walls is an extensive system of firing steps, ramps, and drainage structures.

At the base of Santo Tomás Bastion, the landscape to the north and east is vegetated and little maintained. Bajada Matadero Street closely edges the western and northwestern walls. Buildings abut the road to the west. Bajada Matadero Street passes beneath the west wall of Santo Tomás Bastion via La Perla Gate, an opening established within the North Walls by 1792. This feature is also referred to as the Exit Gate and Santa Rosa Door.

A parapet wall extends due west from Santo Tomás Bastion. Norzagaray Street in this location follows a more curvilinear route, leaving an irregularly shaped open space between the wall and the sidewalk. The wall contains two embrasures at the eastern end that provide views of La Perla.

At the base of the parapet wall, the landscape is vegetated, and subsequently occupied by several buildings that face Lucila Silva and Bajada Matadero Streets, which generally follow the alignment of the walls.

Las Ánimas Bastion opens to the west at the point where the walls and the sidewalk associated with Norzagaray Street meet. Las Ánimas is enclosed to the north by four walls of different lengths. It is cut near the center to the west by a concrete walk that leads to a ramp and bridge crossing of the walls leading to La Perla. The eastern face of the bastion is cut by three embrasures with views of La Perla. A paved drainage channel with rounded collection points closely edges the east and north walls of the bastion, as well as a small segment of the northwest wall. A sentry box sits at the corner between the north and northwest walls. The northwest wall contains two embrasures. One has been altered to accommodate the walk and stair to La Perla. The western wall contains two additional embrasures.

At the base of Las Ánimas Bastion are a series of concrete pavement elements and stairs that sit between Lucila Silva Street and the walls. The bridge leads to a concrete paved landing. Adjacent to the landing is a paved public park space with site furnishings, tree plantings, and parking areas.

The parapet wall that extends west from Las Ánimas Bastion closely edges Norzagaray Street and the adjacent sidewalk. The wall continues, forming a strong edge to the street corridor until opening to the north at Santo Domingo Bastion.

At the base of the parapet wall, Lucila Silva Street and adjacent parking closely edge the structure. To the north of the street is a dense cluster of buildings associated with La Perla.

Santo Domingo Bastion is edged to the north by three walls. The east wall is nearly perpendicular to Norzagaray Street, while the north wall meets the east wall at a nearly 90-degree angle. The third wall angles to the southwest. The eastern half of the interior open space is developed as part of the Instituto de Neurobiología (Institute of Neurobiology), a large institutional building associated with the University of Puerto Rico, "C"-shaped, that is edged to the north and east by parking. The parking follows the alignment of the wall system. The complex is edged to the west by a mortared stone retaining wall. The remainder of the bastion interior is open turf, with a single tree at the northeastern corner. The southern edge of the bastion is closely edged by Norzagaray Street and the adjacent sidewalk. The road leading to the cemetery across the Esplanade arises from Norzagaray Street within the bastion and cuts across it at an angle, descending to San José Gate, a tunnel-like space that leads beneath the North Walls to the cemetery. The eastern wall contains six embrasures that view La Perla. A sentry box is at the corner between the east and north walls. The north wall contains three embrasures.

Lucila Silva Street follows the base of the eastern Santo Domingo Bastion wall.

The Community of La Perla. San Juan National Historic Site extends outward from the base of the masonry structure for 33 feet. Within this character area, the community of La Perla hugs the North Walls. Portions of this residential district, which was established during the nineteenth century, fall within the park boundary. Features that occupy and edge the park associated with La Perla include roads, recreational facilities, community gardens, plazas and public park spaces, as well as residential buildings. In several locations, there is evidence that structures have also been built outward from the walls themselves. Bajada Matadero Street provides vehicular access to the community through Santo Tomás Bastion, while two concrete stairs provide pedestrian access across the top of the wall to the community (Figure 69). A basketball court occupies the space between San Sebastián and Santo Tomás Bastions (refer to Figure 66).



FIGURE 69. View of the eastern stair that provides pedestrian access to the community of La Perla by crossing the North Walls.

Cultural Vegetation

Refer to Figure 109, Cultural Vegetation, Character Area 1.

Turf lawn. The interior of each bastion associated with the North Walls east of El Morro Esplanade are characterized by turf grass cover maintained through mowing (Figure 70). The turf is primarily composed of Bermuda grass (*Cynodon dactylon*) and Zoysia grass (*Zoysia* spp.) with weeds present throughout.



FIGURE 70. View of the interior of San Sebastián Bastion and the extent of turf grass that characterizes the open space behind the walls.

Palm trees along Norzagaray Street. East of the intersection of Norzagaray and Bajada Matadero Streets is a small plaza with seating for pedestrians. Palm trees are planted within the plaza within raised planters and within the turf grass east of the paved area (Figure 71).



FIGURE 71. Palm trees edge the small, paved plaza along the sidewalk that edges Norzagaray Street at the North Walls.

Cultural vegetation associated with La Perla. Along the base of the North Walls within La Perla are several small parks and plazas that contain cultural plantings including a range of small trees, shrubs, and groundcover. There are also two community gardens. One is located near the basketball court, while the other is located at the west end of La Perla.

Vegetation between the North Walls and the shoreline. At the base of the North Walls between San Sebastián Bastion and San Cristóbal is an area of dense coastal vegetation that includes tall grasses, groundcover, and some shrubs (Figure 72).



FIGURE 72. View of the vegetated area at the base of the North Walls at the east end near San Cristóbal

Circulation

Refer to Figure 110, Circulation, Character Area 1.

Norzagaray Street (Calle Norzagaray). Norzagaray Street is a two-way asphalt road, with parking on the south side, which follows the northern margin of the city of Old San Juan. The road edges the North Walls for approximately two-thirds of a mile between San Cristóbal and El Morro. The road is edged by a paved sidewalk that overlooks the North Walls (Figure 73).

Lucila Silva Street. Lucila Silva Street is a narrow asphalt road located within the southern section of La Perla at the base of the North Wall below Las Ánimas Bastion.



FIGURE 73. View west along Norzagaray Street and the adjacent sidewalk and guardrail.

Bajada Matadero Street. Bajada Matadero Street leads from Norzagaray Street to the community of La Perla. The asphalt-paved road is 16 feet 6 inches wide and edged to either side by tall concrete retaining walls (Figure 74). It bisects Santo Tomás Bastion and travels through La Perla Gate as it extends beneath the west wall of the bastion, today providing access to the community of La Perla. The road also travels through La Perla in a westerly direction where it intersects Lucila Silva Street and easterly where it meets San Miguel Street.



FIGURE 74. View southeast along Bajada Matadero Street as it passes through Santo Tomás Bastion.

Tiburcio Reyes Street. Tiburcio Reyes Street is an asphalt-paved road that generally extends through the northern section of La Perla. It joins Lucila Silva Street at the northwestern corner of the North Walls at Santo Domingo Bastion, which continues to Santa María Magdalena de Pazzis Cemetery.

Padre Bernardo Boil Street. Padre Bernardo Boil Street is a short segment of asphalt roadway that connects the pedestrian sidewalk at the base of the North Wall to Bajada Matadero Street.

Trace road leading into San Sebastián Bastion. A short segment of road connects Norzagaray Street to San Sebastián Bastion (Figure 75). The road is composed of concrete pavers where the road arises from Norzagaray Street. The pavement transitions to concrete, followed by asphalt. The asphalt paving is broken and uneven, with grass growing into the road. Eventually the asphalt transitions entirely to grass lawn with a few patches of asphalt. A concrete pier and chain gate limits access to this road at Norzagaray Street. There is a stone and concrete retaining wall that edges the road on the south, which is set below the mortared stone retaining wall that supports

Norzagaray Street and the associated paved sidewalk above.



FIGURE 75. View northwest along the trace road leading into San Sebastián Bastion.

Sidewalk along Norzagaray Street. A paved sidewalk edges Norzagaray Street for its entire length along the North Wall system. The sidewalk varies in width from 6 feet 9 inches in front of San Sebastián Bastion to 11 feet 6 inches near Las Ánimas Bastion. The sidewalk is surfaced in 10-1/2-inch square stone aggregate tiles along its length (refer to Figure 73), except for a section of rectangular concrete pavers located near the road accessing San Sebastián Bastion. The tile is beige in color with intermittent bands composed of three pink tiles that run perpendicular to the direction of the walk. A concrete curb edges the sidewalk at the road. At the entrance to the two pedestrian walks leading to La Perla, curb cuts align with crosswalks at Norzagaray Street. Portions of the sidewalk are edged by a metal guardrail that protects pedestrians from the drop in grade associated with the adjacent walls and bastions. Associated with the sidewalk are light poles. A small plaza with planters, seats, and tables edges the sidewalk near Las Ánimas Bastion. The sidewalk exhibits a range of condition issues including cracking, staining, water damage, settling, broken tiles, and vegetative growth.

Eastern walk and stair to La Perla. There are two concrete staircases that lead from Norzagaray Street to La Perla over the North Wall. The eastern stair occurs within the curtain wall between San Sebastián and Santo Tomás Bastions. The walk is concrete and measures 6 feet in width. It consists of a flight of steps near the street, which transition to a series of three landings separated by a single step (Figure 76). The walk is edged by metal handrails. The handrail is composed of four horizontal tube steel railings supported by vertical tube steel. Where the handrail meets a cheek wall, the upper tube railing has been welded to a flat bar rail which continues to run along the top of the wall to the base of the stair. The railing is mounted using bar stock into the top of the cheek wall. Portions of the handrail show wear as evident in rust staining at welded joints and bent steel. The cheek walls are painted pink, and the stair treads and risers of the stair feature blue. The stair turns east at a landing near the outer edge of the wall and descends to a concrete path at the base of the wall (refer to Figure 69). The concrete stair was built by the municipality in the 1960s to provide pedestrian access to La Perla. Grass abuts the stair and is creeping onto the surface of the stair in some locations.



FIGURE 76. View of the eastern walk and stair that leads from Norzagaray Street to a stair providing pedestrian access to La Perla from Old San Juan.

Western walk and stair to La Perla. The western walk and stair are located at Las Ánimas Bastion. The 5-foot-wide concrete walk leads through the bastion from Norzagaray Street. The walk ends at the concrete stair, which begins within one of the embrasures in the northwest wall and is edged by cheek walls painted white. Where the walk crosses the North Wall, the wall has been parged with concrete and painted. There is a landing at the outer edge of the wall where the stair turns west and descends to a concrete landing surfaced with asphalt at the base of the North Walls. Meeting the landing is a second staircase

that descends to the street (Figure 77). The stair was built by the municipality in the 1960s to provide pedestrian access to La Perla.



FIGURE 77. View of the western concrete stair providing pedestrian access to La Perla from Old San Juan.

Walks at the base of the North Wall. Several concrete walks are located at the base of the North Walls within La Perla. At the base of the eastern staircase is a 3-foot-6-inch-wide concrete walk that leads to the basketball court and Padre Bernardo Boil Street (Figure 78). Another concrete walk sits at the base of San Sebastián Bastion and runs eastward along the wall, turning to the south before ending abruptly where thick vegetation is growing along the shoreline. This walk varies in width and is periodically edged by a concrete curb and a wooden guardrail where the shoreline drops steeply to the ocean. Another walk is at the base of the wall below Las Ánimas Bastion. This concrete walk is edged by a concrete curb painted yellow. The walk leads to the western staircase, where it transitions to asphalt and leads to a small community park plaza. A public plaza at the base of the wall is surfaced with brick pavers.



FIGURE 78. View of the concrete walk connecting the eastern stair and the basketball court at the base of the North Walls.

Buildings and Structures

Refer to Figure 111, Buildings and Structures, Character Area 1. See Glossary for military fortification terms.

There are no buildings associated with the North Walls east of the Esplanade. The primary structures are the walls themselves. The wall system as a whole is described below, followed by each component part.

North Walls. The North Walls east of the Esplanade are composed of linear parapet walls known as curtains and forward polygonal projections referred to as bastions built by the Spanish as a coastal defense system between 1776 and 1783. The North Wall system faces the Atlantic Ocean. Overall, the wall system measures approximately 11,000 feet in length, and is 15 to 30 feet in height.

The North Walls typically comprise two basic parts—the scarp and the parapet. The scarp is the battered portion visible from the ocean side of the wall. The parapet is the upper portion of the wall that extends above ground on the interior side. The North Walls are composed of straight sections referred to as curtains and forward extensions that are polygonal in shape and known as bastions. The

walls that form the bastions afford parapet walls that face in different directions and can be used to fire artillery more effectively through openings referred to as embrasures. As viewed from the outer or ocean side, the parapet is not battered and is more vertical than the scarp.

The scarp walls rise from between 15 and 25 feet in height depending on the form of the promontory. The depth of the scarp walls also varies but is typically greater than 12 feet. The parapet is typically 12 feet deep and rises approximately 5 feet above the interior. To facilitate firing, the parapet walls are often embattled with alternating embrasures and merlons. Sentry boxes are located at the corners of several bastion parapet walls, generally at the forward-most position. They are accessed from embrasures in the parapet wall.

The North Walls consist of original Spanish construction dating to the eighteenth century, as well as more recent repairs. The foundations of the walls are typically composed of sand, limestone or coral stone bedrock, or a combination of the two. The walls are generally constructed of a combination of cut limestone, rubble masonry, brick, rammed earth (tapia), and crushed limestone or mortar binding agents. The primary construction material is eolianite, a calcareous limestone native to Puerto Rico.

These materials are used in one of three ways—mass stone masonry construction; masonry clad systems; and parged masonry construction. The older portions of the wall feature stone masonry construction consisting of coursed ashlar limestone and random rubble backup masonry. Individual stone units are mostly square in shape and measure approximately 12 inches to 18 inches tall and 24 inches to 36 inches wide. Joints between the irregular edges of the stone are filled with smaller stone infill. The walls have a battered appearance and are deeper at the base than at the top. Brick is used at times to finish wall corners, form edge coping, and to add decorative elements.[180]

The North Walls east of the Esplanade include four bastions—San Sebastián, Santo Tomás, Las Ánimas, and Santo Domingo—as well as curtain walls between San Cristóbal and San Sebastián Bastion, between San Sebastián and Santo Tomás Bastions, between Santo Tomás and Las Ánimas Bastions, and between Las Ánimas and San Sebastián Bastions. The individual features that comprise the North Walls east of the Esplanade are described below.

Sentry boxes. Sentry boxes (garitas) are located at the forward projections of many bastions where two wall segments intersect. The original structures were built in the 1770s and 1780s with the expanded wall system for use as lookout locations. The original design for the sentry boxes called for a 5-foot-wide, elaborately molded base, a 15-foot-high structure three times the width of the base, and a finial top designed in the military baroque style (Figure 79). Although eighteenth-century designs suggested that the sentry boxes should be built in a pentagonal form, many of those built at San Juan were circular.[181]

Of the eight sentry boxes associated with the North Walls, three are of original eighteenth-century construction, while five are twentieth-century replacements.[182] Many sentry boxes were replaced in the 1930s by the US Army, including two sentry boxes within San Sebastián Bastion. Some were replaced for a second time in the 1980s. The replacement sentry boxes are constructed of cast-concrete block, brick, cut sandstone, and cast-concrete finials at the top. They feature an ogee-shaped roof dome formed by separately cast concrete pieces and corbelled out from the corners of the bastion walls.

180. The Collaborative Inc. and Atkinson Noland & Associates, Inc., *Santa Elena and San Agustín Bastions and Associated Fortification Walls: Condition Assessment* (NP: National Park Service, 2014).

181. Berkowitz et al., volume III, 87-88.

182. Berkowitz et al., volume I, 34, 36, 42, 43; five of the eight are located within this character area.



FIGURE 79. View of the sentry box at San Sebastián Bastion.

Curtain wall, San Cristóbal to San Sebastián Bastions. The easternmost curtain wall of the North Walls connects a paved landing and unnamed bastion west of San Cristóbal with San Sebastián Bastion. The wall is edged closely by the sidewalk along Norzagaray Street and the vehicular access way to a trace road leading into San Sebastián Bastion (Figure 80).

The curtain wall consists of a smooth parging over rubble masonry construction at the scarp and ocean side of the parapet. The interior of the parapet wall also has exposed rubble masonry with evidence of previously applied parging that has deteriorated. The top of the parapet wall consists primarily of random coursed stone masonry. At both the face and top of the parapet wall, there are localized areas where composite cast tiles have been installed or mortar has been applied over the rubble masonry to create a pattern of faux coursed masonry joints. There are two embrasures at the eastern end.



FIGURE 80. View looking west along the curtain wall between San Cristóbal and San Sebastián Bastion.

Behind the wall is an enclosed space formed by an elevated parking area outside San Cristóbal. The interior space is accessed from a set of fourteen brick stairs leading from the parking area. The retaining walls associated with the elevated parking are parged and contain weepholes and electrical wiring along their surface. The space between the retaining walls and the North Wall is a narrow slot 10 feet wide with a level plain of mown lawn.

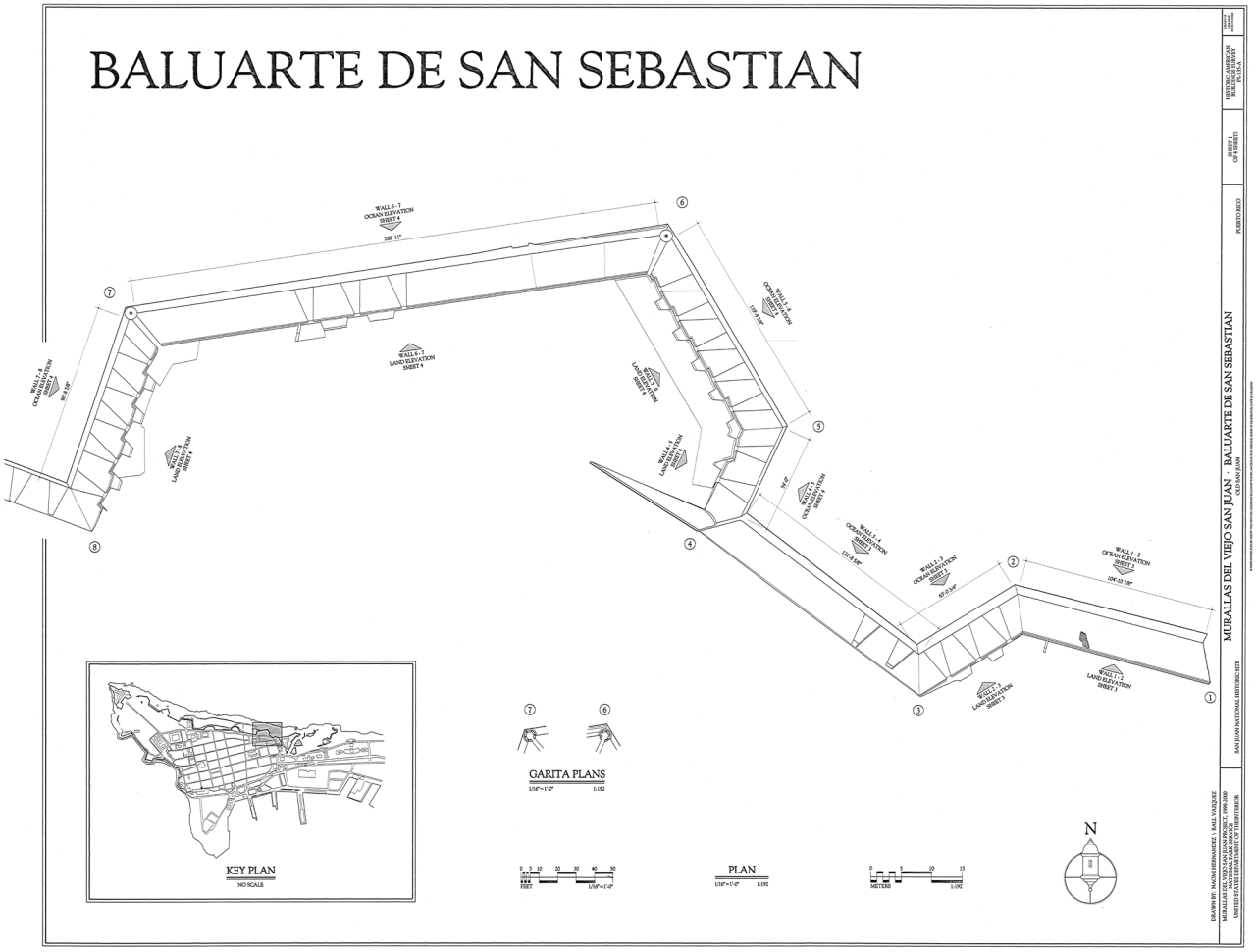


FIGURE 81. HABS documentation of San Sebastián Bastion. Murallas del Viejo San Juan, HABS No: PR-135-A. (Source: Library of Congress)

San Sebastián Bastion. San Sebastián Bastion is the easternmost bastion associated with the North Walls (Figure 81). The bastion was built by the Spanish in 1772–1783. It is composed of four wall segments that form a polygon-shaped outward projection. Overall, the bastion features fifteen embrasures and two sentry boxes (Figure 82). San Sebastián Bastion is the only bastion with two sentry boxes along the North Wall.

The walls of San Sebastián Bastion are composed primarily of coursed ashlar limestone with evidence of previously applied parging at the scarp and oceanside parapet wall. Localized areas of the wall have irregularly shaped stone set in a random course. Portions of the interior of the parapet wall have composite cast tiles applied over rubble masonry construction. The top face of the wall at the west end of the bastion also has composite cast tiles. The top face of the parapet wall at the remaining wall sections are parged.



FIGURE 82. View looking northeast of the interior of San Sebastián Bastion, including the western sentry box.

The wall that forms the eastern edge of the bastion is the shortest. It is cut with two embrasures. A

second wall forms the northeastern side of the bastion. This wall has five embrasures. The third wall forms the northern edge of the bastion. It has three embrasures; sentry boxes sit at either end of the wall. The fourth and final wall forming the bastion is to the west. It has five embrasures.

Access to the sentry boxes is via a narrow passageway through the escarpment surfaced with two rows of stone aggregate tile. The passageway leading to the eastern sentry box is set above the grade of the bastion interior. This area appears to have been impacted by erosion and water damage. Access to the western sentry box occurs from a landing edged by brick. Both sentry boxes are circa 1939 replacements. Below the sentry box are concrete reinforcing elements edged by a wooden railing.

The interior of the parapet walls is edged by five banquettes, a brick knee wall, and paved landings between several of the banquettes. Stairs provide access to the banquettes. The stair risers as well as the banquette platforms are surfaced with a combination of brick, stone, and concrete. The landings between the banquettes are surfaced with a combination of concrete, limestone block, and red brick. The paved landings are rough and broken by patches of grass and lichen. A concrete walk links the landings along the eastern wall segments. Along the north bastion wall, grass has grown up to nearly bury the knee wall and two banquettes between the embrasures. Through wall scuppers, located at the lower part of the parapet, consist of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall.

The interior of the bastion is relatively level and maintained in mown turf. A trace road leads into the space from Norzagaray Street that is edged to the south by a retaining wall (Figure 83). Also located within the bastion is a dog-waste bag dispenser and receptacle and a standard park trash receptacle (refer to Figure 100).

A steeply sloped hillside below the wall exhibits evidence of failure. It was reinforced using shotcrete in the 1990s.



FIGURE 83. View of the stone retaining wall that edges the trace road north of Norzagaray Street.

Curtain wall, San Sebastián to Santo Tomás Bastions. The curtain wall that connects San Sebastián and Santo Tomás Bastions parallels Norzagaray Street. It is set below the elevation of the road and adjacent sidewalk and edged by a stone retaining wall (Figure 84). The wall is edged to the south by a strip of turf grass. Visitors travel between Sebastián to Santo Tomás Bastions along the curtain wall by walking along the strip of turf grass. Near Santo Tomás Bastion, Bajada Matadero Street rises from Norzagaray Street and breaks into the turf strip. Additionally, a walk cuts across the grass strip to provide access to a concrete stair leading to La Perla.



FIGURE 84. View of the curtain wall between San Sebastián and Santo Tomás Bastions.

The curtain wall consists of rubble masonry walls. There is evidence of previously applied parging at the scarp and ocean side parapet. The interior side and top of the parapet are clad with composite cast tiles. There are circular drains set in rectangular outlets that extend to the ocean side of the wall.

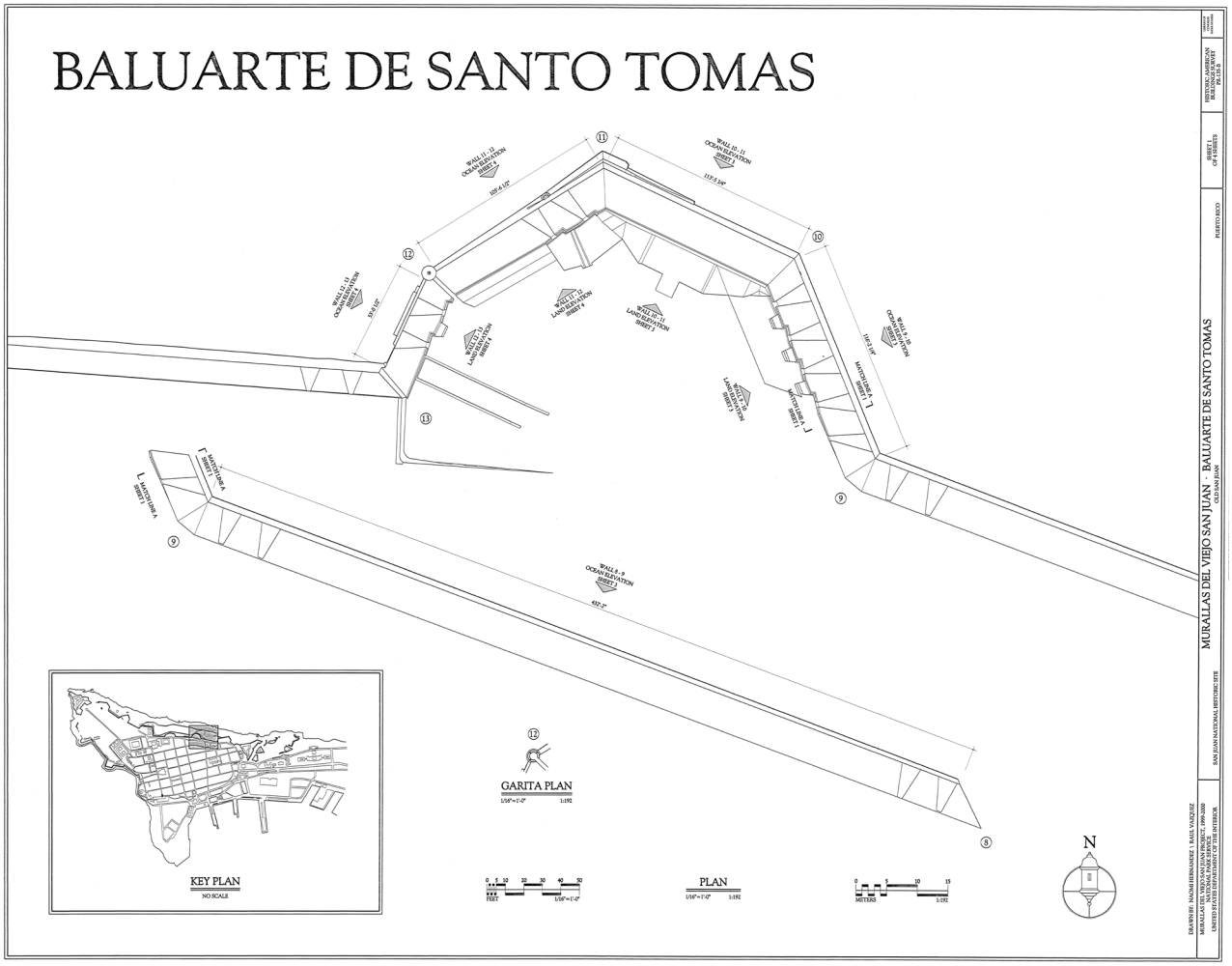


FIGURE 85. HABS documentation of Santo Tomás Bastion. Murallas del Viejo San Juan, HABS No: PR-135-B. (Source: Library of Congress)

Santo Tomás Bastion. Santo Tomás Bastion is located west of San Sebastián Bastion (Figure 85). The polygonal form of the bastion is formed by four wall segments that project outward (Figure 86). The eastern wall segment features five embrasures and is edged by four banquettes set between them. The northeast wall has no embrasures. It is edged by a sculpted platform or firing step that continues the length of the wall but varies in depth. A ramp provides access to the firing step near the center of the platform. The northwest wall features two embrasures and two banquettes accessed by ramps. A sentry box is located at the intersection with the bastion's west wall. The grade rises along the length of the northwest wall. A ramp provides access to a long firing step that ends at the brick-paved passageway into the sentry box. The west wall has two embrasures and one banquette. Stairs provide access to the banquettes. Paving is present behind several of the parapet walls composed of stone aggregate pavers, stone blocks, brick, and concrete. The stairs and banquettes paved with stone and concrete. Many of the banquettes are edged with brick. Beyond the paved surfaces, the interior of the bastion is turf lawn.

The walls at Santo Tomás vary in construction materials. Walls at the east half of the bastion have random coursed stone masonry clad with parging at the scarp and ocean side parapet. The interior side and top of the parapet are clad with composite cast tiles. The west half of the bastion has coursed ashlar sandstone, consisting of much larger units than those at the east half of the bastion, which is not clad with parging. The interior of the parapet and top of the parapet has rubble masonry with remains of a previously applied parging. The wall is drained through

square outlets that extend through the wall at the lower portion of the parapet.



FIGURE 86. View of the interior of Santo Tomás Bastion.

Bajada Matadero Street passes through the bastion, providing access to La Perla. The road follows descending topography westward toward La Perla Gate, an opening in the west wall. Concrete retaining walls edge the road as it approaches the gate.

The retaining walls extend above the height of the surrounding grade. These could serve as a trip hazard for visitors. Other issues of concern include worn turf within the bastion where heavy visitor use occurs. Vegetation is growing in and around the drainage structures and along the top of the walls and between embrasures.

La Perla Gate. Bajada Matadero Street extends through the open space of the bastion interior to La Perla Gate that extends beneath the west wall of the bastion (Figure 87). The opening was built to provide access to a city slaughterhouse as well as Santa María Magdalena de Pazzis Cemetery. Santo Tomás Bastion was built by the Spanish between 1772 and 1783.

Curtain wall, Santo Tomás to Las Ánimas Bastions. The curtain wall that connects Santo Tomás and Las Ánimas Bastions generally parallels Norzagaray Street, although the road curves in this location, leaving a turf strip to the north of the road at its east end, and closely edging the wall at its west end. The wall extends above the adjacent grade at its east end of the wall. It contains two embrasures edged by firing steps at the east end.

There are no embrasures in the wall at the west end. Moving west along the curtain wall, the grade changes such that Norzagaray Street rises in relationship to the curtain wall. The wall height rises 3 feet above the lawn at the east end but is only 14 inches higher than the adjacent sidewalk at the west end (Figure 88). Near the western end of the curtain wall, it closely edges the sidewalk, and it has been parged to protect it against damage from cars and visitors.



FIGURE 87. View of La Perla Gate.



FIGURE 88. View of the curtain wall between Santo Tomás and Las Ánimas Bastion.

The curtain wall has coursed ashlar stone construction at the scarp and ocean side of the parapet wall. The Esplanade side of the parapet wall consists of rubble masonry with remains of previously applied parging. At some locations, the parapet is clad with composite cast tiles. Similarly, the top of the parapet wall has areas of rubble masonry with parging and composite cast tiles. Through wall scuppers, located at the lower part of the parapet, consist of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall.

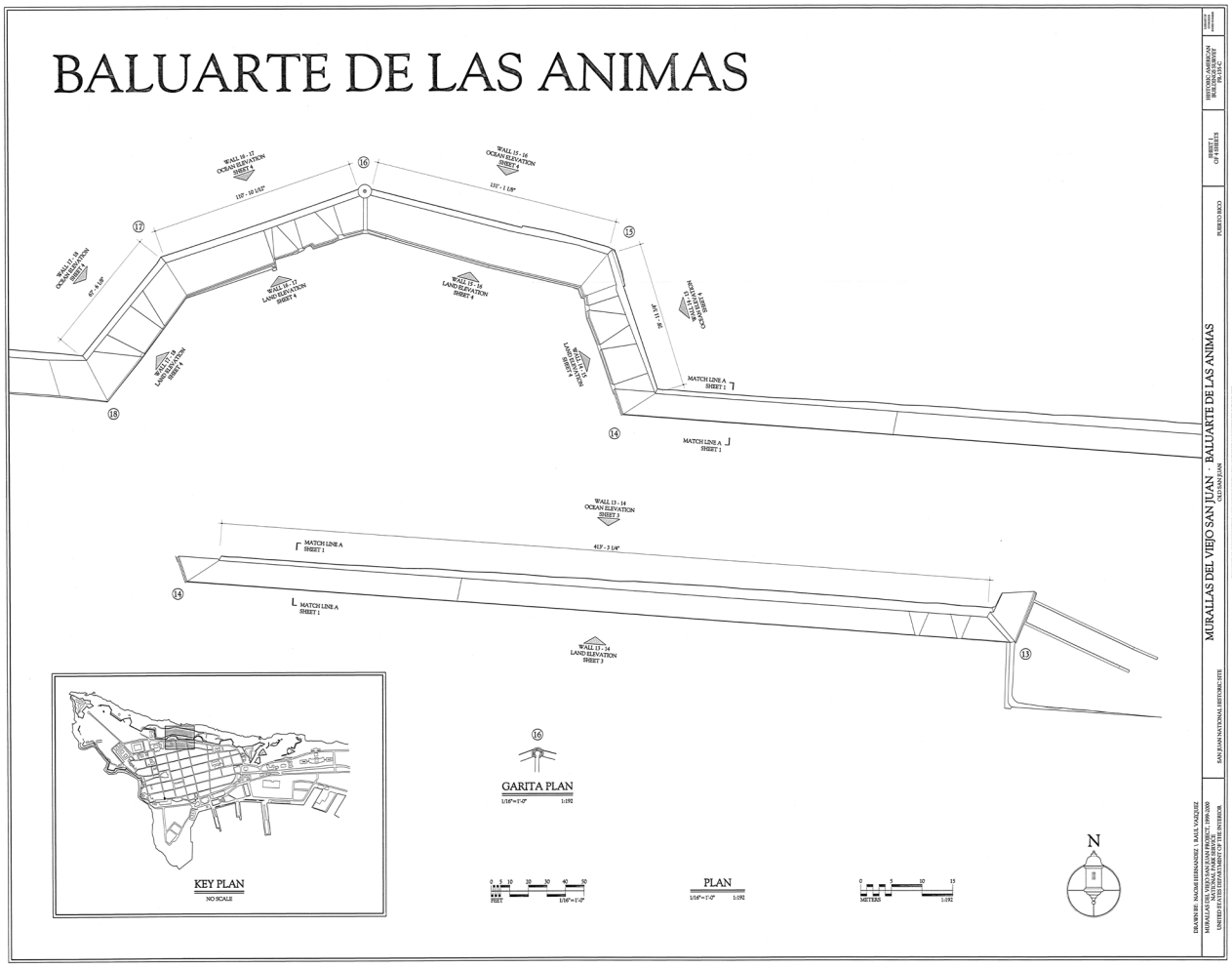


FIGURE 89. HABS documentation of Las Ánimas Bastion. Murallas del Viejo San Juan, HABS No: PR-135-C. (Source: Library of Congress)

Las Ánimas Bastion. Las Ánimas Bastion is located west of Santo Tomás Bastion (refer to Figure 89). The polygonal form of the outwardly projecting bastion is formed by four wall segments. The interior of the bastion is primarily turf grass (Figure 90). A concrete walk and stair cross the western half of the bastion, providing access to a concrete stair structure that leads to La Perla through one of the embrasures.

The eastern segment of the bastion contains three embrasures. There are no embrasures along the wall that abuts the eastern segment and forms the northeastern face of the bastion. The walls forming the northwestern and western faces of the bastion each contain two embrasures. One of the embrasures in the northwestern face is used for the stair that descends to La Perla. Between the northeast and east faces, a concrete passageway leads to a sentry box.

Walls at Las Ánimas Bastion vary in appearance. The east half of the bastion is similar in appearance to the adjacent curtain wall to the east. It has coursed ashlar sandstone at the scarp and ocean side parapet. The interior side of the wall is clad with composite cast tiles, and the top of the wall is parged with fragments of brick pressed into it. The west half of the bastion consists of smaller polygonal-shaped random coursed masonry at the scarp and ocean side parapet. The interior side of the parapet wall and top of the wall consists of random course stone units with parging. At some locations, specifically at embrasures, the wall is clad with composite cast tiles. Through wall scuppers, located at the lower part of the parapet, consist of segmental arched openings with stone

spouts that extend beyond the ocean side face of the wall to convey stormwater. Water is conveyed to the scuppers via a concrete runnel.



FIGURE 90. View of the interior of Las Ánimas Bastion.

Along the east and northwest wall segments, the ground plane abuts the wall at the same elevation as the embrasure openings where there is a knee wall edged with brick. At the west end of the bastion, the walls are taller, and the embrasures are set higher than the ground plane.

A single standard park trash receptacle and dog-waste bag dispenser and receptacle edge the concrete walk leading to the bridge to La Perla. There are two wayside exhibits set within the interior of the bastion that face the walls. A bronze plaque that notes "Ánimas Bastion" is mounted in the center of the northeast wall segment.

Curtain wall, Las Ánimas to Santo Domingo Bastions. The curtain wall that connects Las Ánimas and Santo Domingo Bastions closely edges and parallels the Norzagaray Street sidewalk. The curtain wall is battered with a knee wall edged with brick that transitions toward the center where it becomes a brick edge between the sidewalk and the wall (Figure 91). To the west, the knee wall reemerges. There are no embrasures within the curtain wall.

The curtain wall is clad with polygonal-shaped random coursed stone units with the remains of a previously applied parging at the scarp and ocean side parapet. The esplanade side of the parapet wall features areas with random coursed stone and areas clad with composite cast tiles. The top face of the parapet wall has a parging with brick and stone fragments pressed into it.



FIGURE 91. Curtain wall, Las Ánimas to Santo Domingo Bastion.

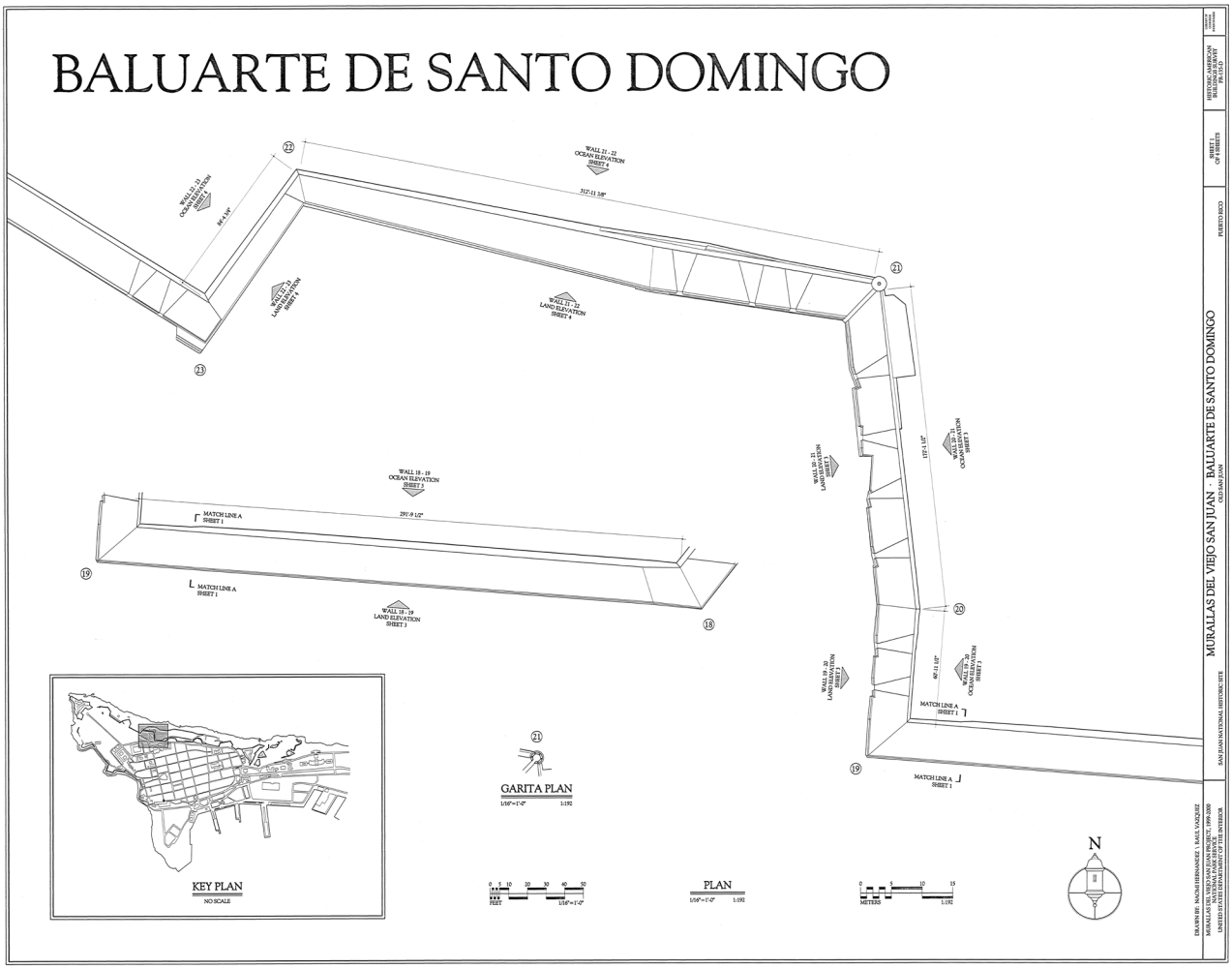


FIGURE 92. HABS documentation of Santo Domingo Bastion. Murallas del Viejo San Juan, HABS No: PR-135-D. (Source: Library of Congress)

Santo Domingo Bastion. Santo Domingo Bastion is the largest of the four bastions located along the North Walls east of El Morro Esplanade (refer to Figure 92). The eastern third of the bastion is occupied by the Instituto de Neurobiología (Figure 93). The western portion is open turf lawn that slopes and declines towards the west. The bastion interior is outside of the CLR project area. The polygonal form of the bastion is comprised of three wall segments. The eastern wall segment has six embrasures, while the northern wall segment has three. A sentry box is located at the junction between the eastern and northern wall segments. The western wall segment contains no embrasures. This wall segment is set below the height of the other two wall segments due to the declining topography.

The walls at the Santo Domingo Bastion have coursed ashlar limestone at the scarp and ocean side parapet. The interior side of the parapet has areas of random coursed stone and areas of rubble masonry with evidence of a previously applied parging. The top of the parapet wall has parging. At some location, brick and stone fragments have been pressed into the parging. At various locations on the oceanside and interior side of the wall, composite cast tiles have been installed. These are presumably areas of later repair.

The eastern wall segment consists of stone that has been parged with cement or stucco, while the northern wall segment is a composite of large stones and cobble mixed with cement. The top of the western wall segment is accessible at grade from the wall expansive views of San María Magdalena de Pazzis Cemetery are afforded.



FIGURE 93. View toward Santo Domingo Bastion with the Institute of Neurobiology beyond.

Set within the bastion is a tall concrete wall painted white that extends north-south and intersects the northern wall segment of the bastion. A single sea grape plant (*Coccoloba uvifera*) is located near where the two walls meet. Between the building and the eastern wall of the bastion is an asphalt and concrete parking lot with approximately thirty marked parking stalls and numerous large mechanical systems related to the building. The mechanical equipment is protected from vehicles by yellow bollards. Within the parking area, there are interior concrete walls to protect the bastion walls from the cars. The south side of the bastion is delineated by a decorative concrete wall, stuccoed and painted peach and white, with iron gates.

North Walls and associated stormwater management structures. Drainage structures collect stormwater from the bastion interiors and direct it through structures and openings in the wall, some of which extend beneath the firing steps. The outflow of drainage through the scarp occurs in the form of scuppers and simple openings, although in some cases the drainage systems have been modified through the addition of pipes.

As noted above, drainage associated with San Sebastián Bastion includes through wall scuppers, located at the lower part of the parapet, in the form of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall. The drainage structures are lined with stone and concrete tile and are edged by stone and brick wing walls that have become partly buried by grass. Stormwater is channeled to the structures by swales cut into the bastion interior.

Santo Tomás Bastion is drained through square outlets that extend through the wall at the lower portion of the parapet. Behind the northwest wall, a paved runnel collects water and channels it toward a square opening in the wall and a through wall scupper.

Las Ánimas Bastion is drained by through wall scuppers, located at the lower part of the parapet. These consist of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall to convey stormwater. Set within the turf behind the walls is a concrete runnel that collects and directs stormwater to the through wall scuppers. The runnel is semicircular in profile and 1 foot 6 inches wide. The two ends of the runnel are marked by circular basins that are 5 feet 6 inches and 4 feet 6 inches in diameter. A large rectangular iron grate abuts the runnel in front of the northeastern wall segment. The grate protects a drop inlet where water collected in the runnel is channeled away from the surface. Weeds and grass occupy the storm water system including at the base of the runnel and space below the grate.

Retaining walls along the Norzagaray Street sidewalk. Norzagaray Street was elevated by 1929. To the east of the sidewalk, the road is supported by a large stone retaining wall (Figure 94). The wall begins at San Sebastián Bastion just west of the trace road entrance into the bastion. It continues to edge the sidewalk to the curtain wall between San Sebastián and Santo Tomás Bastions. The retaining wall returns at the eastern corner of Santo Tomás Bastion and follows along its entire southern perimeter, making a 90-degree turn at the western corner where it intersects the curtain wall. At its highest point, the wall is between 8 and 9 feet tall. A sidewalk sits atop the wall. A metal guardrail edges the sidewalk to protect pedestrians from the adjacent drop in elevation into San Sebastián Bastion and the curtain wall to its west. There is no guardrail above the short segment of wall that intersects at the western corner of Santo Tomás Bastion. This area is a popular location for people to sit. The materials used in the

construction of the retaining wall vary. Portions of the wall are composed of mortared rough limestone block, while other sections are built of irregularly shaped large sized stones with thick mortar joints. Portions of the wall are parged. Vegetation is growing within some of the wall crevices.



FIGURE 94. View of the retaining wall that edges Norzagaray Street from Santo Tomás Bastion.

Retaining walls at San Sebastián Bastion. Three low parged stone retaining walls exist within San Sebastián Bastion to accommodate changes in grade (Figure 95). Two of the walls edge the trace road that leads into the bastion from Norzagaray Street. These walls are 1 foot wide. One of the walls measures 2 feet 4 inches to 2 feet 7 inches in height, while the other is 2 feet 4 inches tall at its highest point. Another low wall, 4 feet in height and 1 foot wide, is also present.



FIGURE 95. View of the retaining walls at the east end of San Sebastián Bastion.

At the base of the wall is a stone platform that measures 2 feet 3 inches in width. It is edged by a low concrete wall that stands 10 inches in height. A sloped concrete slab extends northward from the platform.

Retaining walls along Bajada Matadero Street. Two concrete retaining walls edge Bajada Matadero Street as it approaches La Perla Gate within the west wall of Santo Tomás Bastion. The walls are parged and painted. Set within the southern wall are weeps that contain plastic piping to channel stormwater from the uphill side area into the road. The walls are approximately 2 feet in height and 6 inches wide at the south end and rise to nearly 9 feet as they near the gate (refer to Figure 87). At La Perla Gate, the north retaining wall breaks and a swinging gate provides vehicular access to the interior of the bastion. A short segment of concrete wall connects the retaining wall with the bastion wall. This wall experienced partial collapse in 2005.

Guardrail along Norzagaray Street sidewalk. Two sections of guardrail edge the Norzagaray Street sidewalk to the north to protect pedestrians where there is an abrupt drop in grade (refer to Figure 73). The easternmost section of guardrail runs for approximately 525 feet above the retaining wall, while the second section extends for approximately 250 feet south of Santo Tomás Bastion. At the western corner of Santo Tomás Bastion the guardrail turns north and ties into the North Wall. The guardrail is composed of concrete posts 4 feet in height with a 9-inch-square base and an 8 inch pyramidal cap. The concrete posts are set 16 feet on center. Between the posts are steel panels set 4 inches above the ground and mounted into the concrete posts. The panels are framed by 2 inch flat bar top and bottom rails with 1-inch-diameter circular bars between them at 4 inches on center. Steel posts mount the panels into the ground at 8 feet on center in between the concrete posts. The steel panels are rusting in some locations with rust stains also evident along the surface of the paving below.

Wooden guardrail along the walk east of La Perla. A wooden guardrail edges the concrete walk at the base of the North Wall (Figure 96). The guardrail is composed of three horizontal boards

supported by vertical boards set into the concrete surface. The rail protects pedestrians from a steep drop to the shoreline below.



FIGURE 96. View of the wooden railing along the walk at the east end of La Perla.

Views and Vistas

Refer to Figure 112, Views and Vistas, Character Area 1.

Views to the Atlantic Ocean. Views to the Atlantic Ocean are afforded from the embrasures associated with the North Wall system including from the bastion walls, curtain walls, and sentry boxes.

Views of Old San Juan. Views are afforded toward Old San Juan from the retaining wall along the Norzagaray Street sidewalk.

Views of La Perla. Views to the community of La Perla are afforded through embrasures in the North Walls (Figure 97). Particularly popular locations to view La Perla are above La Perla Gate and overlooking the basketball court near San Sebastián Bastion.

Views of the wall system from La Perla. Standing within La Perla, one can find numerous opportunities to gain dramatic views of the North Walls at their base, with evidence of their construction, materials, and form. From La Perla, views are afforded of curtain walls, bastions, sentry boxes, scuppers, and embrasures.

Views of Santa María Magdalena de Pazzis Cemetery. Views are afforded of the adjacent Santa María Magdalena de Pazzis Cemetery from the low wall segment at Santo Domingo Bastion.



FIGURE 97. View of La Perla through one of the embrasures in the North Walls.

Small-scale Features

Refer to Figure 113, Small-scale Features, Character Area 1.

Tables with benches, plaza along Norzagaray Street. Centrally located along Norzagaray Street near the intersection with Bajada Matadero Street is a small, paved pedestrian plaza. The plaza measures 12 feet by 50 feet and is bound by a low knee wall with brick coping along its northern and western edges. Within the plaza are three small square tables, each with four small benches around them (Figure 98). The tables and benches are custom built of concrete and extend directly from the concrete surface of the plaza. Palm trees are in square raised planters edged with brick at the margins of the plaza. Wall lights are set into the rear knee wall. There is a sign post at the edge of the plaza near the sidewalk that is missing the sign. Two standard park trash receptacles sit at either end of the plaza, one near a yellow fire hydrant and the other near an empty terracotta planter.



FIGURE 98. View of plaza along Norzagaray Street with concrete tables and benches.

Wayside exhibits. Three wayside exhibits are associated with the North Walls east of the Esplanade. The signs are standard National Park Service waysides comprising a steel frame set into the ground that holds an angled panel with text and graphics (Figure 99). The text provides information in both English and Spanish. Some of the panels show signs of wear with discoloration that affects their legibility. Two of the waysides are located along the curtain wall between Santo Tomás and Las Ánimas Bastions. These are titled "Unforeseen Stresses" and "La Perla Ravelin." The third is in Las Ánimas Bastion. It is titled "La Perla Ravelin."



FIGURE 99. View of wayside exhibit titled "Unforeseen Stresses" along the curtain wall between Santo Tomás and Las Ánimas Bastions. The wayside panel is difficult to read due to condition issues.

Trash receptacles. Trash receptacles fabricated in-house by park personnel are present in many locations throughout the City Wall landscape. The trash receptacles are made of exposed concrete and measure 2 feet square (refer to Figure 95). The concrete has chamfered channels at 6 inches and 1 foot 8 inches above the ground. They are hollow in the center to hold a metal trash collection barrel. Each receptacle is covered with a brown plastic cover that measures 1 foot 4 inches and has a door set in the front that swings open. One receptacle is located near the community garden between La Perla and the cemetery, two are located in the plaza along Norzagaray Street, one is west of the Las Ánimas Bastion path to La Perla, and one is within San Sebastián Bastion (Figure 100).

Dog-waste bag dispensers and receptacles. There are several dog-waste bag dispensers and receptacles located in proximity to the North Walls. One is located along the trace road leading into San Sebastián Bastion (refer to Figure 100), another is at the base of the North Walls along the sidewalk near the basketball court in La Perla. A third is set in the grass near the sidewalk between Santo Tomás and Las Ánimas Bastions, while a fourth is along the concrete walk leading through Las Ánimas Bastion to the stair to La Perla.

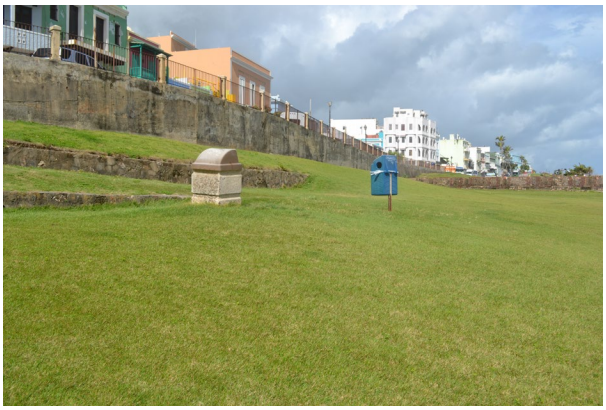


FIGURE 100. View of a trash receptacle and dog waste receptacle located within San Sebastián Bastion.

Backless benches. In addition to the concrete trash receptacles, park personnel fabricate concrete benches that are located throughout the character area. The benches measure 2 feet in width and are 6 feet long. The seats are supported by a concrete leg at either end that is 5-1/2 inches wide. The benches have chamfered edges, and a polished top with exposed aggregate finish elsewhere. Two benches are located in La Perla adjacent to La Perla Gate where Bajada Matadero Street enters La Perla. One bench is farther up

Bajada Matadero Street. One concrete bench is near the community garden that is located between La Perla and the cemetery. Three concrete benches painted blue are scattered around the perimeter of the basketball court (Figure 101).

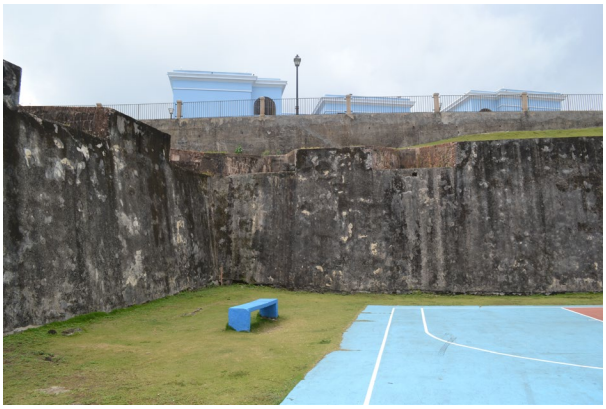


FIGURE 101. View of a backless concrete bench located adjacent to the basketball court along the curtain wall between San Sebastián and Santo Tomás Bastions.

Piers and chain limiting access to the trace road. Access to the trace road that leads into San Sebastián Bastion from Norzagaray Street is controlled with a metal chain supported by a pair of concrete piers (Figure 103).

Gates. Along the wall that edges the east side of Bajada Matadero Street there is a pair of steel swinging arm gates that provide vehicular access to the interior of Santo Tomás Bastion (Figure 103).



FIGURE 102. View of one of the steel swinging arm gates that edge Bajada Matadero Street.

Light poles along Norzagaray Street. Light poles are set within the sidewalk along Norzagaray Street. The light posts are metal and support metal luminaire fixtures (refer to Figure 73).



FIGURE 103. View of the piers and chain that limit access to San Sebastián Bastion.

Playground equipment. Playground equipment is located near the bleachers at the basketball court in La Perla.

"Comunidad La Perla" sign. A sign marking the pedestrian access route to La Perla is set within the turf along the Norzagaray Street sidewalk within at Las Ánimas Bastion. The colorful sign is 8 feet long, 10-1/2 inches thick, and 3 feet tall. It is mounted atop a concrete base with steel supports (Figure 104). The base is trapezoidal in shape and 10 feet long at the top extending to 11 feet 7 inches long at the bottom. The sign is set 14 inches above the base. The top of the base rises 1 foot 5 inches off the sidewalk, and 2 feet 1 inch below the sidewalk where the grade drops away to the north.



FIGURE 104. The Comunidad La Perla sign.

Traffic signs. Regulatory signs are posted on steel poles at the intersection of Norzagaray and Bajada Matadero Streets for vehicular traffic.

These signs are in Spanish and indicate "no parking" and "stop."

Bronze plaque. A bronze plaque with the words "Animas Bastion" is inset in the center of the northeast wall segment. The bronze plaque measures 1 foot 8 inches by 1 foot (Figure 105).



FIGURE 105. View of the bronze plaque identifying Las Ánimas Bastion along the parapet wall interior.

Utilities

Yellow utility boxes. Yellow boxes along Norzagaray Street appear to relate to a utility function.

Fire hydrants. There is a fire hydrant near the paved plaza north of Norzagaray Street.

Known and Potential Archeological Resources

NPS documents do not indicate any known archeological resources in this character area.

Potential Archeological Resources. There is potential for as-yet unidentified archeological resources to be present throughout the character area. Potential remains may include those related to buried wall features, analogous to those identified at the base of the Flanking Battery Wall at the Austria Bastion in the Castillo moat by Hale Smith and Ken Wild in 1961 and 1990, respectively.[183] Additionally, although no pre-Columbian sites have been found at El Morro, they are present in nearby parts of San Juan and they may certainly also be present in this character area.[184]

183. Hale G. Smith, "Archaeological Investigations at El Morro, San Juan, Puerto Rico," *Notes in Anthropology, 6* (Southeast Archeological Center, National Park Service, 1961); Ken S. Wild, *Archeological Investigations at the Flanking Battery Wall of El Morro, San Juan, Puerto Rico* (Tallahassee, Florida: National Park Service, Southeast Archeological Center, 1991).

184. Carlos Solis Magaña, *Colonial Archaeology of San Juan de Puerto Rico: Excavations at the Casa Rosa Scarp Wall, San Juan National Historic Site, Puerto Rico,* Office of Archaeological Research, Report of Excavations 52 (Moundville: University of Alabama, 1988); Agamemnon Gus Pantel, Jalil Sued-Badillo, Anibal Sepúlveda, and Beatriz del Cueto de Pantel, *Archaeological Investigations into the History, Urbanism and Architecture of Barrio Ballajá from Precolumbian Times through to the Twentieth Century* (San Juan, Puerto Rico: Foundation of Archaeology, Anthropology and History of Puerto Rico, 1986); and Pantel, del Cueto & Associates, *Archaeological Assessment, Santa Elena Powder Magazine, Upgrade of Electrical Infrastructure at Masonry Workshop, Visitor and Training Area, San Juan National Historic Site, San Juan Puerto Rico*. Prepared for Division 16 Engineering Corp. (Guaynabo, Puerto Rico: Pantel, del Cueto & Associates, 2014), 62.



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FIGURE 106. Natural Features and Systems



FIGURE 107. Responses to Natural Resources





1" = 200'

0' 100' 200' 400'

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FIGURE 108.
Character Area 1 - North Wall East of the Esplanade Character Area
Spatial Organization



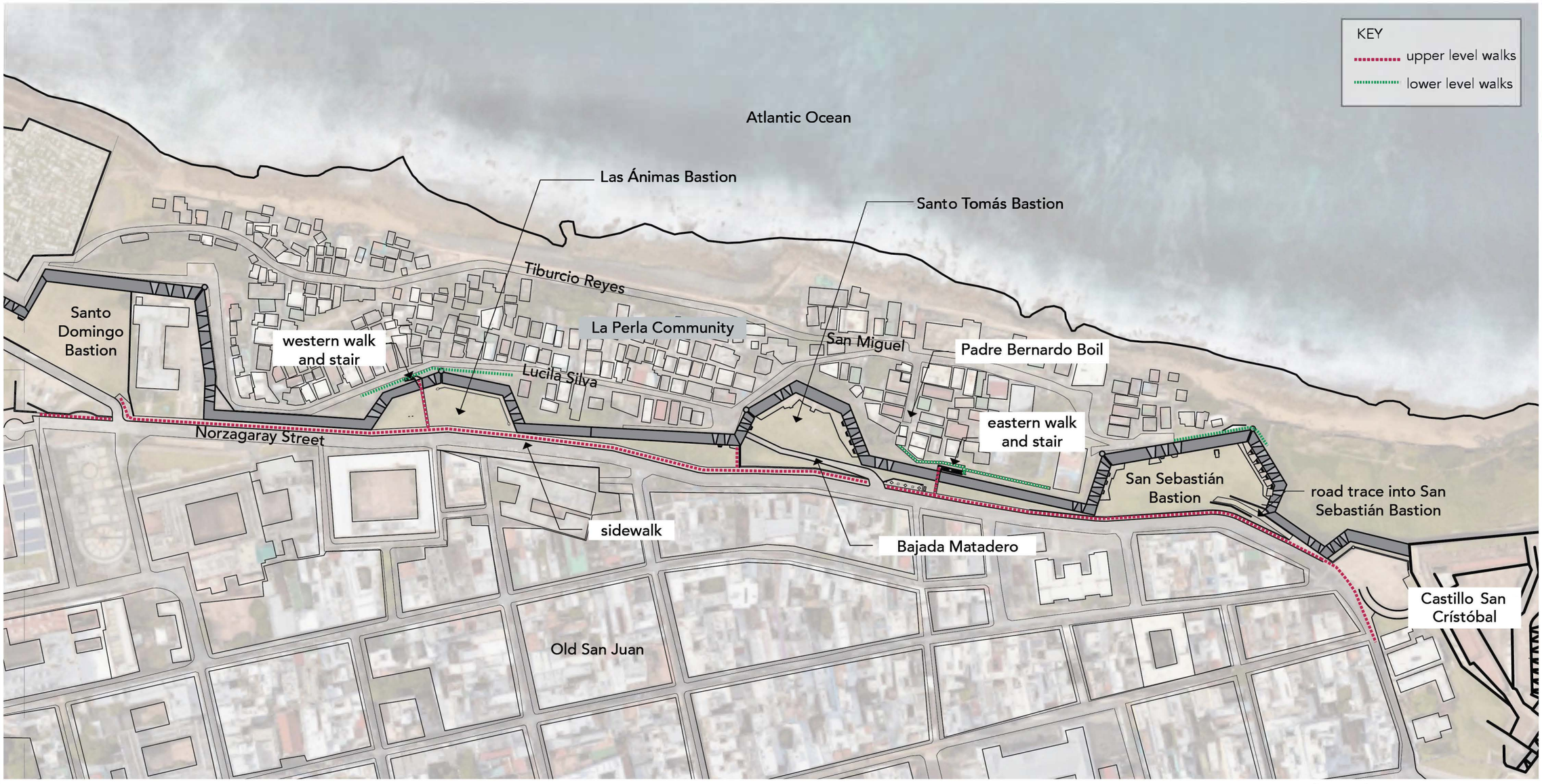


1" = 200'

0' 100' 200' 400'

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FIGURE 109.
Character Area 1 - North Wall East of the Esplanade Character Area Cultural Vegetation

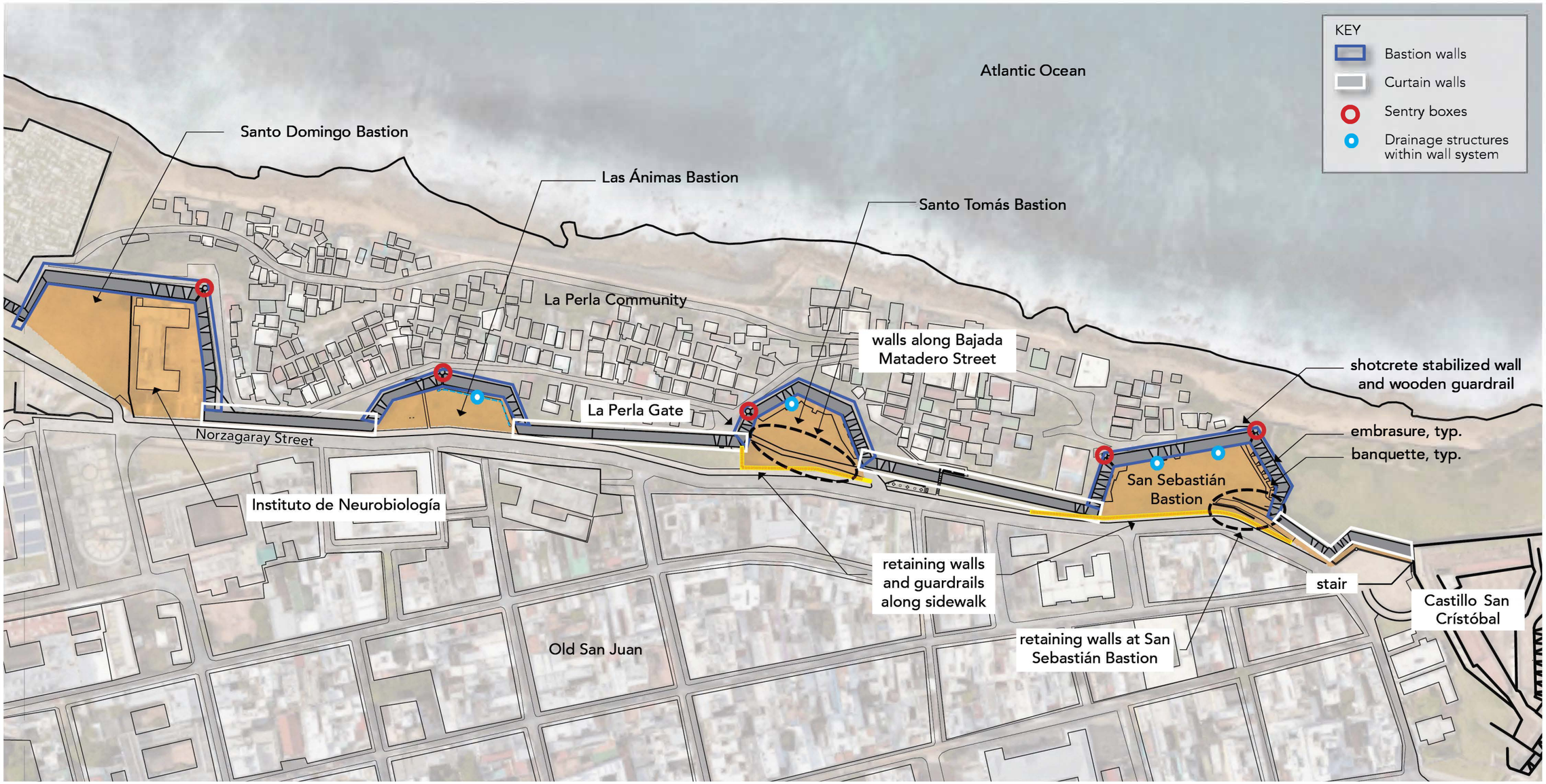




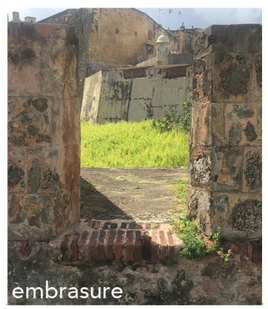
1" = 200'
0' 100' 200' 400'

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FIGURE 110.
Character Area 1 - North Wall East of the Esplanade Character Area Circulation

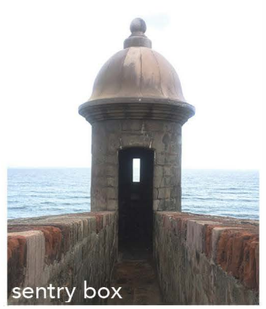












1" = 200'

0' 100' 200' 400'

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FIGURE 111.
Character Area 1 - North Wall East of the Esplanade Character Are Buildings and Structures



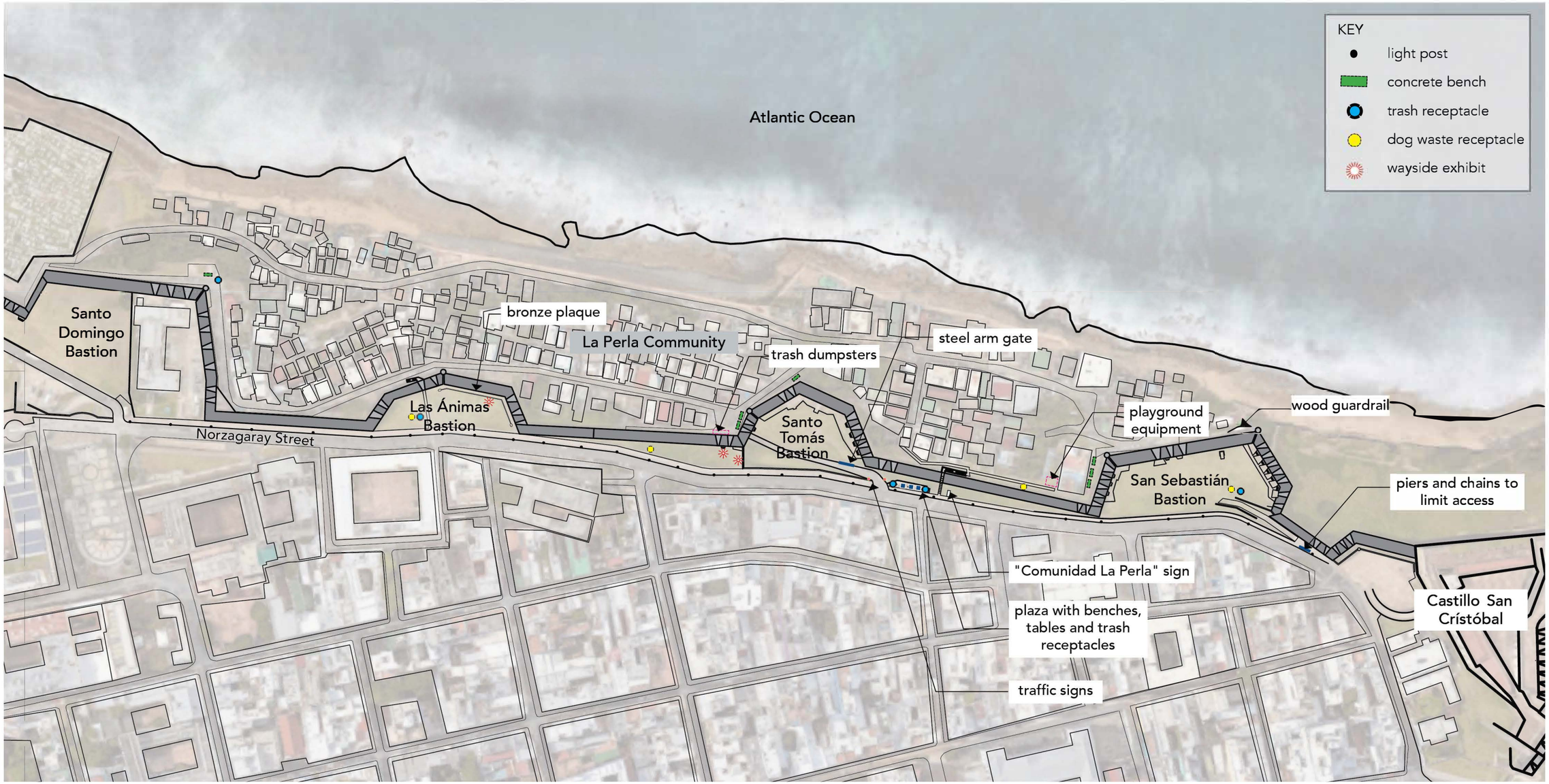


1" = 200'

0' 100' 200' 400'

San Juan City Wall
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FIGURE 112.
Character Area 1 - North Wall East of the Esplanade Character Area
Views and Vistas





1" = 200'

0' 100' 200' 400'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 113.
Character Area 1 - North Wall East of the Esplanade Character Area Small-scale Features

Character Area 2: North Walls associated with El Morro Esplanade

Character Area Description

The North Walls associated with El Morro Esplanade extend along the edge of the promontory landform west of Santo Domingo Bastion. To the north of the walls is Santa María Magdalena de Pazzis Cemetery. A natural area with a pedestrian trail edge a portion of the wall system to the northwest. South of the walls, within the interior of the raised parapet, is El Morro Esplanade, a sweeping open space that historically supported El Morro as a field of fire as well as a military training ground.

The segments of the North Walls that edge El Morro Esplanade include a curtain wall between Santo Domingo and Santa Rosa Bastions, Santa Rosa Bastion, a curtain wall connecting Santa Rosa and San Antonio Bastions, and San Antonio Bastion, which extends to the outer defenses of El Morro at the boundary of the CLR project area.

Natural Features and Systems

Refer to Figure 96, Natural Features and Systems

Promontory landform. The San Juan City Wall follow the edge of the promontory landform that characterizes the northwestern end of Isleta de San Juan. The promontory rises steeply above the shoreline within a narrow band at the edge of the isleta.

Lower terrace along the shoreline. The natural landform of the promontory slopes from the center of Old San Juan toward the ocean. A more steeply sloped hillside marks the transition to a lower terrace along the shoreline. The lower terrace is occupied within this character area by Santa María Magdalena de Pazzis Cemetery.

Responses to Natural Resources

Refer to Figure 97, Responses to Natural Resources.

Establishment of walls for military defense along the edge of the promontory. San Juan City Wall reflects the military defensive needs of Spain in protecting the community of San Juan. The wall system responds to the defensive opportunities afforded by the promontory landform, and the need to defend San Juan Harbor. The walls were designed by Spanish military engineers and completed by circa 1792 to connect larger fortifications at El Morro and San Cristóbal. The military walls follow the edge of the promontory landform to establish a protective parapet, with embrasures that provide a clear field of fire in all directions for the artillery emplaced behind them. The tall, sheer masonry walls were also designed to serve as an obstacle to an attacking military force.

Use of drains, culverts, swales, scuppers, and paved channels to control stormwater associated with perimeter walls and bastions. Drainage structures, including pipes, culverts, swales, scuppers, gutters, and paved channels, collect and direct stormwater from the base of the San Juan City Wall and bastions through openings within the wall system. These were built-in responses to flooding that could potentially undercut and destabilize the walls designed by the Spanish military engineers. Some of the drainage structures are built into the firing steps and wall bases allowing water to move directly through the walls. The structures and systems discharge stormwater through scuppers and simple openings to the exterior façade where the water is dispersed and eventually discharged into the ocean along the shoreline.

Use of the level terrace below the North Walls to site Santa María Magdalena de Pazzis Cemetery. The contained level space at the base of the North Walls associated with El Morro Esplanade was identified for use as a city cemetery as early as 1814. The space afforded a highly suitable location for a burial ground due to the challenges associated with accessing the site, which rendered the space less suitable for other uses. Access to the cemetery was afforded via two gates built in the eighteenth century—La Perla and San José—through the North Walls.

Land Uses

Recreation. The San Juan City Wall property is currently used by visitors and residents for several recreational land uses, including walking, picnicking, dog walking, and sports such as kite flying and basketball. Kite flying occurs in the area of the Esplanade near El Morro.

Museum/Interpretation/Education. The City Wall is also associated with a museum/interpretation/education land use due to the presence of wayside exhibits placed by the National Park Service to interpret the history of the walls and fortification system.

Spatial Organization

Refer to Figure 137, Spatial Organization, Character Area 2.

North Wall System. The North Walls associated with El Morro Esplanade encloses two polygon-shaped outward extensions that include Santa Rosa and San Antonio Bastions. The bastions are composed of open lawn that slopes from the center of the Esplanade toward the perimeter walls. Along the base of the walls, a mix of stone and concrete paving provides access to the walls and the firing steps that abut them. San Antonio Bastion is edged to the west by the San Antonio Guardhouse, while hyphen extensions of the walls curve in from the north ends towards the bastion interiors. Each bastion possesses a distinct interior spatial quality as a result of adjacent conditions and features located within. The bastions and linear masonry wall system also form spaces at the base of the walls. These conditions are described from east to west in the paragraphs that follow.

A curtain wall extends west from Santo Domingo Bastion (Figure 114). This wall features two embrasures at either end. These are edged by firing steps. Cemetery Road parallels the North Walls for approximately half the length of this curtain wall. The road is edged by a retaining wall, forming a narrow corridor of space behind the wall. The space opens up to the Esplanade west of Cemetery Road as it heads toward San José Gate.



FIGURE 114. View west along the curtain wall between Santo Domingo and Santa Rosa Bastions.

At the base of the curtain wall, Tiburcio Reyes Street closely edges the structure and intersects Cemetery Road as it emerges from San José Gate. The road is generous and wide. It is edged in turn to the north by a wall that surrounds the cemetery except where it abuts the North Walls. Cemetery Road extends into the cemetery on axis with a commemorative monument. At the monument, it turns and winds westward through the cemetery. The road is lined with ornate burial plots, arranged in an irregular grid.

Santa Rosa Bastion is edged to the north by four wall segments of varying lengths that create an irregular polygon north of the Esplanade. The interior of the polygon is maintained in mown turf. From the interior of the bastion, views are afforded to the east/northeast through three embrasures in the short east wall and three additional embrasures in the northeast wall. A sentry box sits at the intersection of the northeast and northwest walls. There are five embrasures in the northwest wall, and three additional embrasures in the west wall. These provide expansive views to the west, north, and east of Santa María Magdalena de Pazzis Cemetery as well as part of La Perla, and the Atlantic Ocean. Views to the west include the Cemetery Chapel, a classical structure set at the center of the western cemetery space. The walls are edged to the rear by extensive systems of ramps, firing steps, and banquettes. Also breaking up the space is a hyphen extension of the west wall that is a structure with storage space on the interior. Otherwise, the bastion interior is open, with views through the

embrasures to one side and the expansive open space of El Morro Esplanade to the other.

Graves associated with Santa María Magdalena de Pazzis Cemetery edge the base of the Santa Rosa Bastion walls. Some grave markers are actually embedded in the wall itself.

A curtain wall extends west from Santa Rosa Bastion. The wall forms a linear edge to the open space of the Esplanade. Views of Santa María Magdalena de Pazzis Cemetery and the Atlantic Ocean are afforded through two embrasures at the east end and a single embrasure at the west end where it meets San Antonio Bastion. Ramps, stairs, and banquettes are sited behind the wall near the embrasures. There is a drain structure near the west end that leads to an opening at the base of the wall.

Below the curtain wall is a slot of turf grass edged by a solid wall structure that serves as the cemetery columbarium. Additional graves edge the columbarium. At the center of the space north of the curtain wall is the terminus of Cemetery Road, which encircles the Cemetery Chapel.

San Antonio Bastion forms the final segment of the North Wall system to the west. The west wall of the bastion connects to the fortification walls associated with El Morro. The eastern wall, which overlooks Santa María Magdalena de Pazzis Cemetery, contains four embrasures, and is edged behind by paved ramps, stairs, and banquettes. The northeast wall contains two embrasures with views to the Atlantic Ocean and the less-developed area at the base of the wall. Extensive paved ramps, landings, stairs, and banquettes edge the rear of the northeast wall. A sentry box marks the junction with the northwest wall. A semicircular landing sits at the entrance to the sentry box. There are no embrasures in the northwest or west walls. A building extends south into the bastion space near the junction between these two walls. San Antonio Guardhouse sits at the edge of the interior bastion space, helping to enclose it somewhat. Rolling terrain that slopes upward toward the bluff also helps contain the western part of the bastion.

At the base of San Antonio Bastion, the landscape is undeveloped and primarily woodland vegetation and bluff, cut with trails.

Santa María Magdalena de Pazzis Cemetery. Santa María Magdalena de Pazzis Cemetery edges the North Walls east of San Antonio Bastion and west of Santo Domingo Bastion. The cemetery occupies the space formed by the North Walls within the lower terrace at the shoreline. It is divided into two areas by the pointed extension of Santa Rosa Bastion where there is an ornate gate (Figure 115). The eastern half is nearly rectangular with an access road leading to the center on axis with Cemetery Road that then turns west toward a gate leading to a second group of burials located between San Antonio and Santa Rosa bastions. A system of walls extends north from the North Walls, and turns to form the northern edge of the cemetery, continuing past the gate leading to the second group of burials, and ending at San Antonio Bastion. The North Walls serve as the boundary to the cemetery to the south and west.



FIGURE 115. View across the eastern half of Santa María Magdalena de Pazzis Cemetery towards the northern point of Santa Rosa Bastion and the gate leading to the western half of the burial ground.

The western half contains a central focal point in the circular form of the chapel, which is reinforced by the terminus of Cemetery Road. This section is also edged to the north by walls that connect with the North Walls to the west. A long bar structure follows the curtain wall between Santa Rosa and San Antonio Bastions that serves as the

columbarium. The cemetery otherwise extends to the base of the North Walls.

El Morro Esplanade. El Morro Esplanade was part of the defensive system anchored by Castillo San Felipe del Morro, initially built in 1540 to command the entrance to San Juan Harbor. Also known as the "glacis," the open space of the Esplanade was part of the defensive military terrain of the bluff. It was manipulated to establish a smoothly-graded sloped open space designed to descend from the fortress and expose potential attackers to artillery. It was also used as a parade ground and support space by the Spanish until transferred to the United States following the Spanish-American War of 1898. The US Army later developed the space as Fort Brooke during the first half of the twentieth century. The Esplanade is a broad, expansive open space that affords reciprocal views between Old San Juan and El Morro (Figure 116) and is edged by the North and West Walls that are the focus of this CLR; the Esplanade itself falls outside of the CLR project area, however.



FIGURE 116. Expansive views are afforded across El Morro Esplanade, which edges the North Walls.

Cultural Vegetation

Refer to Figure 138, Cultural Vegetation, Character Area 2

Turf lawn. Much of the interior space behind the curtain walls and within Santa Rosa and San Antonio Bastions is maintained in mown turf lawn (refer to Figure 114). The turf is composed primarily of Bermuda grass (*Cynodon dactylon*) and Zoysia grass (*Zoysia* spp.). The Zoysia grass is lower-growing and visually distinct from the Bermuda grass. The lawn is kept mown, and there are patches where it is significantly worn due to pedestrian activity and service vehicular access. Other areas of the lawn show significant erosion from stormwater and settling over time.

Vegetation within the natural area. At the base of the wall between San Antonio Bastion and the fortification walls associated with El Morro, the landscape is heavily vegetated with dense coastal scrub including trees, grasses, and shrubs (Figure 117).



FIGURE 117. View of coastal scrub vegetation at the western end of the North Walls.

Circulation

Refer to Figure 139, Circulation, Character Area 2.

Nature trail. Outside the North Walls to the northwest is a system of earthen footpaths that extend over sloped terrain through coastal scrub vegetation. The paths are accessible from Paseo del Morro National Recreational Trail and referred to as a nature trail in the materials provided by the park to visitors (refer to Figure 117). Amenities associated with the trail include trash receptacles, benches, concrete tables with benches, signage, a wooden bridge, and a wooden overlook near the shoreline.

Cemetery Road. Cemetery Road extends northwest from Norzagaray Street at the intersection with Calle de Cristo. The western end of Cemetery Road is an asphalt road corridor 10 feet 6 inches wide, edged by low concrete walls. The road descends as it crosses the northeast

corner of the Esplanade before entering a tunnel-like space formed by a concrete retaining wall that provides access to San José Gate, which provides passage beneath the North Walls (Figure 118). The road intersects Tiburcio Reyes Street just beyond the gate.

Cemetery Road continues into the cemetery on axis with Jose Ferrer's grave. The road turns to the northwest, connecting to the western section of the cemetery beyond the forward extension of Santa Rosa Bastion after passing beneath an ornate gate. The road heads west and ends by encircling the Cemetery Chapel. Within the cemetery, the road is paved with a composite material composed of brick and stone edged by stone banding.



FIGURE 118. View east along Cemetery Road toward Old San Juan from the concrete wall above the entrance to San José Gate.

Lucila Silva Street. Lucila Silva Street follows the cemetery walls to the edge of the curtain wall between Santo Domingo and Santa Rosa Bastions. The road ends at the edge of Santa Rosa Bastion. It is paved with asphalt until it reaches the curtain of the North Wall. Here, the pavement changes to a composite material composed of brick and stone set within stone banding. A row of low circular concrete bollards edges the road to protect the wall (Figure 119).



FIGURE 119. View west along Tiburcio Reyes Street as it extends between the North Walls and the cemetery.

Buildings and Structures

Refer to Figure 140, Buildings and structures, Character Area 2. See Glossary for military fortification terms.

San Antonio Guardhouse (CRIS HS #091732; HS-234). San Antonio Guardhouse is located on the north side of El Morro Esplanade on the declining slope below El Morro at the edge of the Santa Rosa Bastion. The Spanish built the guardhouse in 1897. The US Army later rehabilitated the structure to serve as a clubhouse for the golf course established within El Morro Esplanade, and later as a pool house in support of a swimming pool built nearby in 1931. The guardhouse currently serves as a park bookstore.

The San Antonio Guardhouse measures 42 feet 6 inches by 16 feet 2 inches in plan. The stuccoed masonry building faces east. The principal façade features three openings, a central door flanked by windows to either side. The north and south façade each contains a single window opening, while the west (rear) façade includes two window openings. The openings have quoins, and arched hoods with voussoirs. A cornice projects from the wall with a parapet behind hiding a flat roof

(Figure 120). The ground around the paved landing outside the building has been subjected to heavy use and is compacted and eroded.



FIGURE 120. View of San Antonio Guardhouse.

North Walls. The segments of the North Walls that fall within this character area include two bastions—Santa Rosa and San Antonio—and two curtain walls—between Santo Domingo and Santa Rosa Bastion, as well as between Santa Rosa and San Antonio Bastions.

Curtain wall, Santo Domingo to Santa Rosa Bastions. The curtain wall that extends between Santo Domingo and Santa Rosa Bastions features two embrasures at the west end (Figure 121), a banquette that wraps the corner edged by three stone steps, the remains of a ramp, and a paved landing. Another banquette is located between the embrasures also with a paved landing. Openings in the wall allow drainage to pass through the wall. The western end of the curtain wall also features a paved area behind the embrasure edged by wing walls. Cemetery Road passes beneath the curtain wall via a ramp and San José Gate.

The curtain wall has random coursed stone units at the scarp and ocean side parapet. The interior side of the parapet has rubble masonry and parging. At the top of the parapet wall, brick and stone fragments have been pressed into the parging at some locations.



FIGURE 121. Curtain wall between Santo Domingo and Santa Rosa Bastions.

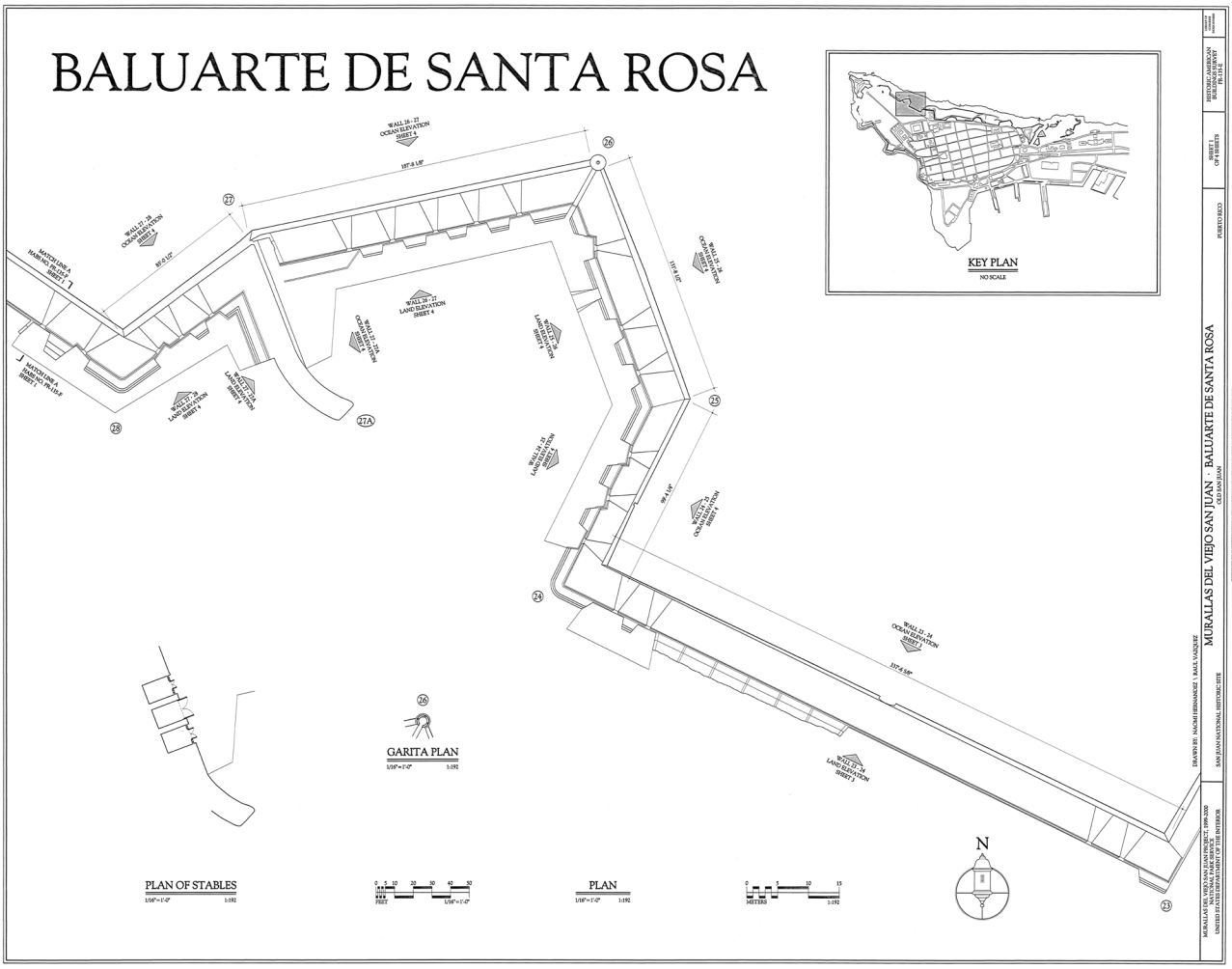


FIGURE 122. HABS documentation of Santa Rosa Bastion. Murallas del Viejo San Juan, HABS No: PR-135-E. (Source: Library of Congress)

Santa Rosa Bastion. Santa Rosa Bastion extends from the North Walls near the east end of El Morro Esplanade (Figure 122). The polygonal form of the bastion is formed from four wall segments or faces. Each face is cut by embrasures. Three embrasures are set into the east and northeast wall segments, while there are five cut into the northwest segment. An additional face sits beyond a wall extension into the bastion interior that features three embrasures. It is set at a higher elevation where the ground plane rises. A concrete sentry box occupies the intersection of the northeast and northwest faces (Figure 123).



FIGURE 123. View toward the sentry box in Santa Rosa Bastion.

The scarp and oceanside parapet walls at Santa Rosa Bastion have coursed stone masonry. The slightly irregular shape of the stone and infill of smaller stone units at joints is more visible at this portion of the wall than at other areas. The Esplanade side of the parapet wall has random coursed stone veneer; however, where the stone is missing, the underlying rubble masonry is exposed to view. The top of the parapet wall has parging with brick and stone fragments pressed into it. Through wall scuppers, located at the base of the parapet, consist of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall.

Much of the area behind the east and northeast walls of Santa Rosa Bastion is paved with a cementitious material that is rough and patched. The paved landing extends variously from a width of 11 feet 8 inches to nearly 16 feet (Figure 124). The landings include colored banding. In many locations there are 6-inch concrete curbs at the edges of the landing areas. A 1-foot-tall concrete gutter edges the landing in some locations. Drainage passes through the wall through designed openings. The Agustín sections are also edged to the rear by banquettes and a brick knee wall. Steps provide access to the elevated banquette platforms. The step risers are brick and concrete, with concrete corners. The banquettes and firing steps are surfaced with a combination of concrete and red and white paving blocks.



FIGURE 124. View northwest of Santa Rosa Bastion.

Other features associated with the bastion include a bronze plaque mounted to the parapet wall directly above one of the drainage structures that notes the name of the bastion. A bronze plaque is also set into the end of a section of wall that extends into the bastion space from the northwest to mark "Copeland's Corner." Visible through the embrasures is Santa María Magdalena de Pazzis Cemetery to the north. Two trash receptacles are set within the bastion.

Erosion is evident near the entry into Santa Rosa Bastion. There are also patches of lower and taller grass, and areas where the grass has been lost to visitor access and compaction.

Storage structure in Santa Rosa Bastion. Extending into the bastion space from the northwest wall of Santa Rosa Bastion is a structure that contains interior storage space (Figure 125). The principal façade features three arched openings with wooden doors. The interior space is currently used for the storage of maintenance equipment.



FIGURE 125. View of the storage structure that extends from the west wall of Santa Rosa Bastion.

Curtain wall, Santa Rosa to San Antonio Bastions. The curtain wall that extends between Santa Rosa and San Antonio Bastions contains four embrasures, two at either end, that overlook Santa María Magdalena de Pazzis Cemetery. The east end of the wall features a banquette with three steps. The banquette is composed of a concrete platform, while the steps are brick. A triangular concrete block is at the base of the steps. Adjacent to the banquette is an arched opening in the wall that allows the passage of drainage. A 2-foot-tall knee wall edges the parapet west of the banquette. Farther west are ruins of structures that may have served as gun ramps. The western end of the parapet also features two embrasures, arched

drainage openings, a paved landing, and two banquettes, one of which wraps the corner of the wall leading into Santa Rosa Bastion (Figure 126). There is a single trash receptacle located along the wall in this area

The curtain wall has coursed ashlar stone at the scarp and ocean side of the parapet. The Esplanade side of the parapet wall has random coursed stone veneer; however, where the stone is missing, the underlying rubble masonry is exposed to view. Some portions of the parapet wall have been parged. The top of the parapet wall is parged with fragments of brick and stone pressed into it.



FIGURE 126. View of the curtain wall between Santa Rosa and San Antonio Bastions.

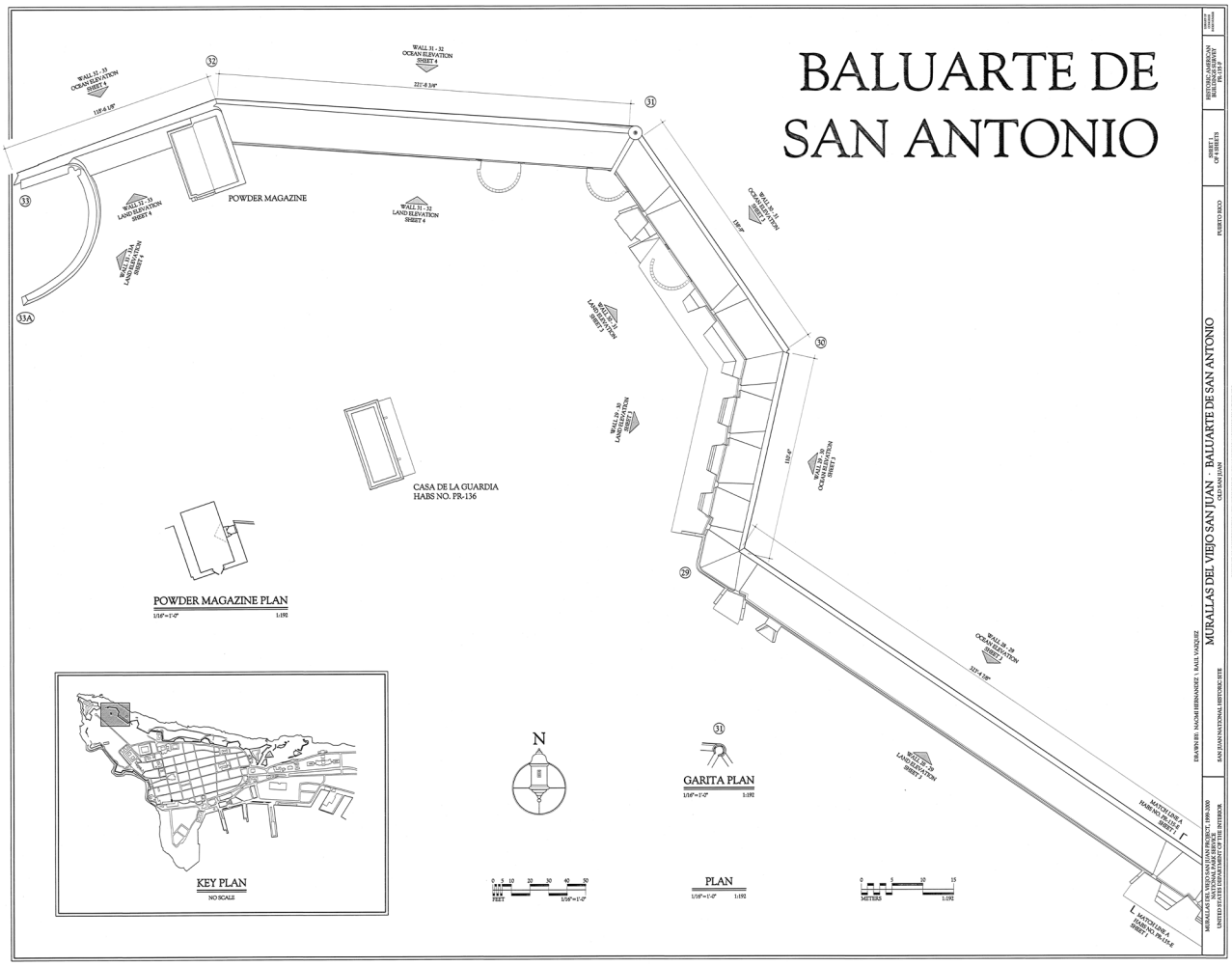


FIGURE 127. HABS documentation of San Antonio Bastion. Murallas del Viejo San Juan, HABS No: PR-135-F. (Source: Library of Congress)

San Antonio Bastion. San Antonio Bastion is located east of El Morro and west of Santa Rosa Bastion (Figure 127). San Antonio Guardhouse sits just west of the opening into the bastion. Like Santa Rosa Bastion, the bastion is composed of four faces, although the form of the projection is wider and less regular. Turf lawn extends into the interior space from El Morro Esplanade and continues to the edge of the paved landings, banquettes, and walls.

The banquettes along the east and northeast wall segments are accessed via steps. Along the northeast facing wall, which includes all of the embrasures, the banquettes are edged by ramps. A sentry box sits at the intersection of the northeast and northwest faces (Figure 128). Two stormwater drainage structures allow water to pass through the wall.



FIGURE 128. View of the sentry box within San Antonio Bastion.

The San Antonio Bastion walls have coursed ashlar stone at the scarp and oceanside parapet. At some locations, specifically at the parapet, there is also random-coursed polygonal and ashlar stone masonry. The Esplanade side of the parapet is clad

with random course stone veneers. At some locations, the veneer is missing, and the underlying rubble masonry and parging are exposed to view. The top of the parapet wall is parged. At the east portion of the bastion, brick and stone fragments have been pressed into the parging. Through wall scuppers, located at the base of the parapet, consist of segmental arched openings with stone spouts that extend beyond the ocean side face of the wall.

A single trash receptacle is located within the bastion space. Ruinous structures are also present within the bastion as foundation outlines on the ground. Beyond the wall, the grade continues to rise to the storage structure at the west end of the North Walls where features associated with El Morro begin.

Storage structure in San Antonio Bastion. A second structure is located at the terminus of the North Wall system where it meets the outer defenses of El Morro (Figure 129). This storage area currently serves as storage for living history props.



FIGURE 129. View toward the storage structure in San Antonio Bastion.

Drainage and stormwater management structures. There are several drainage systems associated with the North Walls at El Morro Esplanade that are historic features of the Spanish-era wall system. These include scuppers composed of segmental arched openings and simple openings.

The curtain wall between Santo Domingo and Santa Rosa Bastions contains openings in the wall beneath the banquettes that allow for drainage to pass through the wall and two through wall scuppers composed of segmental arched openings with stone spouts that extend beyond the oceanside face of the wall.

At Santa Rosa Bastion, there is a 1-foot-tall concrete gutter that edges the interior of the parapet in some locations. Stormwater is collected in shallow trenches behind the parapet walls through grading of the turf and the paved areas. Swales and channels direct the water into arched and square stone and brick openings in the wall, some of which extend beneath the banquettes, to prevent undercutting and ponding. Some sections of the drainage system have become filled with silt or overgrown with vegetation, impeding the flow of stormwater.

The curtain wall between Santa Rosa and San Antonio Bastions also has simple openings that allow drainage to pass through the wall.

At San Antonio Bastion there are two stormwater-drainage structures that allow water to pass through the wall.

San José Gate. Cemetery Road passes beneath the North Walls via the San José Gate, providing access to Santa María Magdalena de Pazzis Cemetery. The gate is a brick arched space, approximately 12 feet in height at the center, which extends through the base of the wall (Figure 130).



FIGURE 130. View of the north side of San José Gate.

Gate to Santa María Magdalena de Pazzis Cemetery. Cemetery Road leads into Santa

María Magdalena de Pazzis Cemetery through an ornate gate set within the perimeter wall system. The gate is composed of stuccoed masonry with a central raised form edged by square columns to either side. The capitals of the columns are connected with a recessed articulated fascia. Above the fascia are two extensions with an arched section that rises between them. The arched section supports a cross (Figure 131). Between the columns, the gate is arched and inset with a pair of metal doors. Buttresses flank the structure to either side. The gate is connected to the perimeter wall of the cemetery, and it is composed of a concrete base and metal fence above. The fence features metal posts inset with metal sections with a functional diamond pattern.



FIGURE 131. View of the gate at the entrance to Santa María Magdalena de Pazzis Cemetery.

Wood bridge. Associated with the nature trail north of the walls of El Morro and the outflow of a drainage scupper is a small wood footbridge. The bridge is arched, and constructed of wooden planks set on stringers. The sides of the bridges are edged by wooden handrails attached to posts at either end and in the center. The posts are topped with ball finials. The bridge is narrow, approximately 3 feet wide, and relatively short, at approximately 6 feet in length.

Wood overlook. Located along the nature trail near its eastern end is a wood stair that leads to a circular wooden overlook structure. The stair is composed of wooden plank treads edged by wooden posts to which boards are nailed for handrails. The stair turns east at the shoreline, continues down a few more steps, and then leads to a boardwalk extension that ends in a wooden circular overlook structure. From the structure, dramatic views of the Atlantic Ocean are afforded. To the east, across the coastal scrub vegetation, La Perla is visible. Also visible near the beach to the northwest is a concrete coastal defense structure in deteriorated condition.

Views and Vistas

Refer to Figure 141, Views and Vistas, Character Area 2.

Views to the Atlantic Ocean. Views to the Atlantic Ocean are afforded through the embrasures that punctuate the curtain and bastion parapet walls throughout the length of the North Wall system. Views to the Atlantic Ocean are also afforded from the nature trail and overlook structure.

Views of Old San Juan. Several institutional buildings and other features of Old San Juan abut Norzagaray Street, which forms the southern boundary of the North Walls east of El Morro Esplanade as well as the southern boundary of the esplanade space. The buildings generally occupy ground that is elevated above the wall system, rendering them highly visible from the park.

Views to Santa María Magdalena de Pazzis Cemetery. Views are afforded of Santa María Magdalena de Pazzis Cemetery from the embrasures associated with both Santa Rosa and San Antonio Bastions as well as from the curtain walls that extend between them and to Santo Domingo Bastion. The cemetery is located topographically below the walls and can be seen at their base when looking downward (Figure 132).



FIGURE 132. View of the chapel in Santa María Magdalena de Pazzis Cemetery from one of the embrasures in San Antonio Bastion.

Views of the North Walls from Santa María Magdalena de Pazzis Cemetery. Views are afforded of Santa María Magdalena de Pazzis Cemetery from the embrasures associated with both Santa Rosa and San Antonio Bastions as well as from the curtain walls that extend between them and to Santo Domingo Bastion. The cemetery is located topographically below the walls and can be seen at their base when looking downward (Figure 133).



FIGURE 133. View of the North Walls, specifically Santa Rosa Bastion and a sentry box, from Santa María Magdalena de Pazzis Cemetery.

Views of La Perla from the North Walls. Additional views are afforded to the east of La Perla from the North Walls located north of the El Morro Esplanade.

Small-scale Features

Refer to Figure 142, Small-scale Features, Character Area 2.

Trash receptacles. There are several park standard trash receptacles consistent with those described above as part of Character Area 1 located within this character area. These are located near the tunnel associated with Cemetery Road, on the paved landing behind the curtain wall between Santo Domingo and Santa Rosa Bastions, two along the paved landing areas of Santa Rosa Bastion (Figure 134), another at Santa Rosa Bastion behind Copeland's Corner, and a final one along the curtain wall between Santa Rosa and San Antonio Bastions. There are also trash receptacles located along the nature trail.



FIGURE 134. View of a standard park trash receptacle in Santa Rosa Bastion.

Backless benches. Park standard backless concrete benches similar to those described above as part of Character Area 1 are located along the nature trail north of El Morro. There are four in total in this location. There are also two additional concrete benches on a paved landing outside San Antonio Guardhouse.

Bronze plaques. Two bronze plaques are used to identify the locations of Copeland's Corner (Figure 135) and Santa Rosa Bastion (Figure 136) within the character area. These plaques are bolted onto the face of the walls where they are displayed. The bronze plaque that identifies Santa Rosa Bastion measures 1 foot 8 inches by 1 foot. It is mounted onto the wall directly above one of the drainage structures. The bronze plaque that identifies Copeland's Corner reads "Copeland's Corner / This plaque is in honor of / Rosie Copeland who during the / years has done so much for the / success of El Morro golf / El Morro

Golf Club / 1962." The plaque measures 1 foot 6 inches by 10 inches.



FIGURE 135. The bronze plaque associated with "Copeland's Corner."



FIGURE 136. The bronze plaque marking Santa Rosa Bastion.

Known and potential archeological resources

Brick foundation ruins. Located along the North Walls at the end of Santa Rosa Bastion is a brick foundation ruin.

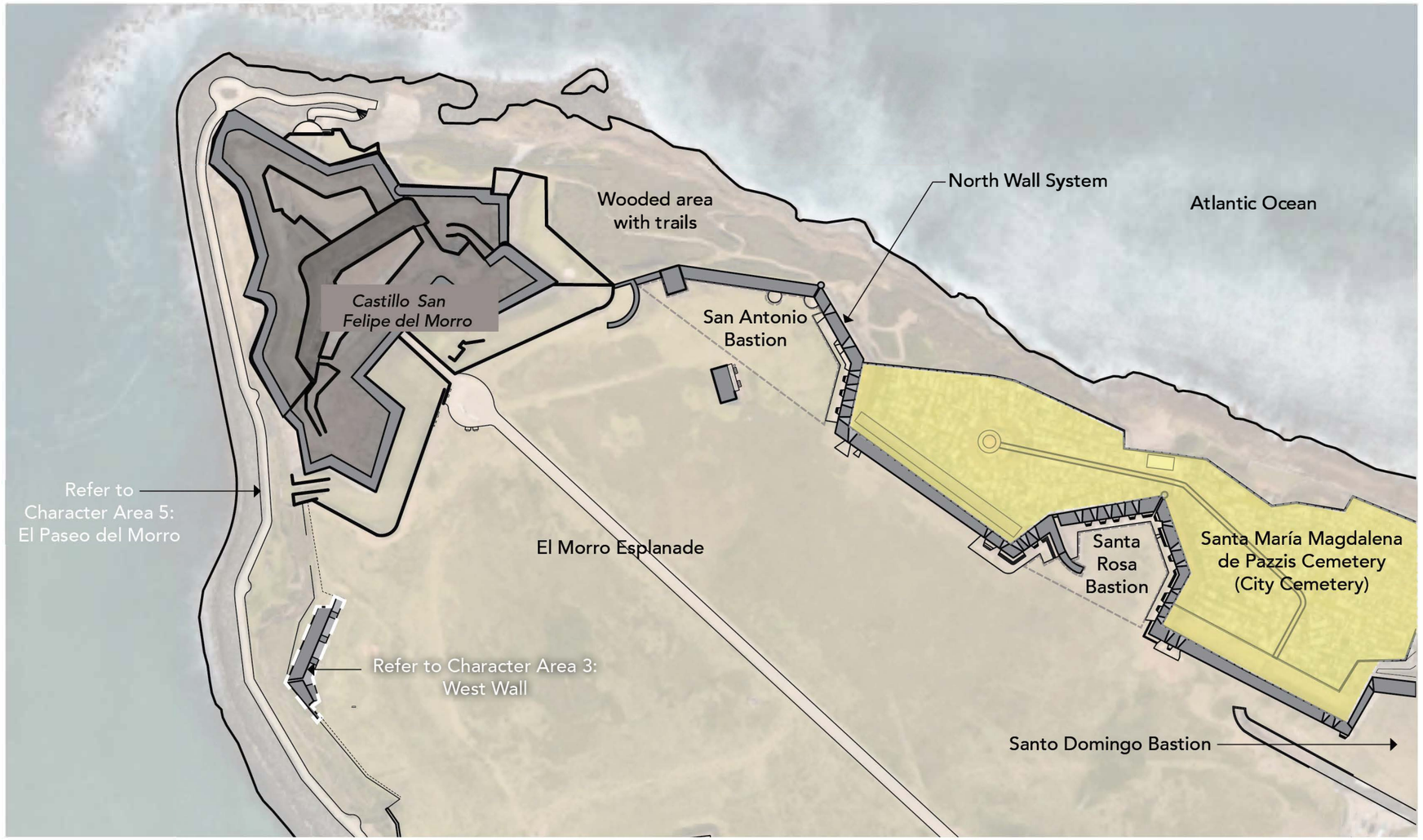
Ruins within San Antonio Bastion. Three ruinous structures are present within San Antonio Bastion. One is a raised circular structure. Another features semi-circular paving aligned with the sentry box access way. West of the sentry box, the grade along the wall rises, partially burying a third semi-circular structure that abuts the wall.

Artifact deposits along the nature trail. Unknown numbers of artifacts have been noted along the nature trail at least since the 1960s. Hale Smith's 1961 excavations at the trail did not identify any dense artifact deposits, but he noted that ". . . the present exposed base sandstone with its pits and gullies are [sic] a favorite 'treasure hunting' area for . . . children. So much cultural material has come from this area it appears that extensive erosion has taken place."[185] Those items he did find were mostly of nineteenth- and twentieth-century age.[186] Artifacts along the trail were also recorded in a photograph sequence on file with San Juan National Historic Site.[187]

Remains of a cistern and an associated structure at Bastion Santa Rosa. The features were inadvertently discovered in the 1990s when heavy equipment was placed near them. This also resulted in their damage.[188]

Potential Archeological Resources. There is potential for as-yet unidentified archeological resources to be present throughout the character area. Potential remains may include those related to buried wall features, analogous to those identified at the base of the Flanking Battery Wall at the Austria Bastion in the castillo moat by Hale Smith and Ken Wild in 1961 and 1990, respectively.[189] Undocumented tunnels/tunnel openings like the one looted by oil cleanup workers following the 1994 *Morris J. Berman* oil spill could also be present within the character area.[190] Additionally, although no pre-Columbian sites have been found at El Morro, they are present in nearby parts of San Juan and also may be present in this character area.[191]

185. Hale, 58.
186. Ibid.
187. El Morro-Archeology, Shoreline Trail. Acc #143, Cat #16399, 1989. On file at San Juan National Historic Site.
188. National Park Service, San Juan National Historic Site Superintendent's Annual Narrative (1997), 10.
189. Smith, *Archaeological Investigations;* Wild, *Archeological Investigations*.
190. National Park Service, San Juan National Historic Site, Superintendent's Annual Narrative (2003), 4.
191. Solis Magaña; Pantel, et al.; and Pantel, del Cueto & Associates, 62.





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FIGURE 137.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Spatial Organization



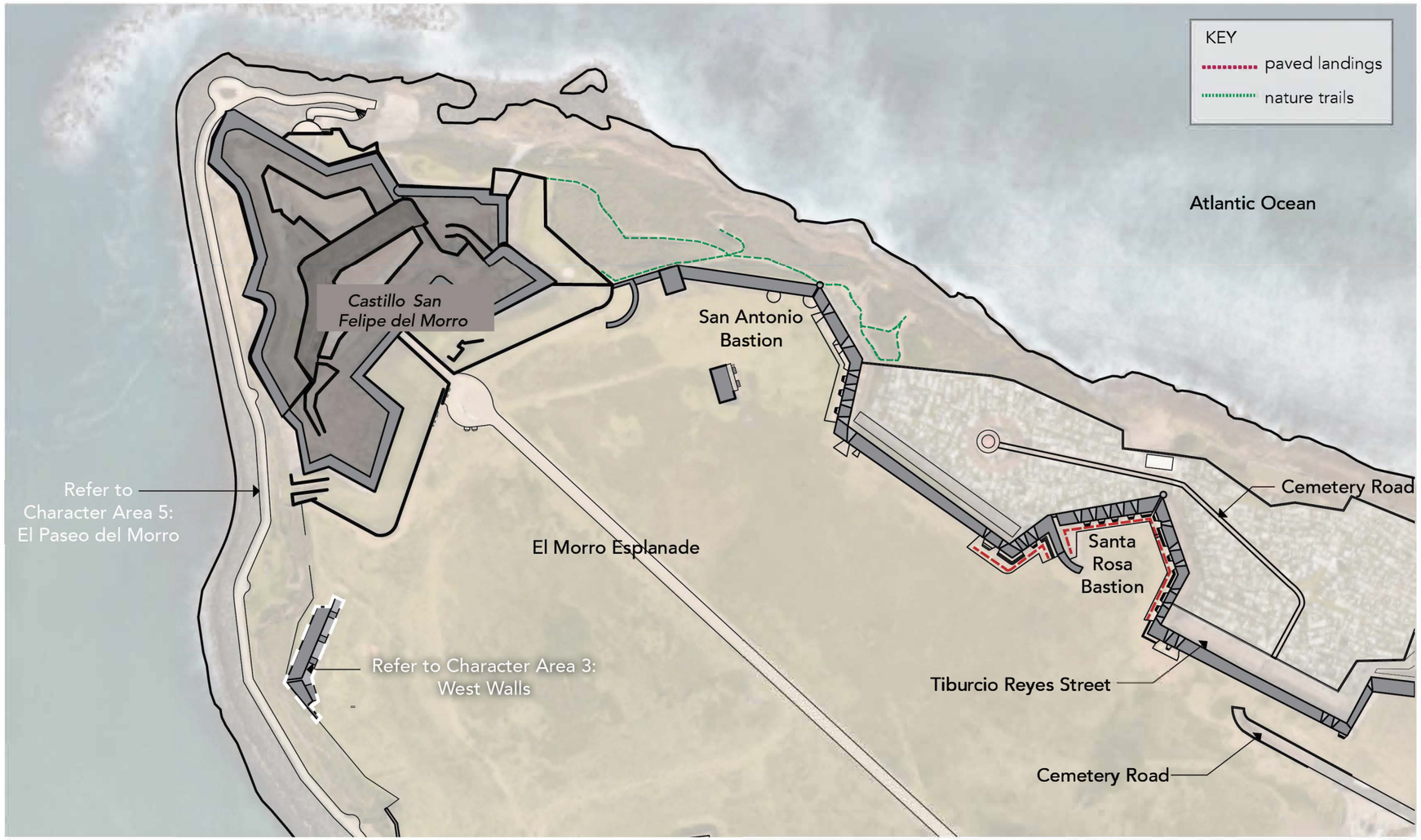
1" = 200'

0' 100' 200' 400'



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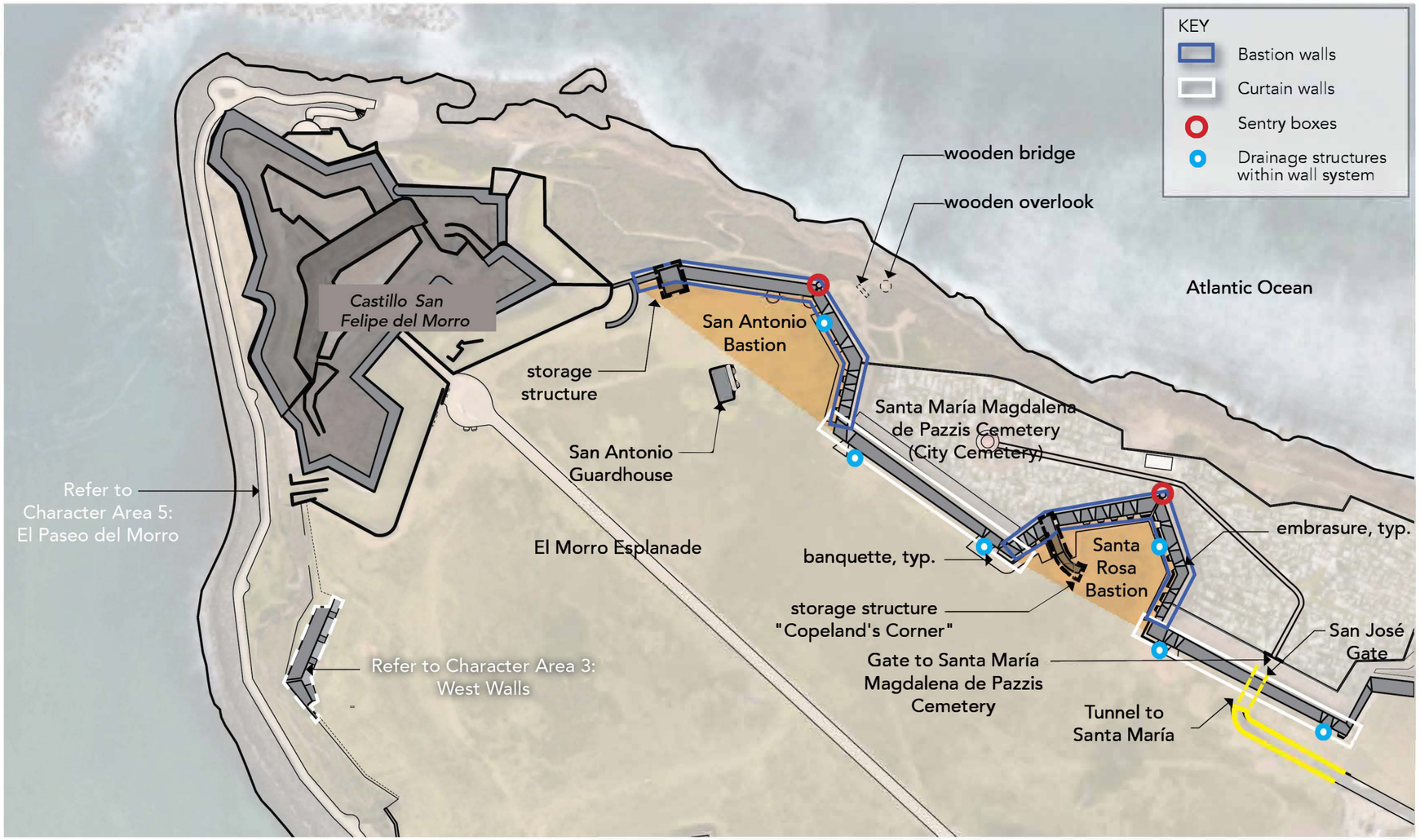
FIGURE 138.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Cultural Vegetation



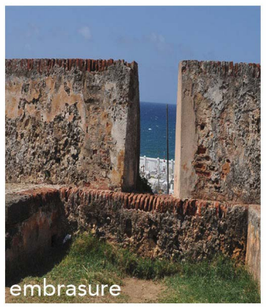


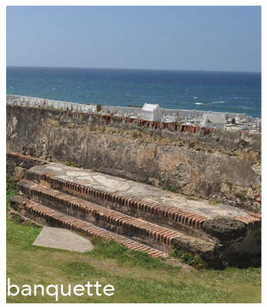
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FIGURE 139.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Circulation

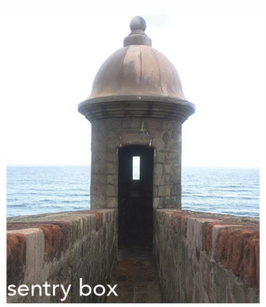





embrasure

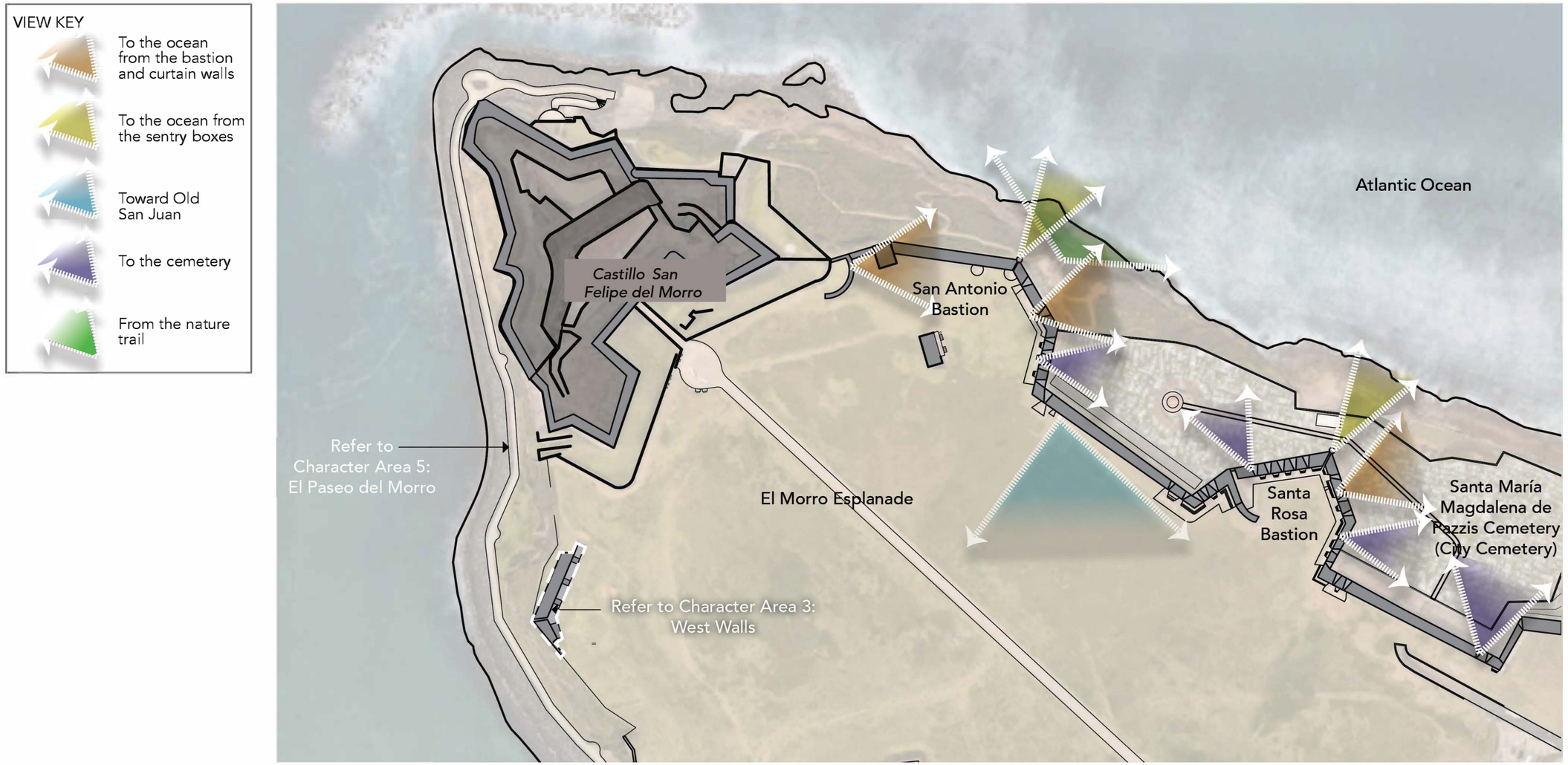

banquette


parapet wall


sentry box

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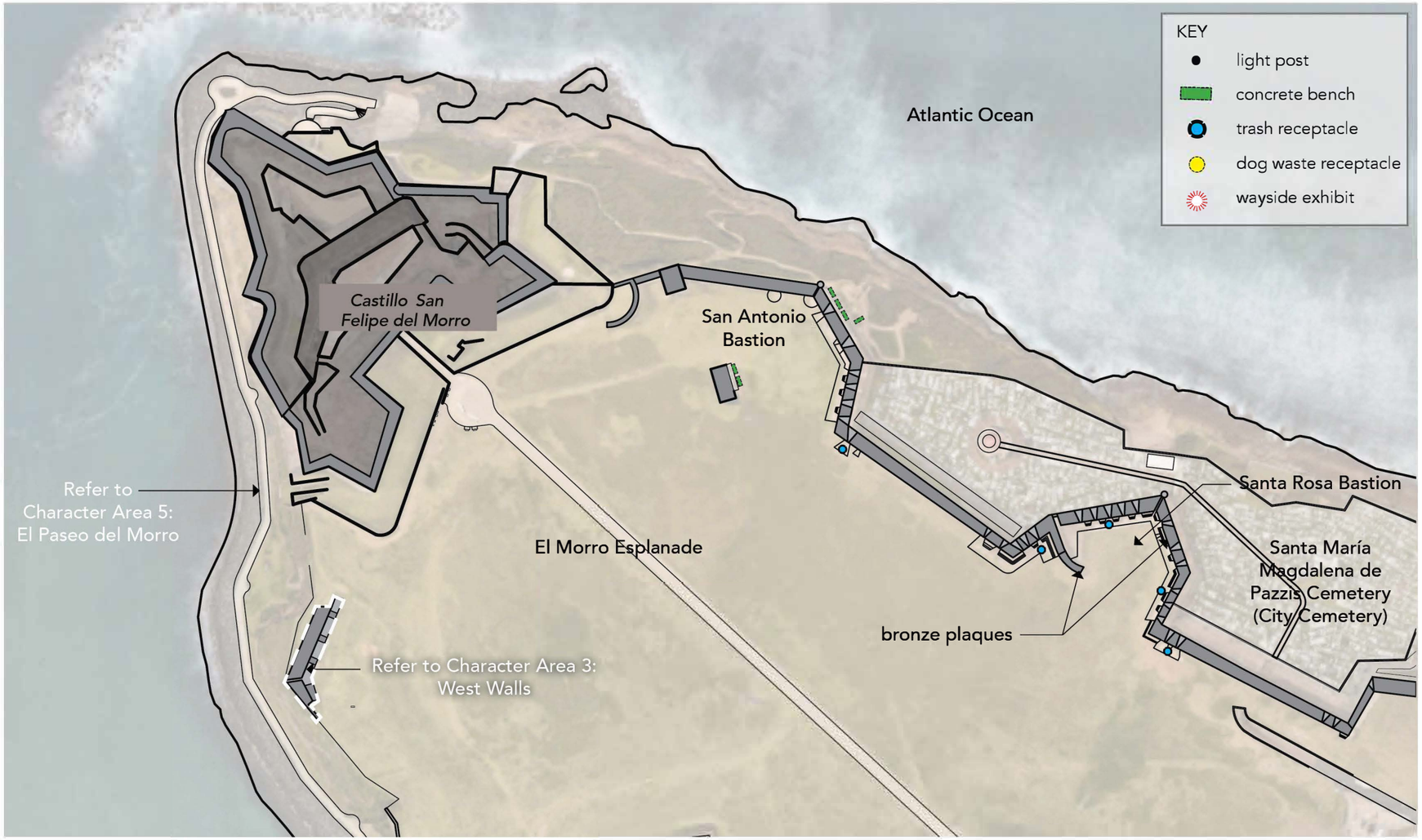
FIGURE 140.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Buildings and Structures





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FIGURE 141.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Views and Vistas





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FIGURE 142.
Character Area 2 - North Wall
Associated with El Morro Esplanade
Character Area Small-scale Features

Character Area 3: West Walls

Character Area Description

The West Walls are part of the City Wall system and were built by the Spanish between the seventeenth and nineteenth centuries. The West Walls include the remains of the San Fernando Bastion, the San Fernando Battery, the Santa Elena Bastion, and San Agustín Bastion. The Santa Elena Guardhouse, built by the Spanish in 1787, occupies the Santa Elena Bastion and is adjacent to a World War I gun emplacement and bombproof magazine. The West Walls also include wall segments that extend between the two bastions and farther to the south to San Juan Gate which marks the end of the character area. The landscape consists of several tangible landscape resources and is associated with other intangible qualities and associations. The features that comprise the landscape are each individually described below in terms of their size and materiality.

Natural Features and Systems

Refer to Figure 96, Natural Features and Systems

Promontory landform. The San Juan City Wall follows the edge of the promontory landform that characterizes the northwestern end of Isleta de San Juan. The promontory rises steeply above the shoreline within a narrow band at the edge of the isleta.

Lower terrace along the shoreline. The natural landform of the promontory slopes from the center of Old San Juan toward the ocean. A more steeply sloped hillside marks the transition to a lower terrace along the shoreline. The lower terrace is occupied within this character area by Paseo del Morro.

Responses to Natural Resources

Refer to Figure 97, Responses to Natural Resources.

Military defensive walls, bastions, and batteries along the edge of the promontory. San Juan City Wall reflects the military defensive needs of Spain in protecting the community of San Juan. The West Wall system responds to the defensive opportunities afforded by the promontory landform and the need to defend San Juan Harbor. The features of the West Wall system were first established during the sixteenth century, with additions and changes made during the seventeenth century. The current configuration was established between circa 1776 and 1783 to enhance its position as a Defense of the First Order by Spanish military engineers. The West Wall system provided defense of the position along the top of the promontory south of El Morro as far as San Juan Gate. The bastions and curtain walls were sited to establish a protective parapet, with embrasures that provide a clear field of fire in all directions for the artillery emplaced behind them. The tall, sheer masonry walls were also designed to serve as an obstacle to an attacking military force.

Use of drains, culverts, swales, scuppers, and paved channels to control stormwater associated with perimeter walls and bastions. Drainage structures, including pipes, culverts, swales, scuppers, gutters and paved channels, collect and direct stormwater from the base of the San Juan City Wall and bastions through openings within the wall system. These were built in response to flooding that could potentially undercut and destabilize the walls designed by the Spanish military engineers. Some of the drainage structures are built into the firing steps and wall bases allowing water to move directly through the walls. The structures and systems discharge stormwater through scuppers and simple openings to the exterior façade where the water is dispersed and eventually discharged into the ocean along the shoreline.

Use of shotcrete to stabilize a failing hillside. The steeply sloped hillside below San Fernando Bastion has been subject to slumping and other failure for many years. The NPS stabilized the hillside in the 1990s using a spray application of shotcrete, which remains visible in 2019 (Figure 143).



FIGURE 143. View of shotcrete applied to the hillside below San Fernando Bastion to stabilize it.

Land Uses

Recreation. The San Juan City Wall property is currently used by visitors and residents for several recreational land uses, including walking, picnicking, dog walking, and sports such as kite flying and basketball. Within the West Walls character area, these uses occur primarily within the Esplanade and San Agustín Bastion areas.

Spatial Organization

Refer to Figure 181, Spatial Organization, Character Area 3.

West Wall System. The West Wall system extends along the western edge of the promontory between El Morro and San Juan Gate, including the margin of El Morro Esplanade. The West Walls typically range in height from 4 to 5 feet above the ground on the interior and stand between 15 and 30 feet in overall height. The walls help to form a spatial edge to El Morro Esplanade, as well as the landscape to its south (Figure 144). The West Walls also edge Casa Rosa Road. Near Plazuela La Rogativa, Casa Rosa Road intersects Caleta de las Monjas, which continues east to intersect Calle de la Defensa. This street turns south and closely parallels the West Walls until San Juan Gate. Caleta de San Juan passes through the gate, providing access to Paseo del Morro National Recreational Trail, which follows the West Wall system along its base to El Morro. Views are afforded through the walls at the upper level at the embrasures. Set within the West Wall System are two outward projections at Santa Elena and San Agustín Bastions that form open occupiable spaces behind. Santa Elena Bastion is edged to the northeast by Santa Elena Guardhouse. The interior of the bastion now also contains a World War I-era concrete gun platform, concrete bombproof magazine, as well as a fenced yard that protects historic armaments being treated by the Cannon Conservation Workshop. San Agustín Bastion is more open and accessible. The center of the bastion is marked by a raised berm, a portion of which is shaded by several mature trees. Along the base of the walls, a mix of stone and concrete paving provides access to the walls and the firing steps that abut them.



FIGURE 144. View of Santa Rosa Bastion and curtain wall, with the Santa Rosa Guardhouse beyond.

Plazuela La Rogativa. Plazuela La Rogativa is a small paved urban space between the West Wall, Casa Rosa Road, and Caleta de las Monjas. At the center of the plaza is the *La Rogativa*, a 1971 bronze sculpture by Lindsay Daen that sits atop an exposed aggregate concrete base inset with a bronze plaque. The sculpture serves as the focal point of the open space (Figure 145). The plaza, which is paved with exposed aggregate concrete, also contains a series of low stairs edged with brick that address an overall change in grade across the space from the southeast to the northwest through the center of the plaza. There are also two standard park trash receptacles and an exposed aggregate drinking fountain within the plaza. A sidewalk edges the West Wall along with a single banquette and ramp. The sidewalk is edged by two large concrete and brick planters that contain shade trees. Another tree is set at the corner of the plaza adjacent to a low concrete retaining wall that is edged by the city sidewalk along Casa Rosa

Street and Caleta de las Monjas. Condition issues include spalling of the base of the banquette.



FIGURE 145. Plazuela La Rogativa with the West Walls to the left and Casa Rosa Gate behind.

Cultural Vegetation

Refer to Figure 182, Cultural Vegetation, Character Area 3.

Turf lawn. Turf lawn characterizes much of the area around San Fernando Bastion, within San Agustín Bastion, and along the base of the West Wall system. Turf lawn is also located within parts of Santa Elena Bastion, while small areas of turf lawn occur between the planters adjacent to the sidewalk near Plazuela La Rogativa. The turf is composed of Bermuda grass and Zoysia grass, with other unidentified weed species present.

Trees within San Agustín Bastion. Three mature trees and one younger tree are located within the central open turf area behind the San Agustín Bastion walls (Figure 146). Tree species present within the bastion include one African cloth-bark tree, also *Laurel Africano* (*Ficus nekbuda*); a sea grape, or Uva de Playa; a Dominican mahogany, also Caoba Dominicana (*Swietenia mahagoni*); and a holywood lignumvitae, or Guayacán(*Guaiacum sanctum*).



FIGURE 146. One of the large shade trees within San Agustín Bastion.

Trees within Plazuela La Rogativa. Four mature trees are located within the Plazuela La Rogativa. Three of the trees are set within planters, and one is growing within a paved area (refer to Figure 145). Species present here include an almond tree, also Almendra India (*Terminalia catappa*); two oxhorn bucida, or ucar (*Bucida buceras*); and another tree that has not yet been identified.

Circulation

Refer to Figure 183, Circulation, Character Area 3.



FIGURE 147. Casa Rosa Road looking southeast with the West Walls to the right.

Casa Rosa Road. Casa Rosa Road parallels the West Wall between Caleta de las Monjas and Casa Rosa. The two-way, asphalt-paved road measures approximately 18 feet in width. It is edged by concrete curbs painted yellow (Figure 147). Light poles, some of which no longer support lanterns, and trees also edge the road. A speed bump crosses the road near its intersection with San Agustín

Road, while Casa Rosa Gate extends across the road to the south of the intersection.

San Agustín Road. San Agustín Road arises from Casa Rosa Road near Casa Rosa and San Agustín Bastion. It extends from Casa Rosa to Santa Elena Bastion. The northwestern section of the two-way road is paved with concrete, while the remainder is paved with asphalt. The concrete section measures 16 feet in width, while the asphalt section is approximately 20 feet in width. The concrete section is edged by turf lawn, with the margins used for parking. The asphalt section is edged by concrete curbing painted yellow. Edging the road are grass swales, a 2-foot-wide concrete gutter that drains the area behind the West Wall. Mango trees, defunct light poles, and utility poles and features also edge the road.

Sidewalk between Casa Rosa Gate and Plazuela La Rogativa. A concrete sidewalk follows the base of the West Wall between Casa Rosa Gate and Plazuela La Rogativa (Figure 148). The sidewalk is set a few feet below the base of the gate and the adjacent road and is accessed via brick stairs. The sidewalk measures 4 feet 6 inches in width. It has a cross slope that directs water to the base of the West Walls where there is a shallow gutter. A brick curb lines the edge of the sidewalk.



FIGURE 148. The sidewalk that follows the West Walls between Santa Rosa Gate and Plazuela La Rogativa.

Sidewalk south of Plazuela La Rogativa. Another sidewalk edges the West Wall south of Plazuela La Rogativa. It continues to a gate associated with La Fortaleza. The sidewalk is composed of square stone pavers with thick mortar joints. A concrete curb runs along the edge of the sidewalk that is painted white. Black light posts with circular fixtures are set within the center of the sidewalk.

Paved landing within Santa Elena Bastion. A paved landing edges the interior of the West Wall at the base within Santa Elena Bastion. The landing is surfaced with a mix of stone, concrete, and asphalt. The paved area varies in width but extends from the wall to the World War I-era coastal defense gun emplacement and bombproof magazine that sit within the bastion (Figure 149). Between the structure and the wall, the concrete is sloped and rises approximately 8 inches. South of the structure, the concrete slopes back down to grade. The concrete of this landing exhibits problems with cracking; vegetation is growing through some of the cracks.



FIGURE 149. The paved landing behind the walls of Santa Elena Bastion.

Buildings and Structures

Refer to Figure 184, Buildings and structures, Character Area 3. See Glossary for military fortification terms.

Santa Elena Guardhouse (CRIS HS #091739; HS-240). The Santa Elena Guardhouse is located within the central open space associated with Santa Elena Bastion. The building was constructed in 1787 by the Spanish. It currently serves as the Cannon Conservation Workshop where historic military armaments are being conserved. The building measures 70 feet in length by 33 feet in width. The masonry building has a flat roof, an arcade on the south façade, and six bays with round arches separated by pilasters. The ends of

the arcade are open. The parapet at the roof rises behind the cornice on the arcade, hiding the flat roof structure (Figure 150). The front has three segmental arch doors.



FIGURE 150. View of Cannon Conservation Workshop at Santa Elena Guardhouse.

Extending from the west façade of the building is a steel-framed structure that is supported by steel posts. Sheet metal rests atop the frame creating a canopy that is used to provide a covered work space. Surrounding the space is a chain-link fence with barbed wire. Portions of the canopy are missing as a result of Hurricane Maria.

West Walls. The West Walls face San Juan Bay and edge the promontory associated with Isleta de San Juan between El Morro and San Juan Gate over a distance of approximately 3,250 feet. A portion of the system frames El Morro Esplanade. The West Walls were built for defensive purposes by the Spanish between the sixteenth and nineteenth centuries, but generally completed in their current form between 1776 and 1783. The eighteenth-century construction replaced earlier isolated bastions and battery positions with a connected system of curtain walls and forward-projecting, polygonally shaped bastions. The West Walls contain some of the earliest sections of masonry that date to the sixteenth century.

The West Walls contain four bastions—San Fernando, Santa Elena, San Agustín, and Santa Catalina—and two curtain walls.[192] The curtain walls are named for adjacent bastions, including Santa Elena curtain wall and San Agustín curtain wall. The walls are broken by fifty-five embrasures and edged by five sentry boxes. Passage through the West Walls occurs only at San Juan Gate.[193] Two of the sentry boxes are original eighteenth-century structures, while three are twentieth-century reconstructions. San Juan Gate is one of the early features of the Spanish military complex. It was restored by the NPS in 1956. Located nearby is La Fortaleza, also part of the early Spanish military complex. La Fortaleza serves as the mansion of the Governor of Puerto Rico. It is located outside of the CLR project area.

The West Walls measure between 20 and 50 feet in height. Most are approximately 50 feet wide at the base and 24 feet wide at the top. Several of the embrasures within the West Walls contain guardrails installed by the NPS to protect the safety of park staff and visitors. The guardrails are composed of top and bottom round PVC plastic pipe filled with concrete that are bolted into the side walls of the embrasures. Set between the horizontal top and bottom rails are smaller diameter vertical PVC pipes. The piping is painted a dark grey. In many locations, the pipe is broken revealing the concrete within, while some of the steel bolts have rusted, leading to staining of the walls. Guardrails associated with the San Agustín curtain include some examples of galvanized tube steel left unpainted, and painted steel pickets with flat bar stock as the top and bottom rails.

Portions of the West Walls collapsed in 1918, notably the curtain wall between Santa Elena and San Agustín Bastions, and were repaired in 1924-1925. As part of the repairs, the rubble masonry structure of the wall was replaced with concrete. Several sections of the West Wall system have also been repaired and rebuilt since the United States assumed ownership of the system (Figure 151). Depending on the era of the repair, the concrete structure was clad with stone veneer consisting of either polygonal-shaped stone, stone units cut square, or composite cast tiles. The veneers were mortar set, with no mechanical anchor. These veneers give sections of the wall a distinctly

192. Santa Catalina Bastion is beyond the CLR project area.

193. Berkowitz et al., volume I, 43.

different visual appearance. The polygonal-shaped stone veneer units measure 2 inches to 4 inches thick, vary in size and shape, and are set in a random pattern (Figure 152). The square-shaped stone veneer units measure approximately 2 inches thick (Figure 153). These units are typically set in a random coursed pattern; however, at some locations, the units have a regular coursing. Composite cast tiles consist of pieces of sandstone and limestone cast in lime mortar and cut into tiles measuring 12 inches square by 2 inches thick. These tiles are set in a stacked course with joints aligning in a grid-like pattern.

At some locations, the wall has been clad with a parging over the rubble masonry wall construction. The parging has either been tooled so that it is smooth or applied in a manner to give the appearance of coursed masonry. The parging is typically less than 1 inch thick.



FIGURE 151. A portion of the West Walls with concrete parge repairs.



FIGURE 152. A portion of the West Wall with polygonal-shaped stone veneer units.



FIGURE 153. Square-shaped stone veneer units.

More recent repairs to the wall have included installation of a concrete structure behind the existing wall and anchoring of the historic or replacement stone masonry with metal tie rods. The metal ties were reportedly connected to the concrete structure and counterforts.[194]

194. Berkowitz et al., volume I, 43.

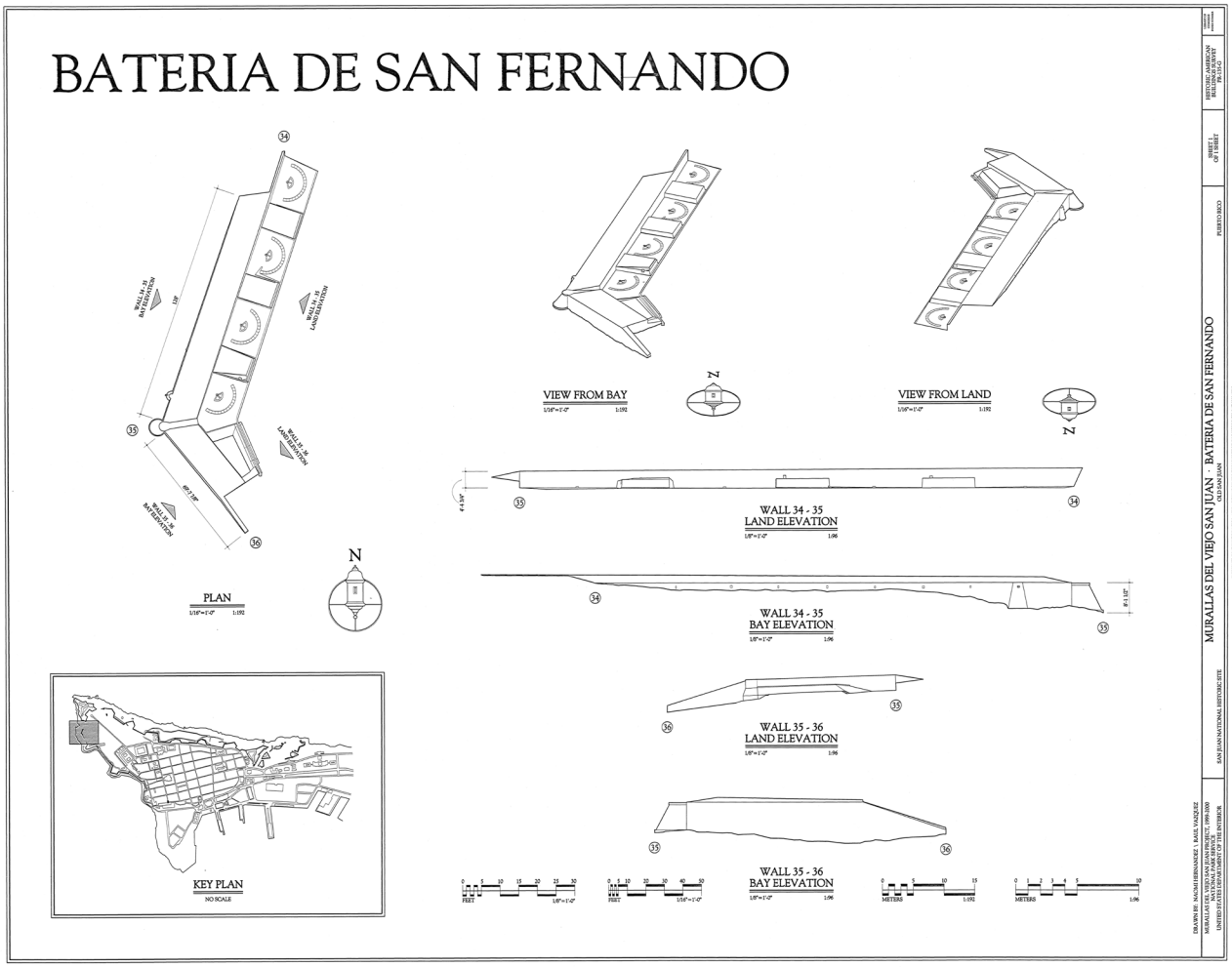


FIGURE 154. HABS documentation of Santa Fernando Bastion. Murallas del Viejo San Juan, HABS No: PR-135-G. (Source: Library of Congress)

San Fernando Bastion (CRIS HS #091740). San Fernando Bastion is a free-standing position at the edge of a steeply sloped section of the promontory south of El Morro (refer to Figure 154). The bastion is in ruinous condition. Archeological investigations have revealed evidence of a sixteenth-century battery in this location. The current bastion was likely constructed by 1769 as an L-shaped wall that contained six embrasures. The remaining single embrasure and wall segment (Figure 155) is edged to the east by a circa 1897 concrete coastal defense artillery emplacement known as Batería de San Fernando.

The remnants of San Fernando Bastion have coursed ashlar masonry at the scarp and oceanside parapet. The Esplanade side of the parapet and top of the parapet has rubble masonry construction with remains of a previously applied parging.



FIGURE 155. View toward San Fernando Bastion.

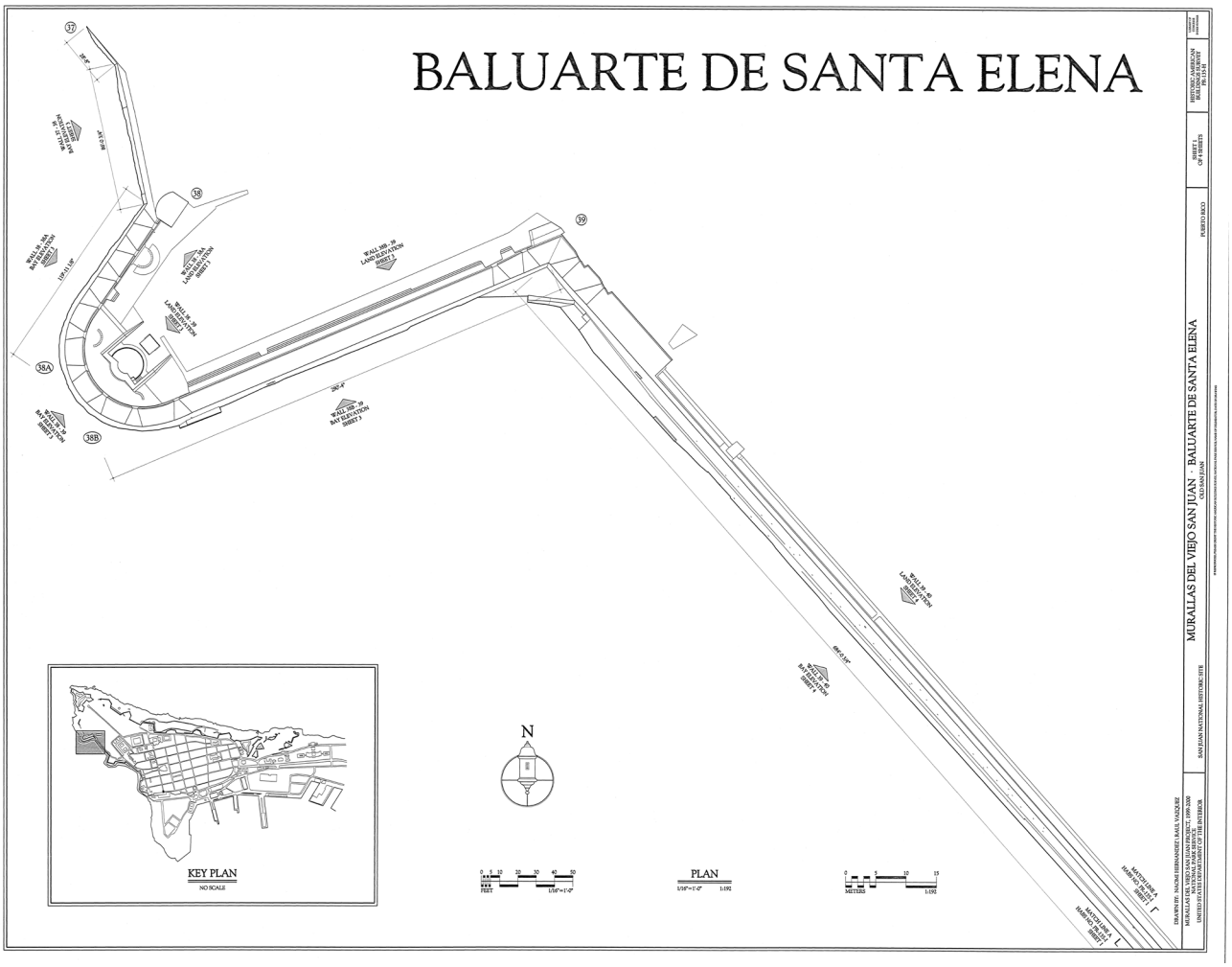


FIGURE 156. HABS documentation of Santa Elena Bastion. Murallas del Viejo San Juan, HABS No: PR-135-H. (Source: Library of Congress)

Santa Elena Bastion. Santa Elena Bastion is an outward projection of the West Walls completed circa 1787 (

Figure 156). The Spanish built an earlier bastion on this site circa 1586 and reinforced the walls of the original structure in 1635. The current bastion was completed as part of the military upgrading of the site to a First Order defensive position. It featured eight embrasures directed north and south to afford 180 degrees of artillery fire coverage on the mouth of the harbor. The adjacent curtain wall to the south was added at the same time.

The scarp consists of mostly coursed ashlar stone with some areas of random coursed masonry. The oceanside parapet is mostly random coursed ashlar masonry (Figure 157). The interior of the parapet wall consists of rubble masonry clad with parging. At the south end of the bastion, the top of the parapet has square clay tiles that border the edges of the wall and visually divide it into sections. The area between the tiles have parging. At the north side of the bastion, the top of the parapet is parged. The interior of the southern parapet wall of Santa Elena Bastion is edged by a gutter system that directs water to through wall scuppers, simple openings, and catch basins. Metal guardrails span between merlons at the parapet wall.

The bastion wall is composed of stone masonry with an ashlar bond pattern with a mix of large and small stones and red and gray stuccos. The bastion is formed by three stone masonry wall segments. The north face is 60 feet long and has five embrasures. The front face has three embrasures. The south face is approximately 240 feet in length

and has three embrasures, one small scupper, one large scupper, a 12-inch-diameter drain pipe, and rectangular openings for drainage. Set within the embrasures are concrete-filled plastic tubing, 6 inches in diameter, which extends across the openings and are bolted into the wall at the top and bottom to form protective guard rails. The tubing is painted black.

Behind much of the south wall is a 192-foot-long concrete and brick banquette accessed by brick stairs (Figure 158). A single small banquette is located along the western wall, accessed by two brick and concrete steps. Where there is no banquette there is a knee wall with brick edging. A banquette at the northwest end is accessed by a ramp rather than steps. This section of wall has a finish coat of stucco with evidence of signatures marked into the surface. A bronze plaque is located on the wall identifying the bastion by name.



FIGURE 157. View toward Santa Elena Bastion from Paseo del Morro National Recreational Trail.



FIGURE 158. View of the southern face of Santa Elena Bastion.

Curtain wall, Santa Elena to San Agustín Bastion. Santa Elena curtain wall includes rebuilt and original wall segments. Portions of the wall collapsed following an earthquake in 1918. The rebuilt sections date to circa 1924-1925 and are narrow concrete structural walls with stone veneer. Other sections date to the late eighteenth century and are stone masonry (Figure 159). The curtain contains four embrasures. They are built of coursed, face-dressed sandstone rubble. Where resurfaced, the walls contain polygonal stone veneer of cast composite stone. There are numerous rectangular holes in the vertical face of the wall. At the base of the rear wall is a concrete channel that conveys stormwater to openings in the wall at the northwest and southeast ends (refer to Figure 144).



FIGURE 159. View of the curtain wall (right) between Santa Elena and San Agustín bastions.

The curtain wall is divided into four visually distinct sections. The northernmost section (section 1) has coursed ashlar masonry and features rectangular wall drains (Figure 160). Extensive repairs were reportedly performed at a portion of the wall to the south (section 2). At this location, the wall appears as random-coursed polygonal-shaped stone masonry. There are square scaffold holds in the wall. The next section of the wall (section 3) has coursed ashlar stone. There are anchor holes covered by parging, indicating previously performed repairs. The south portion of the wall (section 4) was reportedly rebuilt. Similar to section 2, it has random-coursed polygonal-shaped masonry and square scaffolding holds. At all sections of the wall, the interior side and top of the parapet wall has random course stone veneer.



FIGURE 160. View of the curtain wall between Santa Elena and San Agustín Bastions from Paseo del Morro National Recreational Trail.

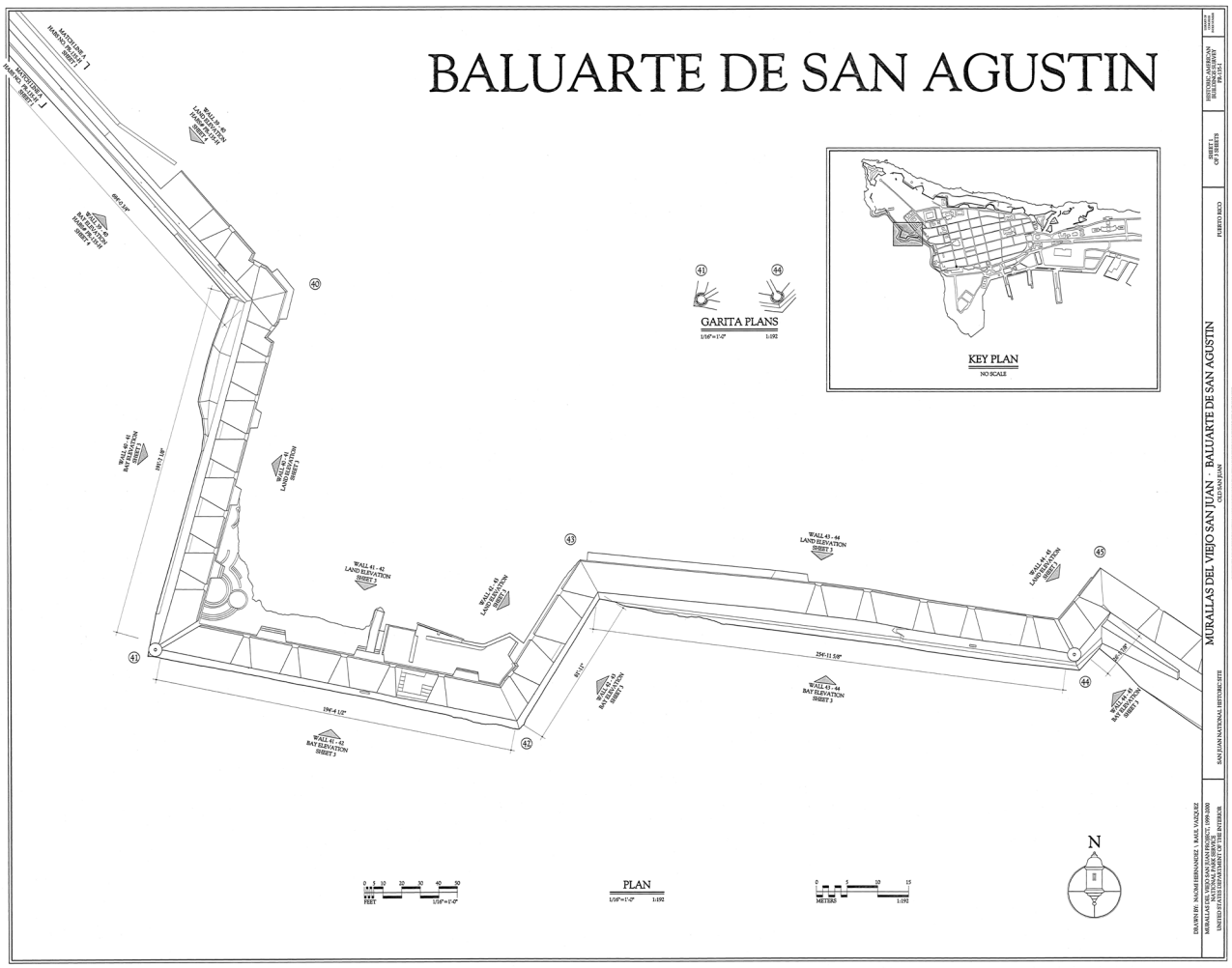


FIGURE 161. HABS documentation of San Agustín Bastion. Murallas del Viejo San Juan, HABS No: PR-135-I. (Source: Library of Congress)

San Agustín Bastion. San Agustín Bastion extends westward from the West Wall south of Santa Elena Bastion (refer to Figure 161). It is composed of three battered wall segments that delineate a central open space composed of an elevated turf knoll, likely built circa 1781. It replaced an earlier battery located on the same site during the sixteenth century known as San Gabriel. The western wall measures 191.6 feet in length, the southern face extends for 194 feet, and the east face is 82 feet long. San Agustín Bastion contains a single concrete sentry box. There is also a large concrete circular structure outlined in the pavement near the passage to the sentry box, also in brick.

The bastion walls are approximately 4.5 to 5 feet tall by 15 feet wide. They are constructed of a mixture of brick, stone, and concrete. The walls are edged to the interior by trapezoidal banquettes that abut the wall base, and paved landings behind. The banquettes vary in dimensions but are generally about 4 feet deep and 12 feet long where they meet the wall, and 8 feet long where they meet the steps. Two steps that measure approximately 1 foot in width and 7-1/2 inches in height lead to the banquettes. Between the banquettes there is a knee wall 2 feet 5 inches above the base that runs the entire interior perimeter. The top of the knee wall is brick, as are the embrasure openings. A brick band marks the edge and sides of the banquette, while the corners and base are concrete. Eight embrasures mark the top of the western wall; five embrasures are along the southern wall, and three embrasures cut the eastern wall. All of these openings afford views to San Juan Bay. Metal guardrails span the merlons at the parapet wall (Figure 162).



FIGURE 162. View of the interior of San Agustín Bastion.

The scarp and oceanside parapet walls of San Agustín Bastion has random coursed ashlar stone masonry at the north half of the bastion and coursed ashlar stone masonry at the south half (Figure 163). The Esplanade side and top of the parapet are primarily random-coursed polygonal-shaped stone veneer. Through wall scuppers include rectangular openings and segmental arch openings with stone spouts that extend to the oceanside of the wall.



FIGURE 163. View of San Agustín Bastion from Paseo del Morro National Recreational Trail.

Curtain wall, San Agustín Bastion to San Juan Gate. The West Walls continues south of San Agustín Bastion as the San Agustín curtain wall (Figure 164). The curtain wall was built in the mid-to-late eighteenth century and includes a stone masonry structural wall and a stone masonry wall with concrete back up. It is cut by five embrasures and features two sentry boxes. At the rear base of the wall is a paved section that abuts an area of grass that slopes toward the wall.



FIGURE 164. View of the curtain wall between San Agustín Bastion and San Juan Gate and one of the associated sentry boxes.

The curtain wall has three distinct types of cladding. The north end of the wall has coursed ashlar masonry at the scarp and ocean side parapet. The portion of the wall to the south has rubble masonry construction that has been partially parged over. The parging was applied over the masonry in a manner that creates faux joints. The faux joints give the visual appearance of coursed masonry with each unit measuring approximately 24 inches square. Localized portions of the scarp also have composite cast tiles. At these two sections of the wall, the parapet extends above the interior. The wall and top of the parapet were recently repaired (Figure 165) and are clad with composite cast tiles. The south section of the curtain wall has coursed ashlar stone at the scarp and oceanside parapet. The parapet does not extend above the interior. Instead, there is a metal picket fence with masonry piers.



FIGURE 165. View of the curtain wall between San Agustín Bastion and San Juan Gate.

Stormwater management structures. The West Walls contain several examples of historic Spanish-era drainage structures, as well as later modifications by the NPS to diminish the impact of stormwater on the masonry structures of the walls and related features. Original drainage features include simple openings in the base of the wall that are located beneath the banquettes sited within the bastions and through wall scuppers composed of masonry-lined channels that lead through the base of the wall.

The US Army, and later the NPS, updated the drainage systems with pipes that collect water in drop inlets and catch basins and direct it through or beneath the walls. A large concrete channel was added behind the rebuilt curtain wall between Santa Elena and San Agustín Bastions to prevent additional wall failure due to hydrostatic pressure.

Santa Elena Bastion features a masonry gutter along the interior of the south face that collects water in a catch basin and pipe that discharges beneath the wall. There are one large and one small scupper and simple rectangular openings in the form of segmental arch openings with stone spouts, and circular drain pipes with metal spouts that extend to the oceanside of the wall on the north and south faces.

A large area of El Morro Esplanade drains towards the bastion; the NPS has built a swale and catch basin up slope of Santa Elena Bastion to capture the overland flow of stormwater before it reaches the bastion interior. This helps to protect against water damage to the masonry structure.

At the base of the curtain wall between Santa Elena and San Agustín Bastions is a concrete channel that directs stormwater to an arched opening in the wall that empties through a large stone scupper near the northwest corner and a catch basin at the southeast end.

San Agustín Bastion features original through wall scuppers composed of rectangular openings and segmental arch openings with stone spouts that extend to the oceanside of the wall. Set approximately 9 feet from the wall is grassy berm and an associated swale designed to collect stormwater within catch basins before it reaches the walls (Figure 100).

Stormwater also flows toward the bastion from the adjacent road. It is collected into an inlet to a closed system at the edge of the road. The stormwater flows through a pipe to a brick headwall and brick swale at the southern end of the bastion. The brick swale discharges to a large scupper on the south face of the bastion wall. Water generally flows to the south, collecting in a concrete gutter behind the bastion wall. The gutter system discharges through the wall via several square openings on the west face and the large scupper on the south face. Although there is no gutter system on the east face, there is a square opening through the wall at the floor level in the southeast corner of the bastion.[195]

Stormwater flow carries soil from the raised turf area in the center of the bastion toward the walls. Silt builds up and covers the concrete landing behind the walls. The NPS maintains the landing behind the bastion walls by removing silt.

Evidence of drainage problems is also present along the southern face where 2-foot-high walls contain a depression marked by broken pavement. Sandbags have been placed at the embrasure

195. The Collaborative Inc. and Atkinson Noland & Associates, Inc., 15.

openings along the southern face to block stormwater flow.



FIGURE 166. View of the interior of San Agustín Bastion.

Batería de San Fernando. A circa 1897 Spanish concrete gun emplacement known as Batería de San Fernando is set on the hillside behind San Fernando Bastion. The gun emplacement is composed of a low concrete wall edged by four gun platforms (Figure 167). It was established by the Spanish to accommodate contemporary artillery. The concrete gun emplacements were designed for Ordóñez cannon, a type of coastal artillery designed by Salvador Diaz Ordóñez, an artillery officer in the Spanish Army.



FIGURE 167. Batería San Fernando.

World War I-era coastal defense gun emplacement. Added circa 1917 to protect San Juan Harbor during World War I, a concrete gun platform and an adjacent concrete structure are set just behind the west walls of Santa Elena Bastion. The gun emplacement is a raised semicircular structure 8 inches from the ground. It is accessed via a concrete sloped surface. The gun emplacement was designed for a 4.72-inch Armstrong rifle mounted en barbette. The gun emplacement was built to sit on a platform large enough to provide space for the gunners to work (Figure 168). The structure was also designed to take care of the reaction from the discharge of the gun through construction of a blast apron and filling in front of the parapet wall. Between the bunker and the wall, the concrete is sloped and rises to a level approximately 8 inches below the knee wall. South of the bunker, the concrete slopes back down to the original elevation.



FIGURE 168. World War I coastal defense gun emplacement at Santa Elena Bastion.

World War I bombproof magazine. Located east of the World War I-era gun emplacement is a concrete structure that may have served as a bombproof magazine (Figure 169). The additions to Santa Elena Bastion appear to date to 1917.



FIGURE 169. World War I bombproof magazine.

Fence at Santa Elena Guardhouse. The work yard outside of Santa Elena Guardhouse is protected by a black chain-link fence and a locked iron gate. The fence is approximately 6 feet tall and

topped with strands of barbed wire on extensions of the posts that extend outward from the top rail.

Casa Rosa Gate. Casa Rosa Gate is a stuccoed masonry structure that runs perpendicular to the West Wall. The gate is painted the same blue color as La Fortaleza. The gate extends across Casa Rosa Road to a retaining wall associated with Casa Blanca. It has vehicular and pedestrian entries. A pair of metal gates mark the vehicular entry with the pedestrian entry to the south. The wall ends in a square pillar at the edge of the road that marks the eastern side of the gate. The pier measures 4 feet 1 inch at the base and tapers to 3 feet 6 inches at the top through stacked blocks. The pier is matched to the west of the road. To the left of the pier is a 4-foot wide opening that constitutes the pedestrian gate. It is edged to the west by a third pier that measures 3 feet 2 inches at the base and tapers to 2 feet 6 inches at the top (Figure 170). Another section of wall extends to the City Wall system that measures 19 feet in length. A 3-foot-wide pier marks the end of the fence. It is topped with a 1-foot square pylon.



FIGURE 170. Casa Rosa Gate.

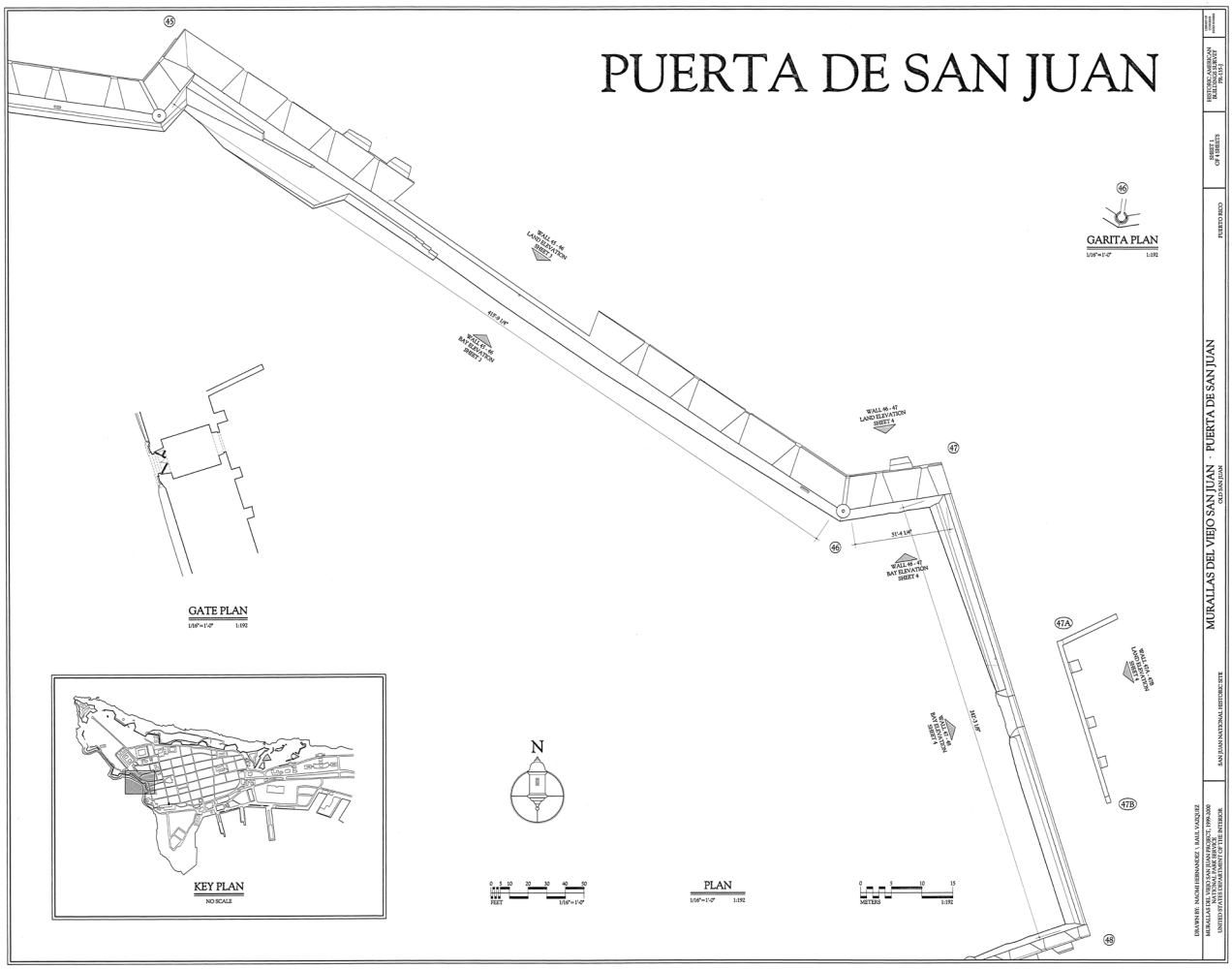


FIGURE 171. HABS documentation of San Juan Gate. Murallas del Viejo San Juan, HABS No: PR-135-J. (Source: Library of Congress)

San Juan Gate, west façade (CRIS HS #091741; HS-242). As one of five gates that controlled access to and from San Juan, the San Juan Gate was considered the formal and symbolic entrance to the city (refer to Figure 171). Named after Saint John the Baptist, the gate was initially constructed in 1635, and altered in 1749. In 1809, the gate was rehabilitated. It was later restored in 1956 by the NPS. The San Juan Gate provides access to Paseo del Morro. The gate is composed of stone and wood with a painted stucco coating on the west face (Figure 172). Heavy wood doors hang in the gate. The gate features an iconic red color at its western face.



FIGURE 172. San Juan Gate.

Views and Vistas

Refer to Figure 185, Views and vistas, Character Area 3.

Views to the Bay of San Juan. Views to the Bay of San Juan and the distant San Juan de la Cruz Fort (El Cañuelo) are afforded from the West Wall, including over the top of the walls in some locations and through the embrasures in others (Figure 173).



FIGURE 173. Views of the Bay of San Juan through an embrasure in the West Walls at Santa Elena Bastion.

Views of Paseo del Morro. Views are also afforded to the pedestrian walk that follows the shoreline below the West Walls as Paseo del Morro from the embrasures and over the top of the walls (Figure 174).

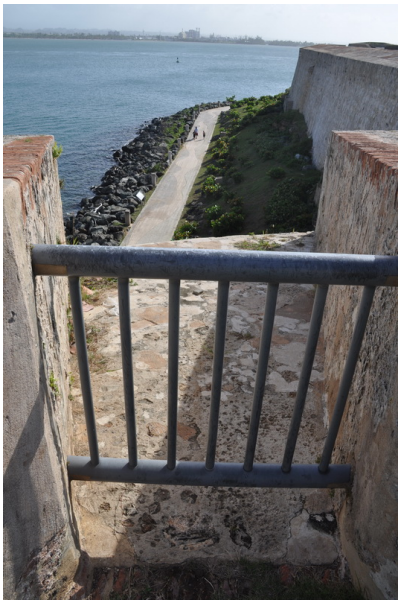


FIGURE 174. Views of the Bay of San Juan through an embrasure in the West Walls at Santa Elena Bastion.

Small-scale Features

Refer to Figure 186, Small-scale features, Character Area 3.

La Rogativa. Artist Lindsay Daen created the statue titled *La Rogativa* that serves as the focal point of the urban plaza of the same name along the West Walls at the intersection of Casa Rosa Road and Caleta de las Monjas. The statue was placed in the plaza in 1971. It stands 12 feet high and features a bronze sculpture of four figures marching. *La Rogativa* is set on a concrete base inset with a bronze plaque identifying the sculpture (Figure 175).



FIGURE 175. *La Rogativa* statue.

Concrete benches. There are two standard park concrete benches within San Agustín Bastion (refer to Figure 166).

Trash receptacles. Three standard park concrete trash receptacles are located along the West Wall System including two at Plazuela La Rogativa (Figure 176) and one within San Agustín Bastion. Some of the trash receptacles are chipped and damaged.



FIGURE 176. View of one of the park standard trash receptacles at Plazuela La Rogativa.

Drinking fountain. An exposed aggregate concrete drinking fountain is located within Plazuela La Rogativa (Figure 177). The drinking fountain appears to have been vandalized such that some of the water tubing is exposed and the panel that covers the housing is missing.



FIGURE 177. Exposed aggregate drinking fountain in Plazuela La Rogativa.

Light poles. Light poles edge Casa Rosa Road as well as the sidewalk south of Plazuela La Rogativa. There are also several light poles along San Agustín Road near San Agustín Bastion and along Casa Rosa Road near Casa Rosa (Figure 178). Some are black-painted cast-iron light poles with their luminaires missing.



FIGURE 178. View of one of the light poles located along Casa Rosa Road.

Wood fencing. Wood fencing edges a large storm drain along the Santa Elena curtain wall (Figure 179). The fencing is partially painted. Some of the rails are loose or have collapsed.



FIGURE 179. Wood fencing that surrounds a deep drainage structure set along San Agustín Road behind the Santa Elena curtain wall.

Regulatory signage. Signs are posted along the roads and walks near the West Walls. These include temporary "Do Not Enter" signs where portions of the wall are being repaired, and regulatory signs related to parking along the roads.

Bronze identity plaque. A bronze plaque is set into the West Walls above the banquette in Santa Elena Bastion that identifies the bastion by name (Figure 180). Rust stains are evident on the wall below the plaque where metal bolts have been used to mount the feature.



FIGURE 180. Bronze plaque identifying Santa Elena Bastion.

Utilities

Power poles and lines. Power poles and lines are located along San Agustín Road.

Telephone box. A telephone box is located at the margin of San Agustín Bastion.

Known and potential archeological resources

Buried refuse deposits east and northeast of the San Fernando Bastion. At least two deposits from the mid-to-late nineteenth century were identified during restoration work at the bastion in the 1990s.[196]

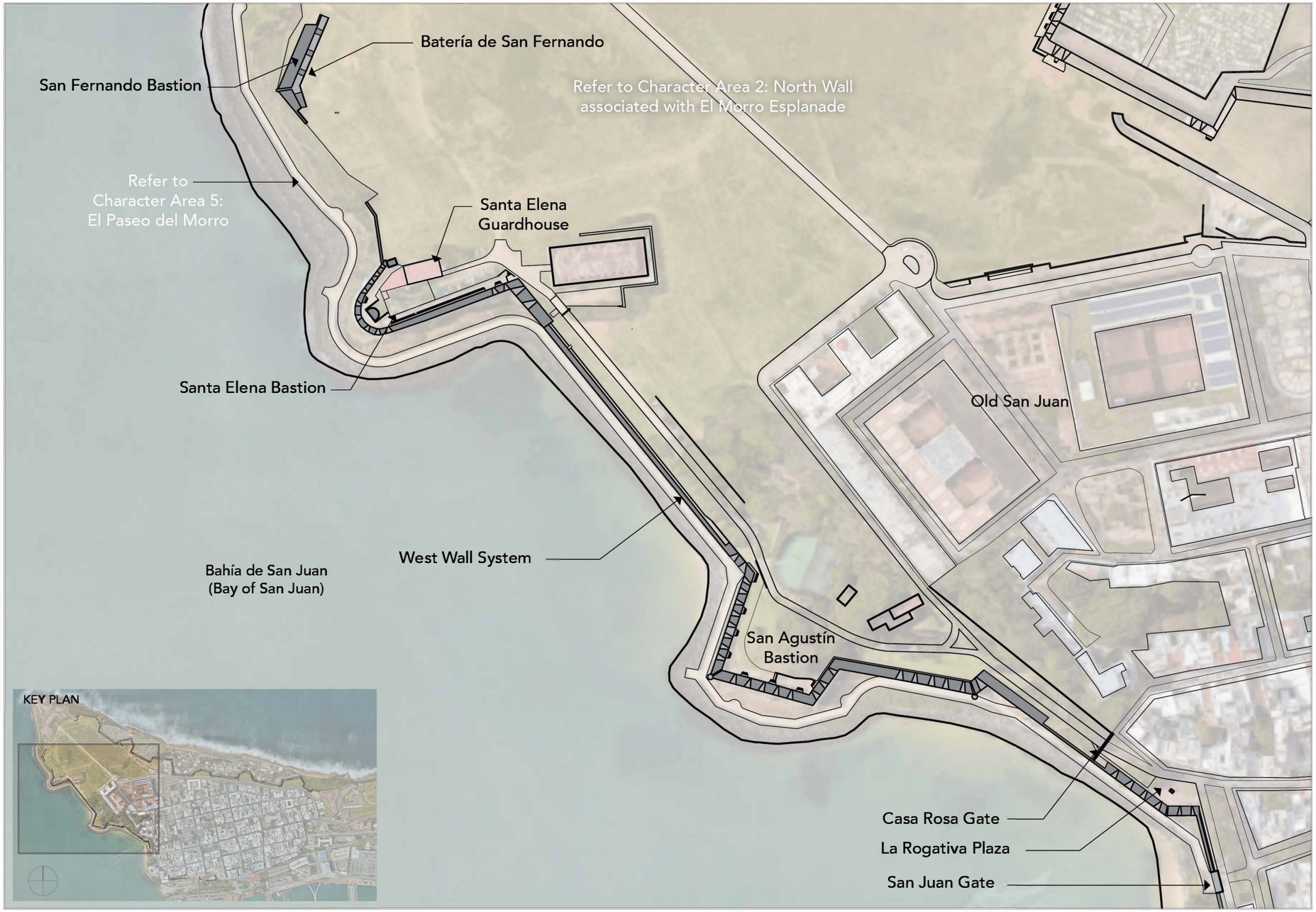
Remains of unidentified structures, a cistern, and an eighteenth-century road fragment at the San Fernando Bastion. The features were identified during 1990s construction at the bastion.[197]

An artifact deposit east of the San Agustín Bastion. The deposit dates from 1784 to 1800 and is made up of refuse related to non-military activities from nearby parts of San Juan.[198]

Potential Archeological Resources. There is potential for as-yet unidentified archeological resources to be present throughout the character area. Potential remains may include those related to buried wall features, analogous to those identified at the base of the Flanking Battery Wall at the Austria Bastion in the castillo moat by Hale Smith and Ken Wild in 1961 and 1990, respectively.[199] Undocumented tunnels/tunnel openings like the one looted by oil cleanup workers following the 1994 *Morris J. Berman* oil spill could also be present in the character area.[200] Because of the degree to which the wall-related construction and reconstruction would have disturbed soils adjacent to the West Wall, intact pre-Columbian deposits are unlikely in the character area .

196. United States Army Corps of Engineers (USACE), Jacksonville District, *Request for Proposal, Cultural Resources Services for (1) Two Archaeological Data Recovery Areas at San Juan National Historic Site, El Morro, PR and (2) Sites VB-27 and VB-32, Municipio de Vega Baja for the Río Cibuco Flood Control Project, Vega Baja, PR, Amended January 29, 1993*; Michele Helene Hayward Merkling and Michael A. Cinquino Argana, *Archaeological Investigations at Castillo San Felipe del Morro, Old San Juan, Puerto Rico*, prepared for the United States Army Corps of Engineers, Jacksonville District (Buffalo, New York: Panamerican Consultants, Inc., 1997). The 1992 investigation at the San Fernando Bastion was conducted by David McCullough and is discussed in Hayward Merkling and Cinquino Argana, 105–107. The deposits are also briefly discussed in National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1997), 9
197. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1997), 9.
198. Solis Magaña.
199. Smith, *Archaeological Investigations;* Wild, *Archeological Investigations*.
200. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (2003), 4.

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San Juan City Wall
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FIGURE 181.
Character Area 3 -
West Wall Character Area

Spatial Organization



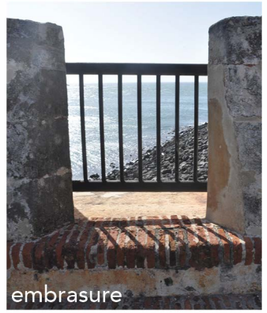
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 182.
Character Area 3 -
West Wall Character Area
Cultural Vegetation

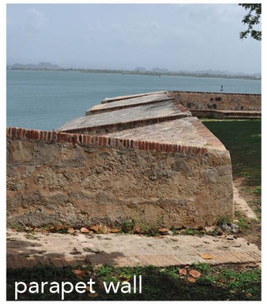


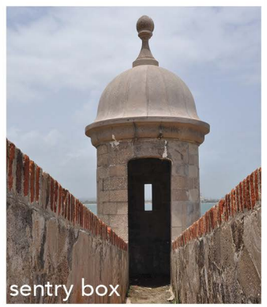
San Juan City Wall
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San Juan, Puerto Rico

FIGURE 183.
Character Area 3-
West Wall Character Area
Circulation


embrasure


banquette


parapet wall


sentry box

Batería de San Fernando

San Fernando Bastion

Refer to Character Area 2: North Wall associated with El Morro Esplanade

Refer to Character Area 5: El Paseo del Morro

Santa Elena Guardhouse

WWII bombproof structure

WWII era coastal defense gun emplacement

Santa Elena Bastion

Fence at Santa Elena Guardhouse

banquette, typ.

Old San Juan

KEY

- Bastion walls
- Curtain walls
- Sentry boxes
- Drainage structures within wall system

Bahía de San Juan (Bay of San Juan)

San Agustín Bastion

embrasure, typ.

Casa Rosa Gate

San Juan Gate

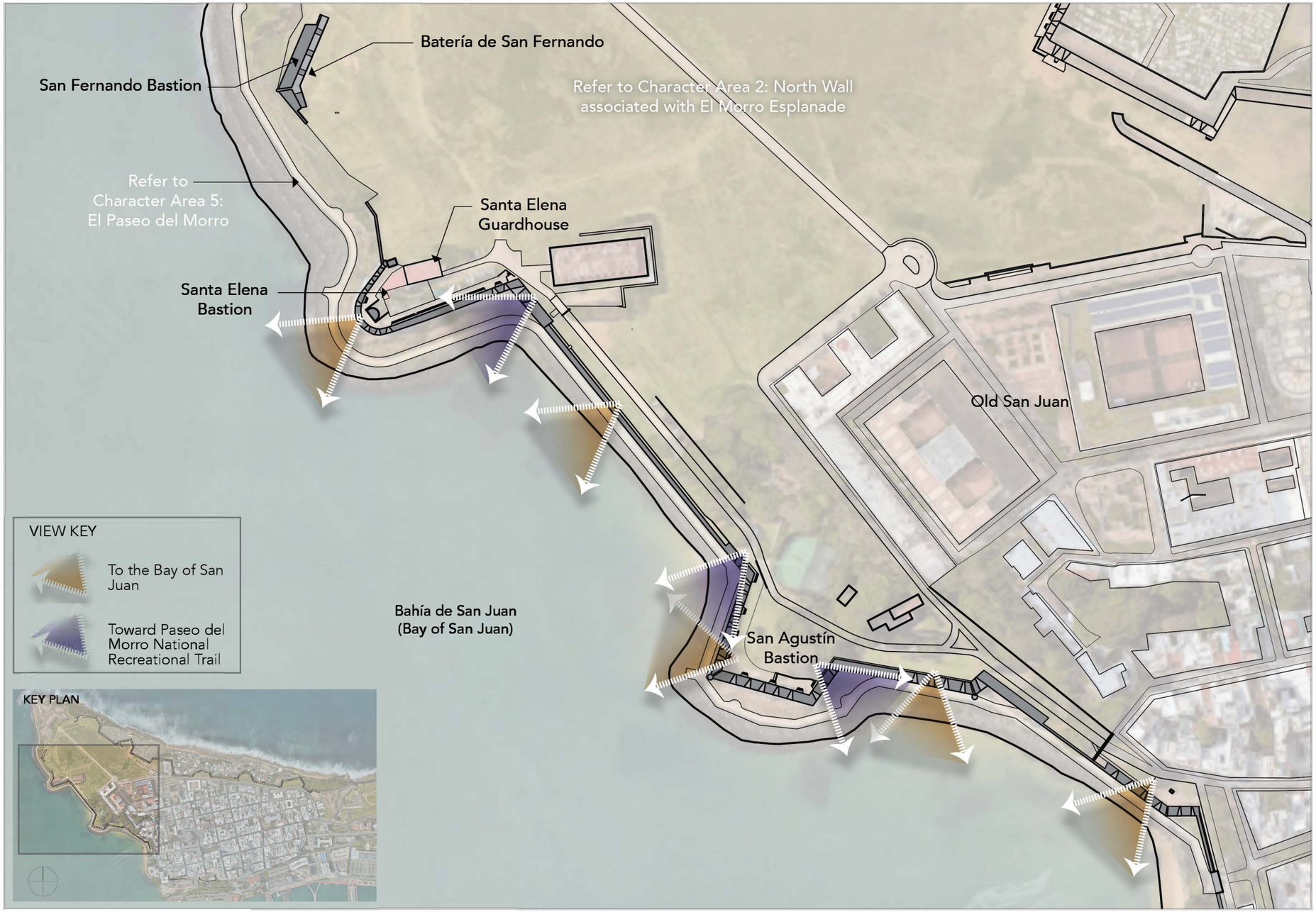
KEY PLAN

1" = 200'

0' 100' 200' 400'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 184.
Character Area 3 -
West Wall Character Area
Buildings and Structures

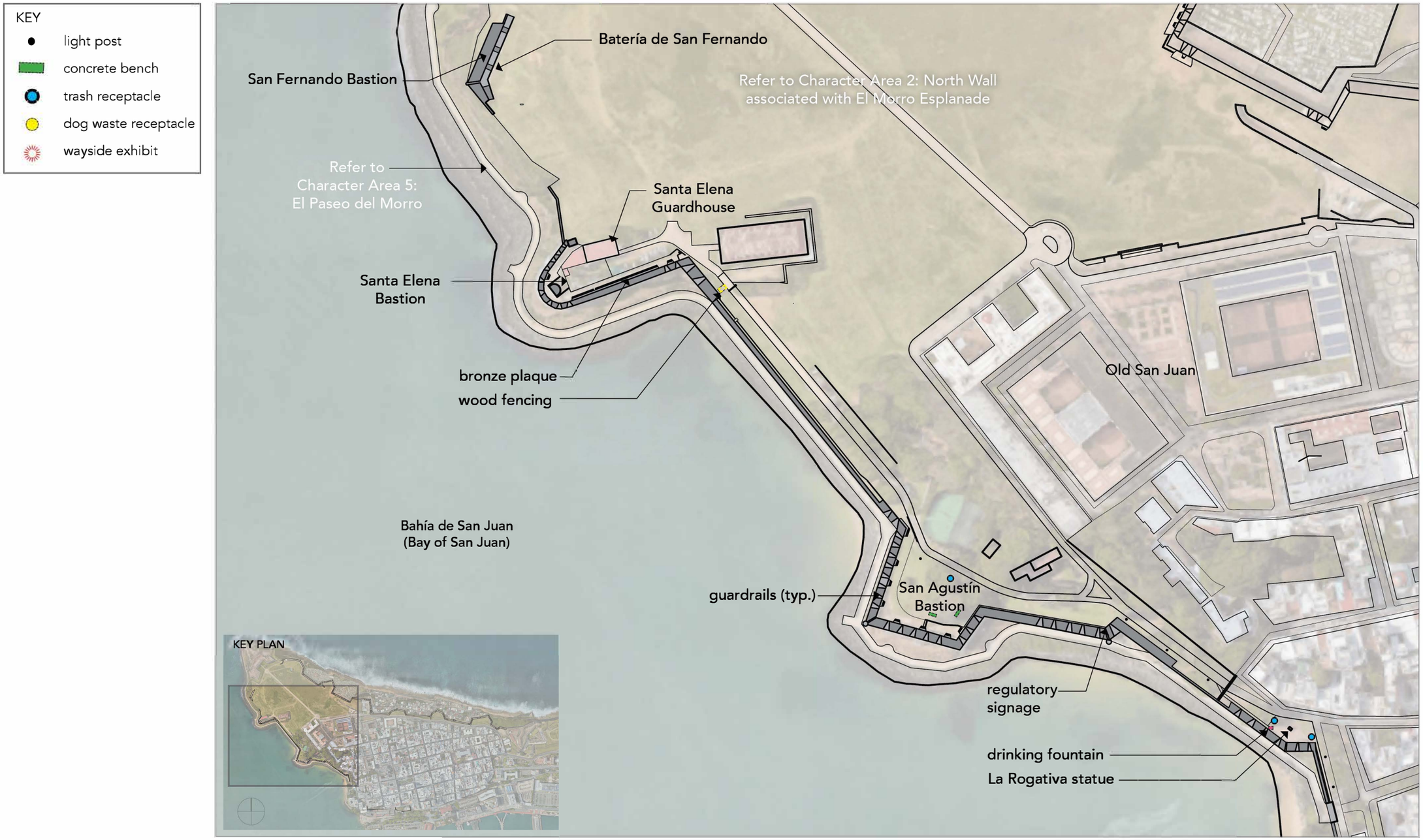


San Juan City Wall

Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 185.
Character Area 3 -
West Wall Character Area

Views and Vistas



San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 186.
Character Area 3 -
West Wall Character Area
Small-scale Features

Character Area 4: South Walls

Character Area Description

The South Walls character area includes the remains of two bastions—La Concepción and Las Palmas. These bastions were first built between 1630 and 1650, altered between 1766 and 1790, and again in 1897. They were further altered by the US Army between 1930 and 1940. Constructed of stone, brick, and stucco, the bastions feature embrasures and firing steps. Located behind the walls of these two bastions are urban public parks known as Parque de Las Palomas and Parque de Las Palmas. Associated with the parks are paved walks and plazas, benches, lighting, trees and other plantings, commemorative markers, wayside exhibits, concession buildings, and feeding stations for pigeons in Parque de Las Palomas. The features that comprise the landscape of the South Walls character area are individually described below by landscape characteristic.

Natural Features and Systems

Refer to Figure 96, Natural Features and Systems

Promontory landform. The San Juan City Wall follows the edge of the promontory landform that characterizes the northwestern end of Isleta de San Juan. The promontory rises steeply above the shoreline within a narrow band at the edge of the isleta.

Lower terrace. The natural landform of the promontory slopes from the center of Old San Juan toward the ocean and the harbor. At the base of the South Walls are city streets, and the site of a nineteenth-century botanical garden.

Responses to Natural Resources

Refer to Figure 97, Responses to Natural Resources.

Military defensive walls, bastions, and batteries along the edge of the promontory. San Juan City Wall reflects the military defensive needs of Spain in protecting the community of San Juan. The South Wall system responds to the defensive opportunities afforded by the promontory landform, and the need to defend San Juan Harbor. Features of the West Wall system were first established during the seventeenth century, with additions and changes made during the eighteenth, nineteenth, and twentieth centuries. The current configuration was initially established between circa 1766 and 1790 to enhance the position as a Defense of the First Order by Spanish military engineers. The bastions and curtain walls were sited to establish a protective parapet, with embrasures that provide a clear field of fire in all directions for the artillery emplaced behind them. The tall, sheer masonry walls were also designed to serve as an obstacle to an attacking military force.

Use of drains, culverts, swales, scuppers, and paved channels to control stormwater associated with perimeter walls and bastions. Drainage structures, including pipes, culverts, swales, scuppers, gutters and paved channels, collect and direct stormwater from the base of the San Juan City Wall and bastions through openings within the wall system. These were built in response to flooding that could potentially undercut and destabilize the walls designed by the Spanish military engineers. Some of the drainage structures are built into the firing steps and wall bases allowing water to move directly through the walls. The structures and systems discharge stormwater through scuppers and simple openings to the exterior façade.

Land uses

Recreation. Visitors to the two parks located adjacent to the South Walls enjoy recreational activities such as picnicking and playing hopscotch.

Museum/Interpretation/Education. Museum/interpretation/education land uses are associated with the parks that abut the South Walls due to the wayside exhibits on display that provide visitors with information about the role of the walls in defending the Spanish colony and harbor at San Juan.

Spatial Organization

Refer to Figure 224, Spatial Organization, Character Area 4.

Parque de Las Palomas. Parque de Las Palomas is a linear park approximately one quarter of an acre in size. The South Wall forms the southern edge of the park (Figure 187). It is accessed via a single gate along Cristo Street, which is located adjacent to the Chapel of Santo Cristo de la Salud. Known for the large number of pigeons that congregated within the park, Parque de las Palomas contains feeding stations that visitors use to attract the birds. There is also a hopscotch court that has been painted on the ground and rows of benches for visitors set under large shade trees. The park is surfaced with interlocking concrete pavers bound by bands of smooth concrete. A triangular panel of lawn exists between a paved walk and the South Wall, which is edged by a guardrail (Figure 188). Raised planters that contain trees and shrubs are located in the park, with additional trees and shrubs planted in the interior and along the perimeter. A small gatehouse is located near the entrance to the park which is kept locked and secured at nighttime. There is also a concession building located at the west end of the park that is not in use.



FIGURE 187. The east end of Parque de las Palomas with views across the South Wall toward the Harbor of San Juan.



FIGURE 188. The west end of Parque de las Palomas.

Park at Las Palmas Bastion. The park at Las Palmas Bastion is located along Tetuán Street within the southern portion of the city of Old San Juan. The eastern half of the bastion is occupied by the Puerto Rico Chamber of Commerce. The park is approximately one-fifth of an acre in size and is separated from the adjacent road by a long planter, brick stairs, and a ramp. The South Wall forms the southern edge of the park (Figure 189). The surface of the park is paved in exposed aggregate concrete with bands of brick and ramps made of smooth concrete. Trees provide shade within the plaza, with benches set at an angle throughout to provide views to the Bay of San Juan (Figure 190). The easternmost portion of the plaza is recessed from the western portion via a set of brick stairs and a ramp.



FIGURE 189. The east end of Las Palmas.



FIGURE 190. The west end of Las Palmas.

Cultural Vegetation

Refer to Figure 225, Cultural Vegetation, Character Area 4

Turf lawn, Parque de las Palomas. A wedge-shaped panel of grass is present within the park. The grass extends to the curb and gutter at the base of the South Wall.

Tree plantings, Parque de las Palomas. A total of twelve trees are planted within the park. These include one Indian laurel, or Laurel de la India (*Ficus retusa*), one shortleaf fig, or Jagüey Blanco (*Ficus laevitaga*), three almonds, or Almendra India (*Terminalia catappa*), three ylang-ylang trees, also Ilán-Ilán (*Cananga odorata*), a royal palm, also Palma Real (*Roystonea borinquena*), and one Puerto Rico palmetto, also Palma de Sombrero (*Sabal causarium*).

Tree plantings, park at Las Palmas. Eight trees are planted in two rows within the park that form a shady canopy. The tree species represented include seven oxhorn bucida (*Terminalia buceras*) and one mango (Manqifera indica).

Circulation

Refer to Figure 226, Circulation, Character Area 4

Tetuán Street (*Calle de Tetuán*). Tetuán Street is the southernmost east-west street within the boundaries of the San Juan City Wall. The street edges north of the park at Las Palmas (Figure 191). It services residential and commercial buildings located to the south. The road surface is brick cobble with a blue patina.



FIGURE 191. Tetuán Street.

Cristo Street (*Calle del Cristo*). Cristo Street is a north-south road that ends at the Santo Cristo de la Salud chapel, which is also the location of the entry to Parque de Las Palomas (Figure 192). The road surface is brick cobble with a blue patina.

Sidewalk along Tetuán Street. A narrow sidewalk edges Tetuán Street between along the brick planter that forms the boundary of the park at Las Palmas. The sidewalk is paved with stone pavers and is edged by granite curbing.

Sidewalk along Cristo Street. A sidewalk edges Cristo Street, and provides access to the gate and fence at Parque de Las Palomas. The sidewalk is composed of large stone pavers and is edged by granite curbing.



FIGURE 192. Cristo Street.

Walk, Parque de las Palomas. A 15-foot-wide walk extends the length of Parque de las Palomas. The surface of the walk is composed of interlocking concrete pavers bound by smooth concrete with concrete bands that run perpendicular to the walk (Figure 193).



FIGURE 193. The paved walk within Parque de las Palomas.

Brick steps and ramp, park at Las Palmas. Three brick steps lead into the eastern end of the park at Las Palmas from the street. The steps are composed of 7-inch risers and 1-foot 5-inch treads. A single ramp that measures 4 feet in width and is edged by railings 3 feet 1 inch in height, bisects the stairs.

Brick landing at east end, park at Las Palmas. The steps at the eastern end of the park at Las Palmas lead to a small brick-paved area (Figure 194).



FIGURE 194. Brick landing at Las Palmas.

Wide concrete ramp, park at Las Palmas. A wide concrete ramp provides access from the lower level of the park at Las Palmas to an upper level. Along each side of the ramp are metal handrails that measure 2 feet 10 inches in height and are set into low concrete cheek walls painted red.

Brick step, park at Las Palmas. A single 7-inch-high step leads down into the plaza from the adjacent sidewalk along Tetuán Street into the park at Las Palmas.

Concrete ramp, park at Las Palmas. A concrete ramp runs alongside the brick planter within the park. It is edged by a low concrete curb on the south side with metal handrails countersunk into the curb. The curb and railing are both in disrepair.

Dumpster, park at Las Palmas. A red and a green dumpster blocks the ramp into the park from the street.

Buildings and Structures

Refer to Figure 227, Buildings and Structures, Cultural Area 4.

The South Walls are composed of linear sections of La Concepción and Las Palmas Bastions as described below.

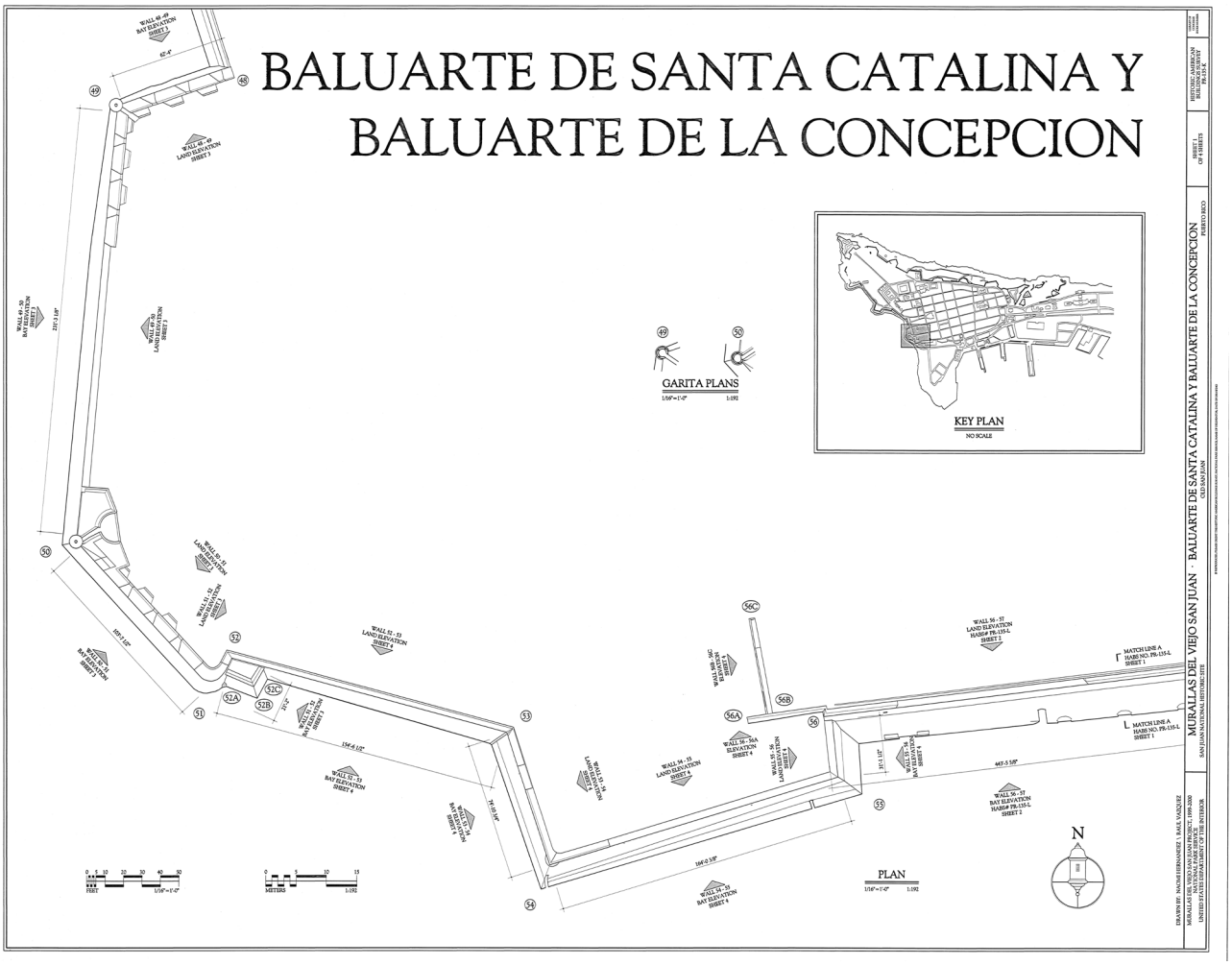


FIGURE 195. HABS documentation of La Concepción Bastion. Murallas del Viejo San Juan, HABS No: PR-135-K. (Source: Library of Congress)

Walls associated with La Concepción Bastion. Parque de las Palomas occupies the easternmost wall segment of La Concepción Bastion (Figure 195). Within the park, the South Wall rises 20 inches above the ground and is approximately 3-1/2 feet thick along the length of the park. A concrete curb and gutter run along the base of the roughly parged wall (Figure 196). The wall of the bastion extends north at the western end of the park toward La Fortaleza, which is beyond the CLR project area. The walls have been inset with guardrails similar to the guardrails used in the West Walls. These are fashioned from PVC pipe filled with concrete and painted black. The top and bottom horizontal rails are mounted directly into the South Wall.



FIGURE 196. South Walls at La Concepción Bastion (Parque de las Palomas).

The scarp at La Concepción Bastion consists primarily of coursed ashlar limestone with localized areas of more random coursed masonry. The parapet wall is random-coursed masonry with the top of the parapet and most of the park side of the parapet coated with parging. There are rectangular outlets at the base of the parapet wall that extend to the ocean side of the South Walls.

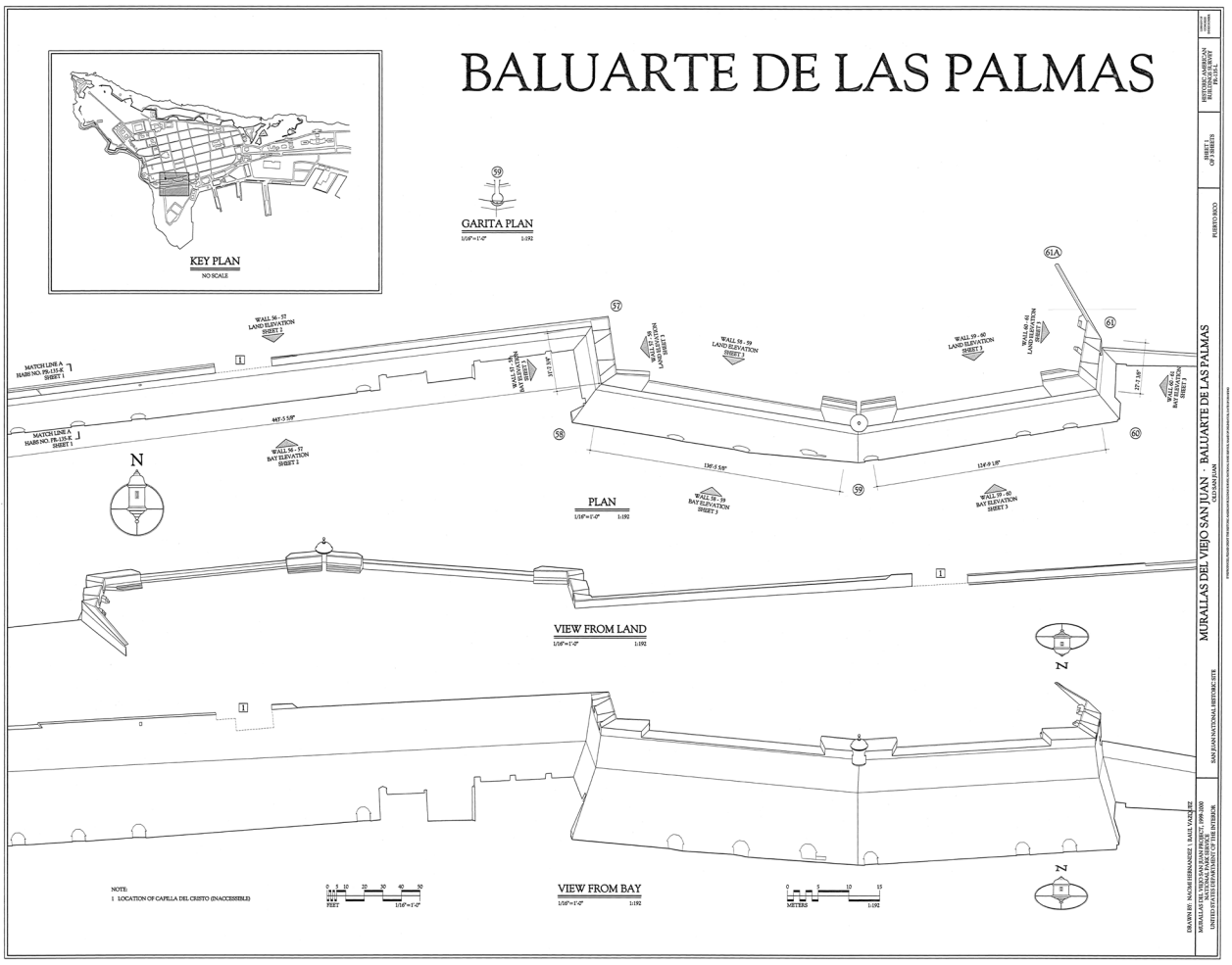


FIGURE 197. HABS documentation of Las Palmas de San José Bastion. Murallas del Viejo San Juan, HABS No: PR-135-K. (Source: Library of Congress)

Walls associated with Las Palmas de San José Bastion. Las Palmas de San José Bastion, commonly referred to as Las Palmas Bastion, comprises four wall segments that vary in thickness (Figure 197). The walls of the bastion extend approximately 5 feet above grade at the rear. The two shorter segments occur at the ends of the bastion. Each contains two embrasures. The longer wall segments contain no embrasures. The parapet wall, however, is lower within this section. At the location where the parapet drops along the western face, there is evidence of a remnant banquette. A sentry box is located at the junction of the two longer wall segments. The walls have been inset with guardrails similar to those used in the West Walls. These are fashioned from PVC pipe filled with concrete and painted black (Figure 198). The top and bottom horizontal rails are mounted directly into the South Wall. Flanking the passage to the sentry box are two banquettes with firing steps. The banquettes are composed of a mix of brick and stone rubble masonry with brick edging along the risers. Two contemporary brick stair risers abut the banquette to allow access between the upper and lower levels of the plaza.

The oceanside of the Las Palmas Bastion wall is divided into three sections: a lower scarp, an upper scarp, and a parapet wall. The lower scarp appears to be coursed ashlar stone and is covered with parging. The upper scarp is also coursed ashlar stone but consisting of smaller units, approximately one-quarter the size of those at the lower scarp. The parapet wall is a combination of stone and brick masonry and has been parged. At the parkside and top of the parapet wall, the rubble masonry is exposed to view with evidence of a previously applied parging.



FIGURE 198. South Walls at La Concepción Bastion (Parque de las Palomas).

A single sentry box is located at the center of the bastion (Figure 199). Access is limited by steel bars and a wood panel.



FIGURE 199. Sentry box at Las Palmas.

Gatehouse at Parque de las Palomas. A stucco and red brick gatehouse with a red tile roof is near the entry gate to Parque de Las Palomas. The gate house measures 6 feet 9 inches by 6 feet 8 inches and has windows on three sides and a door on the rear facade (Figure 200).

Concession building / gazebo at Parque de Las Palomas. A small gazebo occupies the area at the western end of Parque de las Palomas. The structure measures 11 feet 6 inches square and is set on a concrete base. Built out of metal, the gazebo has roll up windows and has been painted green (refer to Figure 193).



FIGURE 200. Gatehouse at Parque de las Palomas.

Planter, park at Las Palmas. Edging the sidewalk along Tetuán Street is a long concrete planter planted with low ornamental shrubs. The planter has concrete walls with brick facing. It measures 10 feet 5 inches by 18 feet 6 inches and 9 feet 8 inches in plan. The wall rises to 4 feet 6 inches in height at its eastern end, while it is 3 feet tall at the center. It serves both as an edge to an access ramp and a bench for visitors (Figure 201).



FIGURE 201. View of the planter that edges Tetuán Street and a ramp leading into the park at Las Palmas.

Planters, Parque de las Palomas. There are three planters in the plaza that measure 8 feet 6 inches by 11 feet 6 inches and are 1 foot 3 inches in height. The planters have concrete bases that have been painted white with red brick at the top perimeter. There are concrete bench seats that cantilever from the planters in some locations and measure 2 feet 6 inches by 2 feet (Figure 202). Other planters are circular and measure 5 feet 6 inches in diameter with a 9-inch brick coping.



FIGURE 202. View of one of the planters within Parque de las Palomas.

Perimeter wall and gate, Parque de las Palomas. An iron gate provides access into Parque de Las Palomas. The gate is composed of three panels and has a chain with a padlock that is used to lock the door at night. Abutting the gate on both sides are free-standing walls that are surfaced with stucco and painted white and grey (Figure 203). Iron pickets are set on the top of the walls.



FIGURE 203. Gate and perimeter wall, Parque de las Palomas.

North wall, Parque de Las Palomas. The northern edge of Parque de las Palomas is formed by a stacked stone wall that faces an adjacent building. The wall features a series of square perforations that pigeons inhabit (Figure 204).



FIGURE 204. View of the north wall at Parque de las Palomas.

Guardrail at South Wall, park at Las Palmas. A guardrail edges the South Wall within the park to protect visitors from falling to the lower level below. The railing is 4 feet in height and is composed of 3-inch-square posts with caps that are 10 feet on center. The top and bottom rails are made of flat stock that is 3 inches wide, with the bottom rail set 8 inches above the ground. Tubular vertical railings are set 6 inches apart between the posts. The posts are mounted directly into both the base and the brick edging of the South Wall (Figure 205). The steel railing has been painted grey but shows signs of chipping and rust.



FIGURE 205. Guardrail along the South Walls at Las Palmas.

Guardrail at South Wall, Parque de las Palomas. A guardrail also runs the length of the South Wall within Parque de las Palomas. The railing is 3 feet 3 inches in height and is offset approximately 30 inches from the wall. Posts are 8 feet 5 inches on center with 8-foot panels. The guardrail is unique to any other location within the

study boundary. It is composed of rectangular forms aligned along steel bars (Figure 206).



FIGURE 206. Guardrail along the South Walls at Parque de las Palomas.

Handrails, park at Las Palmas. Handrails are located throughout that park at Las Palmas. One is set along the interior of the long planter at the edge of the park. Handrails are also located to either side of the ramps within the park. The handrails are metal with square posts and a flat top railing with curled endings (Figure 207). The metal on all railings has been painted black. The top railings appear warped in various locations.



FIGURE 207. View of one of the handrails within the park at Las Palmas.

Views and Vistas

Refer to Figure 228, Views and Vistas, Character Area 4.

Views to the Bay of San Juan Bay and San Juan Harbor. Views from both parks located behind the South Walls are afforded to the Bay of San Juan and San Juan Harbor.

Views of the historic botanical garden site. Views from Las Palmas Bastion are afforded to the historic botanical garden site at the base of the South Walls (Figure 208).



FIGURE 208. View towards the site of the historical botanical garden below the South Walls.

Small-scale Features

Refer to Figure 229, Small-scale features, Character Area 4.

San Juan National Historic Site identity sign, park at Las Palmas. A San Juan National Historic Site identity sign is set atop a brick wall at the eastern entry into the park at Las Palmas (Figure 209). It is composed of wood panels in a steel frame that measures 3 feet 6 inches by 1 foot 6 inches and is 9 inches thick. Some of the smaller lettering on the sign is illegible.



FIGURE 209. Park identity sign at the entrance to Las Palmas.

Francisco de Miranda monument, park at Las Palmas. At the east end of the park where it abuts the Chamber of Commerce building is the Francisco de Miranda monument (Figure 210).

The monument is a bust sculpted by Añez, a Venezuelan sculptor, in 1968, that sits on a stepped base. The NPS granted a special use permit for the installation of the monument on July 2, 1971. In 2011, Venezuelan citizens in Puerto Rico requested that the area around the bust be refurbished. Tree roots that were raising the monument were cut and a new paved surfaced installed on which to place the pillar that holds the sculpture. The bust is 1 foot 10 inches in height. The bust is mounted on a 2-foot 2-inch by 2-foot 5-inch by 4-foot 2-inch tall stone pillar inset with a bronze plaque. The pillar sits on a stone base that measures 3 feet 10 inches by 4 feet 2 inches and is 7 inches tall. There is uplighting in the pavement in front of the monument.



FIGURE 210. The Francisco de Miranda monument at Las Palmas.

Bronze sculpture of two cats, park at Las Palmas. Two bronze sculptures of cats that also serve as seats for visitors are set within the eastern portion of the park at Las Palmas (refer to Figure 189). The name of the cat sculpture is "Silas gatas de cinco." The sculpture, completed in 2000, is by Dafne Elvira. The cat sculpture is the result of a Public Art Program sponsored during the government of Governor Sila María Calderón (2000–2004).

Benches with backs, park at Las Palmas. There are four wood-slat and metal framed benches in the park. The benches measure 8 feet 3 inches in length and have a 1-foot 4-1/2-inch side seat. The benches are painted green (Figure 211).

Backless benches, park at Las Palmas. There are two standard park concrete benches without backs aligned with a row of trees within the park (refer to Figure 211).

Light poles, park at Las Palmas. There are two metal light poles in the park at Las Palmas. These are painted black. One is missing the lantern (refer to Figure 211).



FIGURE 211. View of a backless bench (left), two benches with backs, painted green (right), and a light pole within the park at Las Palmas.



FIGURE 212. View of the bronze plaque identifying the park at Las Palmas.

Bronze plaque, park at Las Palmas. A bronze plaque identifying Las Palmas Bastion is set into the brick wall of the planter that marks the eastern entrance into the park (Figure 212). The plaque measures 1 foot 8 inches by 3 feet 4 inches.

Trash receptacle, park at Las Palmas. A standard park trash receptacle is located near the eastern entry to the park at Las Palmas (Figure 213).



FIGURE 213. View of the trash receptacle located near the entrance into park at Las Palmas.

Yellow box, park at Las Palmas Bastion. A metal utility box is located along the South Wall within the park at Las Palmas Bastion. The box sits higher than the wall and has a single door to access its interior. The box has been painted yellow.

Wayside exhibits. Standard National Park Service wayside exhibits exist within both parks. One is set along the guardrail that edges the South Walls at the park at Las Palmas (Figure 214). The wayside is titled "Bastion de las Palmas." A second wayside describes the history of the South Walls at Parque de Las Palomas. It is along the guardrail that fronts the South Wall.



FIGURE 214. View of one of the wayside exhibits located along the South Walls. This sign is in the park at Las Palmas.

Benches with backs, Parque de las Palomas. There are fourteen wood-slat and metal-framed benches in the park (Figure 215). The benches measure 8 feet 3 inches in length and have a 1-foot 4-1/2-inch side seat. The wood of the benches is unpainted.



FIGURE 215. View of two wooden benches with backs at Parque de las Palomas.

Light poles, Parque de las Palomas. Fourteen metal light poles extend the length of the Parque de las Palomas plaza. Set on trapezoidal concrete bases that measure 1 foot 6 inches at the top, the posts are painted black and support luminaires (Figure 216).



FIGURE 216. View of one of light poles at Parque de las Palomas.

Trash receptacles, Parque de las Palomas. Five trash receptacles are located within Parque de

las Palomas. These are double metal canisters mounted on a single central pole (Figure 217).



FIGURE 217. View of one of trash receptacles at Parque de las Palomas.

Bronze shoes sculpture, Parque de las Palomas. At the eastern end of the park is a collection of small bronze artworks in the form of children's shoes set in the pavement (Figure 218). The shoes sculpture is the work of Puerto Rican artist Chemi Rosado, who is also known for creating the skateboarding "bowl"/swimming pool at La Perla. The shoes sculpture is the result of a Public Art Program sponsored during the government of Governor Sila María Calderón (2000–2004).



FIGURE 218. View of the shoes sculpture at Parque de las Palomas.

Sign on the chapel wall, Parque de las Palomas. Within the park a sign that reads "Parque de las Palomas" is set into the stucco wall of the adjacent chapel. The sign is white with blue lettering (Figure 219).



FIGURE 219. View of the sign on the side of the chapel marking Parque de las Palomas.

Bronze plaques, Parque de las Palomas. A bronze plaque identifying Parque de las Palomas is set into the stucco wall that marks the entrance into the park (Figure 220). A second bronze marker honoring Doña Felisa Rincón de Gautier that measures 2 feet wide and 3 feet tall is mounted on a metal pole and set in a concrete base at the eastern end of the park (Figure 221).



FIGURE 220. View of the bronze plaque marking Parque de las Palomas at the entrance.



FIGURE 221. View of the bronze plaque honoring Doña Felisa Rincón de Gautier.

Regulatory signage, Parque de las Palomas. Within the park four metal signs, painted brown and white, indicate prohibited activities. Along the guardrail that edges the South Wall are two signs that read "Prohibido" (Figure 222) and warn visitors not to climb or sit on the wall. Two signs also indicate "No Feeding of Pigeons." All signs include text in both English and Spanish.



FIGURE 222. View of one of the regulatory signs at Parque de las Palomas.

Orientation sign, Parque de las Palomas. Set in the plaza of Las Palomas is an orientation sign with a map of San Juan. The sign is composed of an upright panel on a square post. The frame is painted green and the map inset is blue. Due to the number of pigeons in the park, the sign has been marked with droppings.

Yard hose in concrete box, Parque de las Palomas. Located within one of the turf panels in Parque de las Palomas is a yard hose intended to provide water for the pigeons. It is protected within a concrete structure 1 foot square and 1 foot 3 inches tall (Figure 223). The structure has a door that opens on the front to provide access to the yard hose.



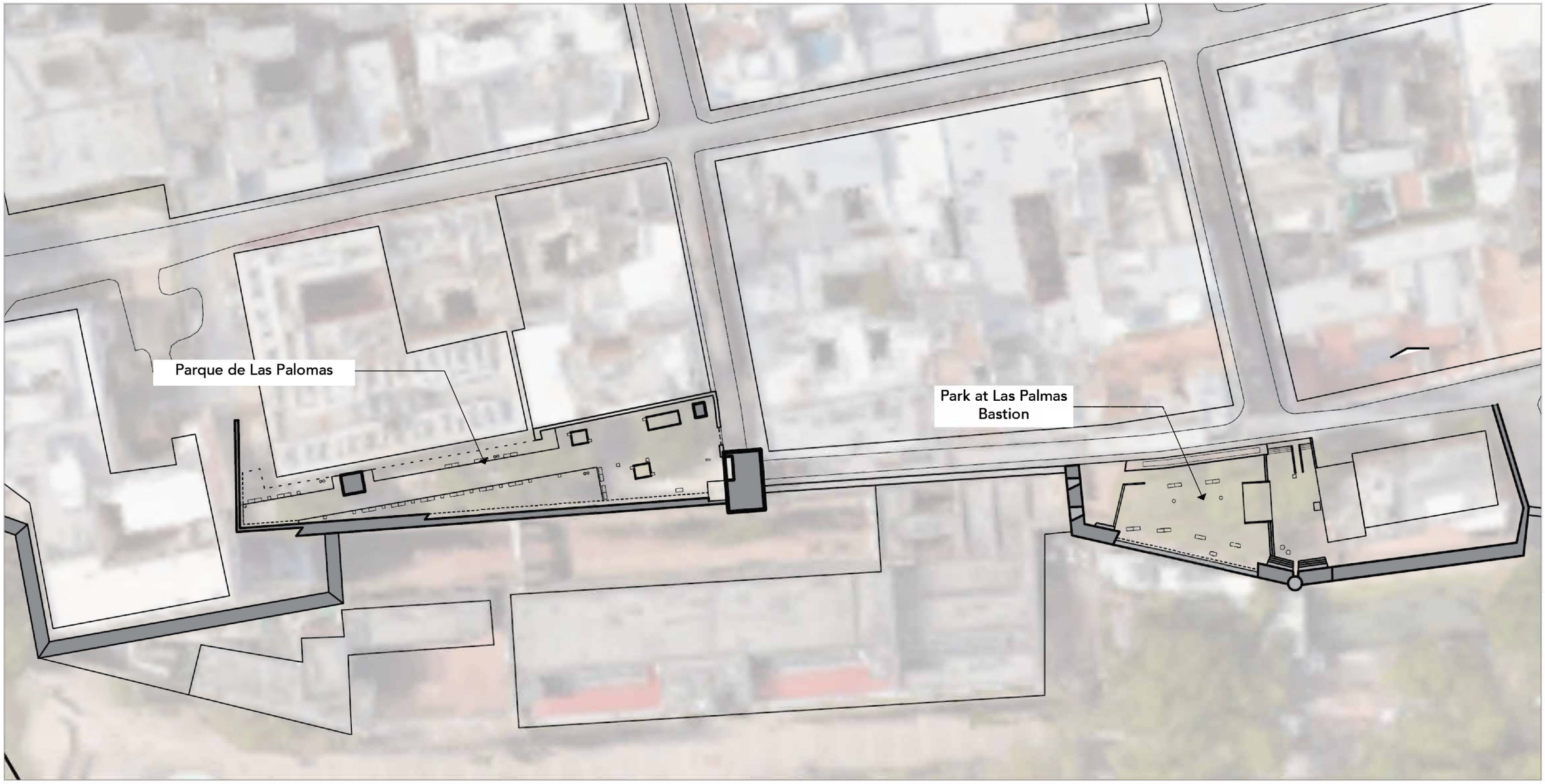
FIGURE 223. View of the yard hose at Parque de las Palomas.

Known and potential archeological resources

NPS documents do not indicate any known archeological resources in Character Area 4.

Potential Archeological Resources. There is potential for as-yet unidentified archeological resources to be present throughout the character area. Potential remains may include those related to buried wall features, analogous to those identified at the base of the Flanking Battery Wall at the Austria Bastion in the castillo moat by Hale Smith and Ken Wild in 1961 and 1990, respectively.[201] Because of the degree to which the wall-related construction would have disturbed soils adjacent to the South Wall, intact pre-Columbian deposits are unlikely in the character area.

201. Smith, *Archaeological Investigations*; Wild, *Archeological Investigations*.



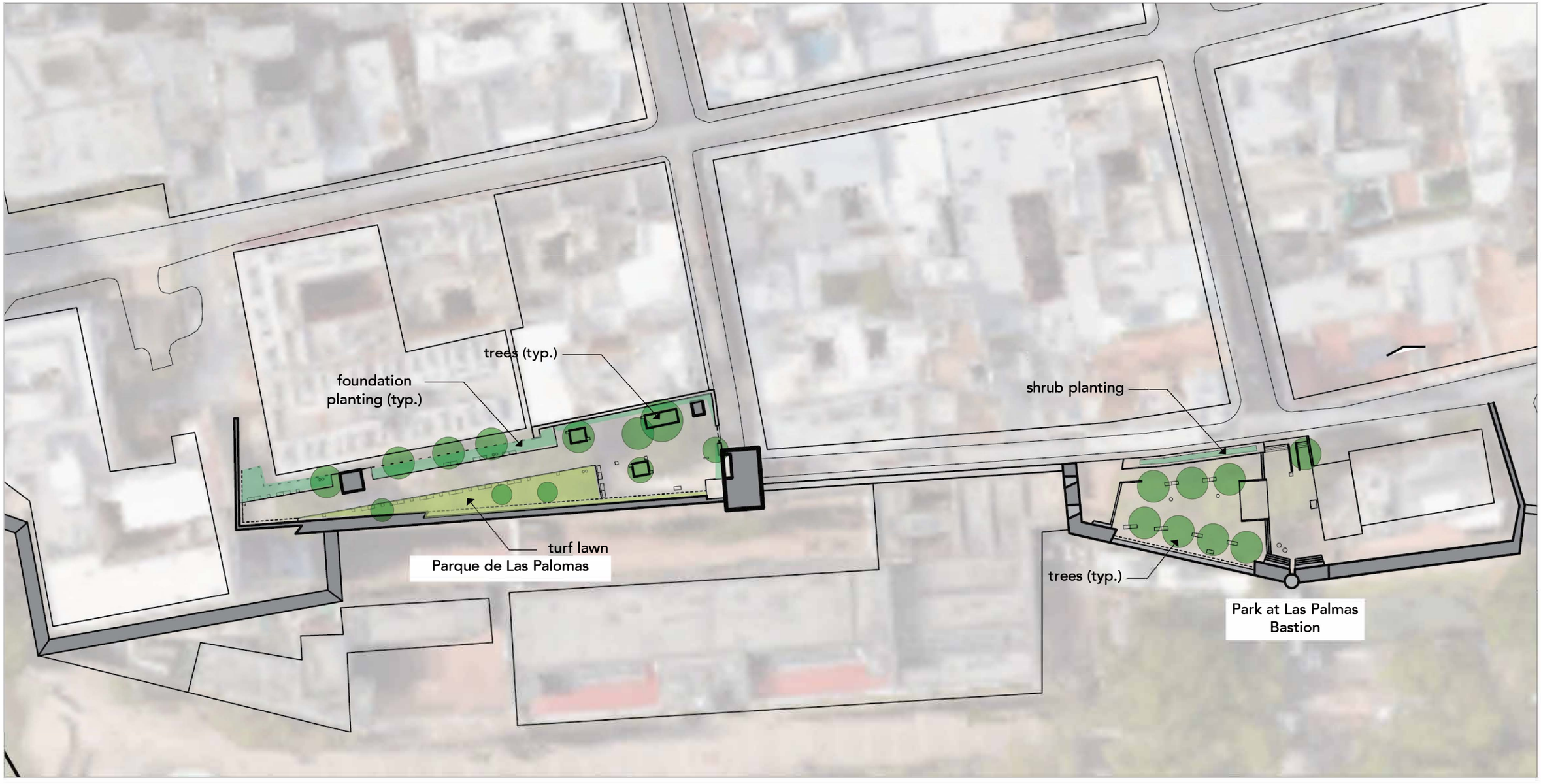


1" = 60'

0' 30' 60' 120'

San Juan City Wall
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San Juan, Puerto Rico

FIGURE 224.
Character Area 4 - South Wall Character Area
Spatial Organization



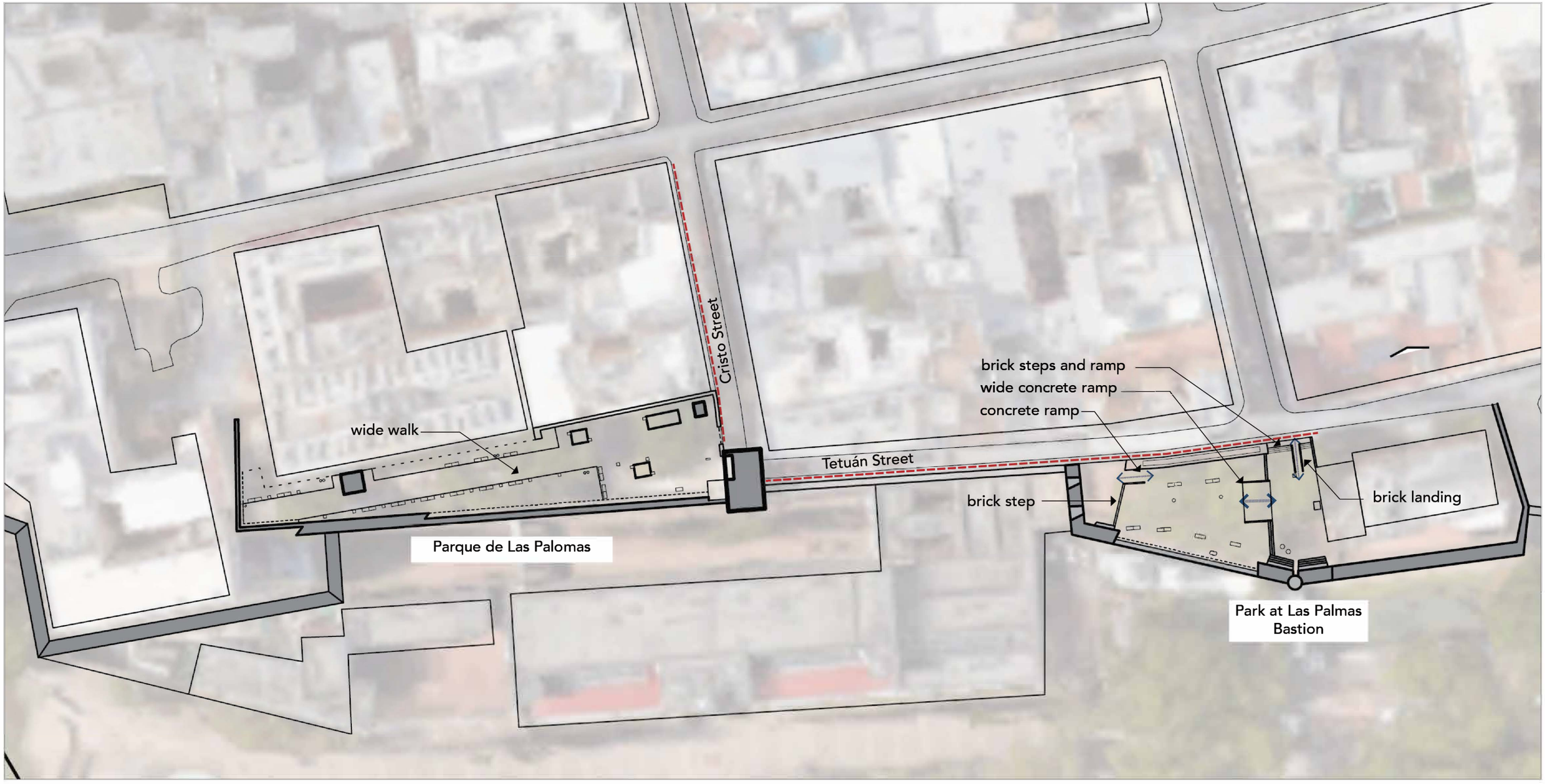


1" = 60'

0' 30' 60' 120'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 225.
Character Area 4 - South Wall Character Area
Cultural Vegetation





KEY
sidewalks
ramps

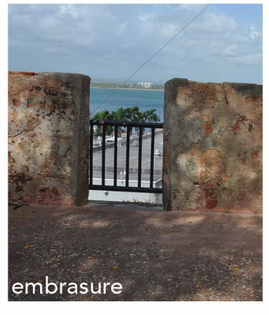
1" = 60'
0' 30' 60' 120'

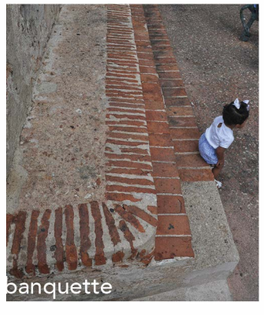
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

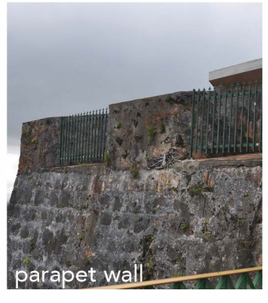
FIGURE 226.
Character Area 4 - South Wall Character Area Circulation

north wall
gatehouse
gate and perimeter wall
Capilla del Santo Cristo de la Salud
concession building / gazebo
planter (typ.)
planter
Parque de Las Palomas
Las Palmas de San José Bastion
embrasure, typ.
banquette, typ.
La Concepción Bastion
walls, typ.
walls, typ.
KEY
Sentry boxes
Guardrails
Handrails




embrasure


banquette

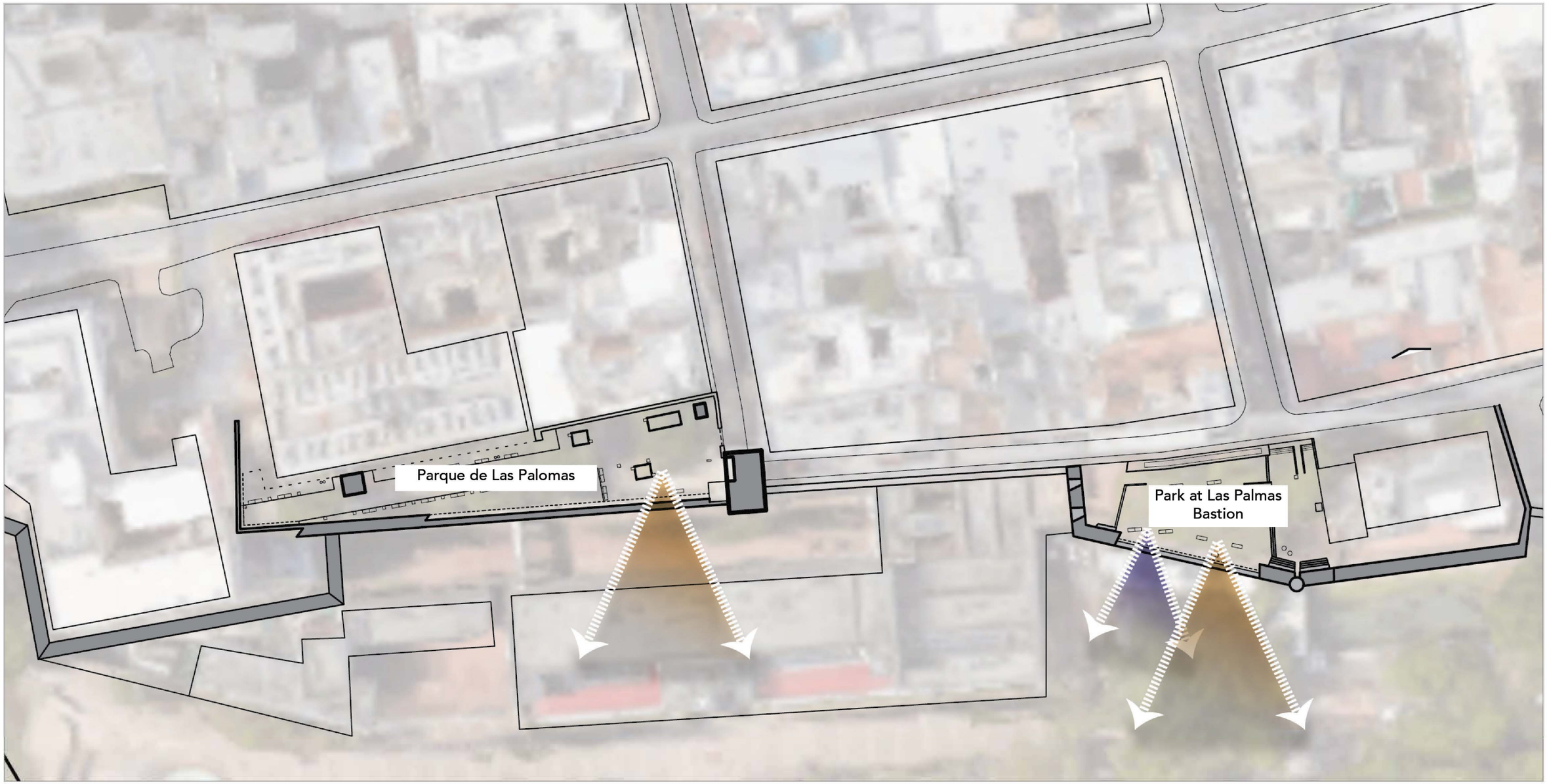

parapet wall


sentry box

1" = 60'
0' 30' 60' 120'

San Juan City Wall
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San Juan, Puerto Rico

FIGURE 227.
Character Area 4 - South Wall Character Area
Buildings and Structures





VIEW KEY

To the Bay of San Juan and Harbor

To the botanic garden

1" = 60'

0' 30' 60' 120'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 228.
Character Area 4 - South Wall Character Area
Views and Vistas

yard hose
light poles (14)
bronze shoe sculptures
regulatory signage
Parque de Las Palomas
bronze plaque
orientation sign
sign on chapel
identity sign
bronze plaque
dumpster
yellow box
Park at Las Palmas Bastion
Francisco de Miranda monument
bronze sculpture of two cats

KEY PLAN

KEY

- light post
- concrete bench
- bench with backs
- trash receptacle
- dog waste receptacle
- wayside exhibit

1" = 60'

0' 30' 60' 120'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 229.
Character Area 4 - South Wall Character Area
Small-scale Features

Character Area 5: Paseo del Morro National Recreational Trail

Character Area Description

Paseo del Morro National Recreational Trail is a paved public walk that follows the shoreline at the base of the West Walls. The entry to the walk occurs from San Juan Gate. The walk continues for three-quarters of a mile to the northern front of El Morro. The linear corridor of land at the base of the West Walls now associated with Paseo del Morro formerly served as a maintenance access route. The original walk was **constructed circa 1995.** An extension of the Paseo del Morro was built in 2013–2015, using mitigation money from the damage caused by the *Morris J. Berman* oil spill of 1994. In 2001, Paseo del Morro was designated a National Recreation Trail. The walk is surfaced with concrete scored with wave-related imagery. Boulders along the shoreline protect visitors from waves and falling into the water. Riprap also edges the shoreline to protect against erosion. Bollard lights edge the outer side of the walk. There are informational signs and wayside exhibits located along the trail as well for the benefit of visitors. Site furnishings include custom benches and standard park trash receptacles. Amenities for the many feral cats that reside in the area include feeding and watering stations. The individual features that comprise the landscape of the character area are individually described below by landscape characteristic.

Natural Features and Systems

Refer to Figure 96, Natural Features and Systems

Promontory landform. The San Juan City Wall follows the edge of the promontory landform that characterizes the northwestern end of Isleta de San Juan. The promontory rises steeply above the shoreline within a narrow band at the edge of the isleta.

Lower terrace. The natural landform of the promontory slopes from the center of Old San Juan toward the ocean and the harbor. Paseo del Morro follows the lower terrace between the West Walls and the Bay of San Juan shoreline.

Responses to Natural Resources

Refer to Figure 249, Responses to Natural Resources, Character Area 5.

Shotcrete stabilized hillsides. The steep slope of the embankment southwest of El Morro overlooks Paseo del Morro. The hillside, which has been subject to slumping and other failure, was stabilized using shotcrete in the 1990s. The shotcrete, a cementitious material that is typically sprayed onto a vertical surface for purposes of reinforcement, remains evident in 2019.

Use of riprap to stabilize the shoreline. Riprap has been used to armor the shoreline along the harbor at the edge of Paseo del Morro. The riprap consists of boulders and other large rock. In some locations, vegetation has begun growing within the riprap border, obscuring views to the bay.

Land Uses

Recreation. Paseo del Morro is a popular recreational pedestrian path system that is used for walking, running, and sightseeing.

Museum/Interpretation/Education. Museum/interpretation/education land uses are associated with Paseo del Morro through the presence of wayside exhibits that provide educational information for visitors.

Spatial Organization

Refer to Figure 250, Spatial Organization, Character Area 5

Paseo del Morro National Recreational Trail. The alignment of Paseo del Morro is determined by the arrangement and location of the City Wall. The walk follows the corridor of space formed by the West Walls and the associated promontory hillside to the east and the harbor shoreline to the west (Figure 230).

Small plazas. Several small plazas are sited along the inland side of Paseo del Morro. These spaces include a wider paved area, or landing, that is edged on the inland side by a curvilinear concrete and stone seat wall. The plazas feature trash receptacles and wayside exhibits and afford views of the harbor and Old San Juan (Figure 231). Moveable feeding stations for feral cats have been placed in the shade cast by the plaza benches in many cases.



FIGURE 230. View along Paseo del Morro National Recreational Trail corridor.



FIGURE 231. One of the small plazas along Paseo del Morro.

Overlooks. In several locations, the walk includes an extension along the shoreline that serves as an overlook (Figure 232). These overlooks are typically directed toward a view of importance, such as Cabras Island.



FIGURE 232. One of the overlooks along Paseo del Morro.

Plaza northwest of El Morro. A large semi-circular plaza is located north of El Morro along Paseo del Morro. It comprises a concrete seat wall that surrounds a cluster of boulders within the center (Figure 233) and a large concrete paved area edged by concrete bollard lights and a steel post and cable guard rail system along the shoreline. There are two wayside exhibits located at the edge of the plaza.



FIGURE 233. Plaza northwest of El Morro.

Rest area at the northern terminus. A small plaza with a concrete bench is at the base of a long concrete stair that leads up to El Morro. The plaza features a wayside exhibit, drinking fountain, and trash receptacle (Figure 234).



FIGURE 234. Rest area at the northern terminus of Paseo del Morro.

Cultural Vegetation

Refer to Figure 251, Cultural Vegetation, Character Area 5.

Shrubs and vines growing on the riprap. In several locations, shrubs, tree saplings, and vines have begun to colonize the riprap that edges Paseo del Morro along the shoreline. This volunteer plant growth obscures views of the water in some locations (Figure 235).

Sea grape. Clumps of sea grape (*Coccoloba uvifera*) are present on the inland side of Paseo del Morro in many locations. It is growing on the steep banks of the promontory hillside, as well as behind the plazas and other open areas inland of the walk (Figure 236).



FIGURE 235. Volunteer vegetation on the riprap along the walk.



FIGURE 236. Sea grape growing on the hillside north of Paseo del Morro.

Circulation

Refer to Figure 252, Circulation, Character Area 5.

Paseo del Morro National Recreational Trail. Paseo del Morro extends for three-quarters of a mile along the shoreline between San Juan Gate and El Morro. It is a colorized brushed concrete paved walk scored with a wave pattern that varies in width. Steel edging is used to separate concrete sections (refer to Figure 236). At the northern end, the walk transitions to a simple monochromatic concrete surface. At its widest point, the walk measures 18 feet 2 inches. The walk narrows to approximately 6 to 8 feet at its narrowest point. The walk is connected at the south end with Paseo de la Princesa, a pedestrian path administered by the Commonwealth of Puerto Rico. Rust stains occur where the steel edging is subject to salt spray and water, generally towards the northern end of the wall.

Calle de la Defensa. Calle de la Defensa parallels the West Wall along the lower side near the San Juan Gate.

Caleta de San Juan. Caleta de San Juan is a city street that extends to the portal of San Juan Gate.

Stairs to El Morro. From the rest area at the northern terminus of Paseo del Morro, visitors can follow a long concrete stair edged to either side by metal handrails to El Morro. The stair includes landings and varies in width between sections. The lower section measures 10 feet in width and is edged by handrails that are 3 feet 1 inch high. The

treads vary in width as the stair curves (Figure 237), while the risers are 6 inches high. The second section has five risers and is edged by handrails that are 3 feet 8 inches high. The handrails are composed of 4-inch-diameter round bars set 5 inches on center. Walk sections that connect stair segments are edged by 4-inch-diameter metal post railings strung with four to eight strands of cable that measures 3 feet 3 inches in height.



FIGURE 237. The stairs leading to El Morro.

Buildings and Structures

Refer to Figure 253, Buildings and Structures, Character Area 5.

Wall and sentry box west of San Juan Gate. West of San Juan Gate is a section of wall that features a sentry box. This wall was historically used to control access to the gate (Figure 238). The wall segment is relatively short. It is edged to the rear by a banquette accessed via three steps. The steps and the banquette are surfaced with brick. The face of the banquette and the wall are stuccoed. A brick landing edges the entrance into the sentry box. An opening at the base of the wall allows drainage to pass beneath.



FIGURE 238. The wall and sentry box west of San Juan Gate.

Gate to control access to Paseo del Morro. Access to Paseo del Morro is controlled with a metal gate painted gold that sits a few feet north of the San Juan Gate portal. The swing arm gate measures 12 feet 3 inches in length and 4 feet 3 inches tall. It is composed of 3-inch metal bars and hangs from a 4-inch-diameter metal post (Figure 239). The gate swings shut at a grouping of boulders to the northeast of the walk.



FIGURE 239. Gate along Paseo del Morro.

Curved seat walls. At six locations along Paseo del Morro, the walk widens to form a small paved plaza. Each of the plazas is edged by a curved seat wall. These walls measure 2 feet in width and are 18 inches high. They are built of concrete faced with stone veneer composed of irregularly sized rock set in mortar (Figure 240). Some serve as retaining walls.

Concrete seat wall at the plaza northwest of El Morro. Within the center of the plaza northwest of El Morro is a pile of large boulders surrounded by a curved concrete seat wall that measures 2 feet in width and 18 inches in height.



FIGURE 240. Curved seat walls.

Concrete seat wall below El Morro. Along the path near the rest area below the stair to El Morro is a long concrete seat wall that measure 2 feet in width and is 18 inches tall.

Guardrail at the plaza northwest of El Morro. The plaza northwest of El Morro along Paseo del Morro is an irregular oval-shaped paved area edged on three sides by riprap along the shoreline of Isleta de San Juan. A guardrail edges the plaza to protect visitors from the accessing the shoreline. The guardrail is composed of metal posts that stand 3 feet 6 inches in height and are set 7 feet on center strung with metal cable. Portions of the metal cable were missing in 2018 at the time that fieldwork was conducted on behalf of this CLR (Figure 241).



FIGURE 241. Guardrail at plaza northwest of El Morro with missing cables.

Stormwater conveyance structures. Various stormwater structures are located along Paseo del Morro, including a drop inlet, concrete swales and channels (Figure 242), and a French drain. These systems direct water beneath the walk, and to the shoreline. Water flows into the walk corridor from scuppers and pipes set within the West Wall. This water flows down the side of the wall and into a system of channels and culverts. The French drain is located in association with the stair and landing system that connects El Morro with Paseo del Morro.



FIGURE 242. Stormwater conveyance system.

Views and Vistas

Refer to Figure 254, Views and Vistas, Character Area 5.

Views to the Atlantic Ocean, San Juan Bay, Old San Juan, and Cabras Island. Along much of Paseo del Morro views are afforded across the water to the Bay of San Juan and Cabras Island. Near the northern end of the walk, views to the Atlantic Ocean are also afforded.

Views to the City Wall and El Morro. From Paseo del Morro, ascendant views are afforded to the West Wall system throughout including the embrasures that mark the bastions, the sentry boxes, and the scuppers and other features that convey stormwater through the wall. El Morro is visible from the northern end of the walk.

Small-scale Features

Refer to Figure 255, Small-scale Features, Character Area 5.

Paseo del Morro National Recreational Trail identity sign. The first sign encountered along Paseo del Morro after traveling north from San Juan Gate is an identity sign for Paseo del Morro National Recreational Trail. The sign is an upright panel that measures 2 feet in width and is 2 feet high set on thin metal posts that stand 5 feet 8 inches in height. A second identity sign is located further along the trail at the base of Santa Elena Bastion.

San Juan National Historic Site identity sign at Paseo del Morro. The second sign along Paseo del Morro is a park identity sign. This sign measures 7 feet 6 inches in length, and is 3 feet 4 inches tall and 9 inches thick. The front panel reads "San Juan National Historic Site / Paseo del Morro / World Heritage Site / Patrimonio Mundial / National Park Service / U.S. Department of the Interior." The rear panel is blank. The panels are plywood painted gray. The front panel features the National Park Service arrowhead. These panels are mounted to steel posts bolted to a concrete base that measures 1 foot 4 inches tall, and they are pyramidal with a 10 foot base that tapers to 9 feet 7 inches at the top in one dimension and 2 feet 8 inches to 3 feet in the other (Figure 243).



FIGURE 243. Park identity sign at Paseo del Morro.

Upright information panels. Upright information panels are located in two places along Paseo del Morro. The first is just north of the identity sign inside the access control gate are two upright panels that stand side by side. The signs provide information regarding the rules and regulations associated with use of the walk and a map indicating features of note. The left-hand sign measures 4 feet 4 inches in width. The right-hand sign measures 3 feet 4 inches in width. They are both set on 2-inch by 3-inch metal posts that stand 7-1/2 feet tall. The second pair is located near San Agustín Bastion further to the north. These two National Park Service signs list rules and regulations associated with use of the Paseo and provide historical information and a map. The left-hand sign measures 4 feet 4 inches in width. The right-hand sign measures 3 feet 4 inches in width. They are set on metal posts, 2 by 3 inches, and 7-1/2 feet tall. A steel-framed sign is located along the path beneath the location where preservation is being done. The sign provides information on the preservation project for the bastions.

National Recreational Trail medallion. A small medallion with the Natural Recreation Trail logo is anchored to a boulder alongside the walk.

Distance markers. In several locations along Paseo del Morro markers indicate the distance to El Morro. These signs measure 1 foot 1 inch in width and are 5 feet 9 inches tall. They are supported by 2-inch metal posts set in concrete footers. The sign panel measures 1 foot by 2 feet 10 inches (Figure 244).



FIGURE 244. Distance marker.

Wayside exhibits. A number of NPS standard wayside exhibits are located along Paseo del Morro at overlooks and plazas. These signs are titled "Busy Entrance," "Walls under Attack,"

"Encircling the City," "Damage Control," "500 Years of Human Passage," "San Juan Bay," "Paseo del Morro," and "San Juan Gate." The signs are printed panels set in galvanized steel frames. The frames are standard National Park Service signs with an angled reading surface (refer to Figure 245).

"Save a Gato" signs. Also sited along Paseo del Morro are signs that read "Save a Gato." These signs measure 3 feet 2 inches in width. They are composed of a 5-foot 10-inch high metal frame that holds a foam core sign 4 feet tall. The signs indicate the efforts being conducted by local residents to feed and adopt cats from the large feral population.

Regulatory signs. A "No Fishing" sign is located on the hillside below the Esplanade.

Bollard lights along Paseo del Morro. Located approximately 25 to 29 feet on center, these lights edge the Paseo del Morro on the ocean side. The bollards measure 1 foot 3 inches in width and depth, and are approximately 4 feet 1 inch in height. Inset near the top of the structures are 9-inch-square lights (Figure 245). A few of the bollard lights are damaged and missing their fixtures.



FIGURE 245. Bollard light and wayside exhibit.

Uplights. Uplights that light the West Wall from below are present along the entire length of Paseo del Morro (Figure 246). The lights are set in concrete boxes that measure 2 feet 2 inches by 2 feet 6 inches and are 2 feet 4 inches tall. The boxes are set on concrete bases that are 6 inches tall.



FIGURE 246. Uplight along the banks below the West Walls.

Bollard lights near El Morro. The stair and landing system that connects El Morro with Paseo del Morro is edged in places by concrete light bollards 2 feet square with wider caps that stand 4 feet in height.

Lights in the pavement. Set within the pavement of the Paseo del Morro are lights that measure 1 foot in diameter. They are set approximately 29 feet 7 inches on center.

Trash receptacles. Park standard concrete trash receptacles are located at each of the plazas along Paseo del Morro (Figure 247).



FIGURE 247. Drinking fountain and trash receptacle at the rest area plaza below El Morro.

Drinking fountain at rest area plaza below El Morro. Along the stairs and landings that connect El Morro and Paseo del Morro is an upright exposed aggregate concrete drinking fountain that measures 1 foot 3 inches square and stands 3 feet 4 inches tall (refer to Figure 247).

Cat feeding stations. Movable cat feeding stations that include plastic dishes for food and water, and containers of food, are located near many of the plazas in the shade of the benches or shrubs.

Utilities

Utility boxes. Between Paseo del Morro and the West Walls are a series of utility structures. Some are metal boxes while others are concrete or concrete with stone facing (Figure 248).



FIGURE 248. A cluster of utilities between Paseo del Morro and the West Walls.

Known and Potential Archeological Resources

Buried refuse deposits east and northeast of the San Fernando Bastion. At least two deposits from the mid-to-late nineteenth century were identified during restoration work at the bastion in the 1990s.[202]

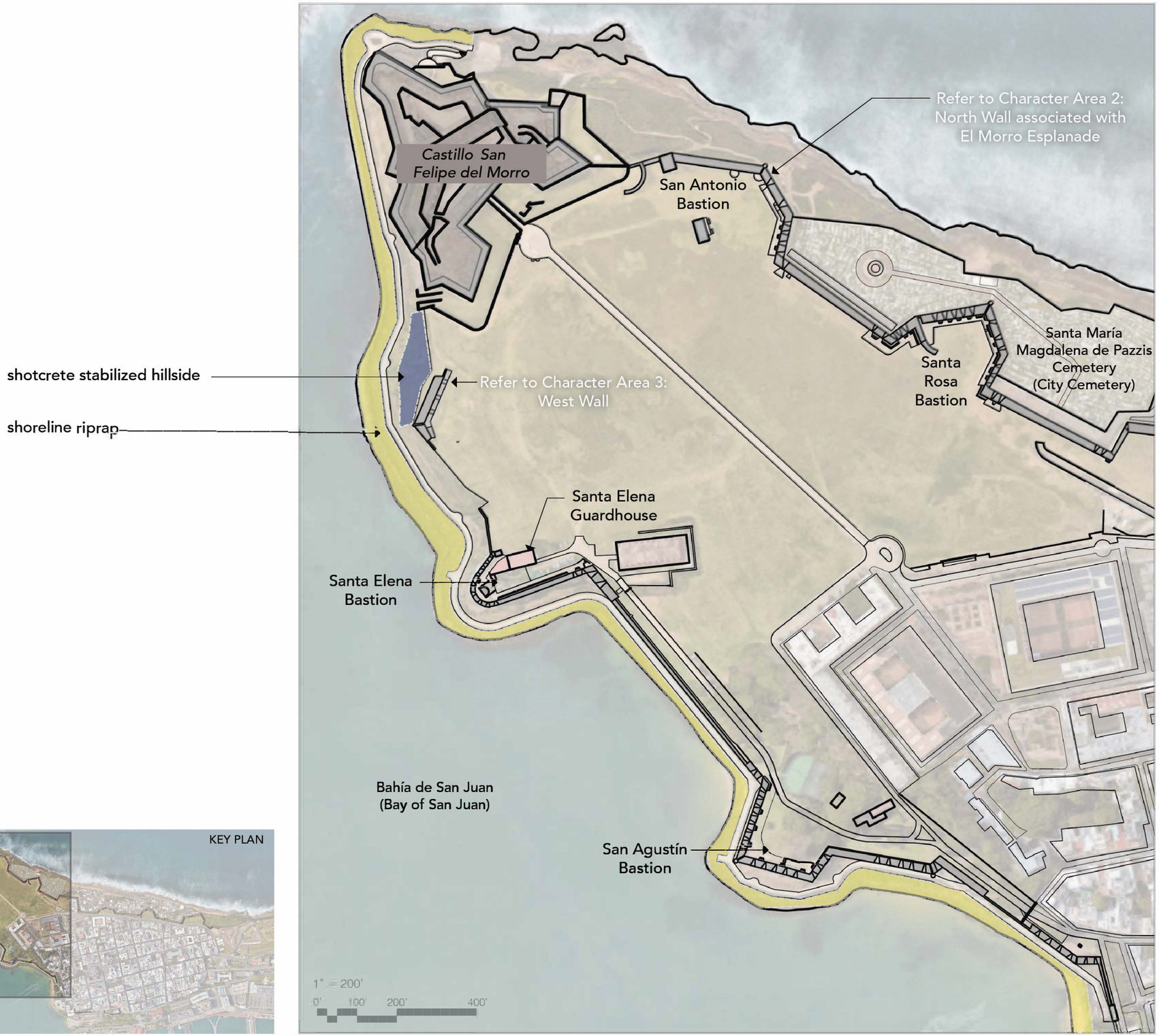
Remains of unidentified structures, a cistern, and an eighteenth-century road fragment at the San Fernando Bastion. The features were identified during 1990s construction at the bastion.[203]

An artifact deposit east of the San Agustín Bastion. The deposit dates from 1784 to 1800 and is made up of refuse related to non-military activities from nearby parts of San Juan.[204]

Artifact deposits along the nature trail. Unknown numbers of artifacts have been noted along the nature trail at least since the 1960s.[205] Artifacts along the trail were also recorded in a photograph sequence on-file with Park Archives, San Juan National Historic Site.[206]

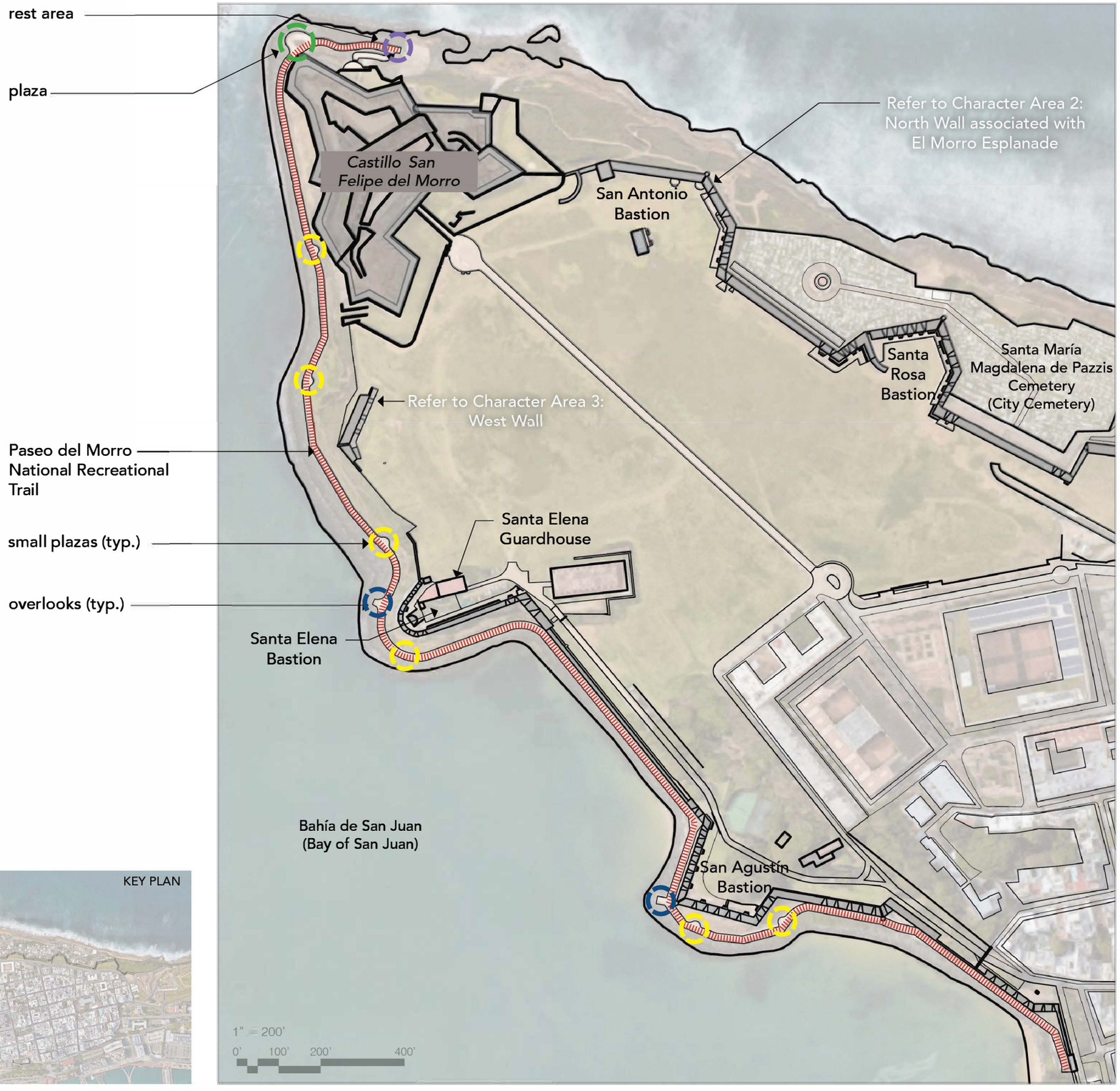
Potential Archeological Resources. There is potential for as-yet unidentified archeological resources to be present throughout the character area. Potential remains may include those related to buried wall features, analogous to those identified at the base of the Flanking Battery Wall at the Austria Bastion in the Castillo moat by Hale Smith and Ken Wild in 1961 and 1990, respectively.[207] Additionally, although no pre-Columbian sites have been found at El Morro, they are present in nearby parts of San Juan, and they may certainly also be present in this character area.[208]

202. USACE, *Request for Proposal*; Hayward Merkling and Cinquino Argana. The 1992 investigation at the San Fernando Bastion was conducted by David McCullough and is discussed in Hayward Merkling and Cinquino Argana, 105–107. The deposits are also briefly discussed in National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1997), 9
203. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1997), 9.
204. Solis Magaña.
205. Hale, 58.
206. El Morro-Archeology, Shoreline Trail. Acc #143, Cat #16399, 1989. On-file at San Juan National Historic Site.
207. Smith, *Archaeological Investigations;* Wild, *Archeological Investigations*.
208. Magaña; Pantel, et al.; and Pantel, del Cueto & Associates, 62.



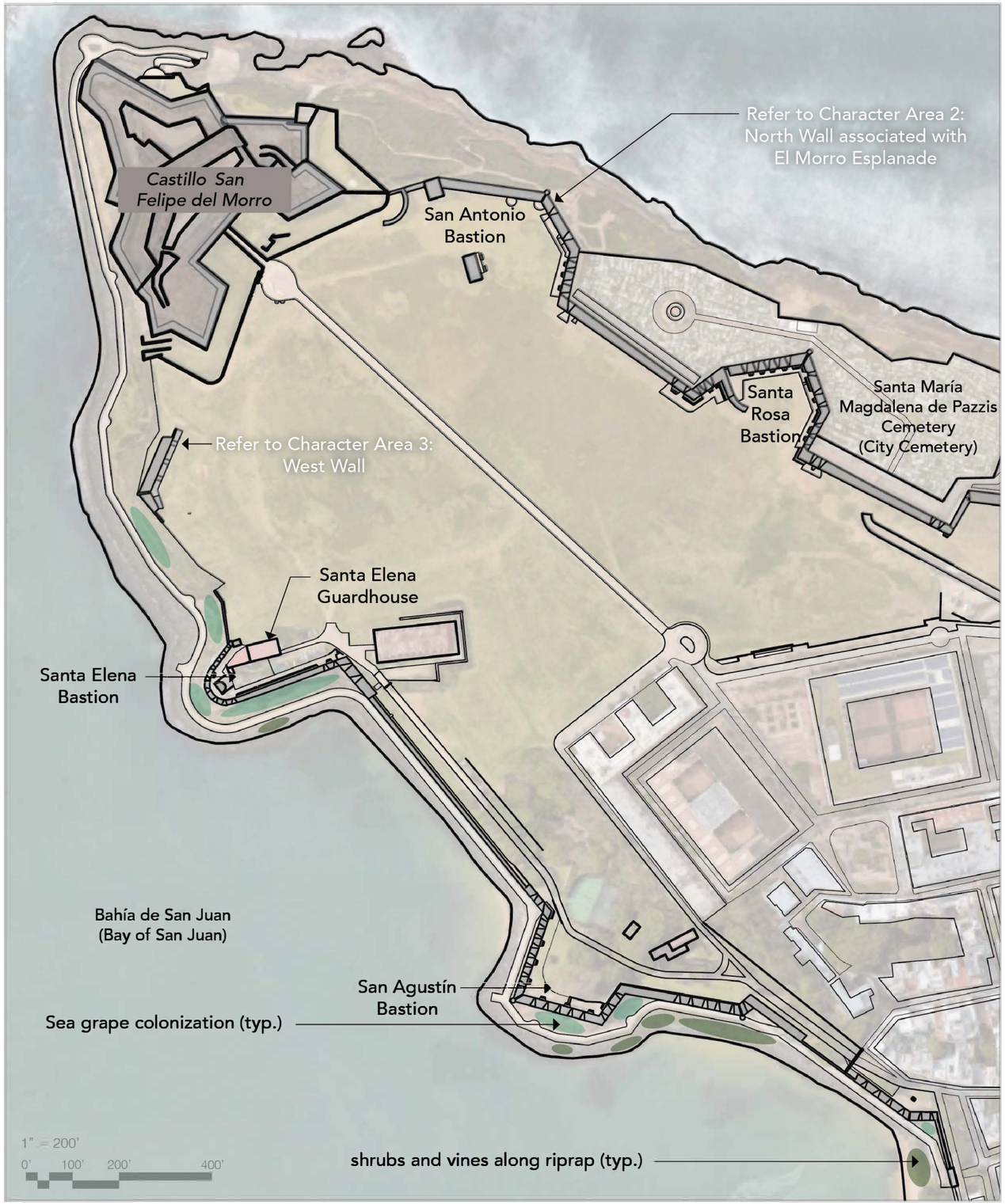
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FIGURE 249.
Character Area 5 - El Paseo del Morro
Responses to Natural Resources



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FIGURE 250.
Character Area 5 - El Paseo del Morro
. Spatial Organization





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FIGURE 251.
Character Area 5 - El Paseo del Morro
Cultural Vegetation



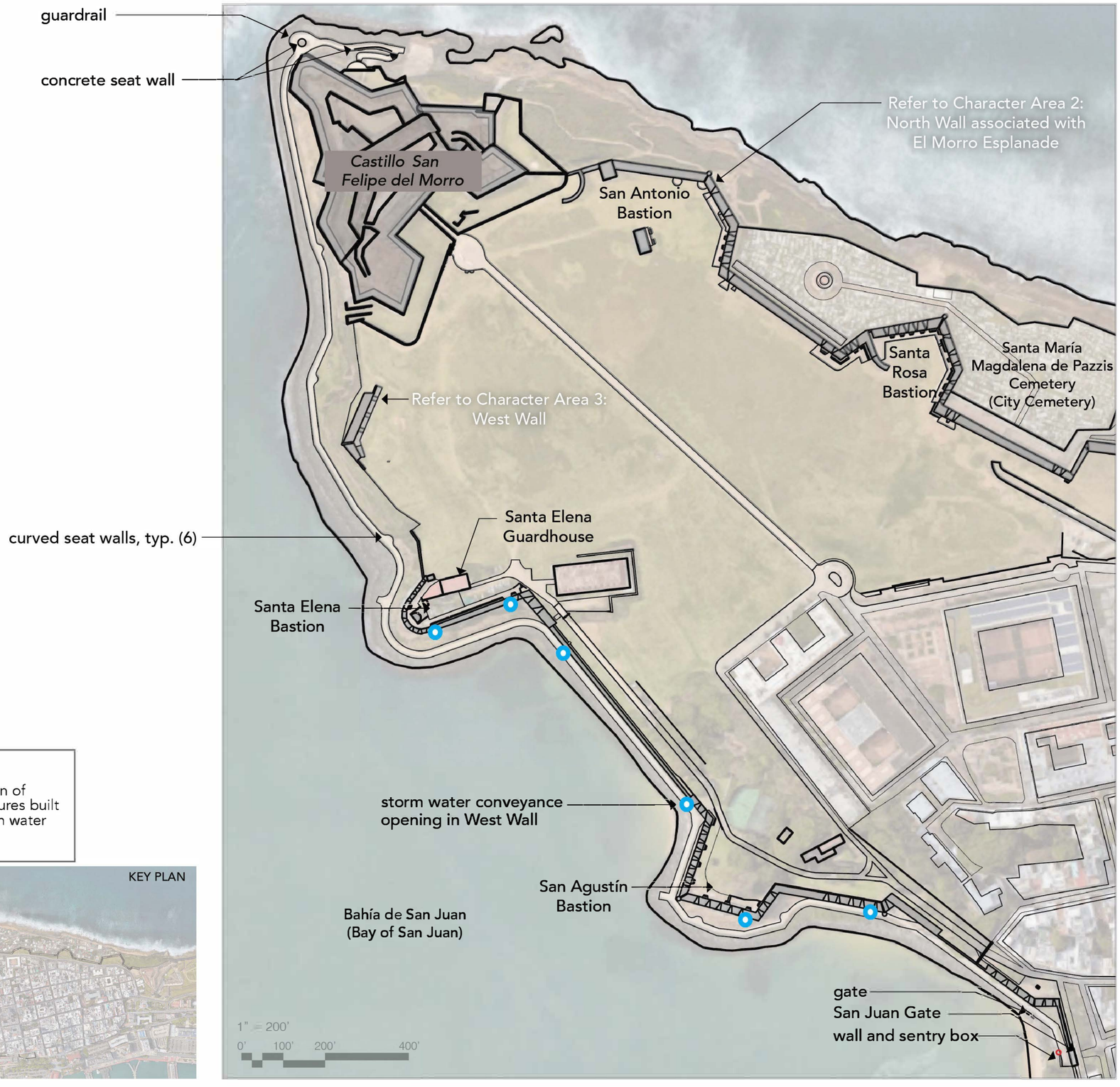
KEY

Paseo del Morro National Recreational Trail



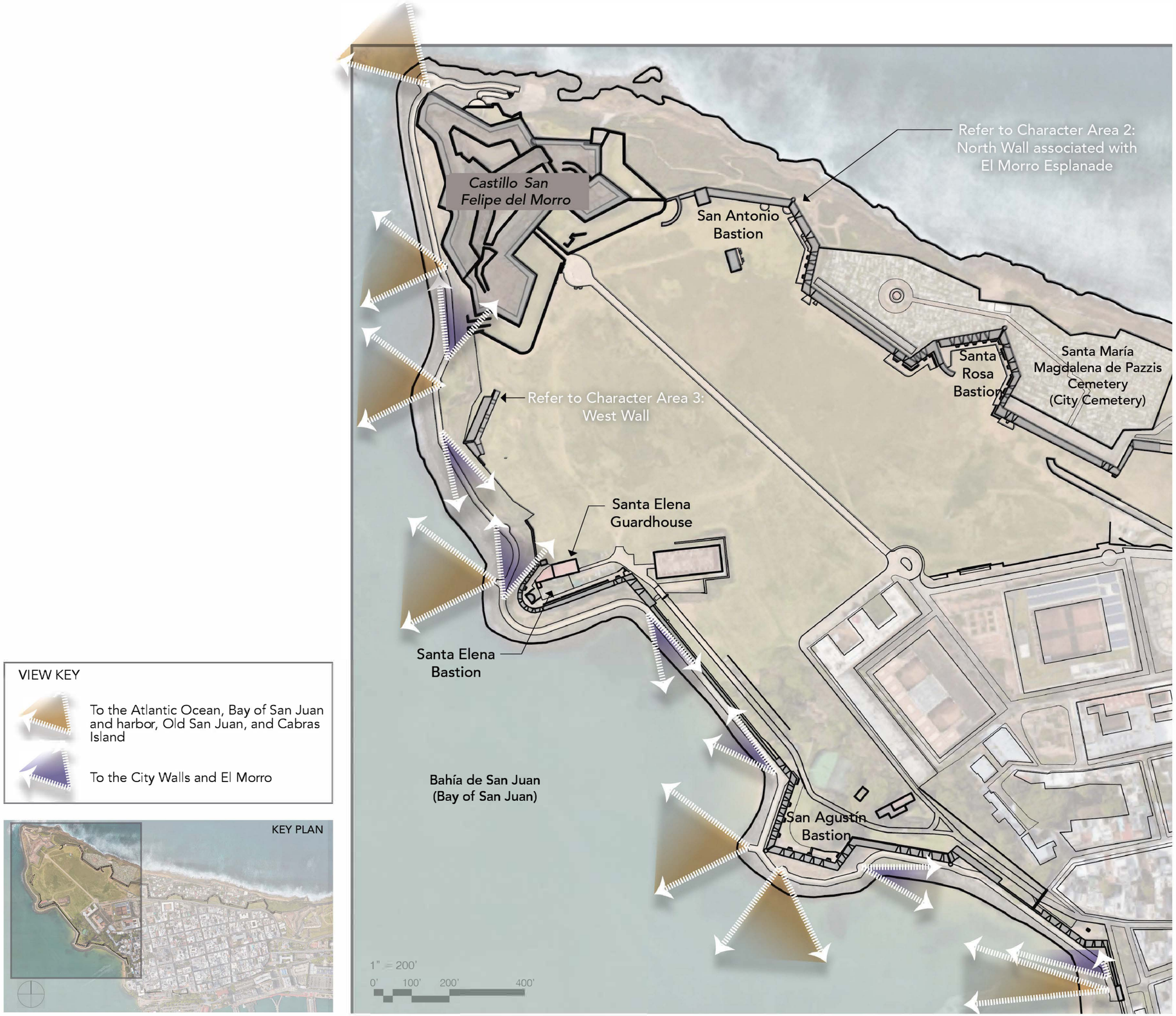
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FIGURE 252.
Character Area 5 - El Paseo del Morro Circulation



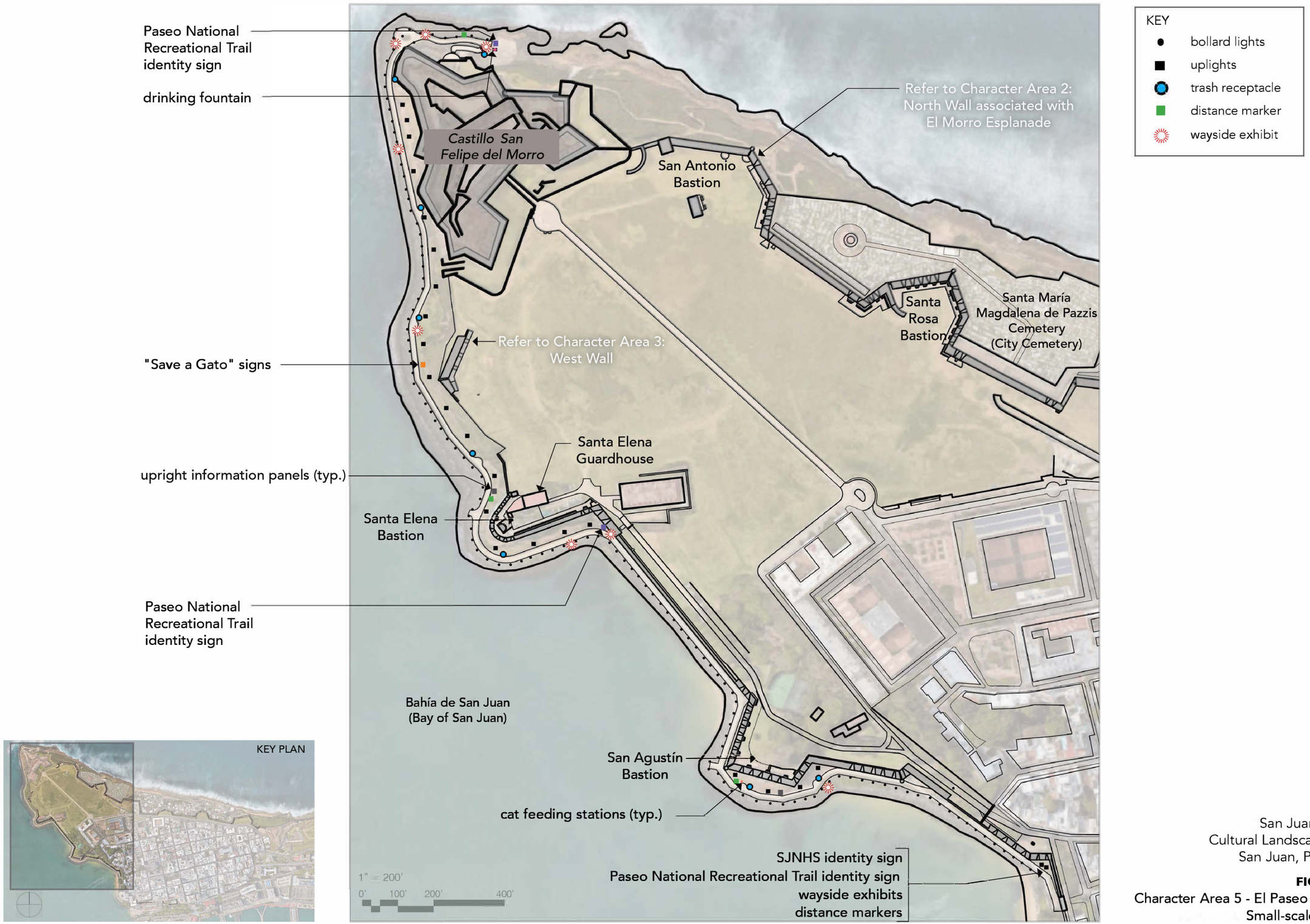
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 253.
Character Area 5 - El Paseo del Morro
Bulidings and Structures



San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 254.
Character Area 5 - El Paseo del Morro
Views and Vistas



San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 255.
Character Area 5 - El Paseo del Morro
Small-scale Features

Analysis and Evaluation

Evaluation of Significance

The National Register of Historic Places, authorized by the National Historic Preservation Act of 1966, is the official list of the nation's historic places worthy of preservation. The National Register is part of a national program of the National Park Service that coordinates and supports public and private efforts to identify, evaluate, and protect America's historic and archeological resources.[209]

Listing in the National Register of Historic Places is based on evaluation of the significance of the property using established criteria. The significance evaluation identifies the important historical associations of the property, and comments on its architectural, archeological, and social value as they relate to the National Register of Historic Places. A property's significance is tied to a discrete period of time in which its important contributions were made and to relevant national, state, and local historic contexts.

National Register Criteria for Evaluation

In order for a property to be eligible for inclusion in the National Register of Historic Places, it must possess significance under one of four criteria. The Criteria for Evaluation for listing in the National Register of Historic Places state:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. 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 persons significant 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 has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the Criteria for Evaluation identify the following Criteria Considerations:

> Ordinarily cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past fifty years are not considered eligible for the National Register. However, such properties *will qualify* if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
>
> a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

209. National Park Service, "National Register of Historic Places" accessed May 22, 2019, https://www.nps.gov/subjects/nationalregister/index.htm.

b. A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or

d. A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.[210]

National Register Significance of San Juan Historic City Wall

San Juan National Historic Site was authorized by the Secretary of Interior under the provisions of the 1935 Historic Sites Act, through the "Establishment Order for San Juan National Historic Site" issued on February 14, 1949.[211] The Establishment Order recognized the historic significance of the Spanish fortifications; designated the fortifications as a national historic site; and authorized the development of a cooperative agreement between the Secretary of the Interior and the Secretary of the Army to preserve the fortifications (Figure 256).[212]

On October 15, 1966, San Juan National Historic Site, together with La Fortaleza, was administratively listed in the National Register of Historic Places under the National Historic Preservation Act. (Although La Fortaleza is not within the study area for this CLR, it is mentioned here as it relates to the National Register documentation and World Heritage Site discussed below.) Following administrative listing, there have been several efforts conducted to prepare National Register documentation, including the following that relate to the Historic San Juan City Walls:

- *National Register nomination Zona Histórica de San Juan (San Juan Historic Zone)*, prepared by Luis M. Rodríguez Morales, Director, General Archives of Puerto Rico, Institute of Puerto Rican Culture, June 1971, signed, listed in the National Register on October 10, 1972 (NRIS 72001553).[213] Areas of significance are identified as Aboriginal: Historic, Architecture, Art, Commerce, Conservation, Military, Political, Religion/Philosophy, Theater, and Urban Planning. As was customary with the form used at the time of this documentation, the period of significance is broadly identified: the sixteenth, seventeenth, eighteenth, and nineteenth centuries. This nomination lists principal

210. *Code of Federal Regulations*, Title 36, Part 60, "The National Register Criteria for Evaluation."

211. "Establishment Order for San Juan National Historic Site," *Federal Register*, 14 Fed. 37 (February 25, 1941), accessed October 2, 2019, https://tile.loc.gov/storage-services/service/ll/fedreg/fr014/fr014037/fr014037.pdf, accessed October 27, 2020; Historic Sites Act of 1935, 16 USC sec. 461–467, https://www.nps.gov/ history/local-law/hsact35.htm.

212. "Establishment Order for San Juan National Historic Site," *Federal Register*, 14 Fed. 37 (February 25, 1941).

213. Luis M. Rodríguez Morales, Director, General Archives of Puerto Rico, Institute of Puerto Rican Culture, *National Register nomination for Zona Histórica de San Juan (San Juan Historic Zone)*, dated June 1971, signed, listed in the National Register on October 10, 1972 (NRIS 72001553).

structures including Castillo San Felipe del Morro, Castillo San Cristóbal, the city walls, and other resources that are part of the National Historic Site.

- *National Register documentation for San Juan National Historic Site*, prepared by F. C. Gjessing, Architect, and Loretta Schmidt, Chief Park Historian, San Juan National Historic Site, June 12, 1973, unsigned (NRIS 66000930).[214] A signed version of this nomination has not been identified by the NPS at this writing, thus the 1973 documentation is considered a draft nomination. (See further discussion of National Register status of the National Historic Site, below.) Areas of significance are identified as Aboriginal: Historic, Architecture, Engineering, and Military. As was customary with the form used at the time of this documentation, the period of significance is broadly identified: the sixteenth, seventeenth, eighteenth, nineteenth, and twentieth centuries are indicated. Specific dates of 1539–1945 are also noted as important.

  The 1973 National Register nomination documentation for San Juan National Historic Site addresses the fortresses of El Morro and San Cristóbal, their outworks, the city walls, the satellite forts of El Cañuelo and San Jerónimo, and associated structures. The nomination notes that the San Juan defensive system is one of the major Caribbean fortifications of the Spanish empire, and helped to protect Spanish interests in the New World.[215]

  As noted in the nomination, the structures "generally retain the character and appearance of the most advanced eighteenth century defense techniques that were applied to a difficult and unusual site."[216] The resources reflect both features of earlier origin, as well as military construction characteristic of the nineteenth and twentieth centuries.

- *National Register documentation for the Old San Juan Historic District*, prepared by Arleen Pabón-Charneco, Puerto Rico State Historic Preservation Office (SHPO) Consultant, 2012, listed in the National Register on July 30, 2012 (NRIS 12000465).[217] This documentation addresses the urban and residential resources of Old San Juan, but also includes the military walls and resources of the National Historic Site. The National Register website indicates that the 2012 documentation is a boundary extension to the 1972 documentation (NRIS 72001553).

  The 2012 National Register documentation for the historic district cites eligibility under National Register Criterion C, and Criteria Considerations A, C, D, and E. The 2012 documentation also cites two areas of significance: Architecture, and Community Planning and Development. The 2012 National Register documentation summarizes the significance of the historic district as follows:

  > The Distrito Histórico del Viejo San Juan / Old San Juan Historic District is the second oldest continuously inhabited European settlement in the Western Hemisphere. Conceived as the capital of the island of Puerto Rico and known for centuries as the *ciudad del puerto Rico* (the city of the Rich Port [rich port]), it is the oldest urban core in the island and the United States of America. Listed in the National Register of Historic Places in 1972, some of its components—the Castillo de San Felipe del Morro, Castillo de San Cristóbal, circuit of defensive walls, and Palacio de Santa Catalina—are considered part of the cultural heritage of humanity.[218]

214. F. C. Gjessing, Architect, and Loretta Schmidt, Chief Park Historian, San Juan National Historic Site, *National Register documentation for San Juan National Historic Site*, dated June 12, 1973, unsigned (NRIS 66000930).
215. Gjessing and Schmidt, Section 8.
216. Ibid.
217. Arleen Pabón-Charneco, Puerto Rico SHPO Consultant, *National Register documentation for the Old San Juan Historic District*, 2012, listed in the National Register on July 30, 2012 (NRIS 12000465).
218. National Register nomination documentation (2012), Section 7.

The period of significance is given as 1519–1939 (see further discussion below), with specific dates of 1519, 1625–1700, 1812, and 1898 cited as important.

- *National Historic Landmark documentation for the Old San Juan Historic District*, also prepared by Dr. Arleen Pabón-Charneco, Puerto Rico State Historic Preservation Consultant, September 24, 2012 (NRIS 13000284).[219] The National Register web site indicates that the Old San Juan Historic District was designated as a National Historic Landmark on February 27, 2013.

  The 2013 National Historic Landmark documentation cites eligibility under National Register Criteria A and C, and Criteria Considerations A, C, D, and E. In addition, the 2013 documentation cites National Historic Landmark Criteria 1 and 4, and Criteria Exception 1 (which pertains to properties owned or used by a religious institution).

  The documentation also indicates significance under two NHL themes—I. Peopling Places, 6. Encounters, Conflicts, and Colonization; and III. Expressing Cultural Values, 5. Architecture, Landscape Architecture, and Urban Design—and the following areas: Architecture, Community Planning and Development, and Ethnic Heritage: Hispanic. The 2013 National Historic Landmark documentation summarizes the significance of the historic district as follows:

  > The Old San Juan Historic District (Distrito Histórico del Viejo San Juan) in Puerto Rico is nationally significant under NHL Criterion 1 and Criterion 4 as one of the premier colonial cities in the United States and the nation's most important and complete Spanish urban center. It is significant because of its architectural history and as a reflection of Spanish culture and colonial history. Much of the southern and western portions of what is now the continental United States were once controlled by Spain; however, Puerto Rico was located on the northern fringe of Spain's massive American empire and documented historic sites predominantly offer insight about religious and military activities and settlement on their frontier, and the relationships and conflicts between the Native Americans and the Spanish.[220]

  Further, the 2013 NHL documentation notes:

  > The Old San Juan Historic District is nationally significant under NHL Criterion 1 as the only extant representation of an almost four hundred year old Spanish colonial city in the United States. It is the oldest city in the United States and the second oldest continuously-inhabited European settlement in the Western Hemisphere. Old San Juan's location in the heart of the Caribbean (the first area in America to be colonized and settled by Spain) provided the Spanish with a key port from which to establish their cultural, military, and political.

  The period of significance is given as 1519–1898 (see further discussion below), with specific dates of 1625–1700 and 1812 cited.

219. Arleen Pabón-Charneco, Puerto Rico SHPO Consultant, *National Historic Landmark documentation for the Old San Juan Historic District*, September 24, 2012 (NRIS 13000284).

220. Gjessing and Schmidt, 81.

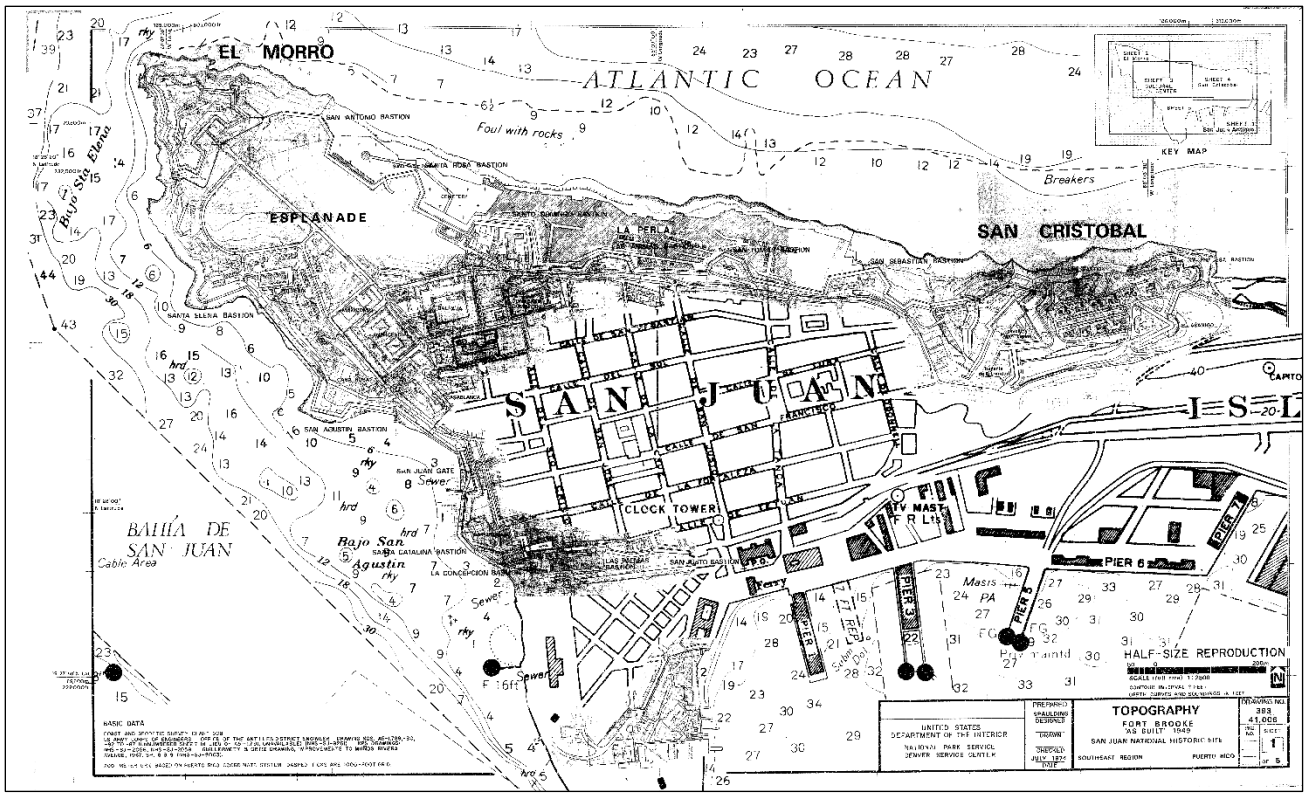


FIGURE 256. Site plan of Fort Brooke as it appeared in 1949. (Source: US Department of the Interior, National Park Service, Denver Service Center, "Topography: Fort Brooke 'As Built" 1949, San Juan National Historic Site, Southeast Region, Puerto Rico," July 1974, Sheet 1 of 5.)

Current National Register Status. The resources of San Juan National Historic Site, including the city walls, are addressed in the historic districts defined by the 2012 National Register documentation and draft (unsigned) 2013 National Historic Landmark documentation, as discussed above.

In addition, National Register nomination documentation for the San Juan National Historic Site is currently underway by other authors.[221]

The draft nomination in progress describes the historic district as follows:

> San Juan National Historic Site is a well-preserved, complex of Spanish colonial masonry military fortifications, begun in 1540, and subject to continuous addition, reconstruction, and modernization efforts over the course of the seventeenth, eighteenth, nineteenth, and twentieth centuries. The last major construction campaign took place during the United States Army's use of the fortifications during World War II. The historic property occupies a large portion of San Juan Islet and spans the entrance to San Juan Bay to include the outpost, El Cañuelo, within its boundary. Castillo San Felipe del Morro comprises the fort of El Morro, the El Morro Esplanade, and San Antonio Guardhouse located to the east of the fort's dry moat. Castillo San Cristóbal comprises the fort of San Cristóbal and the Quarters Buildings along Norzagaray Boulevard, while the San Cristóbal Outworks stretch out for more than 1,000 feet east of the fort. The Old San Juan City Walls run approximately 2.5 miles along the northern, western, and southern edges of the city of Old San Juan and comprise a discontiguous network of bastions, walls, and batteries. El Cañuelo comprises the fort of El

221. Teresa Dujnic Bulger, Richard Grubb & Associates, Inc., Cranbury, New Jersey, *National Register of Historic Places Registration Form, San Juan National Historic Site, San Juan, Puerto Rico*, draft, May 1, 2020.

> Cañuelo, located on the Isle de Cabras, on the west side of San Juan Bay.[222]

The draft nomination in progress identifies 18 contributing buildings, 8 contributing sites, 57 contributing structures, and 1 contributing object, for a total of 84 contributing resources; no non-contributing resources are identified.[223] The San Juan City Wall that comprise the study area for this CLR include the North Walls, which consist of six bastions—San Sebastián, Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, and San Antonio—and connecting curtain walls; the West Walls, which feature three bastions—San Fernando, Santa Elena, and San Agustín—and connecting curtain walls; and the South Walls, composed of La Concepción and Las Palmas bastions. All of these structures are addressed in the draft nomination.[224]

The draft nomination in progress indicates that the historic district that comprises San Juan National Historic Site is significant under National Register Criteria A, C, and D, and under the following areas of significance:

- Military History
- Maritime History
- Architecture
- Ethnic Heritage – Hispanic
- Social History
- Entertainment/Recreation
- Archeology - Historic, Non-Aboriginal[225]

In the areas of Military History and Maritime History, the draft nomination in progress notes that San Juan National Historic Site is significant at the national level under Criterion A, "for its significance as a strategically important maritime and military base for two world powers, Spain and the United States of America, between 1540 and 1945."[226]

In the area of Architecture, the draft nomination notes that National Historic Site is significant at the national level under Criterion C "as a significant and well-preserved component of the system of colonial defensive architecture constructed by the Spanish Crown during the sixteenth through late nineteenth centuries and modified by the United States for its military defense system during the first half of the twentieth century."[227]

In the area of Ethnic Heritage, the draft nomination notes that the National Historic Site is significant at the national, state, and local levels under Criterion A, "for its association with Hispanic cultural history in Puerto Rico and its role as an unparalleled symbol of Puerto Rican national identity."[228] The draft nomination also notes the National Historic Site's significance in Social History, also under Criterion A, for the National Historic Site's "association with the historic preservation movement in San Juan, which sought to protect the cultural heritage of Puerto Rico through preservation of the San Juan fortifications and other resources."[229]

In the area of Entertainment/Recreation, the draft nomination notes that the National Historic Site is significant at the state level under Criterion A "for its role in the establishment of team sports in Puerto Rico through United States military programs implemented at the site during the first half of the twentieth century."[230]

Finally, in the area of Archeology - Historic, Non-Aboriginal, the draft nomination notes that the National Historic Site is significant at the national level under Criterion D with respect to Military History and Architecture, stating that archaeological resources at the site have both

222. Ibid., Section 7-5–6. Note that Parcel B is not covered in the current draft nomination.
223. Ibid.
224. Ibid., Section 7-10–14.
225. Ibid., Section 7[8]–117.
226. Ibid., Section 8-121–122.
227. Ibid.
228. Ibid.
229. Ibid. The draft nomination in progress does not explicitly state a level of significance for Social History.
230. Ibid.

yielded and have the potential to yield information important to understanding of Spanish and American military history in Puerto Rico, as well as to the architectural development of the San Juan fortifications.[231]

World Heritage Listing

San Juan National Historic Site and the earlier fortifications of La Fortaleza were inscribed in the World Heritage List in 1983 as resources of outstanding universal value. The listing notes that the fortifications:

> . . . outstandingly illustrate the adaptation to the Caribbean context of European developments in military architecture from the 16th to 20th centuries. They represent the continuity of more than four centuries of architectural, engineering, military, and political history.[232]

The World Heritage List citation for the fortifications also notes:

> These fortifications, which retain the general appearance of advanced 18th-century defense technology, clearly illustrate both a transfer of technology from Europe to America over a long period and its adaptation to the topography of a strategically significant yet difficult tropical site. Reflecting Italian Renaissance, Baroque, and French Enlightenment designs, the defenses express successive techniques and technologies in fortification construction. The varied examples of military architecture from the 16th to 20th centuries in the fortifications of San Juan are evidence of the imperial struggles that defined the development of the Americas. As one of the first as well as one of the last of the numerous seats of power in Spain's American empire, these structures are now potent symbols of the cultural ties that link the Hispanic world.[233]

The boundary for the World Heritage Site identified in the 1983 documentation was revised in an extension prepared in 2016. The letter articulating the boundary extension noted that the extension accurately reflects the boundaries of San Juan National Historic Site and was the intended basis for the 1983 nomination. The historic city walls were included within the 1983 boundaries; El Morro Esplanade was not included in the original boundaries but is within the updated 2016 boundaries (Figure 257).[234]

World Heritage Listing requires official recognition of national significance by the country in which the property is located, which can be met by National Historic Landmark designation. (La Fortaleza is a designated National Historic Landmark, for example.) The criterion for official recognition of national significance for inclusion in the World Heritage List can also be met by designation as a unit of the US National Park System, which in itself provides official recognition of national significance. This issue is addressed by 36 CFR section 73.7(b) of the World Heritage regulations, as follows:

> (1) The property must be nationally significant. For the purposes of this section, a property qualifies as "nationally significant" if it is:
>
> (i) A property that the Secretary of the Interior has designated as a National Historic Landmark (36 CFR part 65) or a National Natural Landmark (36 CFR part 62) under provisions of the 1935 Historic Sites Act (Public Law 74-292; 49 Stat. 666; 16 U.S.C. 461et seq.);
>
> (ii) An area the United States Congress has established as nationally significant; or
>
> (iii) An area the President has proclaimed as a National Monument under the Antiquities Act of 1906 (16 U.S.C. 433).

231. Ibid.
232. UNESCO World Heritage List, "La Fortaleza and San Juan National Historic Site in Puerto Rico," accessed October 4, 2019, https://whc.unesco.org/en/list/266.
233. Ibid.
234. Stephen A. Morris, Chief, Office of International Affairs, National Park Service, letter to Mechtild Rössler, Director, World Heritage Center, UNESCO, re: La Fortaleza and San Juan National Historic Site boundary clarification, November 6, 2015.

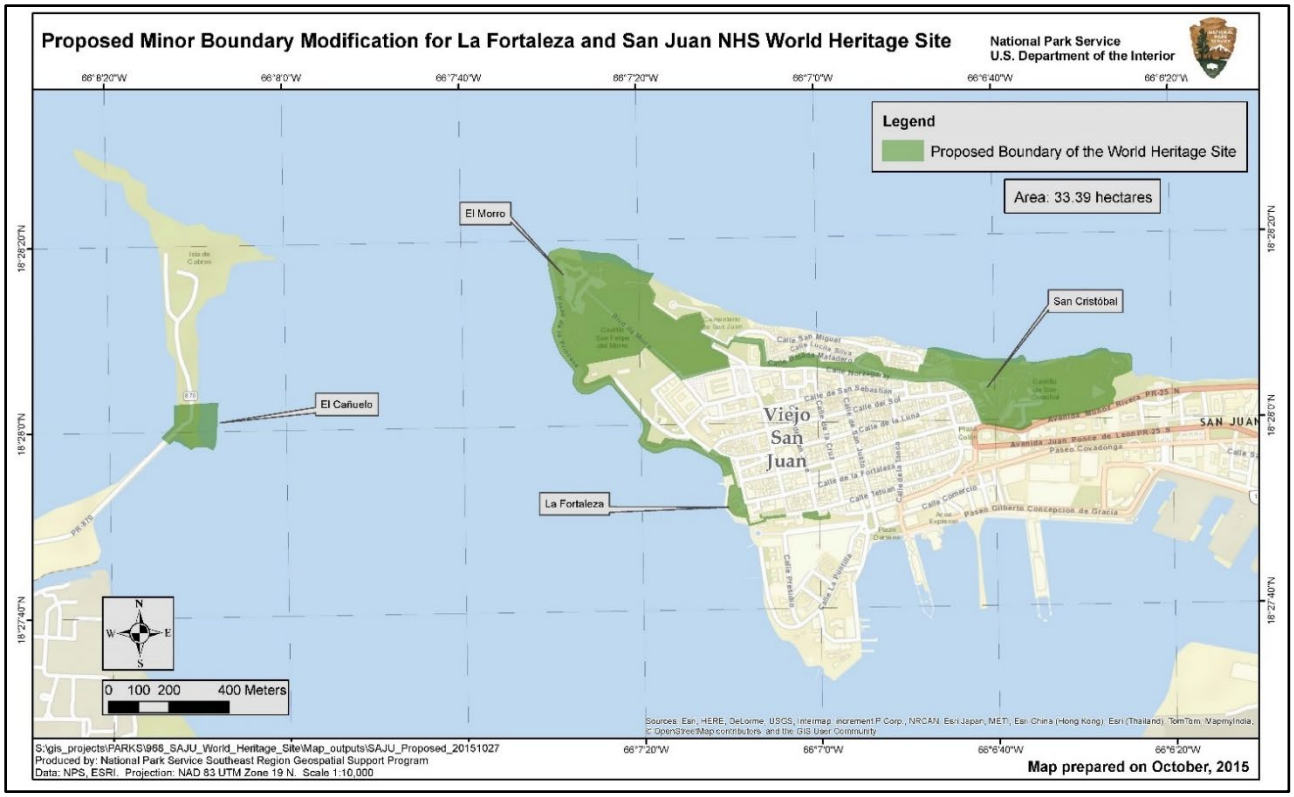


FIGURE 257. Map of the 2016 boundary adjustment to La Fortaleza and San Juan National Historic Site World Heritage Site. The original (1983) World Heritage Site boundary included the historic city walls; El Morro Esplanade was one of the areas incorporated by the 2016 boundary extension. (Source: National Park Service correspondence (2016) for Minor Boundary Modification, La Fortaleza and San Juan National Historic Site Listing World Heritage List web site, accessed September 2020, https://whc.unesco.org/en/list/266/documents/)

For San Juan National Historic Site, the official recognition of national significance is addressed both by its status as a unit of the US National Park System and by its designation as a National Historic Site.[235]

Period of Significance

The 1972 National Register nomination documentation for Old San Juan, which includes the fortifications, and the 1973 nomination documentation for San Juan National Historic Site, both address the period of significance of the property as extending from the sixteenth through the nineteenth/twentieth centuries.[236] The 1973 documentation also notes as "specific dates" the period 1539–1945, suggesting a more defined period of significance than the centuries identified for "period" on the form.[237] The 2012 National Register documentation identifies the period of significance as 1519–1939, beginning with the founding of Viejo San Juan by Juan Ponce de León, and ending with "eve of World War II," characterized by the documentation's author as the end of the "Modern Period."[238] The 2013 National Historic Landmark documentation identifies the period of significance as 1519–1898, noting that the period of significance for the historic district is defined by the centuries of Spanish rule from the founding of San Juan in 1519

235. *Federal Register*: 14 Fed. 37 (February 25, 1949); Historic Sites Act of 1935, 16 USC sec. 461–467.
236. Morales, 1972; Gjessing and Schmidt, 1973. As noted, these broad periods of significance comprising entire centuries are common in nomination documentation of the period because of the form used by the National Register at that time.
237. Gjessing and Schmidt.
238. Morales, Section 8.

until annexation of Puerto Rico as a territory of the United States in 1898.[239]

The 1985 General Management Plan identified the "historic period" as 1539–1961, from "construction of El Morro in 1539 to transference of a major portion of the site to the Department of the Interior in 1961."[240]

The Historic Structure Report prepared for San Juan National Historic Site in 1991 identified five periods of significance for the site, as follows:

- Spanish I: circa 1539–1760, initiation of harbor defenses at el Morro, harbor walls, and city gate
- Spanish II: circa 1760–1835, period of major development at el Morro, San Cristóbal, and the north wall
- Spanish III: circa 1835–1898, modernization and rehabilitation of defensive system and outworks
- American I: circa 1898–1940, construction of the el Morro Lighthouse
- American II: circa 1940–1961, construction of the World War II harbor defense system.[241]

Similar to the General Management Plan, the 1991 Historic Structure Report identified the beginning of the period of significance as 1539, with the beginning of construction of the fortifications, and the end of the period of significance, 1961, "when the land contained within the former Fort Brooke Military Reservation was conveyed to the US Department of the Interior."[242]

With the respect to the cultural landscape, the Cultural Landscape Report portion of the 1991 Historic Structure Report noted two overarching periods of significance:

> The entire site history was reviewed to determine that two distinctly different types of landscape character existed, generally corresponding to the periods of Spanish and US occupation. These two periods have been classified as Period I, circa 1540–1898, and Period II, circa 1898–1961.[243]

By circa 1540, the main defensive fortifications for the city had been relocated to the morro (rocky outcrop) that rises above the eastern side of the entrance to the bay. During the period of Spanish occupation, El Morro Esplanade was developed and maintained as an integral part of the military fortifications of El Morro and San Juan, with a key role in defensive military actions and also as a training ground. The 1991 Cultural Landscape Report considers this period to be of primary significance.

The 1991 Cultural Landscape Report considers the latter period, corresponding to the US Army occupation from 1898 to 1961, to be of secondary significance. The report emphasizes the development of El Morro Esplanade in the period of significance discussion, noting that the esplanade's "significant historic landscape qualifies had already been established by 1898."[244] Also, during the latter period, the US Army effected a significant change in function for the esplanade, with the esplanade developed for military support activities including housing and recreation. The 1991 Cultural Landscape Report also noted that during Period I the esplanade was open and undeveloped, without large structures or trees, and offering unobstructed views from the fort to the city. During the second period, from around 1930 to 1961, the US Army constructed roads and buildings and planted trees, creating a

239. Gjessing and Schmidt, 81.
240. National Park Service, *Final General Management Plan and Environmental Assessment* (San Juan National Historic Site, Puerto Rico, US Department of the Interior, National Park Service, December 1984, with FONSI and Statement of Findings, September 1985), 26.
241. Berkowitz et al., I, 16. Note that the 1991 report, *The Fortifications of San Juan National Historic Site: Historic Structure Report*, consists of three volumes; the Cultural Landscape Report is included as part of Volume III.
242. Ibid., 48–49.
243. Ibid., 48.
244. Berkowitz et al., III, 44–45.

different landscape and more limited views from the esplanade.[245]

Regarding resources from the American period, however, the 1991 Historic Structure Report noted, "It has been determined that the American periods do not include any other resources that are known to be significant and to merit preservation."[246] The HSR identified any features reconstructed by the US Army or the National Park Service as "non-historic" or "non-significant," and the remnants of Fort Brooke to be "insignificant and not worthy of preservation."[247] (The HSR later referred to World War II-era harbor defense features as "of secondary significance by comparison with the Spanish II period features"; at different points in the recommendations narrative, the HSR indicated that these features should be preserved, may be rehabilitated, or may be considered for removal.[248])

The draft National Register nomination identifies an overarching period of significance of 1540–1971.[249] The beginning date of this period is identified as when the Spanish first began construction of Castillo San Felipe del Morro, and the end date as the conclusion of World War II, after which the military use of the fortifications by the US Army ended. Within this overarching period of significance, the draft nomination cites the following periods associated with the specific areas of significance identified for the historic district, as discussed below. (The draft nomination also notes several significant dates related to historical events, including the start and end dates for the sub-periods of significance.) The periods associated with the areas of significance are defined as follows:

- Military History, 1540–1945
- Maritime History, 1540–1945

  For Military History and Maritime History, the beginning and end dates of the period of significance are consistent with the overarching period identified in the draft nomination. The draft nomination acknowledges that the US Army retained control of the fortifications until 1961, and further notes:

  > "during the period of significance, the fortifications of San Juan National Historic Site played an important role in the military strategy of Spain, and later the United States, in the defense of each country's control of the island of Puerto Rico as well as the defense of each country's claim to control of the maritime traffic and commercial trade associated with the island and the Caribbean."[250]

- Architecture, 1540–1945

  For Architecture, the period of significance begins with construction of the first defensive structure on the el Morro headlands, and concludes with the last architectural changes made by the US Army in preparation for World War II.

- Ethnic Heritage, 1913–1971
- Social History, 1913–1971

  For Ethnic Heritage and Social History, the period of significance begins in 1913:

  > when a growing sense of Puerto Rican nationalist cultural identity and the increasing neglect of the fortifications on the part of the Army, let [sic] the territorial government of Puerto Rico to petition[ed] the United States Army for release the fortifications to the "People of Puerto Rico." The site thereafter was subject of numerous Puerto Rican cultural preservation laws and local activism for historic

245. Ibid.
246. Berkowitz et al., I, 16.
247. Ibid.
248. Ibid.
249. Bulger, 7-8; 8-118.
250. Ibid., 8-121.

> preservation throughout the twentieth century."[251]

The period ends fifty years before the date of the nomination. The draft nomination notes that this end date is used "as scholarly research is not yet available with respect to the contemporary importance of the fortifications in modern Puerto Rican ethnic heritage and social history."[252]

- Entertainment/Recreation, 1898–1945

  For Entertainment/Recreation, the period of significance begins:

  > when the United States gained control of the fortifications and the surrounding land after the Spanish-American War. The United States military soon began the construction of recreation facilities and this institution was instrumental in popularizing and encouraging broad participation in team sports in Puerto Rico.[253]

  The period of significance ends with the conclusion of World War II, after which Fort Brooke was demobilized and its occupants returned home.

- Archeology - Historic, Non-Aboriginal, 1540–1945

  For Archeology - Historic, Non-Aboriginal, the period of significance begins with the earliest known historic occupation of the Park at the initiation of construction of Castillo San Felipe del Morro, and concludes with the end of the active use of the site by the United States military during World War II.[254]

The current nomination encompasses the period of significance relevant to the historic city wall, from 1539, with construction of the first Spanish defensive fortifications on the El Morro headlands, through 1971, fifty years before the date of the nomination.

251. Ibid.
252. Ibid., 8-122.
253. Ibid.
254. Ibid.

Integrity Assessment

According to the National Register of Historic Places, integrity is the ability of a property to convey its significance and the authenticity of its historic identity as a result of the survival of physical characteristics present during the period of significance. Historic integrity is the composite of seven qualities or aspects, which include location, design, setting, materials, workmanship, feeling, and association. Historic properties either retain integrity or they do not. Retention of a majority of the qualities or aspects of integrity is necessary for a property to convey its significance. However, not all seven qualities need to be present for a property to retain integrity.

Overall Integrity

Based on review of the historic periods of development, and consideration of change over time within the San Juan Historic City Wall cultural landscape, the property retains all aspects of integrity to the military period of significance (circa 1539–1945), as well as the period of significance that extends to 1971 for the property's association with the local community. Despite this extended period of local significance, there are no features present that specifically relate to local community activities established prior to 1971. As such, this aspect of integrity is not considered herein.

However, as relates to military occupation, the San Juan Historic City Wall cultural landscape continues to convey its historic associations with both Spanish and US military defense activities that occurred over more than 400 years. Numerous historic landscape features survive from the period of significance, contribute to the property's significance, and help to convey important historic associations. Features present today reflect the evolution of the landscape from early Spanish administration of a modest defensive outpost beginning in the early sixteenth century centered around two fortified positions—La Fortaleza and El Morro—both located outside of the San Juan Historic City Wall CLR project area and three supporting batteries facing the Bahía de San Juan entrance—San Gabriel, San Fernando, and Santa Elena— to a First Order defensive emplacement during the second half of the eighteenth century. The property today most closely approximates the wall and bastion system completed circa 1783 that surrounded and enclosed the city of San Juan, and connected the fortified positions at La Fortaleza, El Morro, and San Cristóbal that fall outside of the CLR project area. The wall and bastion system remains relatively intact today, and it features the full complement of walls, bastions, embrasures, firing steps, banquettes, garitas or sentry boxes, drainage structures and systems, and gates present circa 1783. Associated circulation features also survive from the period of significance, although some reflect US military occupation period adaptations of the property rather than Spanish-era developments. Repair, replacement, and restoration of some original fabric has occurred since the early twentieth century, with work completed by the various federal government agencies and programs, including the US Army, US Army Corps of Engineers, National Park Service, and Civilian Conservation Corps. These efforts diminish to a degree the integrity of design, workmanship, and materials of the San Juan Historic City Wall cultural landscape. Neither the eastern walls that were removed during the late nineteenth century to allow San Juan to expand, nor the segments of the South Walls that were deaccessioned at the same time fall within the CLR project area.

As of 2020, the overall arrangement and character of historic features is more consistent with the Spanish era of military occupation than the US military occupation period. Many of the features constructed by the US Army during the early twentieth century, which ranged from buildings and structures to roads, plantings, sports facilities, fences, utilities, and small-scale features, were removed following transfer of the property from the Department of Defense to the Department of the Interior in 1961. This process, generally completed by 1971, served to diminish integrity of design, feeling, and setting related to the US military occupation period, while restoring spatial organization and views characteristic of the Spanish military period. Otherwise, the majority of

the defensive wall-related features established by the Spanish were retained and maintained during the US military occupation period, suggesting that the property possesses integrity for both eras.[255]

Changes made by the National Park Service and Commonwealth of Puerto Rico since the period of significance have included the construction of El Paseo del Morro at the base of the West Walls between San Juan Gate and El Morro, a nature trail north of El Morro, replacement of earlier utility systems, addition of stormwater-management improvements, the addition of site furnishings, signage, walks, parking facilities, and other improvements to accommodate visitors and use by the staff of La Fortaleza. While these changes detract from the property's integrity of setting, feeling, and association, they have had a relatively minimal impact on the cultural landscape and are designed to protect the integrity of the historic property. Based on this, and the information presented below, the San Juan Historic City Wall cultural landscape possesses integrity of location, feeling, association, setting, design, workmanship, and materials.

Integrity by Quality

Location

Location is the place where the cultural landscape was constructed or the landscape where the historic event occurred.

The San Juan Historic City Wall cultural landscape continues to occupy the original site where it was first established between circa 1539 and 1783. The walls remain an integral feature of the defensive system designed and constructed by the Spanish beginning circa 1533 with La Fortaleza, El Morro in 1539, and the La Puerta de San Juan (San Juan Gate) circa 1540. Battery positions were located along the western edge of the promontory south of El Morro during the sixteenth century in similar locations to those present today, reflecting the importance of certain aspects of the landform and topography, and its command of the entrance into Bahía de San Juan. These relationships were formalized and connected to a more systematic defensive system following the outline of the promontory and surrounding the city of San Juan by 1783 that survives today with little change. Thus, the property retains integrity of location for the ongoing presence of a continuous system of perimeter walls and bastions lining the edge of the steeply sloped promontory at the head of Bahía de San Juan. The system continues to demonstrate important principles of military engineering and connects visitors with Spanish defense of the Isleta de San Juan.

San Juan City Wall thus retains integrity of location to both the Spanish and US military occupation periods.

Design

Design is the combination of elements that create form, plan, space, structure, and style of a cultural landscape.

The San Juan Historic City Wall cultural landscape retains the historic patterns of spatial organization and relationships between the built structures and naturally occurring landform and topography established by the Spanish military during the period of significance. These key relationships, and the work of military engineers to maximize defensive systems and the efficacy of artillery positions against the potentially avenues of approach by an enemy, are integral components of the design of the wall system. Other aspects of wall design relate to their position at the edge of the steeply sloped margins of the promontory, and the way in which the massive masonry structures extend up to 35 feet vertically and several feet in thickness, with an internal system of parapet walls, following both curtains and bastions, modified with a series of carefully placed embrasures. The design of the walls also included integral stormwater-management systems composed of swales, gutters, arched openings, and scuppers to allow water to pass through the walls. Sentry boxes

255. Evaluations of the significance of San Juan National Historic Site and El Morro Esplanade also sometimes divide the US military occupation period into two phases, including an early phase between 1898 and 1930, and a later phase between 1930 and 1961.

were designed to allow for look-out locations at forward locations of several intersecting bastion walls. All these elements of wall design, completed by 1783, remain in evidence today. Because they are located outside the CLR project area, the portions of the South and East Walls removed during the late nineteenth century do not impact integrity of the cultural landscape.

Most of the alterations that have been made to the walls since 1783 have entailed repair, rehabilitation, and restoration efforts. Several of the sentry boxes have been rebuilt. Initial efforts to rebuild these features were not completed using historically accurate forms and materials. The National Park Service has worked to restore more historically accurate features since the 1990s. The curtain wall between Santa Elena and San Agustín Bastion was rebuilt circa 1925-1939 following collapse of the historic Spanish period wall. The design of the existing wall is not consistent with the historic wall that it replaced. Instead it was engineered using concrete and other contemporary materials and design elements to protect against additional failure.

Historic maps indicate that most of the bastions remained undeveloped open space for most of the Spanish military occupation period. Exceptions include construction of guardhouses at the edge of San Antonio, Santa Elena, and San Agustín Bastions, all of which survive today but are outside of the CLR project area, and additional military buildings likely related to supply, storage, or housing needs, located within San Agustín, Santo Domingo, Las Ánimas, and Santo Tomás Bastions, not present today. Numerous additional buildings were later built within several of the bastions and El Morro Esplanade during the US military occupation period, along with roads and tree plantings, that are also missing today. Another change that affected the design of Santo Tomás and San Sebastián Bastions was the relocation and elevation of Norzagaray Street during the twentieth century. The road was moved to the south and elevated with a retaining wall built along the edge of San Sebastián and Santo Tomás Bastions that altered the relationship between the interior spaces and the road. The removal of buildings and plantings, and changes made to Norzagaray Street, diminish integrity of design as it pertains to patterns of spatial organization, although the elevation of Norzagaray Street likely occurred during the US military occupation period.

Despite these alterations of historic patterns of spatial organization, the San Juan Historic City Wall cultural landscape possesses integrity of design to both the Spanish and US military occupation periods. As noted above, integrity of design is diminished as a result of changes to spatial organization resulting from the removal of historic military buildings and plantings from several bastions, changes made to the curtain wall between Santa Elena and San Agustín Bastions and many of the sentry boxes, and alterations made to the adjacent elevation of Norzagaray Street.

Setting

Setting is the physical environment of the cultural landscape.

The San Juan Historic City Wall cultural landscape possesses integrity of setting due to the ongoing presence of many of the historic urban and environmental features present during the period of significance. At a broad scale, the surrounding context for the Isleta de San Juan, composed of the Atlantic Ocean to the north and the entrance to the Bahía de San Juan to the west remains consistent with that present during the period of significance. Similarly, development along the lower landform at the base of the North Walls composed of Cementerio Santa María Magdalena de Pazzis and the La Perla community also provide a similar setting to that present during the period of significance. Many of the buildings that edge the property within San Juan also survive from the period of significance and present a similar appearance and setting for the wall system.

Changes to the setting for the San Juan Historic City Wall cultural landscape include expansion of the La Perla community, development within San Juan that is visible from the promontory, and the establishment of El Paseo del Morro at the base of the West Walls. Urban park developments within

the spaces that edge the South Walls also postdate the period of significance and diminish integrity of setting through their contemporary character.

Despite these modest changes, the San Juan Historic City Wall cultural landscape retains integrity of setting to both the Spanish and US military occupation periods, diminished slightly by contemporary development within view to the south in San Juan, to the north within La Perla, and along the base of the West Walls associated with El Paseo del Morro.

Materials

Materials are the physical elements that were combined or deposited during the particular period(s) of time and in a particular pattern of configuration to form the cultural landscape.

Many of the original building materials associated with the San Juan Historic City Wall system survive from the period of significance. The stone masonry, brick, and various mortar materials used to construct many of the walls survives today. Repair and maintenance of the walls has resulted in the replacement of some original materials. Replacement has occurred both in kind and with new non-historic materials due to evolving preservation approaches and needs. For example, during the 1930s, several sentry boxes that had been lost over time were rebuilt. The new features were built from non-historic materials. Similarly, when the failed curtain wall between Santa Elena and San Agustín Bastions was rebuilt, concrete and other contemporary materials were used to ensure the safety of the wall from future failure. A concrete gutter built behind the curtain wall during the 1925-1939 rehabilitation, although completed during the period of significance, also introduced a new material not part of the historic wall system.

Post-historic period stormwater-management features located in association with Santa Elena and San Agustín Bastions are also built of non-historic materials, including earthen swales, metal grate coverings associated with drop inlets. Within most of the bastions, the space is maintained in turf grasses. These approximate historic materials but are likely more manicured than what was present in many of these spaces during the military occupation periods. Park features, such as site furnishings, safety bars, and signs; the concrete walk and stone veneer seatwalls and other features associated with Paseo del Morro; and the paving, walls, and planters characteristic of the two urban parks associated with the South Walls, also reflect the addition of contemporary materials since transfer of the property to the Department of the Interior and Commonwealth of Puerto Rico that were not present during the period of significance.

Regardless of these contemporary additions, the San Juan Historic City Wall cultural landscape retains integrity of materials to both military occupation periods due to the ongoing presence of the original walls and associated features.

Workmanship

Workmanship is the physical evidence of the crafts of a particular culture or people during a given period in history or prehistory.

Like the original building materials associated with the San Juan Historic City Wall system, workmanship related to construction similarly survives with integrity from the period of significance. Despite the extent of repairs that have been made since the twentieth century, substantial evidence of Spanish military period construction methods survives throughout the wall system.

Although several buildings were added during the second half of the nineteenth century by the Spanish military and the first half of the twentieth century by the US military, no evidence of these buildings and their associated materials and workmanship survives today.

Despite repairs and other limited changes that have been made to the wall system, the San Juan Historic City Wall cultural landscape possesses integrity of workmanship for the period of significance.

Feeling

Feeling is a cultural landscape's expression of the aesthetic or historic sense of a particular time.

The San Juan Historic City Wall cultural landscape possesses integrity of feeling as a result of the extensive surviving system of curtain walls and bastions, and related military defense features, continue to convey an ongoing sense of their original use as a fortification system to protect San Juan and the strategic Bahía de San Juan.

Diminishing integrity of feeling is the loss of active military use of the property and its replacement with park and recreational uses. Also diminishing integrity of feeling for both the Spanish and the US military occupation periods is the loss of buildings and other features formerly included within several of the bastions during the late nineteenth and early twentieth centuries that conveyed a sense of active use of the military reservation. The manicured, park-like appearance that characterizes many of the bastions, the two urban parks within the South Walls, and Paseo del Morro also diminishes integrity of feeling for the period of significance.

San Juan City Wall demonstrate integrity of feeling for the Spanish occupation period, as well as for the US military occupation period, although diminished due to the loss of many features built during the period.

Association

Association is the direct link between an important historic event or person and a cultural landscape.

The San Juan Historic City Wall cultural landscape continues to convey a direct historical association with Spanish military coastal defense and protection of the strategically important Bahía de San Juan due to the ongoing existence of the walls and bastions and the nearby fortifications at El Morro and San Cristóbal. Features such as the embrasures through which artillery could be fired, the look-out positions marked by sentry boxes, the connections between bastions and several nearby guardhouses and a powder magazine, also survive to convey integrity of association between the property and historic intended uses. Modifications to the system made during the late nineteenth and early twentieth centuries within Santa Elena Bastion and the Batería San Fernando indicate the ongoing use of the wall system and its adaptation to include updated coastal defense technology intended to protect against advances in weaponry and ship design.

San Juan City Wall thus demonstrate integrity of association for both the Spanish and US military occupation periods.

Comparative Analysis of Historic and Existing Conditions

Refer to Figure 303 through Figure 307, character area maps showing contributing features.

Landscape Characteristics

Historic landscapes are composed of both tangible and intangible landscape characteristics that survive from an identified period of significance. Individually, and collectively, these characteristics contribute to the significance of a place while also providing an aid to understanding the importance of the place. At the San Juan Historic City Wall, numerous landscape characteristics survive to convey a deep understanding between the place, its cultural uses, and environmental conditions. These characteristics include natural features and systems, responses to natural resources, patterns of spatial organization, land uses, circulation, cultural vegetation, buildings and structures, views and vistas, and small-scale features. Understanding the contribution of these characteristics to the property's historic significance is essential to the process of develop appropriate long-term management and treatment strategies that ensure protection of the resources and supports interpretation.

The section that follows is composed of a comparative analysis of historic and existing landscape conditions focusing on each of the landscape characteristics that comprise the San Juan Historic City Wall cultural landscape. The

comparative analysis explores change over time within the cultural landscape, and identifies features originating during the period of significance that retain integrity (contributing resources), those postdating the period of significance, not associated with one of the significant historic contexts of the property, and those that have lost integrity (non-contributing resources). The comparative analysis also identifies features that were present historically but do not survive today. Knowledge of these missing historic features is of interest to the potential understanding of archeological features and to interpretive programming.

The comparative analysis that follows addresses each landscape characteristic categories listed above to discuss the role of individual features during both the Spanish and US military occupation periods.

Natural Systems and Features and Responses to Natural Resources

Natural Systems and Features are the environmental resources and qualities that have influenced the development and physical form of a landscape. They include the underlying landform and topography, soils, and water resources, as well as attendant native plant communities.

Responses to Natural Resources describe the physical connections between the built and natural environment, such as the siting of buildings and structures and the use of native materials in construction.

Summary Analysis. Defense of Puerto Rico was critical to Spain's colonial efforts in South America. Development of fortifications at Puerto Rico was part of a larger effort conducted by the Spanish to safeguard their New World possessions, including México and Perú, where precious gems, gold, and silver were being extracted. Defense of Puerto Rico was seen as critical for maintaining their trade monopoly involving several key harbors in the Caribbean and the Gulf of México. Puerto Rico was also considered the gateway to the Caribbean for ships traveling to the New World from Europe and West Africa.

The direct connection between the military defensive strategies employed by the Spanish beginning during the 1530s, which continued through the establishment of a Defense of the First Order military post by 1783, and the natural form of the land upon which the defensives are sited remains clear and observable today. The natural forms and conditions—including an elevated promontory at the northwestern tip of the Isleta de San Juan, and the steeply sloped hillsides that edge the promontory to the north, west, and south—offered several advantages to the engineering of military defenses suitable for protecting the strategically important Bahía de San Juan. These conditions survive today and suggest the original rationale for the siting of El Morro in 1539 to command and control access to the harbor. Over time, the defenses were expanded and strengthened until they formed a system that surrounded the settlement of San Juan, located at the center of the Isleta, and included artillery outposts along the northern shoreline as well as opposite the channel leading into the harbor on Isla de Cabras. The defenses were sited to afford artillery positions capable of guarding the harbor approach to the city and its strategically important deep-water port. The edge of the promontory, which varies from cliff-like conditions to rocky slopes, was developed by the Spanish through the construction of massive masonry walls and bastions that extended above the grade of the esplanade to provide cover for soldiers manning artillery.

Management of the flow of stormwater, and protection of the perimeter walls from flooding and destabilization, was considered in the design of the structures by the Spanish. Segments of the walls where topography directs overland flow of stormwater were built with openings that allow the water to pass through and beyond the walls. Features indicated in the design of the walls by Spanish engineers generally included scuppers, or openings in the sides of walls, fed by earthen and masonry swales and channels.

During the early twentieth century, some sections of the West Walls began to fail, specifically the curtain wall located between Santa Elena and San Agustín Bastions. The US Army rebuilt the wall between 1925 and 1939 to include paved gutters and channels, scuppers, drains, culverts, and pipes. These coexist with additional drainage modifications added during the 1990s to address flooding that include earthen swales, drop inlets, catch basins, and pipes conveying stormwater through or beneath the walls. While several changes have been made to the West Walls to address stormwater management, the North Walls appear to retain their original systems and have not been updated.

The ongoing presence of the wall system, the clear relationship to the topography and the promontory occupied by El Morro and the San Juan Historic City Wall system, evidence of protected entrances through the walls that controlled access to the city, such as San Juan Gate, continue to convey the military defensive strategies employed by the Spanish. Today, the dramatic landform of the promontory, and the extent of the massive wall construction is more readily understood by visitors as a result of the addition of the Paseo del Morro, a walking path located along the western shoreline. From the trail, visitors can view the masonry walls, the orientation and position of the bastions on rocky outcrops, and sheer cliffs below San Fernando Bastion and El Morro. Visitors can also see the triangular shape of the embrasure openings that permitted a wide firing range for emplaced artillery. These views allow for an understanding of the design of the walls and their relationship to the natural landform and topography not possible from the upper promontory level.

Historic Conditions. The promontory upon which the San Juan Historic City Wall system sits is edged by steep slopes that fall away toward the Atlantic Ocean shoreline to the north and west and Bahía de San Juan to the southwest. During the early sixteenth century, the Spanish began to build defensive systems to protect their colonial interests in the Bahía de San Juan, a deep water port protected by surrounding landforms including the Isleta de San Juan to the north and Cabras Island to the northwest. The first defensive structure built by the Spanish circa 1521 was on the site of present-day La Fortaleza in response to an anticipated attack on Puerto Rico by the French.[256] After a hurricane destroyed the first structure, the Spanish began to build a more substantial fortress on a rocky promontory fronting the entrance channel into the bay in 1533 that became known as La Fortaleza.

Circa 1537, one colonist, Gonzalo Fernandez de Oviedo, raised concerns for the safety of the colony in a letter to the King of Spain, suggesting that an additional fortress would be needed on the on the land overlooking the entrance into the port at San Juan to afford a broader view of the approach to the colony by sea and more time to respond to an enemy threat, including Caribe Indians and pirates.[257] The King responded in 1538 by providing funds to develop an additional defensive structure at San Juan.

The result was a new fortification at the northwestern tip of Isleta de San Juan, sited on a commanding position atop the promontory. The fortification was itself named for the landform, as "el morro" means "promontory" or "headland" in Spanish. Work to develop El Morro began in 1539.

By 1559, additional defenses had been constructed between El Morro and Fortaleza as described by the governor of the island:

> At the main anchorage, which runs from La Fortaleza to the Morro, a wall canvas three hundred steps long and six in brick width with low embrasures on top with the platforms and battlements. Two morros, the one at the entrance of the port of this city, under the other old one, which was there in masonry with seven embrasures. Another under the monastery of Santo Domingo, where there is a landing. On the beach and the ship's surface, seven bastions are so wide that a culverin cannot pass them, placed at a distance that occupy a lot of space on the beach with their embrasures… I have opened roads in the

256. Rodrígues Lopéz and Rivera Groennou, 22.

257. Rodríguez López and Rivera Groennou, 23.

> convenient places so that those on horseback could pass to go to watch and do overdrive, which has been very important for the defense of this city.[258]

Soon thereafter, King Philip II (1556-1598) ordered additional defenses built under the direction of military engineers. In 1588, the Spanish had built three batteries—San Fernando, Santa Elena, and San Gabriel— based on designs prepared by Capt. Diego Menéndez Valdés and executed by Juan de Tejeda and Italian engineer Bautista Antonelli.[259] San Fernando was located just south of El Morro, while Santa Elena battery was built at the base of promontory along the shoreline rather than at the upper level. It occupied the shoreline below the landform referred to as Santa Elena on a map prepared in 1575 by Juan Escalante de Mendoza. Evidence of this early battery, which was rebuilt between 1591 and 1598, survives at the base of West Walls. San Gabriel occupied a rocky outcrop that would later be developed as San Agustín Bastion.

Walls also edged the shoreline near La Fortaleza to control access to the Islet via a single guarded entrance referred to as San Juan Gate, also completed during the sixteenth century (Figure 258.).

The urgency of establishing effective defenses at San Juan increased during the last years of the sixteenth century and during the early seventeenth century when the European powers with colonial interests—Spain, England, France, and Holland—began competing for territory and access to resources. Puerto Rico was attacked twice by the English during this period: in 1595 by Francis Drake and in 1598 by George Cumberland. Damage inflicted during the 1598 attack suggested the need for improvements to the system. By 1620, several repairs and reinforcements had been made to the garrison, including fortification of an island to the west of the harbor through construction of El Cañuelo, or the Fort of Saint John of the Cross.

Despite these improvements, the Dutch under the command of Boudewijn Hendricksz succeeded in overrunning the defenses. The Dutch would go on to occupy San Juan for 39 days before burning the city.[260] A map prepared by the Dutch in 1625 illustrates the configuration of the military defenses at the time (Figure 259).

In response to the Dutch attack and the increasing threat posed by pirates and corsairs in the Caribbean, Spain upgraded the batteries on the western edge of the promontory by building a system of forts connected by walls. The plans were based on proposals provided in 1587 by Valdés that had not been implemented at the time, including a comprehensive system of curtain walls and artillery batteries around much of the city. In the 1630s, the Spanish military began to build a continuous curtain wall between El Morro and La Fortaleza along the edge of the promontory, taking advantage of the precipitous drop in elevation between the promontory and the rocky shoreline to establish a formidable vertical obstacle to attack. The plan suggested continuing the wall system to the south and east of the city. Overall, the walls would measure approximately 10,000 feet in length and end at a second large fortification—Castillo San Cristóbal— built beginning in 1634 as part of these improvements. Once completed in 1650, the walls extended around the southern and western part of the city between El Morro and the highlands of San Cristóbal, with the West Walls rebuilt and new masonry walls to the south and east of the city.[261]

258. Rodríguez López and Rivera Groennou, 24, from a letter from Governor Diego de Caraza to the king dated October 8, 1559.
259. Rodríguez López and Rivera Groennou, 27; Arleen Pabón-Charneco, *The Architecture of San Juan de Puerto Rico: Five Centuries of Urban and Architectural Experimentation* (New York: Routledge, 2016).
260. Rodríguez López and Rivera Groennou, 27.
261. Ibid., 30.



FIGURE 258. Map of El Morro (top right) showing San Fernando, Santa Elena, and San Agustín batteries forming the defenses on the promontory overlooking the channel entrance into Bahia de San Juan north of San Juan Gate (bottom), circa 1678. (Source: Spanish Archives Portal (PARES), State Archives, Madrid, AGI Santo Domingo, Número 074)

The new curtain walls facing the bay were completed by 1639. Built with parapets anchored to the cliffs themselves, the curtain walls connected three key existing artillery positions—San Agustín, San Fernando, and Santa Elena.[262] Together with the curtain walls, Santa Elena and San Agustín Bastions formed ravelins. These positions appear on a map prepared by Luis Venegas Osorio in 1678 (Figure 260).

The rocky bluff forming the northern edge of the promontory was considered a natural barrier and was not improved as part of the improvements. An isolated defensive fortification, however, occupied the lower terrace of the shoreline midway along the northern coast to protect the settlement in this direction known as El Fortín de la Perla, or Fort of the Pearl. Along the south side of San Juan, the new wall segments supporting artillery emplacements included El Baluarte de Nuestra Señora de la Inmaculada Concepción (La Concepción Bastion), El Baluarte de las Palmas de San José (Las Palmas Bastion), El Baluarte de la Derecha de San Justo y Pastor (San Justo Bastion), El Baluarte del Muelle (Bastion of the Wharf), and El Baluarte dee San Pedro Martir (Bastion of San Pedro).

262. Ibid., 31–33.

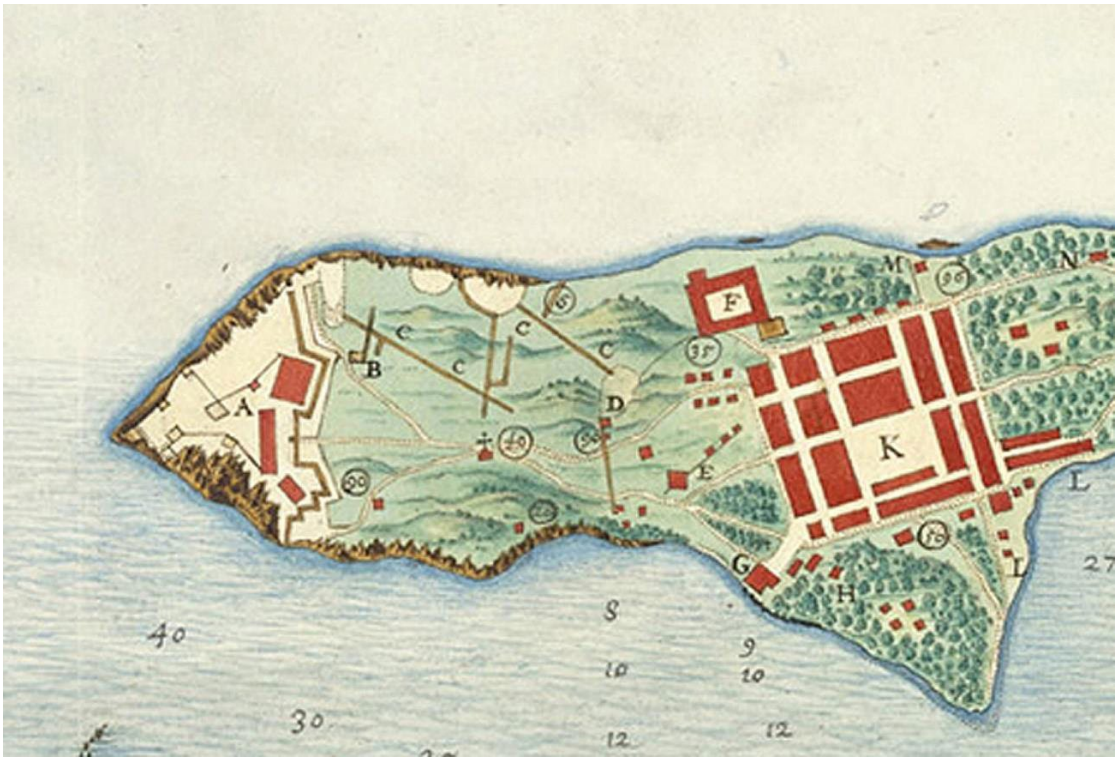


FIGURE 259. Circa 1625 Dutch map of San Juan showing the military defenses located at the western end of Isleta de San Juan, including El Morro (A), La Fortaleza (G), and batteries facing the entrance into Bahía de San Juan. (Source: As reprinted in Rodríguez López and Rivera Groennou, 30)



FIGURE 260. Map of San Juan, 1678, drawn by Luis Venegas Osorio, showing El Morro (bottom right), Santa Elena and San Agustín facing the channel entry into Bahia de San Juan (right), San Juan Gate (P) and La Fortaleza (A), as well as the South Walls (C), East Walls (D- F), San Cristóbal (G), and the fortifications along the north shoreline including El Fortin de la Perla (M). (Source: Spanish Archives Portal (PARES), State Archives, Madrid, AGI Santo Domingo, Número 074)

San Juan remained relatively quiet until the conclusion of the Seven Years War in 1763 when tensions and hostilities between Great Britain and Spain escalated, and efforts being conducted by England to attack and capture Spanish territories in America and elsewhere increased.[263] As a result, King Charles III of Spain ordered San Juan fortified as a Defense of the First Order in 1765 to protect against British incursions. In response to the order, Field Marshal Alexander (Alejandro) O'Reilly, with Chief Engineers Colonel Thomas (Tomás) O'Daly and Juan Francisco Mestre, began to enhance the existing defenses and complete designs for the addition of a north wall system. The North Walls, composed of six bastions—San Sebastián, Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, and San Antonio—and seven curtain walls, as well as two gates—San José and La Perla—were added as part of this effort. La Perla Gate provided access to the El Fortín de la Perla, a battery located on the lower terrace, while San José Gate provided access to the lower terrace between Santo Domingo and Santa Rosa Bastions, where military support structures appear to have been located. The plan proposed by the military engineers was executed over a period of several years and was completed circa 1783. The engineers were based nearby at Casa Blanca (built circa 1520) while they implemented O'Reilly's plans.

The walls complemented and accentuated the steep slopes at the base of the promontory as an obstacle to a potential enemy attack, extending as sheer masonry structures for 20 feet or more along the edge of the promontory, with an additional 4 feet or so of parapet above the esplanade. The parapet walls were designed to provide cover and concealment for the soldiers manning artillery at the openings in the wall known as embrasures. These and other walls in the system featured stormwater management systems designed to channel and conduct flow through openings in the walls. The openings, referred to as scuppers, were set at intervals along the interior face of the bastion and curtain walls. Paved channels and grass swales often directed the flow toward the openings. There were openings left through the walls at the base of many firing steps where stormwater could be channeled to exit.

Completion of the western end of the North Walls required filling a ravine that opened toward the Atlantic Ocean to the east of El Morro's outer walls. O'Reilly described the ravine as 660 feet long, 120 to 180 feet wide, and 10 to 18 feet deep. Earth excavated from a prominent knoll located on the Esplanade—Calvary Hill—was used to fill the ravine so that the walls could be built to engineering standards (Figure 261 and Figure 262).

Improvements were also made to the San Fernando, Santa Elena, and San Agustín Bastions of the West Walls and to the curtain walls extending between Santa Elena and San Agustín, and between San Agustín and San Juan Gate. Santa Elena Bastion was described during this time as having become a true fort with a polygonal form composed of eleven sides and four projections facing the channel leading to the harbor, with a *hornabeque* closing the land side.[264] The bastions along the southern edge of the promontory were also strengthened. The walls present today were principally a result of this effort. Reports of military authorities regularly cite problems and undercutting of the walls caused by stormwater, particularly on the western edge of the promontory where the steep slopes linking the upper esplanade with the West Wall system between Santa Elena and San Agustín Bastion were associated with fast moving and large quantities of overland flow during and after storm events.[265] The improved defenses proved successful when the British under the command of General Ralph Abercromby and Admiral Henry Harvey attacked but failed to capture San Juan in 1797.[266]

263. Rodríguez López and Rivera Groennou, 35.
264. Ibid., 38.
265. Ibid., 43.
266. Ibid., 35.

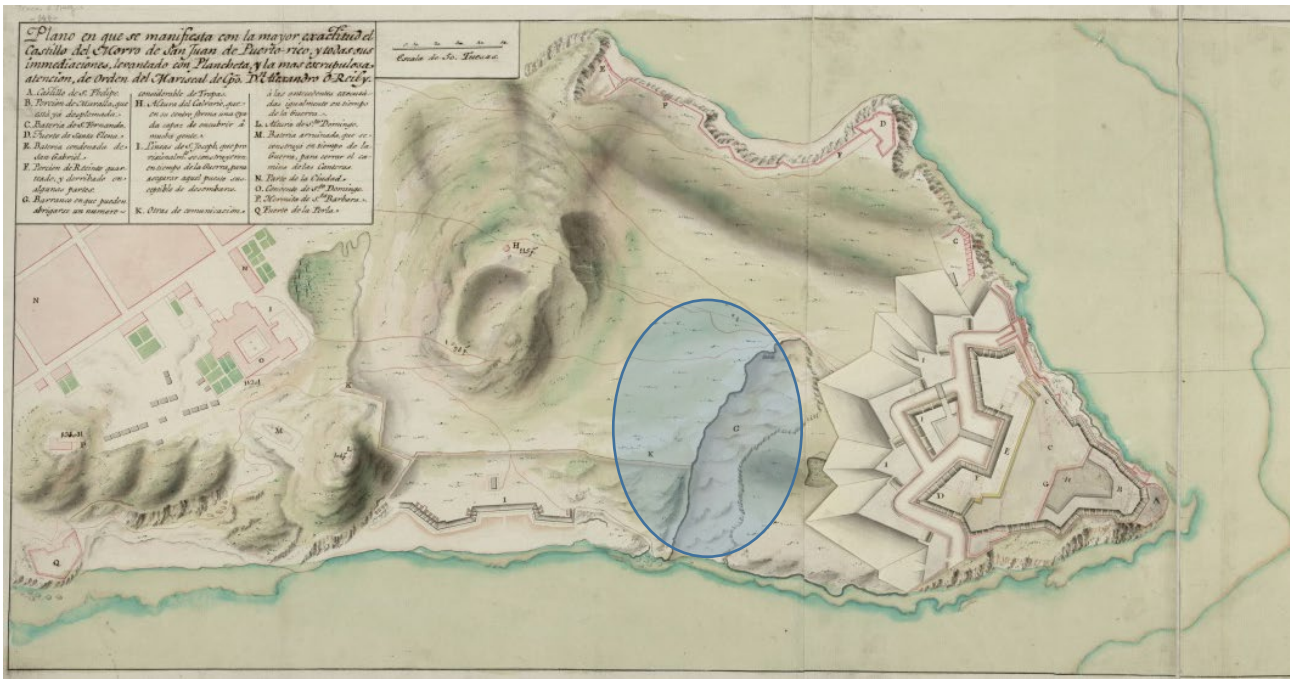


FIGURE 261. 1765 map illustrating the ravine (blue oval overlay), and San Fernando, Santa Elena, and San Gabriel bastions along the southwest coast. An isolated segment of wall appears on the northern edge of the Esplanade at this time. (Source: Park Archives, SJNHS, ARJT4C2651 1765)

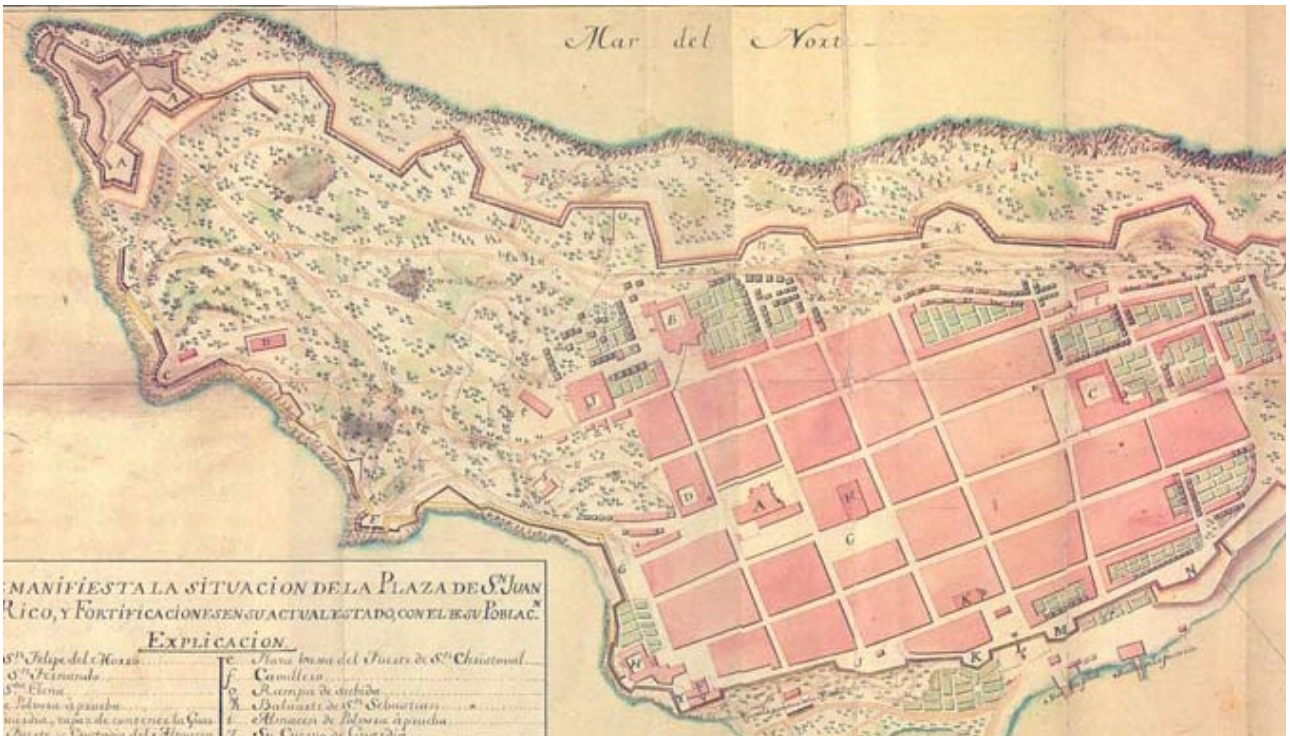


FIGURE 262. 1792 map illustrating the ravine (upper left) and hill (lower right). (Source: *Manuscrito por Juan Francisco Mestre,* Servicio Histórico Militar Núm. 5795, Madrid)

Few changes occurred to the wall system during the nineteenth century. By 1814, plans had been prepared to establish a city cemetery at the base of the North Walls between San Antonio and Santa Rosa Bastions. The cemetery was later expanded during the twentieth century to occupy the terrace between Santa Rosa and Santo Domingo Bastions. Access to the cemetery occurred along a road that

led to the site from San José Gate. By the late nineteenth century, maps indicate that development had begun to occur at the base of the North Walls to the east of Santo Domingo Bastion. In addition to a *matadero* (slaughterhouse), these maps suggest the presence of two residential neighborhoods referred to as La Perla to the west and San Miguel to the east (Figure 263).

Residential development within this area resulted from increasingly crowded conditions within the walled city of San Juan. By 1897, the situation had become dire, and the military agreed to remove the East Walls to allow the city to expand in this direction.

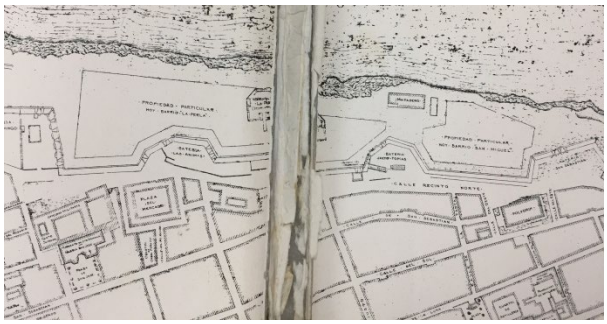


FIGURE 263. Detail of 1897 map of San Juan showing developments on the terrace below the North Walls, including El Fortín de la Perla, and the barrios of La Perla and San Miguel. (Source: https://www.geoisla.com/2018/07/plano-de-san-juan-antes-del-derribo-de-las-murallas-en-1897-1940)

Buildings also appear within some of the bastions during the nineteenth century, that may have been associated with grading of the land. These buildings include one within Santo Tomás Bastion near La Perla Gate, which may have served as a guardhouse, while others are present within Santo Domingo and San Agustín Bastions. The only other change to occur during the Spanish military occupation period within the CLR project area was construction of a modern concrete gun emplacement platform and battery near the sixteenth century San Fernando Battery south of El Morro. Construction of the battery was intended to modernize the coastal defenses of the military reservation. Referred to as Batería San Fernando, this battery was completed in the 1890s.

Between 1899 and World War II, the US Army oversaw several changes to the landscape located in and around the city wall system. These changes entailed terracing the land along the West Walls to establish an access road between San Agustín and Santa Elena Bastions and using the open spaces located within several bastions to site military support buildings. The US Army also conducted condition assessments of the walls themselves and developed plans for preservation and repair, many of which were not completed due to a lack of funding.

An earthquake in 1918 contributed to the failure of portions of the curtain wall between Santa Elena and San Agustín Bastions (Figure 264). The wall was shored up and portions rebuilt between 1925 and 1939.[267] Also rebuilt during this time were several of the sentry boxes that had been lost over time.

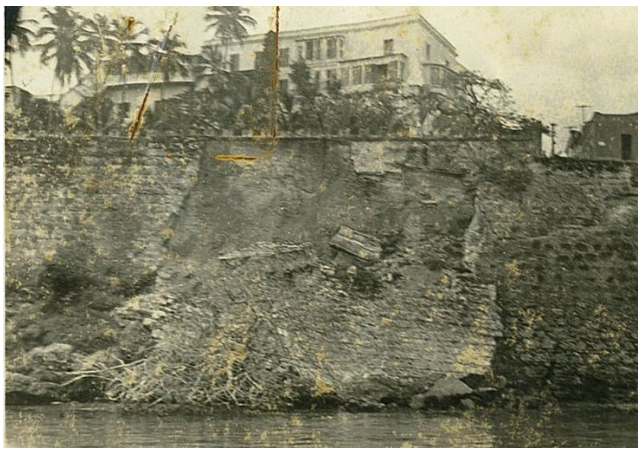


FIGURE 264. 1922 view of the collapsed curtain wall near San Agustín Bastion. (Source: Park Archives, San Juan National Historic Site, Cat. #16577, Acc#143)

During the early to mid-twentieth century, the landform to the south of San Sebastián and Las Ánimas Bastions was altered to shift Norzagaray Street to the south and elevate the road. A retaining wall was built to support the road during the 1950s that altered the bastion interiors by establishing a more contained and isolated space.

Since acquiring the property in 1961, the National Park Service has continued to conduct preservation and stabilization in association with

267. Berkowitz et al., volume III CLR, 31.

the walls. Collapse of a tunnel near Santo Domingo Bastion, and failing slopes near San Sebastián Bastion and south of El Morro were treated by the National Park Service during the 1980s through the 2000s. The failing slopes were stabilized using a spray-on form of concrete known as gunite or shotcrete in the 1980s and the 1990s (Figure 265). It was also during this period that the National Park Service, in conjunction with the US Army Corps of Engineers, regraded the road corridor built by the US Army as well as the landscape around San Fernando and Santa Elena Bastions to address stormwater management.[268]

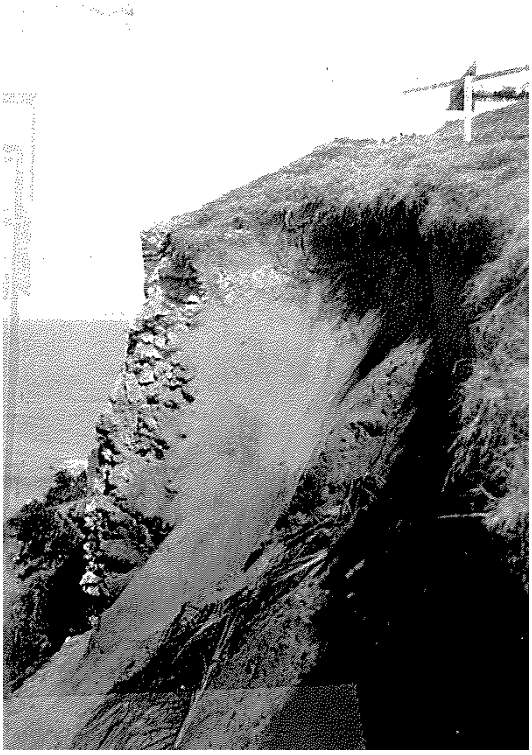


FIGURE 265. Collapsed hillside below San Fernando Bastion that has since been stabilized with shotcrete. (Source: Park Archives, SJNHS, image X10171623-0014, Cat #16399, ACC#143)

Another project that altered the natural features of the project area was construction of El Paseo del Morro circa 1995 at the base of the West Walls. The concrete walkway is built along the shoreline using placed boulders and rip rap where the water once closely edged the walls (refer to Figure 264).

Existing Conditions. The San Juan Historic City Wall cultural landscape continues to occupy the margins of the promontory on which the city of San Juan was initially built. The walls frame the promontory to the north and west as well as portions of its southern margin. Still evident are the commanding views of the Atlantic Ocean to the north and the navigable entry and channel into Bahía de San Juan to the west that were important considerations in the siting the walls and related fortifications. The walls continue to form a dramatic and formidable defensive edge to the promontory, which was designed to discourage attack. These qualities can be experienced by visitors traveling El Paseo del Morro, a concrete walk located at the base of the West Walls between San Juan Gate and El Morro. The walk was engineered through the placement of rock and rip rap along the formerly limited shoreline (Figure 266 and Figure 267). The lower terrace to the north of the North Walls is more extensive. It has been developed as Cementerio Santa María Magdalena de Pazzis and La Perla community, both of which sometimes closely edge the walls.

Evidence of responses to natural resources exist in the form of the placement and construction methods used for the wall and wall systems, including embrasures and sentry boxes to afford views to an attacking enemy and the drainage systems that direct stormwater to pass through the perimeter walls. Also evident are the preservation efforts conducted to address repair and stabilization of the historic walls features, such as replaced wall sections, the use of shotcrete to stabilize failing slopes, and the addition of contemporary stormwater management systems to control drainage at the West Walls.

268. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1998), 7.





FIGURE 266 and FIGURE 267. View of the West Walls during the late nineteenth century (above) illustrating the limited space between the walls and the water. As shown in a 2018 photograph, El Paseo del Morro, a paved pedestrian walk, follows the base of the West Walls today (below). The walk is protected by placed rip rap. (Source: Park Archives, SJNHS, Image X10162957-0004)

Evaluation

(Refer to Table 1)

Several natural features and systems survive within the San Juan Historic City Wall cultural landscape today that were present during the period of significance. These features, which contribute to the historic setting of the cultural landscape, include the dramatic topography of the promontory at the center of the Isleta de San Juan, as well as the steep slopes that edge and frame the landform, and a lower terrace that abuts the shoreline. Cultural responses to these natural resources also survive from the period of significance and contribute to the historic setting. These include the construction of military defensive batteries, bastions, and walls along the edge of the promontory, associated stormwater-management systems composed of drains, culverts, swales, scuppers, gutters, and paved channels that allow water to drain through the walls, and use of the lower terrace at the base of the North Walls to establish Cementerio Santa María Magdalena de Pazzis and La Perla. Construction of the North Walls near El Morro entailed grading to fill a ravine. The design of the walls and bastions accentuated the steep slopes edging the promontory thereby increasing the obstacle presented to an attacker. The engineering of the walls and bastions to address drainage and stormwater management prevented ponding and the potential for destabilization of the walls.

Responses to natural resources introduced after the period of significance by the National Park Service, the Commonwealth of Puerto Rico, and the municipality include additional stormwater-management systems composed of grass-lined swales, berms, catch basins, drop inlets, and pipes in association with the West Walls, use of shotcrete to stabilize failing steeply-sloped walls south of El Morro and near San Sebastián Bastion, adaptation of the shoreline below the West Walls to establish El Paseo del Morro and make it accessible to visitors, and the provision of riprap along the shoreline to protect the walk system. These later additions do not contribute to the historic setting of the property.

There are no examples of missing natural features and systems or cultural responses to natural resources associated with San Juan Historic City Wall.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Natural Systems and Features and Responses to Natural Resources					
Promontory landform		Natural feature; present by circa 1539		North Walls East, North Walls Esplanade, West Walls, South Walls	Contributes to historic setting
Lower terrace along the shoreline		Natural feature; present by circa 1539		North Walls East, North Walls Esplanade, West Walls, Paseo del Morro	Contributes to historic setting
Responses to Natural Resources					
Construction of military defensive batteries, bastions, and walls along the edge of the promontory		Circa 1560s–1783; 1897; 1917-1918	Several walls and bastions have undergone adaptations and repair; the curtain wall between San Agustín and Santa Elena Bastions was replaced by 1939	North Walls East, North Walls Esplanade, West Walls, South Walls, Paseo del Morro	Contributes to the historic setting
Stormwater management: use of drains, culverts, swales, scuppers, gutters, and paved channels in association with bastion and curtain wall design		Circa 1560s–1783; circa 1925-1939	Some stormwater-management systems have undergone adaptations and repair or replacement	North Walls East, North Walls Esplanade, West Walls, South Walls	Contributes to the historic setting
Use of the terrace below the North Walls to establish Cementerio Santa María Magdalena de Pazzis and La Perla		19th century	Portions of these features lie within the CLR project area	North walls	Contributes to the historic setting
Stormwater management: use of berms, swales, catch basins, drop inlets, and pipes		1990s–2000s	Systems associated with San Agustín and Santa Elena Bastions	West Walls	Does not contribute to the historic setting
Use of shotcrete to stabilize failing steeply sloped hillsides		Circa 1990s		North Walls East, West Walls	Does not contribute to the historic setting
Use of the terrace below the West Walls to establish El Paseo del Morro		Circa 1995		Paseo del Morro	Does not contribute to the historic setting
Use of rip rap to stabilize the shoreline adjacent to El Paseo del Morro		Circa 1999		Paseo del Morro	Does not contribute to the historic setting

TABLE 1. Assessment of landscape features related to San Juan Historic City Wall Natural Systems and Features and Responses to Natural Resources.

Land Uses

Land uses include the principal activities in a landscape that form, shape, and organize it as a result of human interaction.

Summary Analysis. Land uses currently associated with the City Wall include museum/interpretive/educational, recreational, residential, cemetery, commemorative, and conservation. Of these, only cemetery, recreational, and residential land uses were present during the period of significance. Since the US Army transferred ownership of the property to the National Park Service and Commonwealth of Puerto Rico, museum/interpretative/educational, commemorative, and conservation land uses have been introduced to the property. Other historic land uses present during the period of significance are no longer in evidence. Most prominent among these is a military land use. Also associated with the property during the Spanish and US military occupation periods were the related land uses of administration, housing, supply, storage, and services.

Historic Conditions. Between the establishment of the Spanish military fortifications, circa 1539-1783, and 1961 when the property was transferred from the US Department of Defense to Department of the Interior, the principal land use associated with the San Juan Historic City Wall cultural landscape was military. The walls and bastions were emplaced with artillery that supported military defense.

A municipal cemetery was laid out at the base of the North Walls between San Antonio and Santa Rosa Bastions in 1814. By the mid-nineteenth century, the cemetery was actively in use, with graves located in proximity to, and sometimes within, the base of the walls themselves (Figure 268). Access to the cemetery occurred via the San José Gate, established as part of the North Wall system by 1783.

It was also during the nineteenth century that crowding within San Juan led to the construction of dwellings on the lower terrace north of the North Walls to the east of San Sebastián Bastion and the formation of the La Perla community named for the outerwork battery located along the shoreline. Access to the community occurred via La Perla Gate, established with the North Wall system by 1783.



FIGURE 268. View of Cementerio Santa María Magdalena de Pazzis that closely edges portions of the North Walls, 2018.

The Spanish began to construct buildings within some of the bastion spaces and El Morro Esplanade during the nineteenth century. These buildings supported such needs as military administration, housing, supply, storage, and service land uses. This use continued with US military occupation between 1899 and 1961.

Recreational uses were introduced by the US military with the development of a nine-hole golf course within El Morro Esplanade between 1907 and 1911 (Figure 269). Outside of the project area, a baseball field was later added near the northeast corner of the Esplanade circa 1923, tennis courts north of San Agustín Bastion by 1929, and an above-ground swimming pool at the edge of San Antonio Bastion by 1931.

The federal government established San Juan National Historic Site at the site of the San Juan Historic City Wall project area in 1949. In 1961, the US Department of Defense transferred the property to the Department of the Interior and Commonwealth of Puerto Rico, after which many of the US Army facilities were removed. At this time, all military and related land uses ceased to operate within the San Juan Historic City Wall cultural landscape with the completion of this removal effort in 1971.



FIGURE 269. View of use of San Antonio Bastion as part of a golf course developed by the US Army as part of Fort Brooke, 1940. (Source: Park Archives, SJNHS, 69GU1288)

Since the 1970s, the National Park Service has introduced museum/interpretative/educational land uses for the benefit of the public through the provision of ranger-led tours, wayside exhibits, and pamphlets. The National Park Service also allows the use of accessible open space for certain forms of recreation, such as walking, jogging, dog walking, picnicking, and kite flying. Construction of El Paseo del Morro circa 1995, and extension of Paseo del Morro in 2013–2015, has increased opportunities for these recreational activities (Figure 270). Since the 1970s, commemorative land uses have also been introduced in the form of plaques, sculptures, and statues within La Rogativa Plaza and Las Palmas Bastion that honor individuals and events important in Puerto Rican history. The final land use that has been introduced since the National Park Service assumed administrative responsibility for the property is conservation. This occurs within Santa Elena Bastion where treatment of historic armaments is being conducted as part of the Metal Artifacts Conservation Project, anticipated to continue until all the cannon and metal objects have been preserved circa 2024.



FIGURE 270. Visitors use Paseo del Morro for walking and jogging, popular recreational land uses associated with the park today.

Existing Conditions. As noted, the land uses in evidence today within the San Juan Historic City Wall cultural landscape include museum/ interpretative/ educational associated with wayside exhibits and ranger-led tours; recreational activities such as kite flying, dog walking, jogging, and picnicking enjoyed by visitors; commemorative in association with La Rogativa plaza that features a 1971 statue commemorating an organized march through the streets of San Juan in 1797, and Las Palmas Bastion, where there is a bust of Venezuelan military leader and revolutionary Francisco de Miranda. Residential land uses are associated with the community of La Perla located at the base of the North Walls east of the San Sebastián Bastion, while cemetery land uses occur within Cementerio Santa María Magdalena de Pazzis at the base of the North Walls between San Antonio and San Sebastián Bastions.

Evaluation

(Refer to Table 2)

Land uses that contribute to the historic setting of the San Juan City Wall include cemetery, residential, and recreational.

Those that post-date the period of significance and do not contribute to the historic setting include commemorative, conservation, and museum/interpretive/educational.

Land uses that are missing from the period of significance include military, administrative, housing, supply, storage, and services.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Land uses					
Cemetery		Circa 1814	Cementerio Santa María Magdalena de Pazzis	North Walls Esplanade	Contributes to the historic setting
Residential		Circa late 19th century	La Perla	North Walls East	Contributes to the historic setting
Recreational		Circa 1907–1911; 1923; 1929; 1931	Paseo del Morro added circa 1995	North Walls East and Esplanade, West Walls, South Walls	Contributes to the historic setting
Commemorative		1970s	La Rogativa Plaza and Las Palmas Bastion	West Walls, South Walls	Does not contributes to the historic setting
Museum/ interpretive/ educational		1970s		North Walls East and Esplanade, South Walls, Paseo del Morro	Does not contribute to the historic setting
Conservation		2000s		West Walls	Does not contribute to the historic setting
Military		*Circa 1539*			*Missing*
Administrative		*Spanish and US military occupation periods*			*Missing*
Housing		*Spanish and US military occupation periods*			*Missing*
Supply, storage		*Spanish and US military occupation periods*			*Missing*
Services		*Spanish and US military occupation periods*			*Missing*

Table 2. Assessment of landscape features related to San Juan Historic City Wall Land Uses.

Spatial organization

Spatial organization is the three-dimensional organization of physical forms and visual associations in a landscape, including the articulation of ground, vertical, and overhead planes that define and create spaces.

Summary Analysis. The primary characteristic of spatial organization associated with San Juan Historic City Wall cultural landscape is the linear form of the wall system as it wraps the edge of the promontory at the center of the Isleta de San Juan and the northern, western, and southern sections of the city. The raised parapets of the walls form a

spatial edge to Norzagaray Street west of San Cristóbal, the open space of the esplanade near El Morro (Figure 271), Casa Rosa Road, and the western edge of the city to La Fortaleza, as well as two city parks—Parque de las Palomas at La Concepción Bastion and the park at Las Palmas Bastion.

Ten bastions extend forward from the linear form of the walls—San Sebastián, Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, San Antonio, Santa Elena, San Agustín, La Concepción, and Las Palmas. The interiors of the bastions are open green spaces characterized by turf lawn and edged by parapet walls on one side, many of which afford expansive views to the north, southwest, and south, and urban fabric or El Morro Esplanade on the other. Views occur through openings in the walls known as embrasures that were designed for artillery, the windows of the sentry boxes (garitas) located at the forward-most point of some bastions, and over the tops of the parapet walls in some cases where the land rises to the rear of the structures. Focal points anchor the walls to the northwest, east, and southeast at El Morro, La Fortaleza, and San Cristóbal. Missing today are sections of the south and east walls, located outside the CLR project area, which completed a perimeter system surrounding the city of San Juan between circa 1783 and the late nineteenth century.

Dense development that dates to the nineteenth century edges the North Walls on the lower terrace in the form of La Perla and Cementerio Santa María Magdalena de Pazzis, while the arterial road—Norzagaray Street edges the space to the south. Where the road has been elevated to better relate to the urban fabric to the south it is edged to the north by a retaining wall that separates San Sebastián and Santo Tomás Bastions from the city; both are now contained spaces edged to either side by walls.



FIGURE 271. The North Walls as they frame the open space of the Esplanade, 2018.

Breaks in the form of historic gates permit passage between the continuous vertical system of the defensive walls near La Fortaleza at the end of the West Walls, between Santa Rosa and Santo Domingo Bastions, and at Santo Tomás Bastion. During the late twentieth century two additional passages providing pedestrian access to La Perla were added that span the North Walls. These structures altered historic spatial patterns by establishing new circulation routes and breaking the line of the wall system with contemporary features.

The lower terrace is accessible along the North Walls within Cementerio Santa María Magdalena de Pazzis and La Perla. Here, the walls form a dramatic edge to the space, extending vertically from 15 to 50 feet in height. El Paseo del Morro, added circa 1995, provides access to the lower terrace at the base of the West Walls, forming a similar edge to the space associated with the pedestrian walk.

The interiors of several of the bastions have changed since transfer of San Juan National Historic Site from the US Department of Defense to the Department of the Interior. During both the Spanish and US military occupation periods, several of the bastions housed buildings constructed to accommodate military needs ranging from administration to housing, supply, storage, and services. The US Army also built fences around some of these developed bastions and planted trees around some of the buildings. The buildings, fences, and trees were later removed by 1971, returning the bastion spaces to the open character present during much of the Spanish military occupation period.

Historic Conditions. Circa 1539 to 1783, the Spanish military developed a comprehensive system of defensive structures along the edge of the promontory associated with the Isleta de San Juan. The initial structure built to defend the harbor was La Fortaleza located facing the channel leading to the harbor, initiated in 1533. By 1539, a large fortification was under construction at the northwestern tip of the Isleta de San Juan with a commanding view of the harbor entrance and expansive views of the waters to the north, west, and south. Artillery positions were later added between El Morro and La Fortaleza to further defend the approach to the harbor. Two of these—Santa Elena and San Gabriel, later San Agustín—occupied rocky outcrops that extended forward from the promontory, allowing for more expansive views of the harbor. The artillery positions were designed to protect San Juan from attack by way of the sea, principally through the narrow navigable channel leading to Bahía de San Juan between the Islet of San Juan and Cabras Island. During the seventeenth century, a second fortification—Castillo San Cristóbal—and a fortified position on Cabras Island known as El Cañuelo were added to these defenses.

The isolated batteries established during the sixteenth and seventeenth centuries were linked to create a comprehensive defensive system of walls and bastions between 1765 and 1783. As part of this effort, the Esplanade to the south of El Morro was transformed into a central open space edged by a comprehensive system of walls to the north and formalization of bastions and curtain walls to the west; irregularities in the terrain, such as a ravine east of El Morro; and a knoll to the southeast of the fort, were regraded to improve the defensibility of the space. The walls continued along the entire northern edge of the promontory to San Cristóbal, which anchored the system to the east. The walls and two bastions—Santo Tomás and San Sebastián—sat below a sloped hillside occupied by the urban fabric of the city. Additional walls enclosed the city northwest of San Juan Gate and to the south of the urban fabric. Access to the city was afforded through several guarded openings or gates, including San Juan, La Perla, and San José. Once completed, San Juan was considered among the strongest fortified cities in the Caribbean.[269]

Buildings were sited near or within the spaces formed by several of the bastions by 1864, such as guardhouses at La Perla Gate in Santo Tomás Bastion, and guardhouses at Santa Elena and San Agustín Bastions, both located outside the CLR

269. Berkowitz et al., volume III, 21.

project area. A small, unidentified structure also appears within San Sebastián Bastion by this time (Figure 272), while two buildings appear within Santo Domingo Bastion (Figure 273). The bastions otherwise appear to have remained undeveloped and in open grass cover.

Also appearing on the 1863 map is Cementerio Santa María Magdalena de Pazzis, including the columbarium, along the curtain wall between San Antonio and Santa Rosa Bastions first planned circa 1814. A road appears on the map showing that the cemetery is accessed from the city through San José Gate. The outerwork at La Perla appears on both the 1863 and 1864 maps on the lower terrace north of the North Walls, while the slaughterhouse is indicated on the 1863 map. The western shoreline is rendered as generally narrow, rocky, and impassable.

During the US military occupation period, the US Army built several more buildings and structures within the open spaces associated with the San Sebastián, Santo Tomas, Las Ánimas, San Domingo, San Antonio, Santa Elena, and San Agustín Bastions (Figure 274). Among the new features were coastal defense structures located within Santa Elena Bastion added during World War I. Tree plantings were added in association with many of the new buildings as seen in photographs of San Antonio, San Sebastián, and San Agustín Bastions.

All these structures and tree plantings were later removed when the property was transferred to the Department of the Interior; the only surviving evidence of these buildings and associated landscape features include limited masonry ruins and evidence of grading. Also altered during the mid-twentieth century was the relationship between the urban landform and Santo Tomás and San Sebastián Bastions when Norzagaray Street (formerly Del Valle Boulevard) was elevated and a retaining wall constructed at the southern margins of the interior open space (Figure 275).

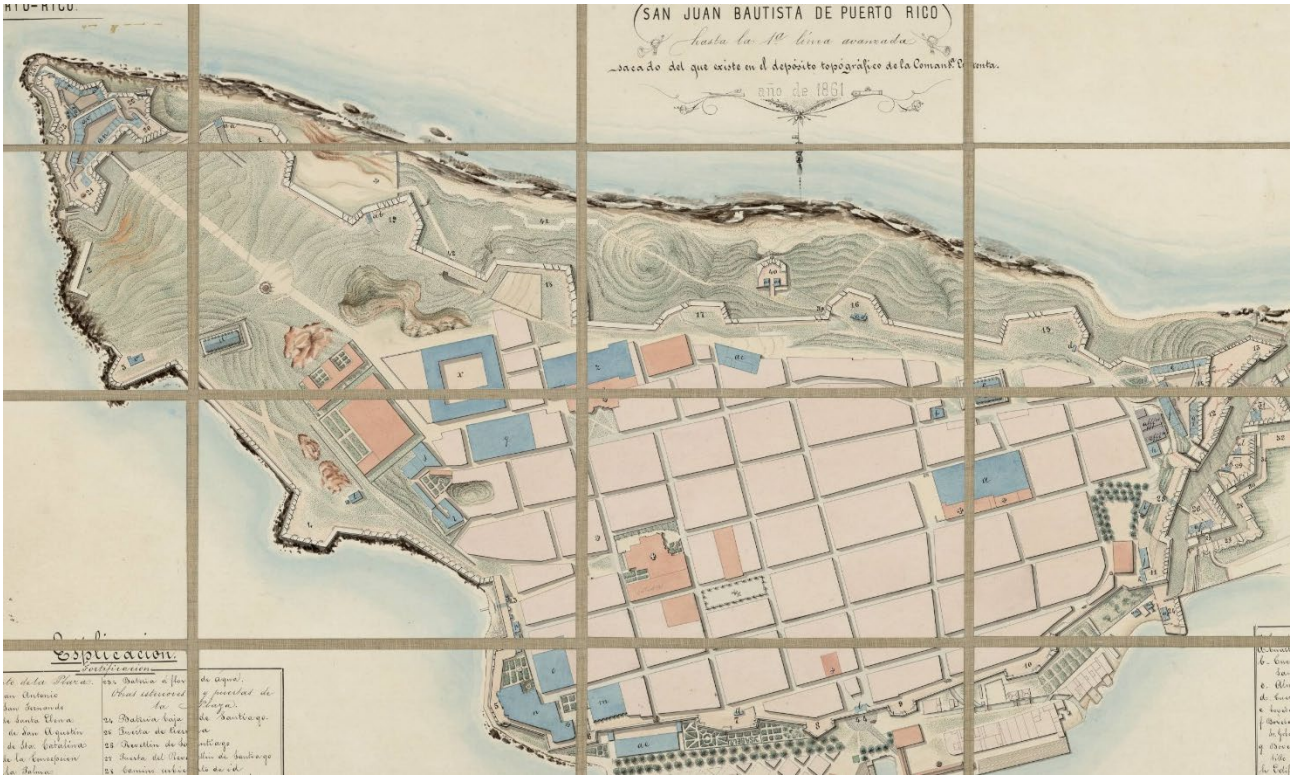


FIGURE 272. Map of 1864 showing the completed arrangement of perimeter walls, El Morro and San Cristóbal, and the buildings associated with several of the bastions. (Source: Park Archives, SJNHS ARJT4C2601 1861)



FIGURE 273. 1863 Map illustrating the wall system and arrangement of buildings within and near several of the bastions. (Source: Park Archives, SJNHS)

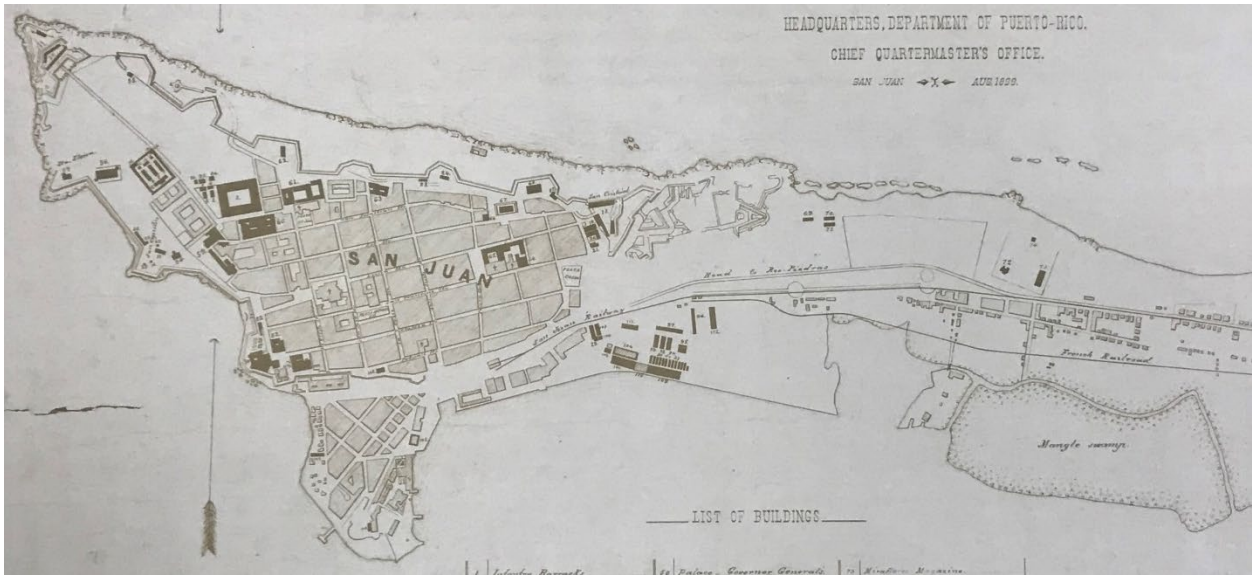


FIGURE 274. 1899 map of the US military reservation at San Juan illustrating the locations of buildings associated with bastions and El Morro Esplanade. (Source: Park Archives, SJNHS)

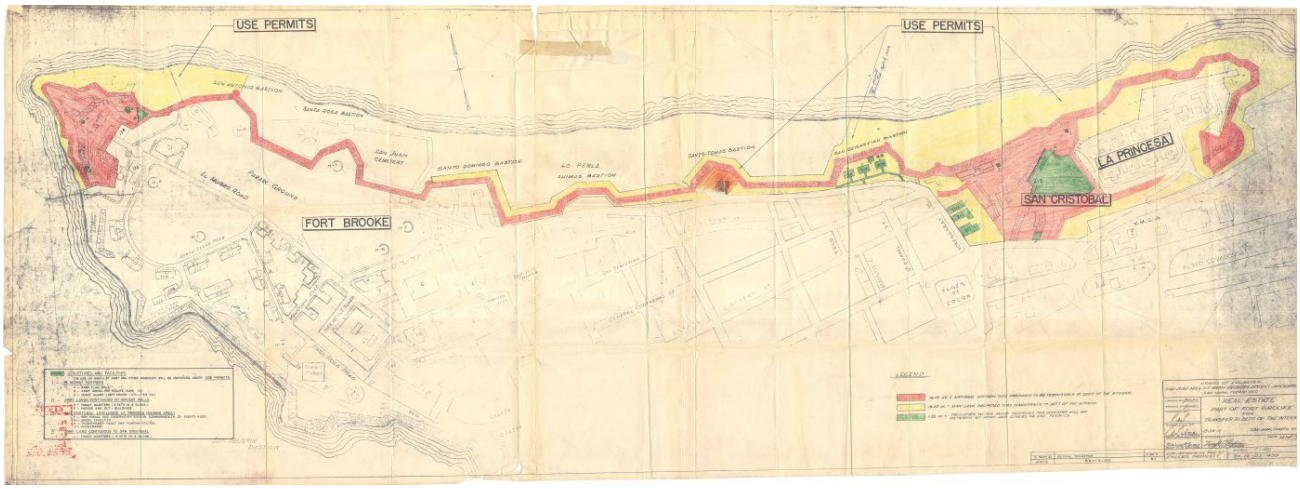


FIGURE 275. US Army map of Fort Brooke, circa 1951, showing the built features associated with the bastions and El Morro Esplanade. (Source: US Army Corps of Engineers, San Juan Area, US Army Engineer District Jacksonville, September 22, 1960, revised September 5, 1961 from Park Archives, SJNHS, 20141212130416073)

Nearly all evidence of US Army developments added between 1899 and 1961 were later removed, returning the bastions to an open character. Other changes to the spatial organization of the San Juan Historic City Wall cultural landscape have included the establishment of access structures over and through the North Walls to provide access to La Perla; construction of fencing within Santa Elena Bastion to accommodate the Metal Artifacts Conservation Project until completed circa 2024; and establishment of El Paseo del Morro along the western shoreline that occupies the formerly rocky coast.



FIGURE 276. Visitors enjoying the open green space associated with San Sebastián Bastion, 2018. The space is edged by a tall retaining wall at Norzagaray Street.

Existing Conditions. The primary elements of spatial organization that characterize San Juan Historic City Wall cultural landscape include the comprehensive system of walls that form a dramatic vertical edge to the lower terraces and a parapet that frames linear curtain walls and ten outward extensions known as bastions sited atop the promontory. The walls are anchored by larger fortifications that lie outside the CLR project area in the form of El Morro at the northwestern tip of the Isleta de San Juan, San Cristóbal to the east, and La Fortaleza at the southern end of the West Walls. The walls are broken by narrow slots of space designed for artillery by the Spanish called embrasures that allow for periodic views to the ocean, harbor, and lower terraces areas occupied by Cementerio Santa María Magdalena de Pazzis and La Perla to the north and El Paseo del Morro to the west. Views from the South Walls of the lower terrace is of urban fabric.

Three gates that were built to provide access through the wall system by 1783 also survive. Two—La Perla and San José—are located within the North Walls, while San Juan is located at the end of the North Walls.

Open green spaces and urban streets and parks edge the walls and bastions. These spaces support recreational use by visitors. Some also provide educational opportunities in the form of wayside exhibits (Figure 276). Historic buildings are located near but not within the CLR project area,

including guardhouses associated with San Antonio, Santa Elena, and San Agustín Bastions. The North Walls are closely edged by Norzagaray Street, a major thoroughfare edged by sidewalks and site furnishings. Institutions and other urban streets, plazas, and buildings edge the wall and bastion system along portions of the West Walls and the two segments of the South Walls.

The lower levels of the walls are edged to the north by Cementerio Santa María Magdalena de Pazzis and the community of La Perla and to the west by the recreational trail Paseo del Morro. Associated with the trail are seating areas, plazas, and overlooks that edge the winding concrete path.

Evaluation.

(Refer to Table 3)

Spatial organization associated with the San Juan Historic City Wall cultural landscape is principally the result of the work of the Spanish military to establish the North, West, and South Walls between circa 1560 and 1783. Patterns of spatial organization contributing to the historic setting of the cultural landscape include the surviving North, West, and South Wall Systems and El Morro Esplanade. Adjacent features at the base of the North Walls, including La Perla and Cementerio Santa María Magdalena de Pazzis, were also established during the period of significance and are directly associated with the walls. These features also contribute to the historic setting of the cultural landscape.

Later changes and additions that occurred during the US military occupation period that also contribute to the historic setting of the cultural landscape include the elevated alignment of Norzagaray Street and associated retaining walls that altered the spatial configuration of San Sebastián and Santo Tomás Bastions.

Changes that postdate the period of significance and do not contribute to the historic setting of the cultural landscape include the addition of La Rogativa Plaza along the West Walls and Parque de las Palomas and Park at Las Palmas Bastion along the South Walls. Pedestrian access structures spanning the North Walls are also later additions that do not contribute to the historic setting, along with the Paseo del Morro recreational trail.

Missing patterns of spatial organization associated with the period of significance include former military buildings, walls, fences, trees, and recreational features located within several of the bastions.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Spatial organization					
North Wall system		By circa 1783		North Walls East and Esplanade	Contributes to the historic setting
Community of La Perla		19th century		North Walls East	Contributes to the historic setting
Cementerio Santa María Magdalena de Pazzis		19th century		North Walls Esplanade	Contributes to the historic setting
El Morro Esplanade		Circa 1539–1897		North Walls Esplanade	Contributes to the historic setting
West Wall system		Circa 16th–19th century		West Walls	Contributes to the historic setting
Norzagaray Street elevated and edged by a retaining wall at San Sebastián and Santo Tomás Bastions		Circa 1950s		North Walls East	Does not contributes to the historic setting
La Rogativa Plaza		1971		West Walls	Does not contribute to the historic setting
Parque de las Palomas		Undetermined (post 1971)	La Concepción Bastion by 1783	South Walls	Does not contribute to the historic setting
Park at Las Palmas Bastion		Undetermined (post 1971)	Las Palmas Bastion by 1783	South Walls	Does not contribute to the historic setting
Pedestrian access structures to La Perla		Undetermined (post 1971)		North Walls East	Do not contribute to the historic setting
Paseo del Morro, including plazas, overlooks, and seating areas		Circa 1995		Paseo del Morro	Does not contribute to the historic setting
Military buildings, trees, and recreational features located within San Agustín Bastion, Santa Elena Bastion, San Fernando Bastion, San Antonio Bastion, Santo Domingo Bastion, Santo Tomás Bastion, and San Sebastián Bastion		*1897–1971*			*Missing*

TABLE 3. Assessment of landscape features related to San Juan Historic City Wall Spatial Organization.

Cultural vegetation

Cultural vegetation is composed of the deciduous and evergreen trees, shrubs, vines, ground covers, and herbaceous plants that have been introduced in a landscape by cultural activities.

Summary Analysis. The San Juan Historic City Wall cultural landscape focuses on the walls themselves, while also encompassing the interiors of five bastions—San Sebastián, Santo Tomás, Las Ánimas, Las Palmas, and La Concepción—the lower terrace and shoreline east of and associated with San Sebastián Bastion, along with a 30-foot-wide strip of land that parallels the remainder of the North Walls, and the extent of the land outside the walls between the center of San Antonio Bastion to San Juan Gate. Cultural vegetation associated with the open space comprising the CLR project area varies from volunteer meadow and woody species north of the North Walls, turf grass within the bastion interiors, grasses and sea grape on the hillside along the margins of El Paseo del Morro, and ornamental tree plantings within La Rogativa Plaza, Parque de las Palomas, and the Park at Las Palmas. The only example of cultural vegetation that contributes to the historic setting of the San Juan Historic City Wall cultural landscape is the turf grass maintained within the bastion interiors. The remaining cultural vegetation postdates the period of significance or is associated with National Park Service administration of the property. Missing cultural vegetation includes tree plantings added in association with buildings constructed within the North Walls East bastions during the US military occupation period, later removed by 1971.

Historic Conditions. The tropical climate and plentiful rainfall enjoyed by San Juan generally supports lush vegetation. Early Spanish explorers and colonists, such as Rodrigo de Figueroa in 1519, described the Isleta being wooded when they first arrived.[270] While the site of El Morro and the associated esplanade were likely cleared of woody vegetation when the military fortification was built beginning circa 1539, much of the remainder of the isleta appears to have retained much of the original woody vegetation throughout the sixteenth century based on period accounts, such one written by Reverend John Layfield in 1598:

> within and surrounding the town, there are large numbers of coconut palms, in addition to the large fruit, these provide a poetic and wonderful aspect to the scenery… The hills are crowded with fruit trees; lemons, limes, and oranges are ordinarily found where no man has sown them.[271]

Within the military occupation areas, field and turf grasses appear to have been a key component of the landscape. The 1625 Dutch map (refer to Figure 259) illustrates the open character of the military emplacements located around El Morro, the esplanade, and the promontory between El Morro and La Fortaleza. The way in which the map is rendered suggests that the northwestern end of the isleta was entirely managed in grass cover. The current locations of the North Walls East and the South Walls appear wooded on the map. The sketch map of El Morro and San Cristóbal prepared by Luis Venegas Ossorio in 1678 similarly suggests the open character of the esplanade, while indicating the presence of trees elsewhere around the city (refer to Figure 260).

Maps of the isleta prepared during the late eighteenth century, when the perimeter wall system was complete show the military landscape as relatively open and grassy, and dotted with what appear to be small shrubs (refer to Figure 262). Elsewhere, the isleta had also been cleared of trees as indicated in a report prepared by French naturalist André Pierre Ledrú in 1797 that indicated woody vegetation was generally lacking throughout the city, and that "it was necessary to travel 3 miles from the city to find habitat in which to gather specimens."[272] French naturalist,

270. Berkowitz et al., volume III CLR, 19; from Juan Manuel Zapatero, *La Guerra del Caribe en el Siglo XVIII* (San Juan: Instituto de Cultura Puertorriqueña, 1964), 279.

271. Berkowitz et al., volume III CLR, 20.

272. Berkowitz et al., volume III CLR, 20; from Eugenio Fernández Mendez, *Crónicas de Puerto Rico (1493–1797)* Vol. I (San Juan:

Auguste Plée, in a sketch of the esplanade prepared in 1821, indicated the presence of only one palm tree within the entire open space, located near the moat and sallyport of El Morro. Throughout the remainder of the Spanish military occupation period, it is likely that the cultural landscape of the project area remained open, as suggested by photographs from the 1890s that showed the esplanade and other areas barren of trees.[273]

Evan after the US Army began to occupy the San Juan Military Reservation the landscape appears to have remained under grass cover. Early twentieth-century photographs continued to show an open landscape, at least until buildings begin to be added. A circa 1905 photograph indicated a single immature palm tree growing near the newly built Commanding Officer's Quarters located along El Morro Road outside of the CLR project area; trees later appear in association with many of the building clusters added within several of the bastion interiors, as well as on El Morro Esplanade.

Circa 1907-1911, the US Army installed a nine-hole golf course near El Morro and within the esplanade that included tee boxes and putting greens within some of the bastions (refer to Figure 269). Development of the golf course entailed the planting of new grass species, including Bermuda grass, that had a finer blade than the existing field grasses. The Bermuda grass later spread to many areas of the esplanade. By the 1950s, the turf associated with the interiors of many of the bastions had been transformed to well-maintained lawn.[274]

By the mid-twentieth century, trees were present within several of the bastions, including San Sebastián, Santo Tomás, San Antonio, and San Agustín (Figure 277 through Figure 279). Principal species planted by the Army included Australian pines (*Casuarina equisetifolia*) and coconut palms (*Cocos nucifera*).[275] Plantings also appear in historic photographs outside of San Juan Gate during this period (refer to Figure 280). All these trees, with the exception of those present within San Agustín Bastion, were removed with the military buildings by 1971.



FIGURE 277. Circa 1951 view of San Sebastián Bastion from San Cristóbal showing the tree plantings within the interior open space associated with military buildings. circa 1951. These trees were removed by 1971. (Source: https://www.geoisla.com/2018/10/mapa-y-fotos-de-edificios-obstruyendo-las-fortificaciones-del-viejo-san-juan-1951/)



FIGURE 278. Circa 1930s view from El Morro of the San Antonio Bastion illustrating the tree plantings added by the US Army in association with a swimming pool built in 1931. (Source: https://www.geoisla.com/2018/10/ mapa-y-fotos-de-edificios-obstruyendo-las-fortificaciones-del-viejo-san-juan-1951/)

Commonwealth of Puerto Rico, 1957), 327–344.

273. Berkowitz et al., volume III CLR, 20.

274. Ibid.

275. Berkowitz et al., volume III CLR, 31.

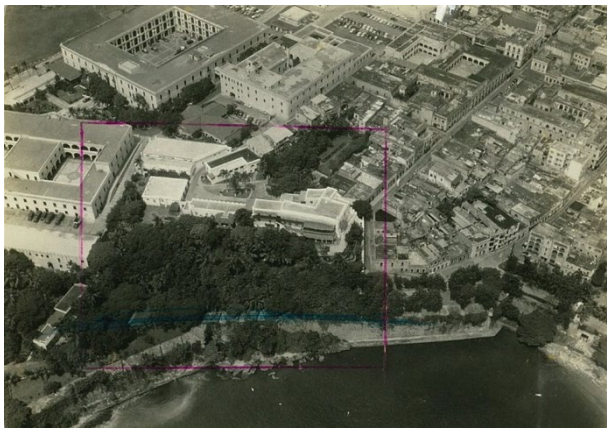


FIGURE 279. Undated bird's eye aerial, circa 1950s, showing the tree plantings located near the West Walls and San Agustín Bastion. (Source: https://www.geoisla.com/2018/10/ mapa-y-fotos-de-edificios-obstruyendo-las-fortificaciones-del-viejo-san-juan-1951/)

Existing Conditions. Much of the San Juan Historic City Wall cultural landscape is today characterized by turf lawn within the interiors of the bastions and along the interior margins of the curtain walls, while volunteer vegetation occupies the lower terrace edging the North Walls. The lower terrace edging the West Walls that includes El Paseo del Morro contains some sea grape and other shrub plantings used for erosion control and screening of utility boxes. Both urban parks associated with the South Wall bastions as well as La Rogativa Plaza contain ornamental tree plantings. While it falls outside of the CLR project area, the interior of San Agustín Bastion features three trees that may be rare surviving examples of plantings added during the US military occupation period in association with the buildings constructed to support the reservation.

Evaluation

(Refer to Table 4)

Turf lawn found throughout the CLR project area in association with the curtain walls and bastions is consistent with historic conditions and contributes to the historic setting of the San Juan Historic City Wall cultural landscape. Trees present within San Agustín Bastion likely survive from the US military occupation period, but they fall outside of the CLR project area.

The volunteer vegetation and erosion control plantings associated with the hillsides north of the North Walls and south of the West Walls postdate the period of significance and do not contribute to the historic setting. Neither do the ornamental plantings associated with the two urban parks at Las Palmas and La Concepción Bastions and La Rogativa Plaza.

Cultural vegetation missing from the period of significance includes tree plantings added within several of the bastions and outside San Juan Gate during the US military occupation period that was removed by 1971.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Cultural vegetation					
Turf lawn		By early 20th century		North Walls East and Esplanade, West Walls, South Walls	Contributes to historic setting
Vegetation north of El Morro and San Sebastián Bastion		Volunteer		North Walls Esplanade	Does not contribute to historic setting
Ornamental plantings within La Rogativa Plaza		Post 1971		West Walls	Does not contribute to historic setting
Ornamental plantings within Parque de las Palomas		Post 1971	Parque de las Palomas	South Walls	Does not contribute to historic setting
Ornamental plantings within Park at Las Palmas		Post 1971	Park at Las Palmas	South Walls	Does not contribute to historic setting
Sea grape and other erosion control and screen plantings along El Paseo del Morro		1990s		Paseo del Morro	Does not contribute to historic setting
Tree plantings associated with military buildings and recreational features within bastion interiors		US military occupation period		North Walls East and Esplanade, West Walls	Missing

TABLE 4. Assessment of landscape features related to San Juan Historic City Wall Cultural Vegetation.

Circulation

Circulation represents the patterns, features, and applied material finishes that constitute the systems of movement in a landscape.

Summary Analysis. Circulation associated with the San Juan Historic City Wall cultural landscape has traditionally been limited, although several roads historically edged and continue to parallel portions of the wall system. Historic roads associated with the North Walls East include the trace of a road leading into San Sebastián Bastion that formerly provided access to a cluster of three barracks buildings, no longer extant today, and Calle Bajada Matadero, which leads through Santo Tomás Bastion to La Perla Gate and into the community of La Perla and Calle de Lucila Silva from Norzagaray Street. The road closely edges the North Walls along the lower terrace, intersecting Calle Tiburcio Reyes below Santo Domingo Bastion. Calle Tiburcio Reyes also closely edges the North Walls. Within the North Walls Esplanade section, a tunnel leads across El Morro Esplanade to San José Gate. The gate currently leads to Calle Tiburcio Reyes and provides access to Cementerio Santa María Magdalena de Pazzis. A paved road extends into and through the cemetery that closely edges the northern edge of Santa Rosa Bastion.

Roads edging the West Walls include San Agustin Road that extends from Casa Rosa Road to Santa Elena Guardhouse and El Polvorín, a powder house built to support the bastion in 1797, located nearby. This historic road was established during the US military occupation period. Casa Rosa Road, another historic route that connected San Juan Gate with El Morro Road as early as the sixteenth century, edges the curtain wall south to

San Juan Gate; Caleta de San Juan intersects the road and leads on axis to the gate. A paved road leads from the gate to the south (Figure 280 and Figure 281).





FIGURE 280 and FIGURE 281. San Juan Gate looking north from the walk along the shoreline, circa 1930s (upper) and 2018 (lower). The 1930s era photograph indicates the presence of plantings to either side of the gate that are no longer extant. (Source: Library of Congress, Historic American Buildings Survey (HABS), Puerto Rico (PR)-7-SAJU, 3-1; http://www.loc.gov/pictures/item/pr0006.photos.143807p/ (upper); the authors (lower))

The South Wall bastions are approached by and edged by historic city roads. Parque de las Palomas is approached by Cristo Street, which leads south to the eastern edge of the urban park. Tetuán Street edges the Park at las Palmas Bastion to the north. This historic city street is intersected in front of the park by Calle de San José.

Two non-historic parking areas are located within or adjacent to the CLR project area. One of these is paved parking located within Santo Domingo Bastion that supports the Instituto de Neurobiología. The parking closely edges the parapet walls of the bastion interior. Cars also park along the margin of Calle Bajada Matadero where it passes through Santo Tomás Bastion.

Pedestrian circulation is also associated with the San Juan Historic City Wall cultural landscape. None of this pedestrian circulation is historic. Features include two pedestrian access routes that lead to La Perla composed of paved walks and concrete bridges/stair structures spanning the North Walls East; a short segment of an unpaved nature trail located north of El Morro; El Paseo del Morro, the recreation trail that edges the base of the West Walls; and the paved plazas associated with the two urban parks set within the South Wall Bastions and La Rogativa Plaza. Concrete sidewalks also edge Norzagaray Street and Casa Rosa Road.

Circulation features present historically that are now missing include internal routes that connected some of the bastions during the Spanish military occupation period, along with communication trenches and counter-mining tunnels that were excavated within El Morro Esplanade by the eighteenth century.

Historic Conditions. The 1625 Dutch map illustrates early circulation associated with the military defenses on the Isleta de San Juan (refer to Figure 259). The map shows three primary access routes leading to El Morro from different areas of San Juan, including one leading northwest from San Juan Gate, present by 1560, a central route—El Morro Road—leading directly across El Morro Esplanade to the sallyport of the fortification, and a route extending southwest from the city's northwest corner. A road is also shown connecting the city with El Fortín de la Perla, while a spur road leads from El Morro Road to the batteries and walls located along the western margin of the promontory. The road connecting San Juan Gate and El Morro Road follows a route similar to that

of Casa Rosa Road today.[276] While not formalized until the nineteenth century, Norzagaray Street follows portions of the northern route alignment.

During the eighteenth century, additional circulation routes crisscrossed El Morro Esplanade, connecting the various artillery positions, including the batteries facing the channel leading to Bahía de San Juan (refer to Figure 261). These routes were refined when the North, West, and South Walls were completed between 1765 and 1783, but were later removed and no longer exist today. Built during this construction effort were gates to provide access to the city interior. Two of these gates were built in the North Walls, San José within the curtain wall east of Santa Rosa Bastion and La Perla within Santo Tomás Bastion. A road extended to El Fortín de la Perla from La Perla Gate. Both survive today. Also located on the lower terrace north of the North Walls was a road leading north from San José Gate to the northern end of Santa Rosa Bastion. This same alignment is followed today by a road that passes through Cementerio Santa María Magdalena de Pazzis. A meandering road edges the southern margins of the bastions and curtain walls of the North Walls that suggests the future alignment of Norzagaray Street (refer to Figure 262).

Many of the city roads present today were already in place by the late eighteenth century, including those that edged La Concepción and Las Palmas Bastions and connected to San Juan Gate.

During the twentieth century, the US Army established a concrete road that paralleled the West Walls and connected Casa Rosa Road with San Agustín and Santa Elena Bastions by 1929.[277] This road was elevated and paved with asphalt circa 1939 as part of the repair of the curtain wall between the two bastions and the implementation of stormwater-management improvements to prevent undercutting of the wall from the uphill side. Circa 1938, the road was further formalized to address general grading and stormwater-management objectives within the area between the San Agustín and Santa Elena Bastions. Following completion of these improvements, the route became known as San Agustín Road.[278] During the 1990s, the road was again lowered to its original elevation, with the northwestern section paved with concrete to recall the character of Bay Road.

Maps and photographs from the mid-twentieth century indicate that Norzagaray Street was present, although it is referred to as Del Valle Boulevard on a plan prepared in 1958 (Figure 282). The plan also shows the road leading to La Perla Gate, as well as an access road leading to three military housing structures located within San Sebastián Bastion. A trace of this road survives within the bastion today.

Norzagaray Street was later elevated, and a retaining wall added along the margins of San Sebastián and Santo Tomás Bastions. The date of construction of the retaining wall thus appears to postdate the period of significance since it is not indicated on the 1958 map.

276. Berkowitz et al., Vol. III CLR, 12, and Vingboons, "Plan of San Juan," ca. 1625.

277. Berkowitz et al., volume III CLR, 23.

278. Ibid.

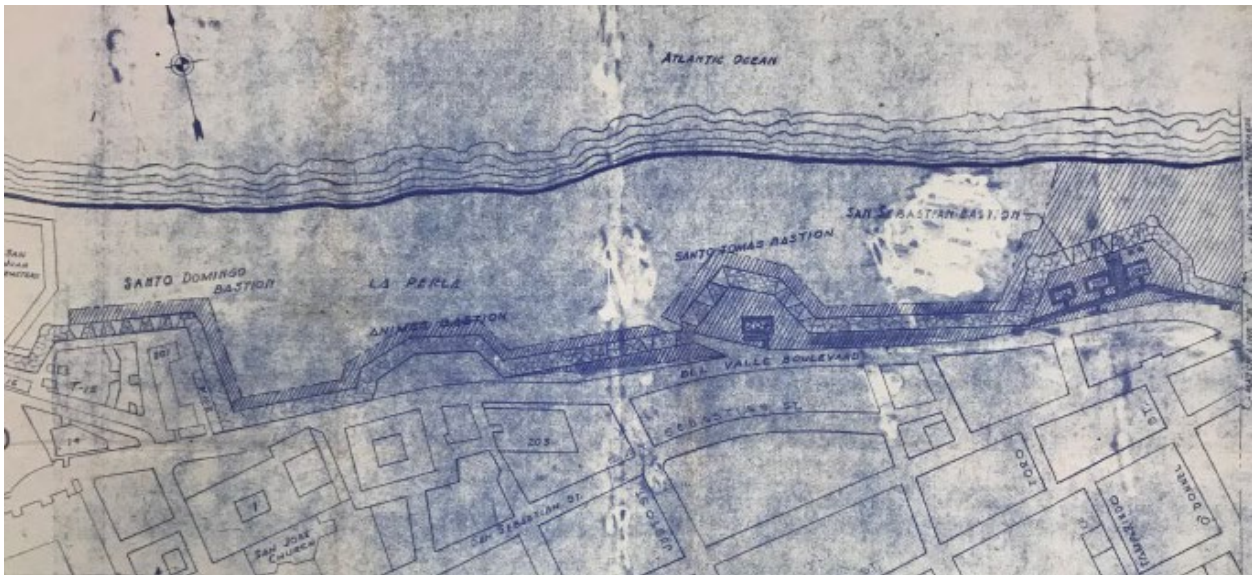


FIGURE 282. Plan prepared in 1958 showing the configuration of Del Valle Boulevard (Norzagaray Street) and its relationship to a road extending to military housing within San Sebastián Bastion and the road leading through La Perla Gate within Santo Tomás Bastion. (Source: Park Archives, SJNHS US Army 1958)



FIGURE 283. Circa late nineteenth/early twentieth century photograph looking southeast toward La Fortaleza from the West Walls and Casa Rosa Road following the San Agustín Bastion curtain wall. The road is edged by electrical lines, no longer present today. (Source: Park Archives, SJNHS, image X10163703-0010. Cat# 16399, ACC#143)

Later additions, for which a specific date of origin has not been determined, include walks and concrete bridge/stair structures leading to La Perla over the North Walls. One spans the North Walls along the curtain wall between Santo Tomás and San Sebastián Bastions, while the other extends through Las Ánimas Bastion to a structure accessed via one of the embrasures. The paved plazas associated with the Park at Las Palmas, Parque del las Palomas, and Rogativa Plaza, along with sidewalks edging Casa Rosa Road and Norzagaray Street also appear to postdate the period of significance, although their dates of origin have not been determined on behalf of this study. The final circulation system added since the period of significance is El Paseo del Morro, constructed circa 1995 with National Park Service oversight. An unimproved nature trail that extends north of El Morro similarly post-dates the period of significance as part of park development.

Existing Conditions. The San Juan Historic City Wall cultural landscape includes both vehicular roads and pedestrian paths, as well as walks, stairs, bridges, tunnels, and gates. Many of these circulation features are historic routes that follow routes established by the Spanish or the US Army. A few were added later by the National Park Service to support park needs since establishment of San Juan National Historic Site.

Several city roads edge the San Juan Historic City Wall system and provide access to the park. These include Norzagaray Street, which edges the North Walls East to the south; Casa Rosa Road, which edges portions of the West Walls; and Calles de Cristo, Tetuán, and San José that edge and lead to the South Wall bastions.

Calle de Bajada Matadero arises from Norzagaray Street and leads through Santo Tomás Bastion to La Perla Gate (Figure 284). It intersects Calle de Lucila Silva Street within the community of La Perla. Calle de Lucila Silva Street is the only road that (Figure 285) falls within the 33-foot-wide zone north of the North Walls administered by the National Park Service as part of the park. A trace road that leads into San Sebastián Bastion from Norzagaray Street a former access route to US military housing no longer present today.



FIGURE 284. View of Calle de Bajada Matadero and La Perla Gate, Santo Tomás Bastion, 2018.



FIGURE 285. Calle de Lucila Silva follows the North Walls to Cementerio Santa María Magdalena de Pazzis, 2018.

Set within El Morro Esplanade is Cemetery Road and an associated tunnel leading to San Jose Gate beneath the curtain wall east of Santa Rosa Bastion. It intersects Calle de Tiburcio Reyes Street that leads to Cementerio Santa María Magdalena de Pazzis from La Perla. Also associated with the North Walls is a parking area set within Santo Domingo Bastion to service the Instituto de Neurobiología.

Pedestrian walks lead from Norzagaray Street to concrete stair/bridge structures that span the North Walls and provide additional access to La Perla. These span the curtain wall between Santo Tomás Bastion and San Sebastián Bastion and cut through Las Ánimas Bastion.

Circulation associated with the West Walls includes San Agustín Road, which parallels the curtain wall between Santa Elena and San Agustín Bastions and connects to Casa Rosa Road. Casa Rosa Road follows the San Agustín curtain wall

south to San Juan Gate. A concrete sidewalk edges Casa Rosa Road and connect to an open city park known as La Rogativa Plaza. On the lower terrace, extending northwest of San Juan Gate, visitors can proceed north along the base of the West Walls via El Paseo del Morro, accessed via Calle de la Defensa, which parallels the West Walls along the lower side near San Juan Gate. El Paseo del Morro leads along the shoreline to plazas and sitting areas before reaching a stair providing access to El Morro and a nature trail. A wooden bridge provides access across a swale as part of the nature trail.

City roads, including Calles de Cristo, Tetuán, and San José, provide access to the two urban parks associated with the South Wall bastions. Both feature paved walks and plazas.

Evaluation

(Refer to Table 5)

Circulation features edging or falling within the CLR project area that survive from the Spanish military occupation period include Norzagaray Street, Calles de Lucila Silva, Bajada Matadero, and Tuburcio Reyes, Cemetery Road, Casa Rosa Road, and Calles de Cristo and Tetuán. Spanish military occupation period gates associated with historic circulation routes that survive within the CLR project area include San Juan, San José, and La Perla. These features contribute to the significance of the San Juan Historic City Wall cultural landscape.

Circulation features that can be traced to the US military occupation period include the trace road leading into San Sebastián Bastion and San Agustín Road. These features contribute to the significance of the San Juan Historic City Wall cultural landscape.

All other circulation features postdate the period of significance and are non-contributing.

Circulation features missing from the landscape that were present during the period of significance include the routes that formerly connected military batteries and bastions during the sixteenth through the eighteenth centuries, as well as communication trenches and counter-mining tunnels; Bay Road that preceded San Agustín Road, and the US military housing access road leading into San Sebastián Bastion.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Circulation					
Norzagaray Street		Early twentieth century	Elevated with retaining wall added circa 1950s	North Walls East	Contributing
Calle de Lucila Silva		By 1945	La Perla	North Walls East	Contributing
Calle de Bajada Matadero		By 1945		North Walls East	Contributing
Calle de Tiburcio Reyes		By 1953	La Perla	North Walls East and Esplanade	Contributing
Trace road leading into San Sebastián Bastion		By 1930s		North Walls East	Contributing
Eastern walk and stair to La Perla		Circa 1960s		North Walls East	Non-contributing
Western walk and stair to La Perla		Circa 1960s		North Walls East	Non-contributing
Cemetery Road and tunnel		By 1861	Tunnel by 1897	North Walls Esplanade	Contributing
Nature trail		Circa 1990s		North Walls Esplanade	Non-contributing
San Agustín Road		1939	Replaced Bay Road	West Walls	Contributing
Casa Rosa Road		Circa 17th century	Formalized 1930s	West Walls	Contributing
La Rogativa Plaza		1971		West Walls	Non-contributing
Caleta de San Juan		By 19th century		West Walls	Contributing
Tetuán Street		By 19th century	Park at Las Palmas	South Walls	Contributing
Cristo Street		By 19th century	Parque de las Palomas	South Walls	Contributing
Paved plaza and walks within Parque de las Palomas		Circa 1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Paved plaza and walks within the Park at Las Palmas		Circa 1970s (?)	Park at Las Palmas	South Walls	Non-contributing
Calle de la Defensa		By 19th century		Paseo del Morro	Contributing
Paseo del Morro		Circa 1995; extended 2013–2015		Paseo del Morro	Non-contributing
Northern access route to El Morro		*18th century*		*North Walls East and Esplanade*	*Missing*

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Communication trenches		*18th century*		*North Walls Esplanade*	*Missing*
Network of paths accessing battery positions		*18th century*		*North Walls East and Esplanade, West Walls*	*Missing*
Counter-mining tunnels		*18th century*		*North Walls Esplanade*	*Missing*
Bay Road		*by 1929*		*West Walls*	*Missing*
Santa Elena Road		*1930s*		*North Walls Esplanade*	*Missing*

TABLE 5. Assessment of landscape features related to San Juan Historic City Wall Circulation.

Buildings and Structures

Buildings are elements constructed primarily for sheltering any form of human activity in a landscape, while structures are elements constructed for functional purposes other than sheltering human activities.

Summary Analysis. There are no historic buildings that fall within the San Juan Historic City Wall CLR project area, and only one non-contributing building, a concession stand located within Parque de las Palomas. There are, however, several historic buildings that relate to Spanish and US military occupation period operation of the military defenses abut or closely edge the CLR project area. These are discussed herein to provide context for the discussion of structures, including the walls themselves, that follows. The buildings that closely relate to the San Juan Historic City Wall CLR project area include three guardhouses—San Antonio, Santa Elena, and San Agustín (now known as Casa Rosa)—each associated with a bastion of the same name, El Polvorin, the powder house built to support artillery needs associated with Santa Elena Bastion; three fortifications associated with the wall system—El Morro, La Fortaleza, San Cristóbal—and the Instituto de Neurobiología, which is located within Santo Domingo Bastion. All these buildings date to the Spanish military occupation period with the exception of the Instituto de Neurobiología, which was built by the US Army and formerly served as a Nurses' Quarters by 1934.

Additional buildings present within some of the bastions and adjacent to some of the curtain walls during the Spanish and US military occupation periods have been removed and do not survive today. These building, missing from the cultural landscape today, were located within San Sebastian, Las Ánimas, Santo Tomás, Santo Domingo, San Agustín, and Las Palmas Bastions, as well as along the curtain wall south of Las Ánimas (Figure 286) and between Santa Elena and San Agustín Bastions.

The San Juan Historic City Wall cultural landscape does, however, contain several historic structures. Primary among them are the surviving examples of the approximately 3-mile long masonry wall perimeter wall system that once encircled Old San Juan. Surviving segments are associated with the North, West, and South Walls. Portions of the East and South Walls were removed circa 1897 to allow the city to expand. Overall, the walls comprising the San Juan Historic City Wall system contain ten bastions— San Sebastián, Santo Tomás, Las Ánimas, Santo Domingo, Santa Rosa, San Antonio, Santa Elena, San Agustín, Las Palmas, and La Concepción— connected by eight curtain walls. Eleven sentry boxes are present. These primarily occupy forward projections of the bastions, but also occur in association with the curtain wall

south of San Agustín Bastion. While some are original to the Spanish construction period, seven are reconstructions dating to circa 1932, 1938–1939, and 1983. Three gates—San Juan, San José, and La Perla—were incorporated into the walls by the Spanish, that were guarded but could permit passage into and out of the city. Also associated with the wall system as completed by 1783 are embrasures, banquettes, firing steps, and stormwater-management features. All these features survive with good integrity from the Spanish military occupation period, although significant repairs have been made to some of the bastions and curtain walls. Overall, there are eleven sentry boxes associated with the North, West, and South Walls.



FIGURE 286. Circa 1951 view west along Norzagaray Street toward Las Ánimas Bastion with some of the military structures evident that were built by the US Army. Also visible is a stone wall with concrete coping along the edge of the road. None of the buildings are extant today, and the wall has been replaced by a metal guard rail. Also visible in this photograph are electrical lines along Norzagaray Street and chain-link fencing with barb wire that contained the bastions during the US military occupation period. (Source: 13. BOF-Photo-145-1951)

Other structures present within the CLR project area were added during the late Spanish military occupation period and US military occupation period. These include concrete coastal defense structures built to modernize the position by the Spanish during the 1890s and by the United States during World War I. These concrete features are located behind the historic San Fernando battery ruins and within Santa Elena Bastion. Additional structures built by the US Army have since been removed.

Structures added by the National Park Service, Commonwealth of Puerto Rico, and municipality of San Juan postdate the period of significance. These include retaining walls, wooden viewing platforms and bridges, planters, seat walls, and stormwater-conveyance structures.

Historic Conditions. The Spanish military occupied the western tip of the Isleta de San Juan for more than 350 years. During this time, military engineers directed the construction of fortifications, batteries, bastions, and curtain walls intended to protect the colony and deep-water port at San Juan from enemy attack.

The earliest fortification built on the island occupied a projection of the shoreline that faced the channel entrance to the Bahia de San Juan on the site of present-day La Fortaleza by 1521. This fortification was built in response to an anticipated attack by the French.[279] After a hurricane destroyed the first defensive structure, residents of San Juan requested that the Crown build additional defenses and a fortress to protect them against attack by Caribe Indians and pirates, among other threats. Spain subsequently authorized the establishment of a fortress on the rocky promontory where the earlier structure had been destroyed in 1533, which became La Fortaleza. After colonist Gonzalo Fernandez de Oviedo raised concerns in a letter sent to the King of Spain in 1537 that La Fortaleza would not be enough to protect the colony and suggested that an additional fortress be built on the north coast at the tip of the entrance into the harbor, the King responded with funds for such a structure in 1538. The location, it was hoped, would provide a broad view of the surrounding ocean waters and thus good lead to time to prepare should an approaching enemy be detected.[280]

Initial efforts to construct the proposed citadel, which became known as El Morro, began in 1539.

279. Rodrígues Lopéz and Rivera Groennou, 22.

280. Ibid., 23.

Over the course of the sixteenth, seventeenth, and eighteenth centuries, the Spanish developed and improved El Morro.

By the late sixteenth century, military engineers had designed additional defensive works to take advantage of the strategic position afforded by the promontory overlooking the approach to Bahía de San Juan. Three early batteries were added along the western margin of the promontory or the lower shoreline between El Morro and La Fortaleza. These were known as San Fernando, Santa Elena, and San Gabriel. The ruins of San Fernando survive on the promontory south of El Morro today, while San Gabriel was later replaced by San Agustín Bastion, and Santa Elena moved from the shoreline to a rocky outcropping between the other two positions. An additional outerwork was also built along the northern shoreline during the sixteenth or early seventeenth century referred to as El Fortín de la Perla. The San Juan Gate was also present by the late sixteenth century.

Following attacks by the English during the late sixteenth century and a highly successful attack on San Juan by the Dutch in 1625, Spanish military engineers worked to improve the defenses during the second quarter of the seventeenth century, using a plan prepared in 1587 by Captain Diego Menéndez Valdés. As implemented beginning in the 1630s, the improved defenses were composed of a continuous curtain wall between El Morro and La Fortaleza that followed the edge of the promontory. The wall then continued beyond La Fortaleza along the south and east sides of the city to the highlands of San Cristóbal, measuring in total approximately 10,000 feet in length.[281] Castillo San Cristóbal, another major fortification like El Morro, was built beginning in 1634 as part of these improvements at the northeastern corner of the city. The curtain walls facing the bay were completed by 1639. They were built with parapets anchored to the cliffs themselves and connected three key artillery positions—San Fernando, Santa Elena, and San Agustín, the latter two of which were built as part of these improvements.[282] Once completed in 1650, the system included rebuilt walls along the western edge of the promontory and new walls to the south and east of the city.[283]

Following the declaration of the military post as a Defense of the First Order by King Charles III of Spain, Field Marshal Alejandro O'Reilly, with Chief Engineers Colonel Tomás O'Daly and Juan Francisco Mestre prepared plans to complete a comprehensive system of perimeter walls and bastions around the city of San Juan that would address any gaps present, including the addition of walls on the north side of the promontory. To do so required the filling of a ravine northeast of El Morro and other complicated engineering efforts, such as constructing bastions on the sloped and rocky terrain of the western promontory (Figure 287).

The engineers completed the improved system by 1783. As built, the curtain and bastion walls extended upward from the shoreline to the top of the promontory, rising some 15 to 50 feet in height. The walls were also several feet thick. The interior edge rose 4 to 5 feet above the grade of the promontory to establish a protective parapet for the soldiers stationed behind the walls. The tall, sheer masonry structures accentuated the steep slopes at the base of the promontory and were designed to serve as an obstacle to potential enemy attack. The parapet walls were designed to provide cover and concealment for the soldiers manning artillery at the openings in the wall known as embrasures. Openings referred to as scuppers at the base of the walls allowed stormwater to flow out through the masonry structure. Storage structures were built in associated with the San Antonio and Santa Rosa Bastion walls that extended into the spaces in an arced form.

281. Rodrígues Lopéz and Rivera Groennou, 30.
282. Ibid., 31-33.
283. Ibid., 30.

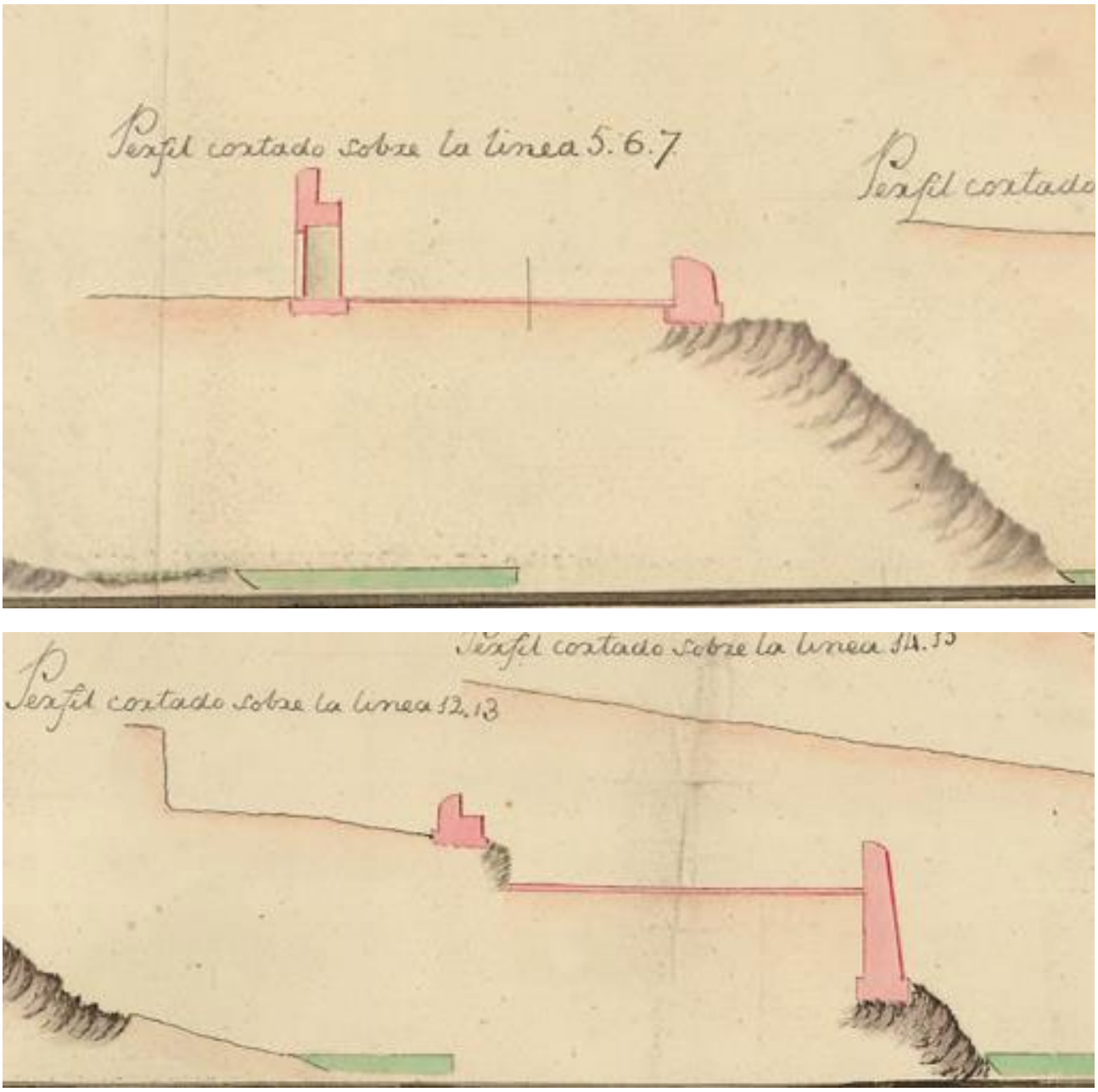


FIGURE 287. Sections drawn by Alejandro O'Reilly in 1765 showing the relationship between Santa Elena Bastion (top), and San Agustin Bastion (bottom) and the cliff of the promontory facing the channel leading to San Juan Harbor. (Source: Sepúlveda Rivera, 141)

Santa Elena Bastion was improved and converted to a true fort with a polygonal form composed of eleven sides and four projections facing the channel leading to the harbor and a *hornabeque* closing the land side.[284] To reinforce this key artillery important position, O'Reilly proposed to site a storehouse for gunpowder nearby, one of five to be erected within the wall system. During the 1780s and 1790s, both a guardhouse and a powder house, or polvorín, were erected near Santa Elena Bastion.

Few changes were made to the wall system after these improvements were completed through the remainder of the Spanish military occupation period. However, military personnel repeatedly reported problems associated with undercutting of the West Walls by overland flow of stormwater, as well as wave action along the shoreline.[285] Beyond the CLR project area, two additional guardhouses were built by the Spanish during the nineteenth century, one at San Agustín Bastion by 1864 (now Casa Rosa), and the other at San Antonio Bastion by 1897. The La Perla outerwork continues to appear on maps of military complex through the mid- nineteenth century.

A map prepared in 1889 illustrates the presence of the guardhouse and powder house at Santa Elena, the guardhouse at San Agustín, as well as several other late nineteenth century developments related to the wall system. These include the presence of four additional buildings in and adjacent to San Agustín Bastion, as well as three buildings within Santo Domingo Bastion, a guardhouse at the road leading to La Perla Gate within Las Ánimas Bastion, and a building at the eastern end of San Sebastián Bastion. To the north of the North Walls are developments associated with Cementerio Santa María Magdalena de Pazzis, including the columbarium closely edging the curtain wall between San Antonio and Santa Rosa Bastions (Figure 288).

Circa 1897, the Spanish built a concrete gun emplacement known as Batería de San Fernando on the hillside behind San Fernando Bastion. The gun emplacement was composed of a low concrete wall edged by four gun platforms to accommodate Ordóñez cannon, an improved type of coastal artillery designed by Salvador Diaz Ordóñez, an artillery officer in the Spanish Army.

A map prepared in 1899 by the US Army shows a slightly different configuration of buildings present after the military reservation was transferred to the Quartermaster's Department (Figure 289). A single building in Santo Domingo Bastion is indicated as a hospital, while buildings within and near Santo Tomás Bastion are labeled as non-commissioned officer's quarters and a guardhouse. San Sebastián Bastion is shown as containing another hospital feature and officer's quarters. San Agustín Bastion is depicted as containing officer's quarters, a kitchen, and other buildings. None of these buildings survive today.

284. Ibid., 38.

285. Rodrígues Lopéz and Rivera Groennou, 43.



FIGURE 288. Map prepared in 1889 showing the configuration of the wall system and military buildings and other buildings and structures located in proximity to the walls. (Source: Park Archives, SJNHS, ARJT4C262)



FIGURE 289. Map prepared in 1899 showing the configuration of the wall system and military buildings and other buildings and structures present after transfer of the property to the United States. (Source: Park Archives, SJNHS)

The US Army built a concrete gun emplacement to protect San Juan Harbor during World War I within Santa Elena Bastion. The emplacement was composed of a concrete gun platform designed for a 4.72-inch Armstrong rifle mounted en barbette, and a nearby bombproof magazine just behind the west walls of Santa Elena Bastion.

Additional buildings and structures were added during the US military occupation period during the 1930s. By 1940, the US Army had built barracks for non-commissioned officers along the curtain wall between Santa Elena and San Agustín Bastions, as well as within San Sebastián (Figure 290) and Santo Tomás Bastions.



FIGURE 290. View of US military buildings located within San Sebastián Bastion, 1960. Fencing is also present along the interior of the bastion parapet walls. (Source: Jack Boucher, HABS photo, Cat #16,071. Acc #143)

Nineteenth-century residential structures near Santo Domingo Bastion were demolished to make room for a Nurses' Quarters (also referred to as a Bachelor Officers Quarters on some maps) by 1934. A Cafeteria and Post Exchange were added nearby after 1934. The Nurses' Quarters was later adapted as the Instituto de Neurobiología and is the only surviving US military occupation period building located in close proximity to the CLR project area, while the Cafeteria and Post Exchange were demolished by the 1990s (Figure 291 and Figure 292).





FIGURE 291 and FIGURE 292. View toward the North Walls from El Morro Esplanade showing the Neurobiology Institute, formerly the Nurses' Quarters, 1951 and 2018. In the 1951 view, the former cafeteria that edged the North Walls is also visible, along with plantings. (Source: 13. BOF-Photo-146-1951)

Structures added by the US Army during the early twentieth century included an 8-foot-tall masonry wall that connected San Antonio Guardhouse and the nearby bastion by 1913 that was constructed in stepped sections and featured a centrally located entry gate. An above-ground swimming pool was added at the edge of the bastion in 1931 (Figure 293). The pool was connected to San Antonio Guardhouse, which served as a pool house. The pool was removed by 1971, at which time the guardhouse was converted to public restrooms.[286]

286. Berkowitz et al., volume III CLR, 32–33.

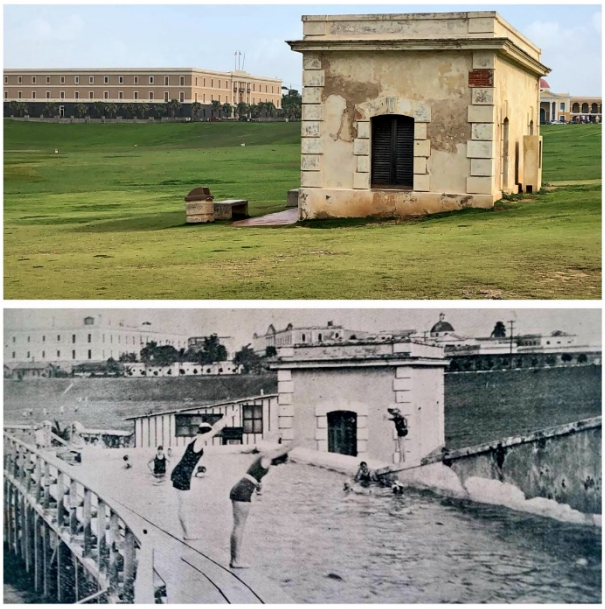


FIGURE 293. View of the San Antonio Guardhouse, 2018 (top), and as it supported a swimming pool built by the US Army by 1931. (Source: Park Archives, SJNHS)

At some time during the 1950s, photographs reveal that Norzagaray Street had been raised, and a retaining wall was added to the north side of the road that served to contain the interior of the San Sebastián and Santo Tomás Bastions (refer to Figure 277 and Figure 286). A low stone wall with concrete coping that edged Norzagaray Street is no longer present, although the retaining wall survives. By 1971, all evidence of US Army development within the bastions had been removed.

Buildings and structures that support use of the two public parks located within the South Walls bastions appear to have been built during the 1970s, although further study is needed to confirm the date of origin.

El Paseo del Morro, a recreational trail that closely edges the base of the West Walls between San Juan Gate and El Morro, contains stone and concrete seat walls and other walls as well as gates constructed circa 1995.

Wall preservation needs were first identified by the US Army during the early twentieth century. A lack of funding forced the Army to postpone proposed repairs. An earthquake in 1918 contributed to the failure of the West Walls curtain walls. Sections of the wall began to collapse in the 1920s. Repairs were begun in 1925 and were completed in 1939 (Figure 294). Contemporary materials such as concrete were used in the repairs to ensure the safety of the structure.[287]

The National Park Service restored San Juan Gate in 1956.[288]

Records dating to the late twentieth century, specifically the Superintendent's Annual Narrative reports from the late 1990s and 2000s, provide insight into the preservation efforts conducted by the National Park Service for the City Wall. For example, the 1997 Superintendent's Annual Narrative records efforts conducted by the National Park Service with the US Army Corps of Engineers to stabilize the circa 1750 San Fernando Bastion. The Corps of Engineers conducted excavations of the site, including a 45-foot-deep trench in front of the bastion, while the NPS recorded additional historic walls and features uncovered during the project. The site was stabilized and the historic remains preserved. Archeologists documented the remains of an earlier bastion that may represent attempts made in the 1500s to fortify the promontory near El Morro.[289] The 1997 Superintendent's Annual Narrative also records work completed to improve safety railings and iron grates associated with the walls and bastions, as well as ongoing efforts to restore San Fernando Bastion and portions of the West Wall, repair the cemetery tunnel wall, restore the San Agustín sentry box, preserve the Santa Elena World War I bunker, and conduct emergency repairs at San Agustín Bastion. In addition, PVC railing was installed at Santa Elena Bastion.[290]

287. Berkowitz et al., volume III CLR, 48.
288. Berkowitz et al., volume III CLR, 59.
289. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (1997).
290. Ibid.

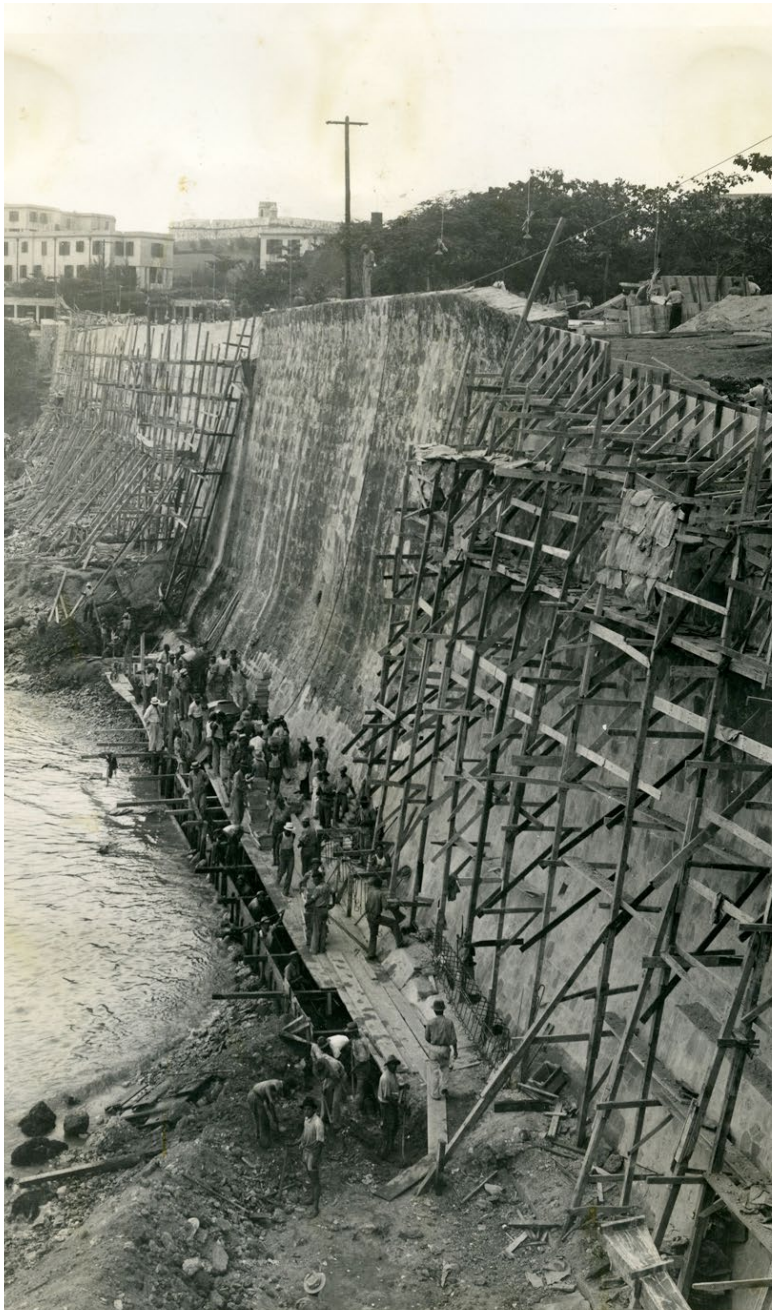


FIGURE 294. Repairs being made to the curtain wall between Santa Elena and San Agustín bastions, 1939, using sheet piling. (Source: Park Archives, San Juan National Historic Site)

The 2001 Superintendent's Annual Narrative notes that repairs were made to the walls, including stucco work, rehabilitation of sentry boxes, historic brick emplacement, and restoration of historic gates.[291] The 2002 narrative notes that additional work was conducted to rehabilitate the walls, including repair of the stucco coatings, replacement of the Santa Elena Bastion brickwork and repair of the floor, and rehabilitation of the Santa Elena World War I gun emplacement.[292] The 2003 narrative notes that the San Antonio sentry box, previously rebuilt in 1933 using concrete blocks and metal rebar, was rebuilt. The Santa Elena Bastion brickwork project continued on the

291. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (2001).

292. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (2002).

circa 1760 bastion. Using brick and traditional lime mortar, the National Park Service repaired the bastion and opened it to the public.[293] The 2004 Superintendent's Annual Narrative notes that additional wall repair and rehabilitation projects were conducted.[294]

Existing Conditions. The present-day San Juan Historic City Wall cultural landscape features the intact system of North, West, and South Walls, their associated ten bastions, eight curtain walls, embrasures, eleven sentry boxes, banquettes, firing steps, drainage features, and three gates built by the Spanish by 1783. Beyond the CLR project area there are three Spanish-era guardhouses located near San Antonio, Santa Elena, and San Agustín Bastions. Late nineteenth- and early twentieth-century coastal defense battery features are located near San Fernando and Santa Elena Bastions.

Additional buildings and structures are found within the two urban parks associated with the South Walls. These include a gatehouse and concession building located within Parque de Las Palomas at La Concepción Bastion, as well as masonry planters, walls, guardrails, and gates present within both parks.

A retaining wall edges and supports Norzagaray Street at the southern margins of San Sebastián and Santo Tomás Bastions. Low concrete walls edge Bajada Matadero Street as it passes through Santo Tomás Bastion to La Perla Gate, while low seat walls occur in various locations along Paseo del Morro. Other structures present within the CLR project area include a wooden bridge and overlook associated with the nature trail north of El Morro, and stormwater-management collection systems near Santa Elena and San Agustín Bastions.

Evaluation

(Refer to Table 6)

Historic buildings and structures that survive from the period of significance with integrity include all the features associated with the North, West, and South Walls; San Juan, La Perla, and San José Gates, as well as the concrete coastal defense structures added during the late nineteenth and early twentieth centuries.

Buildings and structures that postdate the period of significance and are non-contributing include the retaining and seat walls along Norzagaray Street, Bajada Matadero Street, and El Paseo del Morro; the gates associated with El Paseo del Morro; the contemporary stormwater-management structures located in association with the West Walls; and the concession stand, guardhouse, planters, seatwalls, and guard rails associated with the two urban parks.

Missing historic buildings and structures include the buildings added to the bastion interiors during the Spanish and US military occupation periods later removed along with walls and recreation features circa 1971.

293. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (2003).

294. National Park Service, *San Juan National Historic Site Superintendent's Annual Narrative* (2004).

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Buildings and Structures					
North Walls East					
Curtain wall, San Cristóbal to San Sebastián Bastion		By 1783		North Walls East	Contributing
San Sebastián Bastion		By 1783		North Walls East	Contributing
Sentry boxes (2), San Sebastián Bastion		By 1783	reconstructed 1939	North Walls East	Contributing
Curtain wall, San Sebastián Bastion to Santo Tomás Bastion		By 1783		North Walls East	Contributing
Santo Tomás Bastion		By 1783		North Walls East	Contributing
Sentry box, Santo Tomás Bastion		By 1783		North Walls East	Contributing
La Perla Gate		By 1783		North Walls East	Contributing
Curtain wall, Santo Tomás Bastion to Las Ánimas Bastion		By 1783		North Walls East	Contributing
Las Ánimas Bastion		By 1783		North Walls East	Contributing
Sentry box, Las Ánimas Bastion		By 1783	reconstructed 1944-1945	North Walls East	Contributing
Santo Domingo Bastion		By 1783		North Walls East	Contributing
Sentry box, Santo Domingo Bastion		By 1783		North Walls East	Contributing
Retaining wall along the Norzagaray Street sidewalk		Circa 1950s		North Walls East	Non-contributing
Walls edging along Bajada Matadero Street as it extends through San Tomás Bastion		Circa 1950s (?)		North Walls East	Non-contributing
North Walls Esplanade					
Curtain wall, Santo Domingo to Santa Rosa Bastions		By 1783		North Walls Esplanade	Contributing
Santa Rosa Bastion		By 1783		North Walls Esplanade	Contributing
Storage structure, Santa Rosa Bastion		By 1783		North Walls Esplanade	Contributing
Sentry box, Santa Rosa Bastion		By 1783	reconstructed 1939	North Walls Esplanade	Contributing
Curtain wall, Santa Rosa to San Antonio Bastions		By 1783		North Walls Esplanade	Contributing

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
San Antonio Bastion		By 1783		North Walls Esplanade	Contributing
Storage structures, San Antonio and Santa Rosa Bastions		By 1783		North Walls Esplanade	Contributing
Sentry box, San Antonio Bastion		By 1783	reconstructed 1939	North Walls Esplanade	Contributing
San José Gate		By 1783		North Walls Esplanade	Contributing
Wooden bridge, nature trail		Circa 1990s		North Walls Esplanade	Non-contributing
Wooden overlook, nature trail		Circa 1990s		North Walls Esplanade	Non-contributing
West Walls					
San Fernando Bastion	#091740	Circa 1750		West Walls	Contributing
Batería de San Fernando		Circa 1897		West Walls	Contributing
Santa Elena Bastion		By 1783		West Walls	Contributing
World War I-era coastal defense gun emplacement		Circa 1917		West Walls	Contributing
World War I-era bombproof magazine		Circa 1917		West Walls	Contributing
Curtain wall between Santa Elena and San Agustín Bastions		By 1783		West Walls	Contributing
San Agustín Bastion		By 1783	replaced San Gabriel Bastion	West Walls	Contributing
Sentry box, San Agustín Bastion		By 1783	reconstructed 1932	West Walls	Contributing
Curtain wall, San Agustín Bastion to San Juan Gate		By 1783	reconstructed?	West Walls	Contributing
Sentry boxes (2), San Agustín curtain wall		circa 1762–1783	reconstructed 1932, 1983	West Walls	Contributing
San Juan Gate		circa 1650	Restored 1956	West Walls	Contributing
South Walls					
La Concepción Bastion		By 1783		South Walls	Contributing
Las Palmas de San José Bastion		By 1783		South Walls	Contributing
Sentry box, Las Palmas		By 1783		South Walls	Contributing
Gatehouse		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Planter		1970s (?)	Park at Las Palmas	South Walls	Non-contributing
Planters		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Perimeter wall and gate		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Guardrails at South Walls		1970s (?)	Park at Las Palmas; Parque de las Palomas	South Walls	Non-contributing

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Paseo del Morro					
Wall and sentry box west of San Juan Gate		By 1783		Paseo del Morro	Contributing
Gate to control access to Paseo del Morro		1990s		Paseo del Morro	Non-contributing
Seat walls		1990s		Paseo del Morro	Non-contributing
Guardrail at the plaza northwest of El Morro		1990s		Paseo del Morro	Non-contributing
Stormwater-conveyance structures		1990s-2000		Paseo del Morro	Non-contributing
Masonry wall connecting San Antonio Guardhouse and Bastion		*1913*		*North Walls Esplanade*	*Missing*
Swimming pool		*1930-1931*		*North Walls Esplanade*	*Missing*
Wall at Santa Elena Bastion		*1930s*		*West Walls*	*Missing*

TABLE 6. Assessment of landscape features related to San Juan Historic City Wall Buildings and Structures.

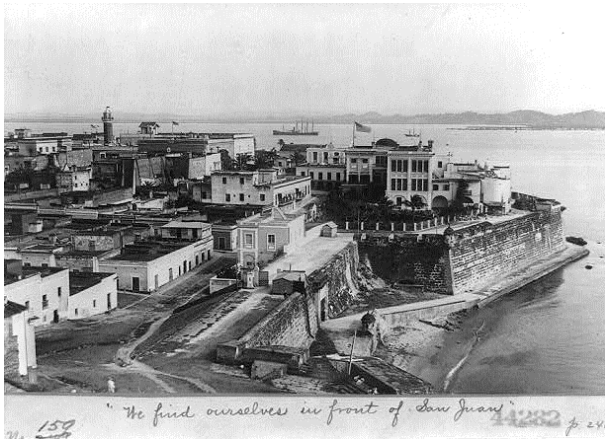


FIGURE 295. View looking south toward San Juan Gate with La Fortaleza beyond, 1900. (Source: Park Archives, SJNHS)

Views and Vistas

Views are generally defined as expansive and panoramic prospects, naturally occurring or designed; while vistas are deliberately designed views often meant to orient the gaze to a linear feature or particular focal point.

Summary Analysis. The elevated position of the promontory characterizing the center of the Isleta de San Juan allows for expansive views toward the Atlantic Ocean to the north, Bahía de San Juan to the south, and the entrance into the harbor marked by Isla de las Cabras and the northwestern tip of the isleta. These commanding views were an important consideration used by Spanish military engineers in the design of the San Juan Historic City Wall system and the defensive features erected beginning in the sixteenth century. The first military defensive structure—La Fortaleza—was built facing the harbor (Figure 295), while El Morro was sited at the northwestern tip of the Isleta to allow for early detection of an enemy approaching by sea. To enhance strategic military views, the Spanish built on the high ground, cleared trees, graded the glacis of El Morro to be smooth and without high points or ravines, and established openings in the perimeter walls through which to direct artillery. Behind the parapets that extended above the edge of the walls to protect the soldiers, the Spanish added elevated banquets and firing steps. Sentry boxes were built at forward projections of many of the bastions for additional lookout capabilities. The perimeter wall system was kept free of obstacles to ensure a clear field of fire. These qualities remain present today, except where development has expanded, upward in some cases, within La Perla.

During the nineteenth century, views from the North Walls were impacted by the development of Cementerio Santa María Magdalena de Pazzis and La Perla on the lower terrace, although by this time the masonry walls were considered obsolete

and the field of fire no longer of similar importance.

During the US military occupation period, the US Army built numerous buildings, planted trees, and erected fences within several of the bastions and along the edge of some curtain walls. These buildings interfered with the earlier expansive views. By 1971, nearly all the features added during the US military occupation period were removed in support of Department of the Interior administration of the property as part of San Juan National Historic Site. Removal helped to reestablish the historic viewshed associated with the wall system. The only exception is Santo Domingo Bastion, where the Instituto de Neurobiología remains within the bastion interior.

The Paseo del Morro recreational trails built circa 1995 has benefited visitors by providing opportunities to view the West Walls from below and thus better understand the massive defensive system built by the Spanish by 1783.

Historic Conditions. The San Juan Historic City Wall cultural landscape, composed of curtain walls, bastions, and gates, as well as fortifications visible beyond the CLR project area boundary, were constructed over a 250-year period between circa 1539 and 1783. Military engineers designed the system to establish strategic positions and clear fields of fire for the placement of defensive artillery behind narrow openings called embrasures. Banquettes built behind the parapet walls allowed soldiers to man the guns and view out. Throughout the Spanish military occupation period, views from the walls were maintained as open and unobstructed to ensure prospect and early detection of approaching enemy ships. The bastions were built as forward projections that allowed for a wider range of fire and crossfire. Sentry boxes built at the ends of some of the bastion projections were designed as strategic look-out positions. The North Walls faced the Atlantic Ocean. These walls were built during the final construction episode. Prior to the mid-eighteenth century, Spanish planners determined that the potential for enemy ships to land on this part of the shore were limited due to coastal conditions, and they chose to limit the fortifications built on this side. Most of the early works faced the entrance into the harbor where the West Walls stand today. Initial batteries were built during the mid-sixteenth century to face the channel and were improved over the course of the seventeenth century before the current system was completed circa 1783. The South Walls were part of an initial effort to protect the city in this direction during the seventeenth century. Views from the South Wall extend to La Puntilla, a peninsula at the mouth of Bahía de San Juan. Over time, views in this direction were to change. By 1776, La Puntilla had developed from a mangrove swamp into an agricultural landscape. By 1797, La Puntilla was targeted for military use. A complex of buildings known as the old Navy Arsenal was located on La Puntilla by 1800.[295] Circa 1837, La Princesa, the city's prison, was built within the viewshed of the South Walls. A walk that followed the shoreline south of San Juan Gate before turning east below the South Walls, known as Paseo de la Princesa, was in place by 1853. It was edged by the city's newly established botanical garden, also visible from the South Walls.

Cementerio Santa María Magdalena de Pazzis also developed outside the walls at the base of the North Walls between San Antonio and Santa Rosa Bastions during the nineteenth century. Visible from the embrasures of the North Walls Esplanade section, the cemetery included a dense concentration of graves and monuments and a columbarium that closely edged the curtain wall. During the twentieth century, the cemetery was expanded east of Santa Rosa Bastion.

Similarly, the community of La Perla developed during the nineteenth century. It emerged on the lower terrace outside the North Walls East where El Fortín de La Perla and a slaughterhouse existed. Like Cementerio Santa María Magdalena de Pazzis, La Perla has since had an impact on the views from the North Walls.

295. "San Juan: Old Navy Arsenal," *Enciclopedia de Puerto Rico,* accessed October 4, 2019, https://enciclopediapr.org/en/encyclopedia/san-juan-old-navy-arsenal/.



FIGURE 296. 1948 bird's eye aerial view of El Morro and the Esplanade edged by the North and West Walls showing tree plantings located along the edge of some bastions and curtain walls. (Source: KP4EM pamphlet cover)

During the US military occupation period, the open and unobstructed views of the walls and bastions were impacted by the addition of buildings, structures, and tree plantings by the US Army (Figure 296). Within the North Walls Esplanade, the US Army built an aboveground swimming pool and planted trees within San Antonio Bastion that blocked views of the Atlantic Ocean from some locations (refer to Figure 293). Military housing, trees, and fencing were added within San Sebastián, Santo Tomás, and Las Ánimas Bastions that similarly blocked views of the Atlantic Ocean (refer to Figure 264 through Figure 286, and Figure 290). Within the West Walls, structures were built within San Agustín Bastion, along the curtain wall between San Agustín and Santa Elena Bastions, and walls and fences were built at Santa Elena and San Fernando Bastions, all of which established visual boundaries to the formerly open space associated with the wall system.

Historic viewsheds were later restored by 1971 when the majority of the US military occupation period features were removed.

Existing Conditions. Today, expansive views are afforded to the north, west, and south from the San Juan Historic City Wall cultural landscape. Views are afforded through the embrasures in the walls, the windows in the sentry boxes, and over the walls where the landform behind the walls is elevated. Visible from the walls is the Atlantic Ocean, the harbor entry marked by la Isla de las Cabras, the channel leading to Bahía de San Juan, La Fortaleza, El Morro, and San Cristóbal, the cities of Old San Juan and San Juan, the community of La Perla, and Old San Juan Cemetery. Also visible from the West Walls is Paseo del Morro along the shoreline at the base of the promontory. From Parque de Las Palomas and La Concepción Bastion, the Paseo de la Princesa and La Puntilla can be seen.

Dramatic views of the West Walls and harbor and harbor entrance are afforded from Paseo del Morro as it winds along the shoreline between San Juan Gate and El Morro (Figure 297).



FIGURE 297. View northwest of a sentry box along the West Walls with Santa Elena Bastion and the mouth of Bahía de San Juan beyond from Paseo del Morro, 2018.



FIGURE 298 and FIGURE 299. View across Santo Tomás Bastion from Norzagaray Street toward La Perla, 1965 (top), and 2018 (bottom), indicating the upward expansion of La Perla and its impact on views. (Source: Park Archives, SJNHS)

Evaluation

(Refer to Table 7)

The views and vistas associated with the San Juan Historic City Wall cultural landscape closely approximate those present during the Spanish military occupation period. Portions of the view were obscured by trees and built features during the US military occupation period that have since been removed. Today, expansive views are afforded in all directions from various locations associated with the wall system.

Detracting from historic views have been growth and expansion of San Juan and as La Perla (Figure 298 and Figure 299), which impact views to the north and southeast. The views of the West Walls afforded from Paseo del Morro postdate the period of significance.

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Views and vistas					
Views to the Atlantic Ocean		Circa 1539–1783		North Walls East and Esplanade	Contributes to historic setting
Views to the Bay of San Juan Bay and Bahía de San Juan		By 1783		West Walls, South Walls	Contributes to historic setting
Views of Old San Juan		18th–19th century		North Walls East and Esplanade	Contributes to historic setting
Views of La Puntilla, Paseo de la Princesa, and the city botanical garden		19th century		South Walls	Contributes to historic setting
Views to Santa María Magdalena de Pazzis Cemetery		By circa 1863		North Walls East and Esplanade	Contributes to historic setting
Views of La Perla		By late 19th century		North Walls East	Contributes to historic setting
Views of Paseo del Morro		Circa 1995		West Walls	Does not contribute to historic setting
Views to the Atlantic Ocean, Bay of San Juan, Old San Juan, and Cabras Island from Paseo del Morro		1990s		Paseo del Morro	Does not contribute to historic setting
Views to the City Wall and El Morro from Paseo del Morro		1995		Paseo del Morro	Does not contribute to historic setting

TABLE 7. Assessment of landscape features related to San Juan Historic City Wall Views and Vistas.

Small-scale Features and Utilities

These are the elements providing detail and diversity for both functional needs and aesthetic concerns in a landscape.

Summary Analysis. The majority of the small-scale and utility features associated with San Juan Historic City Wall cultural landscape are likely to postdate the period of significance as they were added by the National Park Service, Commonwealth of Puerto Rico, and Municipality of San Juan after 1971. Small-scale features present within the CLR project area are primarily composed of site furnishings such as benches and trash receptacles, lighting elements, sculptural and commemorative pieces, bollard and chain edging, and wayside exhibits (Figure 300). The only potentially historic small-scale features and utilities include cast-iron light poles located along San Agustín and Casa Rosa Roads, and bronze plaques affixed to several of the bastion interiors. Although the dates of origin of these features has not been determined as part of this project, the light poles, which are missing their luminaires, were likely added during the US military occupation period, as were the bronze plaques due to their appearance and character.



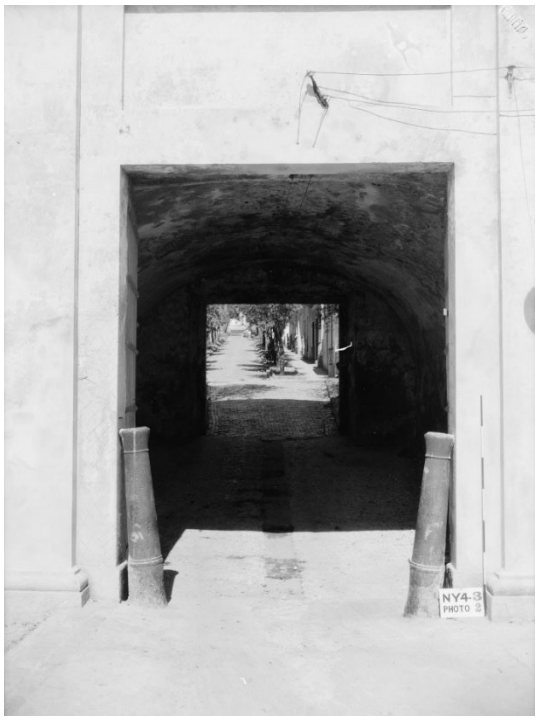
FIGURE 300. The majority of the small-scale features associated with San Juan City Wall have been added by the National Park Service to support the needs of visitors to San Juan National Historic Site. Features include site furnishing and wayside exhibits (shown above).

Small-scale features present during the Spanish and US military occupation periods included emplaced artillery, utility elements related to electrical, water, and sewer systems, military iconography such as replica cannon mounted upright at San Juan Gate, and fencing that was erected in conjunction with some of the military administration, housing, supply, storage, and service buildings, and to corral livestock. None of these features survives today.

Historic Conditions. Little is known about small-scale and utility features present within the San Juan Historic City Wall cultural landscape during the Spanish occupation period. Likely present were artillery emplaced behind the embrasures and within the bastions and fencing in limited locations.

During the US military occupation period, small-scale features were added in support of the establishment of a golf course, baseball field, and swimming pool, such as golf tees. flags, and baseball bases, all of which were located within El Morro Esplanade, and thus outside of the CLR project area. Early to mid-twentieth century photographs indicate that fencing was used to restrict access to some of the bastion interior spaces, and that utility features such as electrical poles edged some roads (refer to Figure 283 and Figure 286). Ornate cast-iron light poles present today along San Agustín and Casa Rosa Roads were likely added during the early twentieth century, while bronze plaques that mark several bastions by name convey an appearance that suggests they were also installed during the early to mid-twentieth century. A later addition is a bronze plaque mounted on the end of the storage structure that extends from the walls of Santa Rosa Bastion. This plaque, with text that reads "Copeland's Corner," dates to 1961. Also added during National Park Service administration of the property is bollard and chain edging that limits access to the road trace that extends into San Sebastián Bastion from Norzagaray Street.

Another small-scale feature that appears in circa 1960 Historic American Buildings Survey photograph of San Juan Gate is a pair of cannon mounted upright in the ground to either side of the San Juan Gate western opening side (Figure 301) that has since been removed (Figure 286).



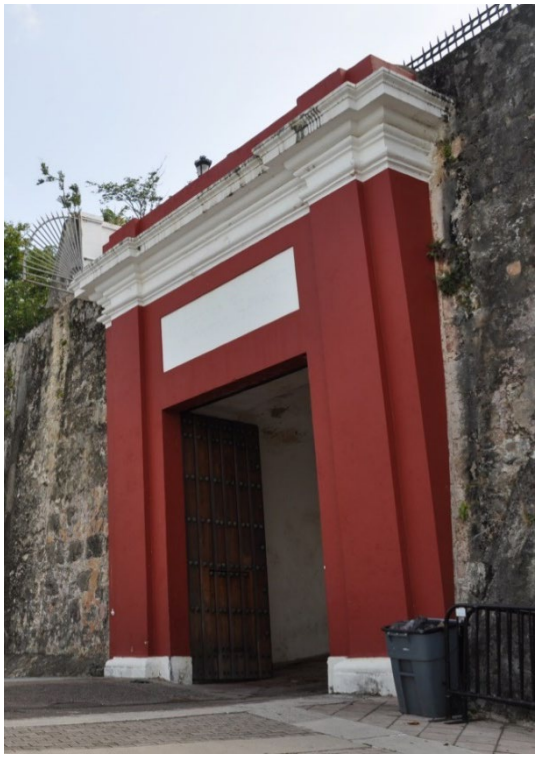


FIGURE 301 and FIGURE 302. The western facade of the San Juan Gate, circa 1960 (upper), showing cannon mounted upright to other side of the opening, and in 2018 (lower) after the cannon have been removed. (Source: Library of Congress, Image 143807pu [upper]; Authors [lower])

Existing Conditions. Small-scale features present within the San Juan Historic City Wall cultural landscape in 2020 range from site furnishings, such as concrete benches, trash receptacles, and drinking fountains, to light poles that follow some road corridors, and interpretive, wayfinding, and regulatory signs. Within the two urban parks there are also several monuments, commemorative features, and sculptural pieces, while bronze plaques marking the name of the space are set into the walls of several bastions. These small-scale features support National Park Service and Commonwealth of Puerto Rico administration of the park for public access and enjoyment.

Evaluation

(Refer to Table 8)

All of the small-scale features present within San Juan Historic City Wall, with the exception of several cast-iron light poles without their original luminaires located along San Agustín and Casa Rosa Roads, that no longer include their luminaires, and bronze plaques affixed to the interior of several bastions, post-date the period of significance and are non-contributing.

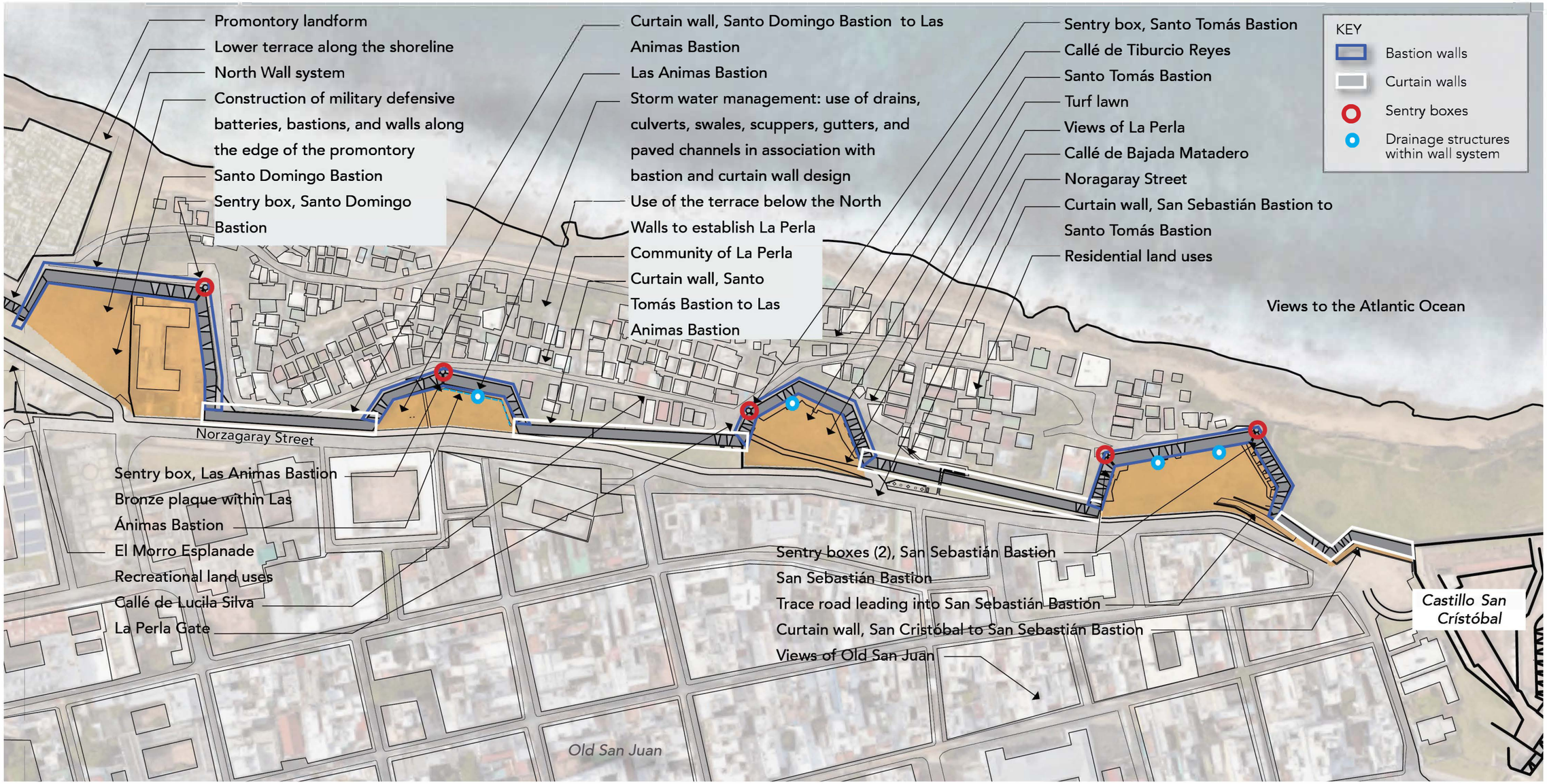
Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Small-scale features					
Light poles along Casa Rosa and San Agustín Roads		Early 20th century	Missing luminaires	West Walls	Contributing
Bronze plaques within Las Ánimas, Santa Rosa, and Santa Elena Bastions		Circa 1930s (?)	Copeland's Corner plaque added 1961	North Walls East and Esplanade, West Walls	Contributing
Bollards and chains limiting access to San Sebastián Bastion trace road		Post 1971	San Sebastián Bastion	North Walls East	Non-contributing
La Rogativa sculpture		1971	La Rogativa Plaza	West Walls	Non-contributing
Francisco de Miranda monument within Park at Las Palmas		Sculpted 1968, placed within the park in 1971	Refurbished 2011	South Walls	Non-contributing
Bronze sculptures of two cats		2000	Park at Las Palmas	South Walls	Non-contributing
Bronze shoe sculptures within Parque de las Palomas		Circa 2000–2004		South Walls	Non-contributing
"Comunidad La Perla" sign		Post 1971 (?)		North Walls East	Non-contributing
San Juan National Historic Site identity sign at Park at Las Palmas		Post 1971		South Walls	Non-contributing
Bronze identity plaque, Park at Las Palmas		Post 1971		South Walls	Non-contributing
Bronze identity plaque, Parque de las Palomas		Post 1971		South Walls	Non-contributing
Bronze plaque honoring Doña Felisa Rincón de Gautier		Post 1971		South Walls	Non-contributing
Orientation sign, Parque de las Palomas		Post 1971		South Walls	Non-contributing
Wayside exhibits		Circa 1990s–2000s	Las Ánimas Bastion, curtain wall between Santo Tomás and Las Ánimas Bastion, Parque de las Palomas, park at Las Palmas	North Walls East, South Walls, Paseo del Morro	Non-contributing

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Paseo del Morro National Recreational Trail identity sign		1990s		Paseo del Morro	Non-contributing
San Juan National Historic Site identity sign at Paseo del Morro		1990s		Paseo del Morro	Non-contributing
National Recreational Trail medallion		1990s		Paseo del Morro	Non-contributing
Distance markers		1990s		Paseo del Morro	Non-contributing
Upright information panels		1990s		Paseo del Morro	Non-contributing
"Save a Gato" signs		1990s		Paseo del Morro	Non-contributing
Regulatory signs		2010s	associated with wall repair work	West Walls, South Walls, Paseo del Morro	Non-contributing
Traffic signs		Post 1971		North Walls East	Non-contributing
Backless benches		post 1961		North Walls East and Esplanade, West Walls, South Walls	Non-contributing
Benches with backs		Post 1971	Park at Las Palmas	South Walls	Undetermined
Trash receptacles		post 1961		North Walls East and Esplanade, West Walls, South Walls, Paseo del Morro	Non-contributing
Dog-waste bag dispensers and receptacles		Post 1971		North Walls East	Non-contributing
Drinking fountain at La Rogativa Plaza		Post 1971		West Walls	Non-contributing
Drinking fountain at rest area plaza below El Morro		1990s		Paseo del Morro	Non-contributing
Light poles within Park at Las Palmas and Parque de las Palomas		Post 1971		South Walls	Non-contributing
Bollard lights along Paseo del Morro		1990s		Paseo del Morro	Non-contributing
Uplights		1990s		Paseo del Morro	Non-contributing

Feature	CRIS Number	Date of Origin	Alterations	Character Area(s)	Contributing Status
Bollard lights near El Morro		1990s		Paseo del Morro	Non-contributing
Lights in the pavement		1990s		Paseo del Morro	Non-contributing
Yard hose in concrete box		Post 1971	Parque de las Palomas	South Walls	Non-contributing
Cat feeding stations		1990s		Paseo del Morro	Non-contributing
Fire hydrants		Post 1971		North Walls East	Non-contributing
Utility boxes		1990s		North Walls East; South Walls, Paseo del Morro	Non-contributing
Fencing associated with buildings within bastions and El Morro Esplanade		*US military occupation period*		*North Walls East, North Walls Esplanade, West Walls*	*Missing*
Replica cannon sited upright flanking San Juan Gate on the west side		*US military occupation period*		*West Walls*	*Missing*
Golf course tees and flags		*US military occupation period*		*North Walls Esplanade*	*Missing*
Electrical poles and other utility features		*US military occupation period*		*West Walls*	*Missing*

TABLE 8. Assessment of landscape features related to San Juan Historic City Wall Small-scale Features.

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1" = 200'

0' 100' 200' 400'

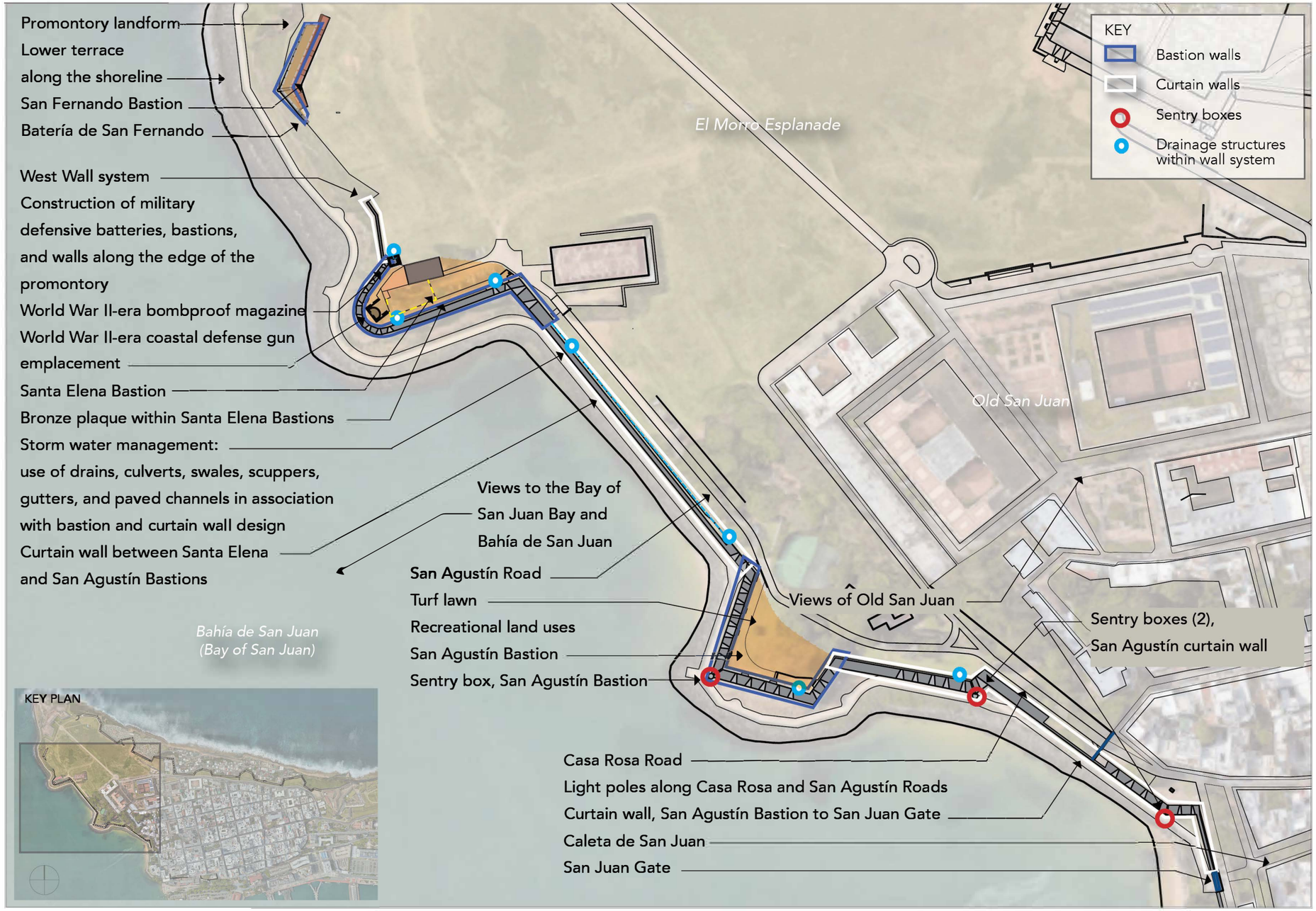
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 303.
Character Area 1 - North Wall East of the Esplanade Character Area Contributing Features



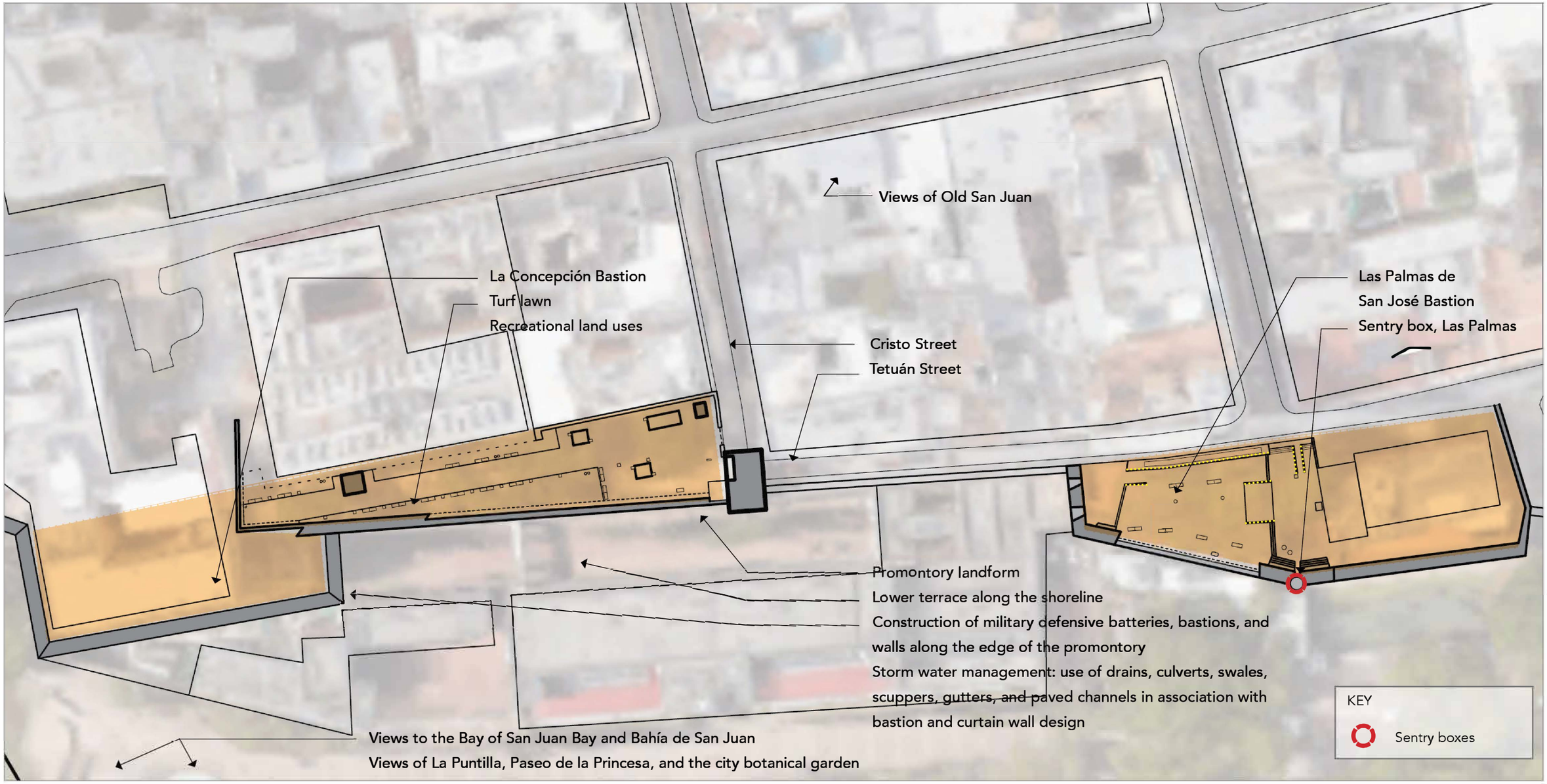
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FIGURE 304.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Contributing Features



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FIGURE 305.
Character Area 3
West Wall Character Area
Contributing Features



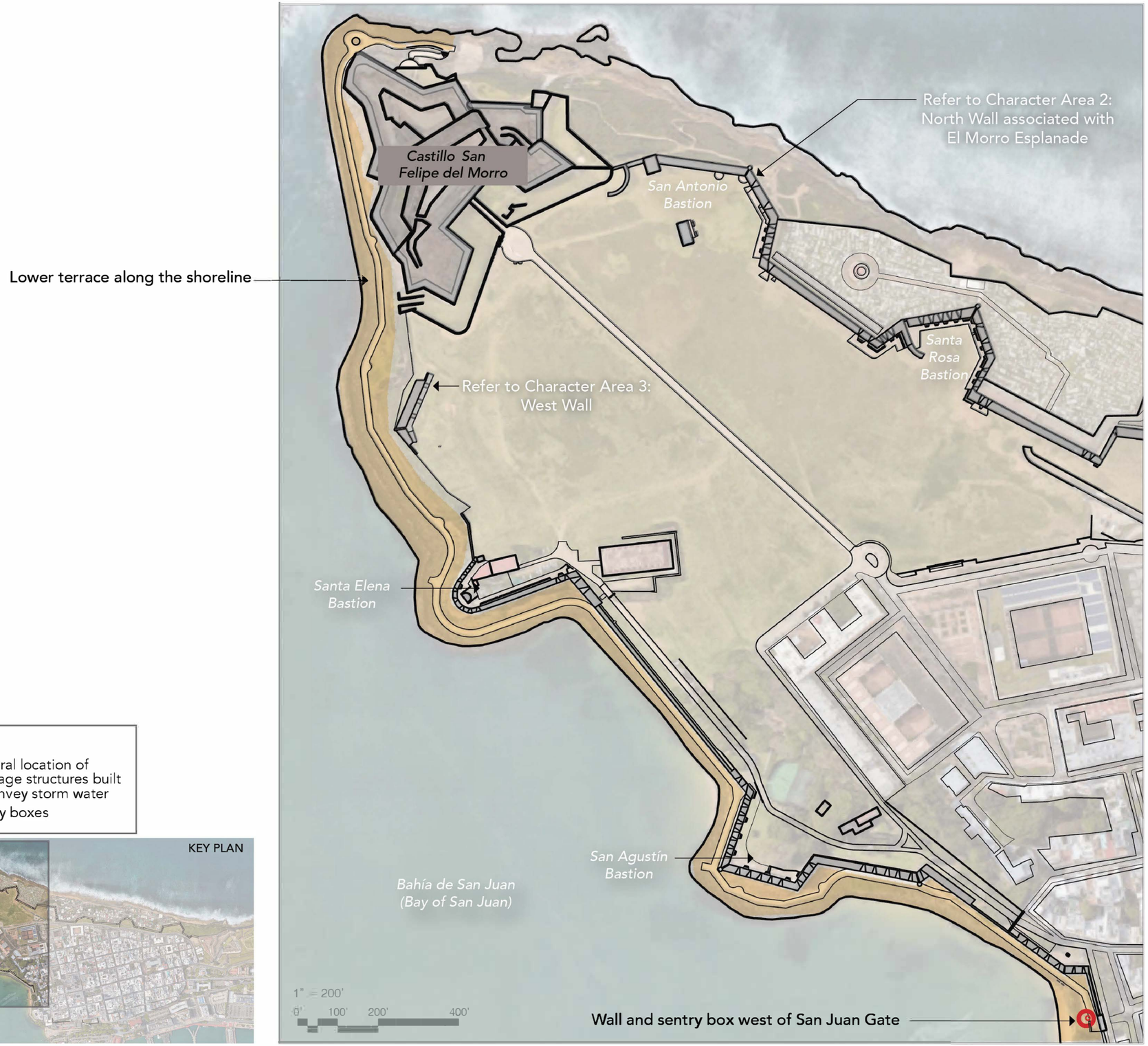


1" = 60'

0' 30' 60' 120'

San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 306.
Character Area 4 - South Wall Character Area
Contributing Features



San Juan City Wall
Cultural Landscape Report
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FIGURE 307.
Character Area 5 - El Paseo del Morro
Contributing Features

Treatment Plan

Introduction

Treatment is a preservation strategy for long-term management of a historic property, intended to direct physical work on the landscape so that the distinguishing characteristics and features that contribute to its significance are preserved.

One of the goals of the treatment plan is to enhance the historic character of a cultural landscape while accommodating contemporary function and use. Treatment plans establish how the landscape should look and be maintained to protect and/or enhance historic integrity and character. Treatment plans also address other park management goals, such as access, sustainability, and interpretation, as well as routine and cyclical maintenance measures necessary to perpetuate the identified desirable character of the landscape.

This treatment plan has been prepared to provide the National Park Service with an overall vision for the San Juan Historic City Wall cultural landscape. The recommendations and guidelines included herein are intended to guide and support long-term management and interpretation of the site and its resources.

The resource management strategies presented in the treatment plan have been guided by input from the National Park Service, including park and regional personnel, afforded during meetings and through the review process. The input relating to management goals, issues, and objectives provided by park and regional personnel was particularly critical to this project. Three documents, including a 1985 General Management Plan (GMP), were also considered when establishing baseline approach strategies for this treatment plan.

The treatment plan is organized into six sections, as follows:

1. **Park Management Goals, Issues, and Concerns.** This section describes the issues raised by the park for consideration within the treatment plan, in addition to issues raised in the park's GMP.

2. **Recommended Treatment Approach.** This section presents the four approaches recognized by the Secretary of the Interior for treating historic properties, and identifies the approach recommended for the San Juan Historic City Wall cultural landscape.

3. **Treatment Concept.** The treatment concept section conveys the overarching vision for landscape treatment of the San Juan Historic City Wall cultural landscape based on the NRHP significance of the property and the goals identified by the National Park Service for its management and interpretation.

4. **General Treatment Guidelines and Recommendations.** This section provides an overarching set of recommendations and guidelines that applies to the San Juan Historic City Wall cultural landscape as a whole and that should be considered in conjunction with the more specific recommendations that follow.

5. **Specific Treatment Recommendations.** This section provides more specific treatment recommendations for individual actions intended to address the management goals, issues, and concerns identified for the San Juan Historic City Wall cultural landscape.

6. **Landscape Preservation / Rehabilitation Projects.** This section provides a prioritized list of draft National Park Service Project Management Information System (PMIS) statements for projects that result from the treatment recommendations and guidelines proposed herein. The list provides a general outline for work needed at the San Juan Historic City Wall cultural landscape to fully implement the recommended treatment.

Park Management Goals, Issues, and Concerns

The management goals, issues, and concerns to be addressed by this treatment plan were identified in several ways. The majority were conveyed during a project start-up meeting held at the park on July 17, 2018, attended by National Park Service regional and park personnel and members of the Panamerican/WJE/LSHLA CLR project team. Others were gleaned from the project statement of work, field investigations, consultation with park maintenance staff, and review of available planning and inventory documents.

Issues Conveyed by Park Personnel

The issues conveyed by park personnel include the following:

- Vegetation management
- Views and viewsheds
- Universal accessibility
- Drainage
- Turf management
- Erosion control
- Visitor management
- Signage strategies
- Site furnishing recommendations
- Graffiti removal strategies
- Future land and water trails





General Management Plan Issues

The General Management Plan for San Juan National Historic Site indicates the general treatment approach to the property to be:

> The National Park Service will preserve the San Juan fortifications in their existing form, retaining as closely as possible their appearance between 1949 and 1961, the period during which the facilities were last used for military purposes.[295]

295. National Park Service, GMP, 26.

The rationale for this approach as discussed in the GMP is as follows:

> The fortifications of San Juan must be viewed as a historic district that has evolved over time . . . Over the centuries of construction and use, the fortifications have remained one of the finest examples of coastal and land defense systems in the world. As a new technology was developed or a need was identified, the fortifications were changed. Each of these changes was a product of its time, and each served a particular need in the overall defense mission. Therefore, the final result of these changes should be preserved so that the whole story can be told to the millions of visitors who come each year.[296]

Treatment guidelines detailed in the GMP that relate to the work conducted herein include the following:

> Missing historic fabric will not be reconstructed except when it is determined through the preservation maintenance program. . . that reconstruction is necessary to ensure structural stability of the fortifications.
>
> No physical alterations will be undertaken to provide for adaptive reuse of the casemates or other interior spaces, or to provide for handicapped visitor access or for visitor safety, if it is determined that such actions will impair the significant architectural features or structural system of the fortifications.
>
> Interior spaces will generally not be restored unless it is absolutely necessary to help convey an interpretive theme.[297]

Treatment Approach

The four treatment approaches recognized by the Secretary of the Interior for historic properties were considered in conjunction with the park's objectives in developing this CLR in order to determine the approach most suitable for the San Juan Historic City Wall cultural landscape. Described in the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as forming the "philosophical basis for responsible preservation practice and enable long-term preservation of a landscape's historic features, qualities, and materials,"[298] the four treatment approaches include: preservation, rehabilitation, restoration, and reconstruction. The approaches are defined as:

> **Preservation:** the act or process of applying measures necessary to sustain the existing form, integrity, and material of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction.
>
> **Rehabilitation:** the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.
>
> **Restoration:** the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by removing features from other periods in its history and reconstructing missing features from the restoration period.
>
> **Reconstruction:** the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.[299]

296. National Park Service, GMP, 26.
297. National Park Service, GMP, 26.
298. Page et al., 82.
299. Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings* (Washington, DC: National Park Service, Historic Preservation Services, 2017), 2–3; accessed April 2021, https://www.nps.gov/tps/standards.htm.

The 1991 HSR/CLR for "The Fortifications of San Juan National Historic Site" noted the following regarding a treatment approach for the park:

> The *General Management Plan* acknowledges the fact that the NPS has not followed [the preservation philosophy outlined therein] in the past, stating "past restoration and removal of materials dating from the historic period (1539-1961), particularly at San Cristóbal, has created a configuration of the fortifications that never existed historically." More specifically, the treatment approach of the NPS in the 1960s and 1970s had been to repair and restore selected structures to their original, as-built appearance. For example, the Officers' Quarters building at San Cristóbal was restored to its exterior appearance of 1775, while its south wing built circa 1861 has been retained as public restrooms. There is no provision in either the *General Management Plan* or the "Resource Management Plan" for rectifying the situation.
>
> This historic structure report proposes a revision to the treatment approach at San Juan National Historic Site. . . It is recommended that the treatment. . . be a combination of preservation, restoration, and rehabilitation. Those elements that should be preserved are all existing fabric dating from the Spanish periods, the lighthouse at El Morro, and the American harbor defense system from World War II.
>
> Limited restoration work may be undertaken on significant elements by removing features that are not historic and by reconstructing missing historic features for which adequate documentation exists. Lastly, those features that are determined to be of lesser significance may be rehabilitated for use by visitors and by NPS administration.
>
> If it is decided to adopt this revised treatment approach at San Juan National Historic Site, it will be necessary to amend the existing *General Management Plan.*[300]

Recommended Treatment Approach for San Juan Historic City Wall cultural landscape

Based upon the goals for the property set forth by the 1985 GMP, the 1991 HSR/CLR, and park and regional National Park Service personnel, which identify the need for changes to the cultural landscape to meet current and projected future interpretive, functional, and management goals, **rehabilitation** is recommended by this CLR as the most appropriate overarching treatment approach for the San Juan Historic City Wall cultural landscape. Because rehabilitation is defined as the act or process of making possible a compatible use for a property, this approach allows for protection of the site's historic character and resources while carefully addressing the need for limited enhancement of interpretive opportunities and circulation routes, sustainability, expanded access for all visitors to more of the park resources, and the improvement of visitor amenities. As part of rehabilitation treatment, stabilization, protection, and preservation of historic and natural resources are assumed even when new uses are accommodated.

In considering the other treatment alternatives recognized by the Secretary of the Interior for possible application to the San Juan Historic City Wall cultural landscape, the CLR found them inappropriate for the following reasons. **Preservation** is overly restrictive because it does not allow for the site enhancements associated with interpretation and access that are currently needed; **restoration** and **reconstruction** are also inappropriate approaches because they assume, as a prerequisite, that sufficient documentation exists to accurately portray a lost historic condition. At this time, it does not appear that there are documentary sources detailed enough to support comprehensive restoration or reconstruction of the park's cultural landscape to a particular year or period or replacement of missing historic features. Given the expansive period of significance of the property, identifying a particular date for a restoration treatment would prove challenging.

300. Berkowitz et al., volume I, HSR, 16-17.

Rehabilitation allows for ongoing interpretation of evolving nature of military use and development.

Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior has developed standards for rehabilitation as applied to historic properties. There are ten basic principles that comprise the standards. These are intended to help preserve the distinctive character of a historic property while allowing for reasonable change to meet new needs. The standards (36 CFR Part 67) apply to historic properties of all periods, locations, sizes, conditions, and uses. These standards create a baseline of guidance to which intended changes to the historic landscape must be compared. These standards are neither technical nor prescriptive, but promote responsible preservation practices as follows:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.[301]

Treatment Concept

The primary goal of the treatment recommendations that follow is the long-term preservation and protection of existing San Juan Historic City Wall cultural landscape features that contribute to the historic character, setting, and

301. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996)*, 49; accessed April 2021, https://www.nps.gov/tps/standards/four-treatments/landscape-guidelines.

significance of the property, while specifically addressing the goals, issues, and concerns identified for consideration by the CLR.

Given the extensive period of significance for the property, the goal of treatment is not restoration of the landscape to a particular period of time, but rather, appropriate long-term treatment measures that preserve and protect the qualities and character-defining features of the San Juan Historic City Wall cultural landscape.

Another goal is to maintain historic resources in good condition, address repair needs, and identify appropriate protocols for the treatment of individual materials and feature types in support of streamlining maintenance and preservation practice. In support of the National Park Service goals of providing public access and education, the CLR suggests limited landscape treatments intended to support the provision of additional opportunities for appropriate visitor access and interpretation. Specific suggestions for providing additional points for universal access and movement through the park landscape and interpreting the various layers of history present using a range of creative means and methods that have a limited impact on the integrity of historic resources are included.

General Treatment Guidelines

The general treatment guidelines that follow offer an overarching strategy that should be followed regardless of the individual tasks implemented over time. These general treatment guidelines should guide the implementation of the specific treatment recommendations presented in the next section.

Role of preservation specialists

- Undertake all treatment projects under the direction of appropriate specialists, including historical landscape architects, historical architects, archeologists, conservators, natural resource management specialists, and qualified technicians and artisans.
- Evaluate all proposed new uses in consultation with a historical landscape architect and other appropriate professionals.
- Undertake sufficient study and recordation of landscape features requiring modification, repair, or replacement before work is performed to protect research and interpretive values.

Universal accessibility

- Ensure that the historic features of critical importance to telling the story of the San Juan City Wall are accessible to the public. Universal accessibility of key historic features and interpretive information should be a goal of park management, although it may not be entirely achievable. Offer an alternative interpretive experience of equal value where universal access is not achievable without compromising the integrity of the historic resource.

Access to resources

- Limit, monitor, and control access to areas that are vulnerable to damage from humans, or that may be deemed unsafe for visitors to access.

Land use

- Avoid land use activities, permanent or temporary, which threaten or impair known or potential archeological resources.
- Monitor and regulate use of the landscape to minimize immediate and long-term damage to cultural resources.

Sustainability

- Employ cultural and natural resource treatment and maintenance methods that are environmentally and culturally sensitive and sustainable over the long term.
- Emphasize landform-based solutions, such as grading, over hardscape solutions, such as

retaining walls, to address concerns relating to circulation, drainage, and new construction.

- Minimize the extent of any ground disturbance, compaction, and drainage pattern alteration in areas other than those noted below in the specific treatment recommendations for addressing stormwater management concerns.
- Promote biodiversity through the use of native plant species wherever possible.
- Take into consideration life-cycle costing of materials, including their long-term wearing capacity and maintenance costs, when evaluating options. Always consider materials that are non-toxic, durable, long lived, and low maintenance. Consider strategies for the re-use of materials that have been salvaged from the site.
- Encourage visitors to the historic site to "leave no trace" through the creative use of signage and education.
- Minimize soil disturbance and grading in areas other than those noted to enhance the management of stormwater and the visitor experience.
- Preserve existing landforms and natural drainage patterns to the greatest extent possible.
- Consider grading strategies that improve areas where erosion consistently occurs, causing ponding and the loss of turf cover.
- Establish vegetative cover when addressing the need for erosion control. Consider planting species that are suited to the local soil and moisture conditions, selecting native species whenever possible.
- Limit the use of mitigating devices such as retaining walls and closed drainage systems.

Spatial organization

- Maintain character-defining patterns of spatial organization and resources identified as contributing to the significance of the historic landscape.
- Avoid the addition of any new features—including plantings, roads, or structures—to the landscape that would alter the overall character-defining patterns of spatial organization.

Visual quality

- Utilize screening methods that blend with the surrounding character of the site.
- Minimize the visual impacts of vehicles and vehicular access systems. Consider the impact on views when proposing new circulation systems. Also consider noise and other impacts that parking will have on the visitor experience and historic resources.
- Minimize the visual impacts of new pedestrian access systems by utilizing materials consistent with the existing material palette at the site and limiting path width.

Cultural vegetation

- Replace plantings indicated as contributing in kind when the need arises. Consider the use of species that are native, durable, and appropriate to urban and windswept conditions.
- Remove vegetation that has the potential to damage historic features.

Circulation

- Follow the guidance afforded in Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the standards associated with the Architectural Barriers Act Accessibility Standards (ABAAS) when designing universally accessible paths.

- Ensure that all paths are wide enough for two people to walk comfortably side by side, evenly graded, and well-drained to prevent trampling of vegetation, soil compaction, and erosion of the path margins.

- Limit the construction of new roads, including service or maintenance routes unless absolutely necessary.

- Identify appropriate locations for new parking as needed that are not within primary view corridors.

Buildings and structures

- Consider the interpretive value of non-intrusive, non-contributing buildings and structures, and retain when possible.

- Consider the removal of non-contributing structures that are intrusive to the historic landscape only if they are found to be without historical or functional merit or value.

- Avoid conjectural reconstruction of historic buildings and structures.

Interpretation

- Develop an interpretive program that addresses cultural resources, natural systems, and their interrelationships, as well as layers of landscape history.

- Minimize the visual and physical impacts of interpretive and visitor use facilities on cultural resources and natural systems. Develop the least-intrusive interpretive and visitor use improvements possible.

- Develop interpretive programs and media to be as accessible as possible for the widest range of visitors.

- Provide an alternative means for interpretation for those features located in areas that cannot be made universally accessible or where new interpretive features would be a visual intrusion.

- Increase the accuracy of park interpretation by conducting additional documentary and archeological research and investigation.

- Enhance visitor understanding of the property and its historic resources by considering the establishment of additional interpretive aids that result in a better understanding of the historic configuration and composition of the property during the Spanish and US Army occupation periods. Consider incorporating this information into the park's Long-Range Interpretive Plan.

- Consider a range of alternatives, including virtual interpretation such as augmented reality and various types of visual aids, to identify the most successful and least intrusive option for enhancing interpretation. Avoid landscape restoration as an interpretive aid.

Conservation of historic materials

- Avoid the use of chemical or physical treatments that cause damage to cultural resources and natural systems. Undertake the surface cleaning of structures using the gentlest means possible.

Maintenance

- Ensure a tidy, well-cared for, and maintained appearance within the park.

- Carefully address junctions between ground plane surface materials by ensuring that they are flush with one another without gaps, dips, or drop-offs.

- Maintain paved surfaces in smooth and repaired condition and rehabilitate the margins of circulation routes and drainage channels to address erosion and compaction problems.

- Rehabilitate pavements that are in fair to poor condition. Ensure that rehabilitated pavements are consistent with historic conditions in material, finish, and location.

- Utilize best management practices (BMPs), integrated pest management (IPM), and soil and erosion control measures in all maintenance and management practices to minimize water pollution and degradation of natural systems.

Site furnishings and signs

- Erect the minimal number of signs necessary to meet identity, directional, interpretive, and regulatory needs.

- Establish wayside exhibits in the least intrusive manner possible to fulfill proposed new interpretive goals.

New design and construction

- Avoid altering existing features or adversely affecting the landscape's historic character when adding new features to support interpretive, management, and visitor access functions. Features that facilitate access and interpretation should be designed to minimize adverse impacts on the character and features of the landscape. Limit the construction of new facilities to those that are absolutely necessary. Consider the use of temporary structures that do not require the placement of foundations in the ground or involve soil disturbance.

- Site necessary new buildings and structures out of key viewsheds. Consider designing necessary new facilities as low buildings situated in such a way as to be screened from view from primary visitor use areas. A cluster of smaller buildings that are tightly grouped and follow a consistent orientation is preferable to the establishment of one very large building. As possible, situate new structures relatively close to existing road corridors to limit the establishment of new roads.

- Ensure that any new buildings and structures are compatible with local traditions of design and constructed of locally available and indigenous materials such as stone and wood. The design of new buildings and structures should also be sympathetic to local traditions in terms of scale, massing, roof form, and details. New buildings and structures should be situated to lie lightly on the land, minimizing soil disturbance, particularly cut and fill. Sustainability should be considered in the choice of materials and energy use. Consider incorporating passive solar energy conservation strategies into the design of new buildings and structures. Also consider the local climate in the siting and design of buildings and their relationship to solar orientation, heat gain, shading, prevailing winds, and seasonal average temperatures to minimize energy costs. Limit the footprints of new buildings and structures by optimizing use and flexibility of both indoor and outdoor spaces.

- Retain and maintain historic materials, features, finishes, construction techniques, spaces, and spatial relationships when changes to the cultural landscape are considered.

- Design and site new additions or alterations to the landscape in such a way that they do not destroy historic materials, features, and spatial relationships that characterize the cultural landscape. Design all new additions and alterations to be a product of their time, and compatible with historic resources in materials, size, scale and proportion, and massing. Differentiate new work from historic resources.

- Design and site new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and integrity of the cultural landscape would be unimpaired.

- Retain and maintain changes to the cultural landscape that have acquired historic significance in their own right.

- Repair, rather than replace, deteriorated historic features. Replacement of severely deteriorated features should be based on archeological, documentary, or physical

evidence. The new feature should match the old in design, color, texture, and, where possible, materials.

- Avoid landscape changes that create a false sense of historical development, including the addition of conjectural, typical, or representative features. Consider interpretation of typical features in cases where restoration is not possible, but where providing the information is important to the visitor experience.

- Design new features, systems, and programs to be as accessible as possible.

Archeological resources

- Protect and preserve archeological resources in place. If such resources must be disturbed, undertake mitigation measures such as recovery, curation, and documentation.

- Limit the use of destructive techniques, such as archeological excavation, to provide information required to support research, interpretation, and management goals.

- Utilize the findings of non-invasive methods to identify areas of possible interest for conducting subsurface investigations. For example, consider conducting a ground-penetrating radar (GPR) survey to help determine the purpose of features currently visible on the ground.

General Treatment Recommendations

Refer to Figure 345 through Figure 350 for Treatment Plans.

Documentation

- Complete Historic Structures Reports for contributing buildings and structures associated with the San Juan Historic City Wall cultural landscape, including:

    - North Walls, including bastions, sentry boxes, and other related structures
    - West Walls, including bastions, sentry boxes, and other related structures
    - South Walls, including bastions, sentry boxes, and other related structures
    - La Perla Gate
    - Tunnel to Santa María Magdalena de Pazzis Cemetery
    - Casa Rosa Gate
    - San Juan Gate
    - Batería de San Fernando
    - World War I-era coastal defense gun emplacement
    - World War I-era bombproof magazine

- Document all cultural resources located within the San Juan Historic City Wall cultural landscape using Global Positioning System (GPS) equipment with sub-meter accuracy. Maintain a digital archive using Geographic Information System (GIS) that can also be used to generate working drawings in AutoCAD for resources; provide access to digital archive for use by the National Park Service as well as professionals consulting on preservation and treatment strategies for long-term management of the site.

- Consider conducting oral histories to collect information about the more recent history of the property, such as the era of US military occupation, transfer to the Department of the Interior, and efforts conducted to establish the park and protocols for managing resources.

- Update the historic resources listed in the Cultural Resource Information System (CRIS) to include the features indicated as contributing to the significance of the San Juan Historic City Wall cultural landscape. Currently listed are Old San Juan City Wall (North Wall) (CRIS HS #006065); Old San Juan City Wall (West Wall) (CRIS HS #006068); Old San Juan City Wall (South Wall) (CRIS HS #006069); San Juan Gate (CRIS HS #091741); and San Fernando Bastion at El Morro (CRIS HS #091740).

- Document, through drawings, photographs, and notes, all future changes and treatments made within the historic landscape. Maintain records of treatment documentation according to professional archival standards, and ensure it is accessible for use by park staff, researchers, contractors, and maintenance personnel as needed.

Universal accessibility

- Complete a universal accessibility assessment for San Juan Historic City Wall cultural landscape to identify limitations associated with access to the property's primary interpretive program for persons with disabilities, and goals for improving accessibility that are consistent with current standards and federal guidelines. Determine the impact that adding accessible routes will have on the historic landscape. Consider the potential to add paths that will render more of the wall system accessible while meeting the requirements of ABAAS.

Land ownership

- Work with the Commonwealth of Puerto Rico to formulate a strategy for defining roles and responsibilities for maintenance within Parcel B of the El Morro Esplanade.

- Work with the Commonwealth of Puerto Rico to transfer ownership of the northwestern section of Parcel B, which includes El Polvorín and Santa Elena Guardhouse, to the National Park Service.

Appropriate activities

- Manage the San Juan Historic City Wall cultural landscape by providing clear guidance to visitors related to what activities are appropriate within the space. Provide a bilingual information panel at the primary locations where visitors enter the park that outline appropriate behavior and any rules for use. Discourage visitors from climbing into the embrasures, from entering the site after hours, and from using the sentry boxes in inappropriate ways.

- Prohibit use of the park as a venue for large events.

Conservation of historic materials

- Complete a materials conservation plan that identifies appropriate repair and maintenance protocols for stone and brick masonry, mortar, stucco, tile, concrete, wood, and metal features comprising the historic city wall and associated features. In the plan, address procedures for ameliorating or correcting the problems caused by environmental processes, such as wind-borne salts, acid rain, airborne pollutants, and animal activity. Also address problems resulting from cultural activities such as erosion resulting from stormwater-management systems, and damage caused by mowers, weed trimmers, chemical treatments used for grounds maintenance (*see Implementation Projects*).

- Consider a range of strategies for the removal of graffiti on walls using materials and equipment deemed safe for use on historic materials. Test strategies on limited and visually unobtrusive areas before applying them throughout (*see Implementation Projects*).

Repair

- Repair all landscape features assessed in fair to poor condition, including, in particular, evidence of soil compaction and erosion, damaged walls and structures, broken and cracked paving, and broken and incomplete light fixtures and signs. Follow the guidance afforded in the materials conservation plan prepared based on the recommendations herein (*see Implementation Projects*).

- Provide opportunities to engage young people in the conservation efforts at San Juan Historic City Wall cultural landscape, which provides an unparalleled opportunity for hands on conservation education. Local and national outreach to university and high school students would provide hands on experience in conservation science in Puerto Rico, as well as allow the park staff to continually reevaluate the improve implemented

procedures and examination techniques. The NPS could collaborate with organizations including the Hispanic Access Foundation, which aims to provide opportunities and engagements with parks dedicated to Latino history and culture, or the Greening Youth Foundation, whose mission is to engage under-represented youth and young adults in careers in conservation. Furthermore, the US Youth Conservation Corps is a summer youth employment program that engages young people in meaningful work experiences at national parks and develops an ethic of environmental stewardship and civic responsibility.

Treatment Recommendations by Landscape Characteristic

Refer to Figure 345 through Figure 350 for Treatment Plans.

Natural Features and Systems and Responses to Natural Resources

- Preserve and maintain all natural features and systems, and responses to natural resources, assessed as contributing to the significance or historic setting of San Juan Historic City Wall cultural landscape, including:
  - Promontory landform
  - Lower terrace along the shoreline
  - Construction of military defensive batteries, bastions, and walls along the edge of the promontory
  - Stormwater management: use of drains, culverts, swales, scuppers, gutters, and paved channels in association with bastion and curtain wall design completed during the period of significance
  - Use of the level terrace below the North Walls to site Santa María Magdalena de Pazzis Cemetery and the community of La Perla

  Address condition issues of concern related to natural features and systems, including:

  - Growth of vegetation on and within the walls themselves (Figure 310)
  - Growth of vegetation within the drains, culverts, swales, scuppers, and paved channels that control stormwater associated with perimeter walls and bastions (Figure 311)
  - Erosion of the cliff face below San Fernando Bastion, including erosion along the edge of El Morro Esplanade which contributes to the instability of the cliff and the safety fencing atop the promontory (Figure 312 and Figure 313)
  - Stormwater management within San Agustín Bastion (Figure 314)
  - Soil erosion in locations where visitors congregate, such as at benches and trash receptacles (Figure 315)
  - Soil erosion within La Perla at the base of the North Wall due to deferred maintenance of the stormwater infrastructure and human impact (Figure 316)
  - Ongoing erosion of the shoreline due to impacts of sea-level rise and climate change (Figure 317)



FIGURE 310. Composite of images showing vegetation growing on and within the North Walls.



FIGURE 311. Vegetation growing within one of the drainage channels associated with the North Walls, which limits the capacity of the runnel to hold and direct stormwater.



FIGURE 312. The fence marking the top of the cliff wall associated with the West Walls adjacent to El Morro Esplanade appears to be failing, and thus may not be safe for visitors. The fence is also overgrown with vegetation.



FIGURE 313. The cliff face between Batería de San Fernando and Santa Elena Bastion that has treated with shotcrete continues to erode.



FIGURE 314. The use of sandbags to manage stormwater along the West Wall.



FIGURE 315. Soil erosion at the base of a bench within the San Agustín Bastion.



FIGURE 316. The base of the North Wall in La Perla is evident and utilities are exposed due to heavy pedestrian activity and deferred maintenance of the area.



FIGURE 317. Rip raps has been used to stabilize the shoreline below the West Walls.

Drainage

- Ensure that all stormwater structures are in good condition and maintained so that stormwater can pass through available openings and be dispersed away from walls.
- Establish a cyclical strategy to clean out all vegetation within the drainage catchment system, including runnels, gutters, catch basins and other infrastructure that impedes stormwater flow.
- Complete a topographic survey of the San Juan Historic City Wall cultural landscape that provides information at a 1-foot contour intervals and identifies all existing stormwater infrastructure, including the location of below ground pipes and cisterns.
- Use the topographic survey to comprehensively address stormwater management at a landscape scale. Develop a plan that identifies desired flow patterns, and any engineering measures needed to manage and collect overland flow, disperse the water and protect the site from erosion and deterioration.
- Complete an analysis of the way in which stormwater interacts with the site and identify drainage issues and concerns related to the wall system. For example, investigate the cause of ongoing flooding within San Agustín Bastion (refer to Figure 314) as the first step towards correcting the problem.
- Develop a stormwater-management plan that considers strategies such as re-grading to slow and redirect overland flow of stormwater away from the parapet walls and toward detention systems and/or structures designed to capture and convey the water to a downhill location designed to handle the outflow (Figure 318 and Figure 319).
- Consider the use of underground cisterns (refer to Figure 319) to store and slowly release detained stormwater; porous pavements; and/or media filters as part of a strategy to effectively capture water uphill of

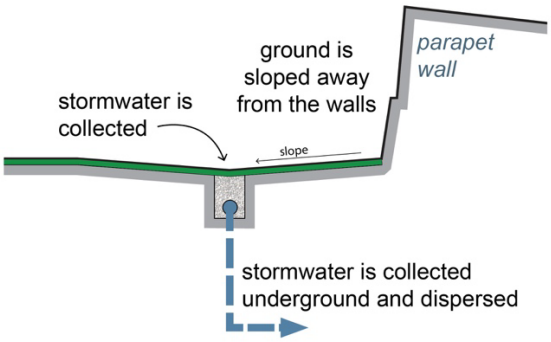




FIGURE 319. Installation of an underground cistern system at the University of Virginia East Range, part of a UNESCO World Heritage Site.

Erosion control

- Identify the locations within the San Juan Historic City Wall cultural landscape that are subject to erosion and analyze the cause of the damage.
- Address the cause prior to implementing any engineering strategies.
- Correct evidence of erosion by placing a combination of fill, erosion control fibers or matting, and sod or hydroseeded grass within areas of turf and soil loss and compaction. Fill is preferable to but as a corrective action due to the potential for cutting to disturb archeological resources *(see Implementation Projects*).

- Repair erosion associated with social trails by establishing a stabilized turf path that follows the "desire lines" or preferred routes of visitors. Surface the path with turf so that it blends with the surrounding landscape.

- Continue the use of rip rap or revetments to protect the shoreline against erosion by wave action, storm surge and currents. As rip rap is replaced or revetments are repaired, ensure the material is consistent in terms of color and size with that present.

- Replace the fence between El Morro and San Fernando Bastion with a new safety fence that is more secure and less prone to failure.

- Consider the use of fibrous-rooted plants (many grasses would qualify) at the edge of the promontory above the cliff as one of the tools to protect against additional soil erosion.

- Complete a geotechnical engineering study to address ongoing erosion of the steeply sloped margins of the promontory, particularly the cliff faces south of El Morro and at the east end of the North Walls. Consider the use of architectural shotcrete, which can be colored and textured to blend with the natural surroundings (Figure 320) *(see Implementation Projects)*.



FIGURE 320. View of a steep slope edged by architectural shotcrete. (Source: Drill Tech Drilling and Shoring).

Patterns of spatial organization

- Preserve and maintain all patterns of spatial organization assessed as contributing to the significance or historic setting of San Juan City Wall, including:

  - North Wall system
  - Community of La Perla
  - Santa María Magdalena de Pazzis Cemetery
  - El Morro Esplanade
  - West Wall system
  - South Walls

- Avoid adding new buildings, structures, or trees to the historic landscape that would serve to alter historic patterns of spatial organization.

Land uses

- Preserve and maintain all land uses assessed as contributing to the significance or historic setting of San Juan City Wall, including:

  - Residential land use associated with La Perla
  - Recreational land use associated with park use by visitors
  - Cemetery associated with Santa María Magdalena de Pazzis Cemetery
  - Commemoration land use related to plaques and monuments erected during the period of significance

- Continue to accommodate visitors in publicly accessible locations throughout the park, while ensuring preservation of the features associated with the San Juan Historic City Wall cultural landscape.

- Encourage visitors to be respectful of the San Juan Historic City Wall cultural landscape and discourage activities that are unsafe or might lead to deterioration of historic resources.

Circulation

- Preserve and maintain all circulation features assessed as contributing to the significance or historic setting of San Juan City Wall, including:
  - Norzagaray Street
  - Calle de Lucila Silva
  - Calle de Bajada Matadero
  - Calle de Tiburcio Reyes
  - Trace road leading into San Sebastián Bastion
  - Cemetery Road and tunnel
  - San Agustín Road
  - Casa Rosa Road
  - Caleta de San Juan
  - Tetuán Street
  - Cristo Street
- Address condition issues of concern related to circulation, including:
  - Ponding at the intersection of the trace road leading into San Sebastián Bastion and Norzagaray Street (Figure 321)
  - Deterioration of the road trace leading into San Sebastián Bastion (Figure 322)
  - Cracking, staining, and the growth of grass at Bajada Matadero Street
  - Some of the paving along Norzagaray Street, which serves as the entry point to the park along the North Walls, is cracked, broken, and stained (Figure 323)
  - The walkways at the base of the North Walls within La Perla are cracked, broken, and uneven (Figure 324)
  - The walkway leading through Las Ánimas Bastion to the western stair to La Perla is cracked and exhibits spalling (Figure 325)
  - Soil erosion at the entrance to the sentry box at San Sebastián Bastion has caused a large gap in the circulation (Figure 326).



FIGURE 321. The trace road leading into San Sebastián Bastion exhibits ponding during storm events. The bollards have been damaged by vehicles and the paving materials are inconsistent with the existing tile surface of the Norzagaray Street sidewalk.



FIGURE 322. The road trace into San Sebastián Bastion exhibits signs of deterioration along its surface and retaining walls.



FIGURE 323. Staining of tiles at sidewalk along Norzagaray Street due to rusted handrail.



FIGURE 324. Walkways are deteriorated and in need of replacement.



FIGURE 325. The path that leads through Las Ánimas Bastion from Norzagaray Street to the stair to La Perla is cracked, broken, and uneven.

- Repair the asphalt surfacing along the road trace into San Sebastián Bastion (refer to Figure 322). Consider replacing the very dark asphalt with a lighter material that incorporates brown-toned aggregate in the mix. Beyond the existing brick wall that edges the road trace, replace the asphalt with a more compatible surface material such grass pavers (Figure 327).

- Work with the municipality to rehabilitate the sidewalk along Norzagaray Street to address ponding at the intersection of the trace road leading into San Sebastián and direct water away from the pedestrian route (refer to Figure 321).



FIGURE 326. Erosion within San Sebastián Bastion has created a trip hazard at the entrance to the sentry box.



FIGURE 327. View of a grass paver system for vehicular and pedestrian uses that may protect against soil erosion and compaction and blend with certain historic settings while also promoting infiltration of storm water. (Source: Belgard turfstone paver system)

- Work with the municipality to rehabilitate the sidewalk along Norzagaray Street to remove rust stains caused by the steel guardrail and replace paving tiles that are cracked and broken, or are themselves replacements that do not match the original pavement in terms

of materials and pattern character. Identify a source for appropriate tile material (refer to Figure 323).

- Repair the broken and generally deteriorated concrete walkways at the base of the North Wall in La Perla (refer to Figure 324).
- Repair the concrete walkway connecting Norzagaray Street to the western stair, which is cracked and exhibits spalling. Replace the walkway, which does not appear to be historic, if needed.
- Address soil erosion within San Sebastián Bastion and render entry into the sentry box possible by filling, providing an earthen ramp, or paving a walk into the structure to correct the current step up, which may constitute a trip hazard.
- Consider repaving the concrete walk leading into the North Walls and connect the walk with a ramp rather than a step at Norzagaray Street (Figure 328).



FIGURE 328. The sidewalk along Norzagaray Street connects to a paved walk leading into the North Walls via a step. Single steps can be dangerous due to a lack of visibility and should be avoided. The associated path is also in need of repair.

- Consider providing concrete pads or reinforced turf at the base of wayside exhibits for visitors to use while reading the signs, as well as trash receptacles and benches. Also consider using reinforced turf along the perimeter of walkways to protect against erosion and compaction.
- Consider further the proposal to extend El Paseo del Morro along the north shoreline between El Morro and Castillo San Cristóbal. Coordinate planning efforts with the municipality. Consider completing a feasibility study that considers the potential effects of storm surges and coastal erosion on the pedestrian trail, as well as associated maintenance needs and safety precautions. Use the study to consider the impacts the project would have on the resources available to the park for facilities management.

Universal accessibility

- Based on a future universal accessibility assessment, ensure that any proposals for implementing access improvements are compatible with and sensitive to the character and material palette of the San Juan Historic City Wall cultural landscape.
- Replace or repair all paving that is cracked, spalling, and may be considered a trip hazard.

Social trails

- Consider strategies to stabilize areas of heavy pedestrian use, particularly social trails, using turf stabilizer mats or other similar systems to improve durability.
- Consider turf reinforcement of the social trail that follows the curtain wall between San Sebastián and Santo Tomás bastions (Figure 329). Also consider adding a guard rail and safety signage (see also Small-scale Features below).



FIGURE 329. Compaction and erosion associated with the social path at base of curtain wall between San Sebastián and Santo Tomás bastions needs to be corrected.

Vehicular access

- Consider adding "No Parking Signs," and bollards where vehicles attempt to park along the road to La Perla.

- Stabilize routes used by maintenance vehicles with turf stabilizer or reinforcement mats (*see Implementation Projects*).

Cultural vegetation

- Preserve and maintain all cultural vegetation assessed as contributing to the significance or historic setting of San Juan City Wall, including:

    - Turf lawn within the bastions and along the West Walls

- Remove grass and weeds growing along the North Walls, including at the top of the walls, along the face of the walls, within the embrasures, and at the base of the walls (Figure 330).



FIGURE 330. Volunteer growth of weeds atop the North Wall.

- Remove grass and weeds growing within many of the North Wall drainage conveyance structures and channels, impeding the outflow of surface water (Figure 331).



FIGURE 331. Volunteer growth of weeds within the grate of the catch basin at Las Ánimas Bastion.

- Carefully limb up the trees at San Agustín Bastion that appear to be at risk for falling and clogging drainage infrastructure (Figure 332).



FIGURE 332. Tree branches at San Agustín Bastion at times fall and block drainage channels.

- Engage an arborist to evaluate the health of trees in San Agustín Bastion to ensure they do not pose a hazard to visitors, structures or vehicles. Identify the care and maintenance needs for the trees.

- Repair erosion and slumped earth and turf associated with the sloped topography within Santo Tomás Bastion (Figure 333). Use erosion control fabric in the repair where erosion and slumping are likely to continue to occur. Use fill as possible to regrade areas subject to erosion and slumping.

- Remove grass and weeds growing on the paved landings behind the parapet walls within the bastions.



FIGURE 333. Erosion and vegetative growth associated with the pavement within Santo Tomás Bastion.

- Remove vegetation growing on the retaining wall that supports Norzagaray Street (Figure 334).

- Remove grass from the sidewalk that provides access to the eastern bridge to La Perla.

Turf management

- Consider strategies to stabilize turf areas that exhibit evidence of heavy pedestrian use, such as within bastions, using turf pavers, fiber reinforcement, or other similar systems to improve durability and resist erosion.



FIGURE 334. Vegetation is growing within the masonry retaining wall that supports Norzagaray Street.

- Research alternate turf species to replace Bermuda grass, which is non-native and invasive.

- Ensure that turf health is addressed through the regular testing of the soil for pH and fertility, and that appropriate applications of lime and fertilizer are made to meet any deficiencies identified as part of the soil testing.

- Consider aeration where necessary. Where the turf is poorly aerated due to high water levels and a low permeable pore system, the application of quicklime is recommended to improve the soil.

- Utilize appropriate mowing equipment in the vicinity of masonry walls and structures. Avoid heavy machinery and equipment that will

damage walls and masonry structures and exacerbate compaction and erosion.

- Consider the value of acquiring remote-control mowing equipment for use on steep slopes to reduce safety risks to maintenance staff.
- Use turf wheels on riding mowers.
- Conduct careful training of maintenance personnel in practices that avoid damage to the walls and other masonry features within the landscape during mowing operations.
- Trim turf at the base of walls and masonry structures with a line trimmer (weed whip) using a line measuring no more than .09" in diameter and without a metal core.
- Ensure that any damage caused during mowing operations is reported immediately to the chief of maintenance.
- Reinforce the turf at the base of benches and around trash receptacles to repair worn areas.
- Remove silt and grass that have washed onto the paved area in Santo Tomás Bastion, particularly the eastern corner where Bajada Matadero Street enters the bastion.

Buildings and structures

- Preserve and maintain all buildings and structures assessed as contributing to the significance or historic setting of the San Juan Historic City Wall cultural landscape, including:
    - Curtain wall, San Cristóbal to San Sebastián Bastion
    - San Sebastián Bastion
    - Sentry boxes (2), San Sebastián Bastion
    - Curtain wall, San Sebastián Bastion to Santo Tomás Bastion
    - Santo Tomás Bastion
    - Sentry box, Santo Tomás Bastion
    - La Perla Gate
    - Curtain wall, Santo Tomás Bastion to Las Ánimas Bastion
    - Las Ánimas Bastion
    - Sentry box, Las Ánimas Bastion
    - Santo Domingo Bastion
    - Sentry box, Santo Domingo Bastion
    - Curtain wall, Santo Domingo to Santa Rosa Bastions
    - Santa Rosa Bastion
    - Storage structure, Santa Rosa Bastion
    - Sentry box, Santa Rosa Bastion
    - Curtain wall, Santa Rosa to San Antonio Bastions
    - San Antonio Bastion
    - Storage structures, San Antonio and Santa Rosa Bastions
    - Sentry box, San Antonio Bastion
    - San José Gate
    - San Fernando Bastion
    - Batería de San Fernando
    - Santa Elena Bastion
    - World War I-era coastal defense gun emplacement
    - World War I-era bombproof magazine
    - Curtain wall between Santa Elena and San Agustín Bastions
    - San Agustín Bastion
    - Sentry box, San Agustín Bastion
    - Curtain wall, San Agustín Bastion to San Juan Gate
    - Sentry boxes (2), San Agustín curtain wall
    - San Juan Gate
    - La Concepción Bastion

- Las Palmas de San José Bastion
- Sentry box, Las Palmas
- Wall and sentry box west of San Juan Gate

- Address condition issues of concern related to buildings and structures, including:
  - When walls need repair, ensure that materials and construction strategies are consistent with the historic condition and compatible with historic materials.
  - Repair the walls that have been damaged by cars parking in Santo Domingo and establish barriers to protect the walls from future damage.
  - Repair the brick edging at the curtain wall between Las Ánimas Bastion and Santo Domingo Bastion.
  - Repair the walls that frame Bajada Matadero Street to address cracks and damage from vehicles (Figure 335).
  - Repair the parge coat that has been applied to the retaining wall that supports Norzagaray Street that is cracking (Figure 336).



FIGURE 335. Bajada Matadero Street exhibits signs of deterioration along its surface and retaining walls.



FIGURE 336. The parge coat on the retaining wall that supports Norzagaray Street is peeling and discolored.

  - Address the erosion at the base of the North Wall below Santo Tomas Bastion in La Perla. The erosion has caused the footer of the wall as well as underground utilities within the vicinity to become exposed.
  - Repair masonry at the base of the wall that has been damaged, possibly as a result of maintenance and mowing equipment or due to the action of stormwater.
  - Coordinate repairs to the base of the wall with measures to address stormwater and control erosion. (See Implementation Projects.)
  - Remove vegetation and biological growth, including moss, small rooted plants, and grasses, where present on the wall.
  - Repoint open and eroded joints in the rubble and ashlar masonry.
  - Remove graffiti present at various areas of the wall, especially at the entrance and interior of accessible sentry boxes.
  - Repair composite masonry tiles (tiles faced with stone fragments set in mortar) to address erosion of the mortar and spalling of the face of the tile.
  - Repair paving and landings to address chipping, spalling, and cracking. Remove vegetation from paving as part of cyclical maintenance.

- Clean concrete at Paseo del Morro to remove staining from rusting steel edging. Consider replacing steel edging with a non-corroding material.
- At safety railings added to embrasures of the West Wall, remove rusting bolts holding railings into the walls and replace with corrosion resistant bolts.
- Discourage visitors from using sentry boxes for urination. Develop cyclical maintenance protocols for cleaning of sentry boxes to remove odor.
- Discourage visitors from leaving trash in the sentry boxes by placing trash receptacles within view of the sentry boxes.
- Repair the guardrail along Norzagaray Street that is rusted, warped, and has bent posts. Ensure the guardrail continues to meet all applicable codes including structural capabilities, height and opening limitations. Utilize a consistent railing design and material palette that is visually unobtrusive and does not distract from the historic setting.
- Improve the wooden guardrail at the base of the North Wall in La Perla that appears unstable. Ensure the guardrail continues to meet all applicable codes including structural capabilities, height and opening limitations.
- Replace the wooden guardrail at the drainage structure behind the curtain wall between Santa Elena and San Agustín Bastions, which is failing and unsafe. Ensure the guardrail continues to meet all applicable codes including structural capabilities, height and opening limitations.
- Replace the missing cables at the plaza northwest of El Morro along El Paseo del Morro.

Views and vistas

- Preserve and maintain all features assessed as contributing to the significance or historic setting of San Juan City Wall, including:
  - Views to the Atlantic Ocean
  - Views of La Perla
  - Views of Old San Juan
  - Views to Santa María Magdalena de Pazzis Cemetery
  - Views to the Bay of San Juan and San Juan Harbor
  - Views of the botanical garden from the South Wall
- Carefully limb up the trees at San Agustín Bastion that impede views (refer to Figure 332).

Small-scale features

- Preserve and maintain all small-scale features assessed as contributing to the significance or historic setting of San Juan City Wall, including:
  - Bronze plaques within Las Ánimas Bastion, Santa Rosa Bastion, and Santa Elena Bastion
  - Light poles along Casa Rosa Road and San Agustín Roads
- Address condition issues of concern related to small-scale features, including:
  - Repair of broken light fixtures
- Replace the fencing between El Morro and Santa Elena Bastion which is both materially incompatible and appears structurally unstable.
- Consider adding a guardrail and safety signage adjacent to the social path along the curtain wall between San Sebastián and Santo Tomás bastions.

- Treat as cultural resources commemorative markers, plaques, and monuments regardless of whether they date to the period of significance.

- Avoid adding additional commemorative markers, plaques, and monuments within the park.

- Work with local environmental groups to establish guidance on lighting and light pollution at San Juan National Historic Site.

- Avoid adding additional lighting along the shoreline. Ensure that existing lighting is adequate but minimal so as not to spill over into natural areas, negatively affecting local flora and fauna.

  If lighting is necessary for wayfinding, consider low level lighting that highlights pathways without spillover or light trespass (Figure 337). All lighting should be shielded or full cutoff which constricts the light produced by a luminaire to a specific area. Utilize solar-powered LED lights when feasible *(see Implementation Projects)*.



FIGURE 337. Rope lighting or in-grade low profile path lights provide illumination to the path only without spillover.

- Avoid adding any new pole lights except to replace existing lights that are missing or damaged.

- Repair or replace the damaged bollards and chain at the trace road leading into San Sebastián Bastion (refer to Figure 321).

- Repair or replace light posts along Norzagaray Street that have been damaged or are missing (Figure 338).



FIGURE 338. Light posts and tiles located at the sidewalk along Norzagaray Street exhibit signs of neglect and damage.



FIGURE 339. Visitor safety is a concern along the North Wall where access to the embrasures is difficult to control.

Visitor management strategies

- Consider the use of small retractable stainless steel scissor gates that could be placed within the sentry boxes or embrasures to discourage access during periods when large crowds are anticipated (Figure 339 and Figure 340). If possible, gates should be secured with tension and not embedded or otherwise fixed to the wall. Tension-secured gates could be installed as an initial strategy. If it is determined that a fixed gate is required (e.g., if visitors remove the tension-secured gates), a fastened-in-place gate or other barrier could be installed. An alternative option is the use of removable steel posts with chain.

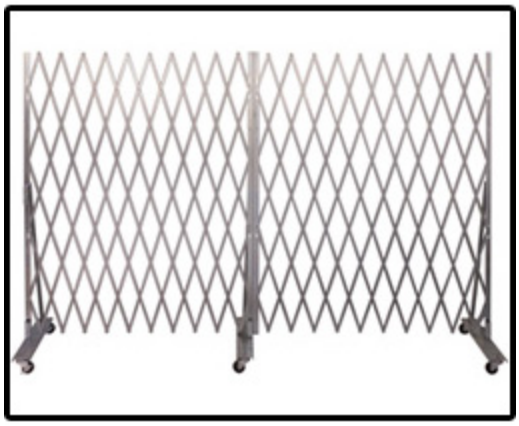


FIGURE 340. An example of a removable scissor gate that could be placed within the embrasures to discourage access during busy periods. (Source: Carolina Dock Equipment)

- Consider adding small signs near embrasures where protective railings or gates are not present to discourage visitor access to the openings (Figure 341).



FIGURE 341. An example of graphic language use on signage.

- Retain the existing barricades within the West and South Walls. As these barricades require replacement consider options for diminishing the visual and physical impact on the walls and embrasures. Consider the use of thinner steel bars or cables that will reduce the visual impact of the safety features. Finish bars with a matte material that is gray in color to diminish its visual impact on the view through the embrasures. Use cables that are gray in color with a matte finish. Use the existing anchoring locations for the replacement features to avoid causing further damage to the walls.

Signage strategies

- Limit the number of signs installed within the park to the least necessary to address wayfinding, interpretation, safety, and other guidance.
- Utilize simple graphic language on signs as much as possible to ensure understanding by the widest audience possible.
- Consider providing orientation and informational signs at the locations where most visitors enter the park. These signs should convey rules and regulations, provide orientation information about the history of the site and its historic significance, encourage visitors to be good stewards, and provide wayfinding information about what the site has to offer. Signage should be in both Spanish and English.
- Provide low signs at the base of the curtain walls and bastions that indicate the safety and resource protection issues associated with walking into the embrasures or on top of the walls. Signs should discourage visitors from climbing on top of the walls or into the embrasure openings. Rangers and volunteers should regularly advise visitors from these practices. The orientation signs at the entrances to the park should clearly state that these practices are to be avoided, and small signs should be included near each group of embrasures to remind visitors of this rule. Undertake these efforts to avoid adding barricades within the openings of the North Walls.
- Provide discrete signage at each sentry box encouraging citizen stewardship to protect and maintain the historic resources.
- Replace missing sign panels.
- Replace deteriorated wayside exhibit panels (Figure 342).



FIGURE 342. Some of the wayside exhibits within the San Juan Historic City Wall cultural landscape are in need of replacement.

Site furnishings strategies

- Identify strategic locations in the landscape for the placement of trash receptacles and benches that enhance visitor experience and comfort on site.
- Identify areas of high pedestrian traffic volume for the location of trash receptacles. Place receptacles where they do not impede viewsheds or circulation patterns.
- Ensure that each bastion that has a sentry box also has a trash receptacle in a highly visible location.
- Continue to utilize a consistent palette of materials and forms for benches and trash receptacles. Current concrete benches and trash receptacles, fabricated by park staff in the maintenance shop, are compatible with the character and feeling of the cultural landscape.
- Provide concrete landings for waysides, trash receptacles, dog-waste dispensers, benches and other furnishings that receive high pedestrian traffic in order to reduce the amount of erosion that occurs in proximity to these features.
- Provide additional seating in high traffic areas, particularly along the North Wall where seating options are limited.
- Coordinate with the residents of La Perla to relocate trash collection away from the base of Figure 343). In addition, consider having trash collections occur more frequently to avoid overflow of excess refuse.



FIGURE 343. Trash accumulating at the base of the North Wall in La Perla should be picked up and future use of this area for trash discouraged by placing a receptacle nearby.

Interpretation strategies

- Consider a range of options for enhancing interpretation within the park that does not include the addition of new wayside exhibits. Instead of adding additional wayside exhibits, provide upright orientation panels in locations where visitors typically enter the park. Provide overview information about the history of the property, information about rules and regulations, and opportunities to learn more from alternative sources. Provide the information in both Spanish and English.
- Consider virtual strategies for interpretation for people using a smart phone or tablet. Such options may include installing small signs with

QR codes that allow visitors to scan the code for historic information, augmented reality, or a focused podcast series that relays stories about San Juan National Historic Site and the San Juan Historic City Wall cultural landscape (*see Implementation Projects*).

- Work with partners to develop a 3-D model of the San Juan Historic City Wall cultural landscape using such technology tools as laser scanners and high-definition photography coupled with traditional survey techniques (Figure 344)Figure 344). The model could be made available at the park and online for remote access or hand-held devises. The 3-D model could also serve as a baseline of information about the wall system for future study and management.

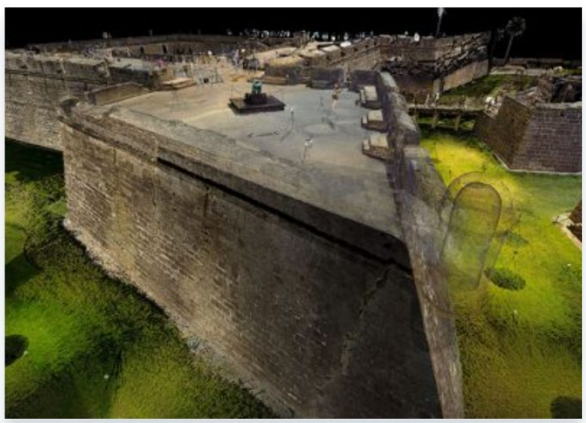


FIGURE 344. Example of a 3-D model created by the University of South Florida. (Source: University of South Florida Libraries Digital Heritage and Humanities Collections)

Utilities

- Work with the Puerto Rico Electric Power Authority to relocate power poles installed near the walls, particularly those located within La Perla that are sited adjacent to walls and sentry boxes and present safety concerns for National Park Service personnel involved in maintaining the structures. The power lines and poles also negatively impact views.

Cat and iguana control

- Work with the Commonwealth of Puerto Rico and the Save-a-Gato organization to develop an appropriate approach to controlling the cat population living within the park. Consider confining the use of feeding stations to Parcel B around the Save-a-Gato offices behind Casa Rosa and removing feeding stations from El Paseo del Morro.

- Encourage the Save-a-Gato organization to work with the local community to discontinue the practice of leaving unwanted cats at the park. Help provide educational information about how leaving cats at the park is not in the best interest of the cats or the park.

- Support Save-a-Gato work to place cats in homes and promote neutering and spaying programs.

- Engage in a coordinated iguana control initiative. Provide information about how iguanas can damage and undermine historic landscapes and structures. Consider involving a crew that includes volunteers through the Friends of San Juan National Historic Site and park personnel. Employee various techniques concurrently:

  - Limiting access to preferred habitat using temporary wire netting, cages, and/or screens.

  - Maintain vegetation by removing favored brushy low growing plants and shrubs and piled branches or stone.

  - Use natural iguana repellent.

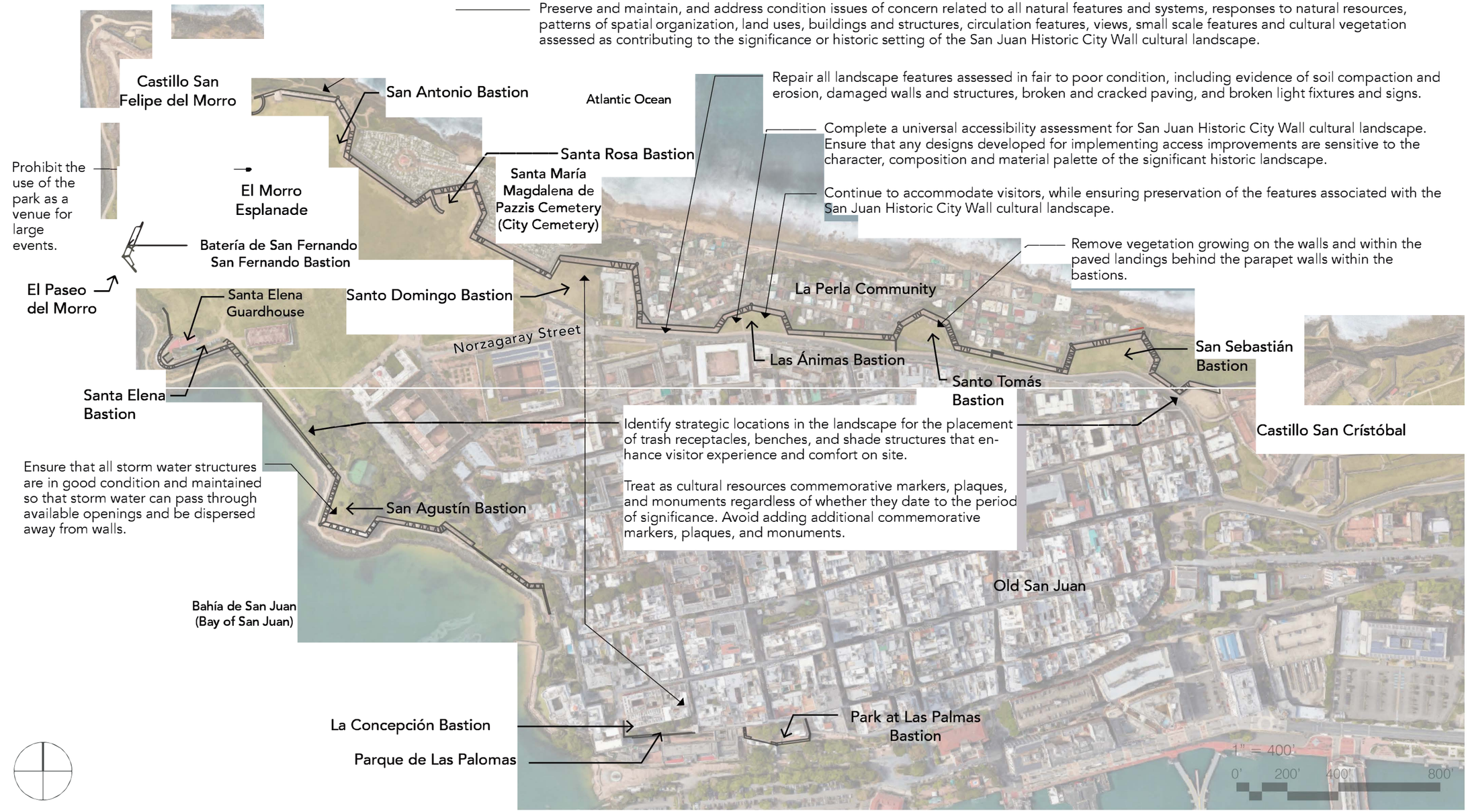
  - Trap and relocate the animals.

Archeological resources

- Ensure that the San Juan Historic City Wall cultural landscape is adequately surveyed to determine its archeological information potential, and that all archeological investigations are fully documented. A comprehensive archeological inventory should comply with standards established by the National Park Service System-wide Archeological Inventory Program. Archive the findings of archeological investigations, as well as any identified artifacts, with the park's collections. Utilize information gained through archeological investigations to guide interpretation of the historic landscape.

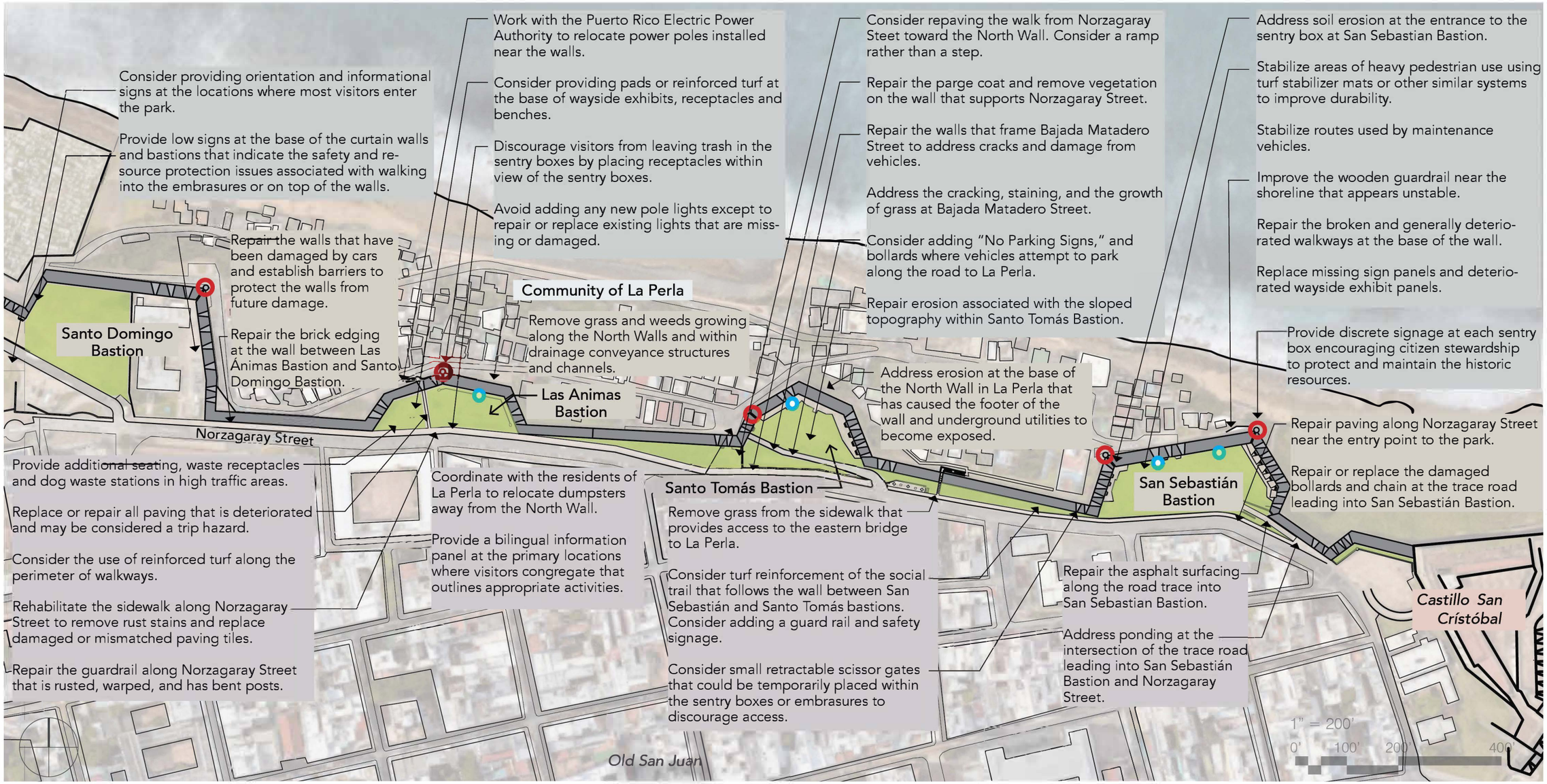
- Utilize GIS technologies to identify the location of archeological resources known within the San Juan Historic City Wall cultural landscape. Using the information gained, provide an ongoing digital display of important archeological finds and use the information to guide interpretation of the historic landscape.

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See character area enlargements for additional treatment guidance.

FIGURE 345. Overall Treatment Plan



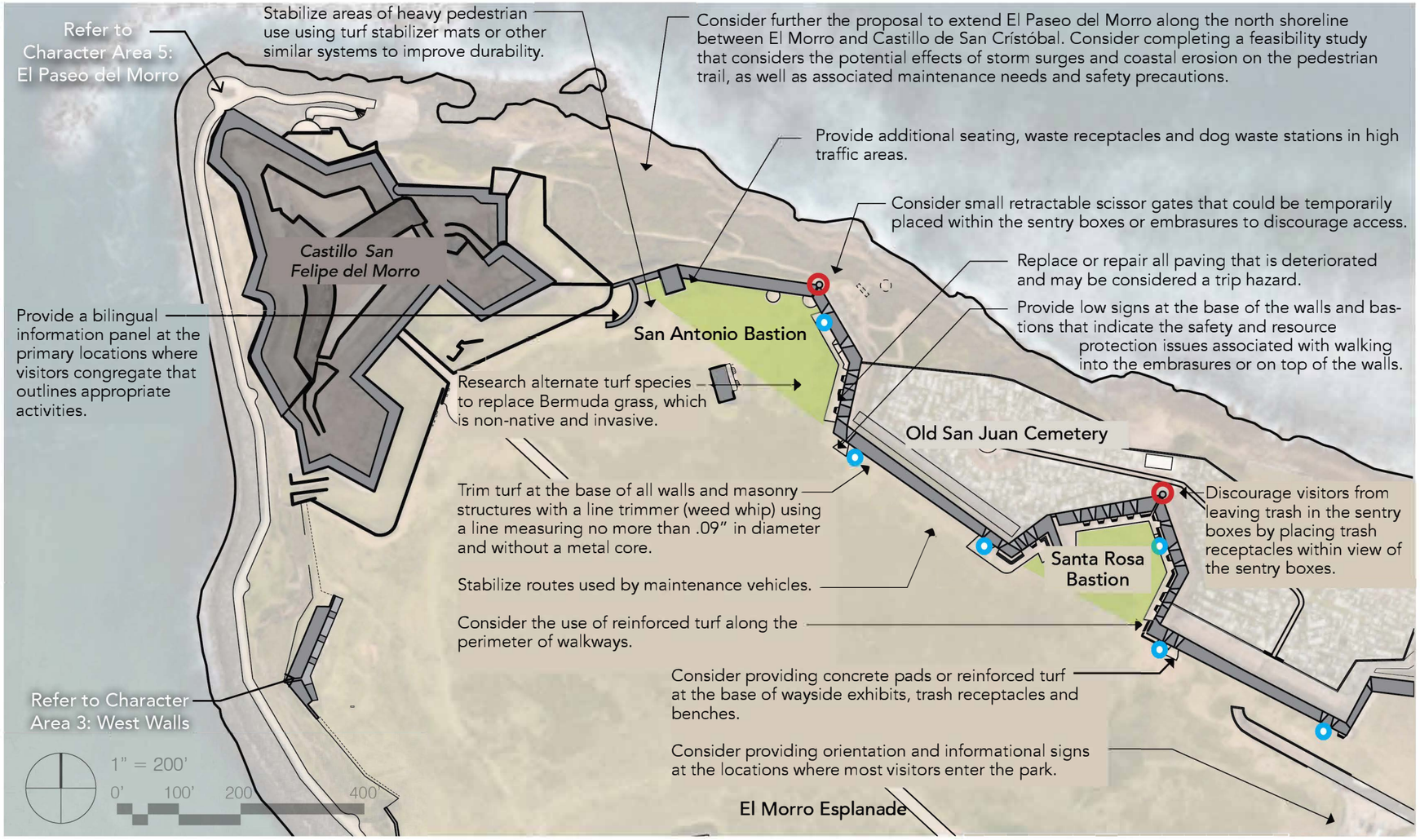


KEY

- Sentry boxes
- General location of drainage structures within wall system

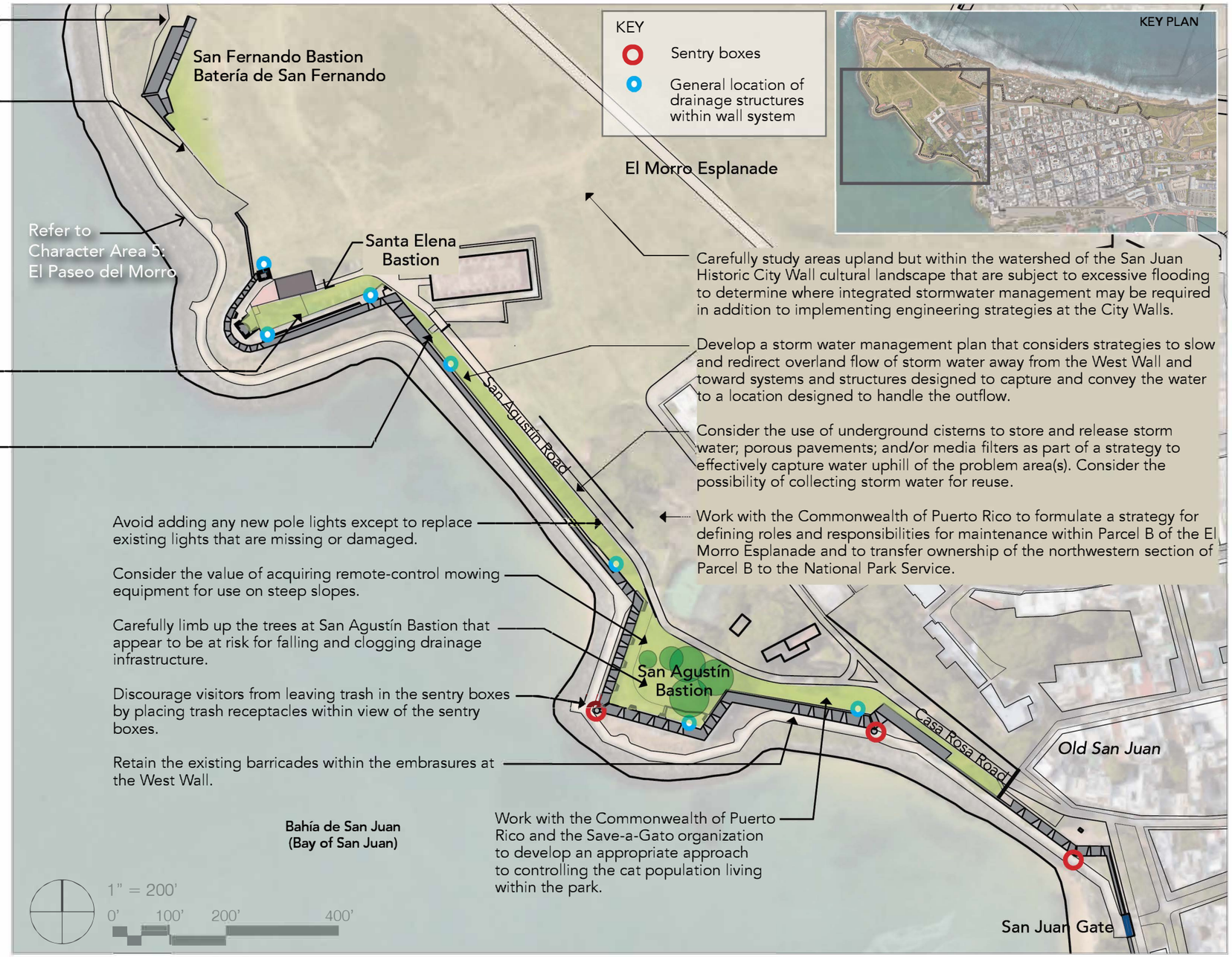
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 346.
Character Area 1 - North Wall East of the Esplanade Character Area Treatment Plan



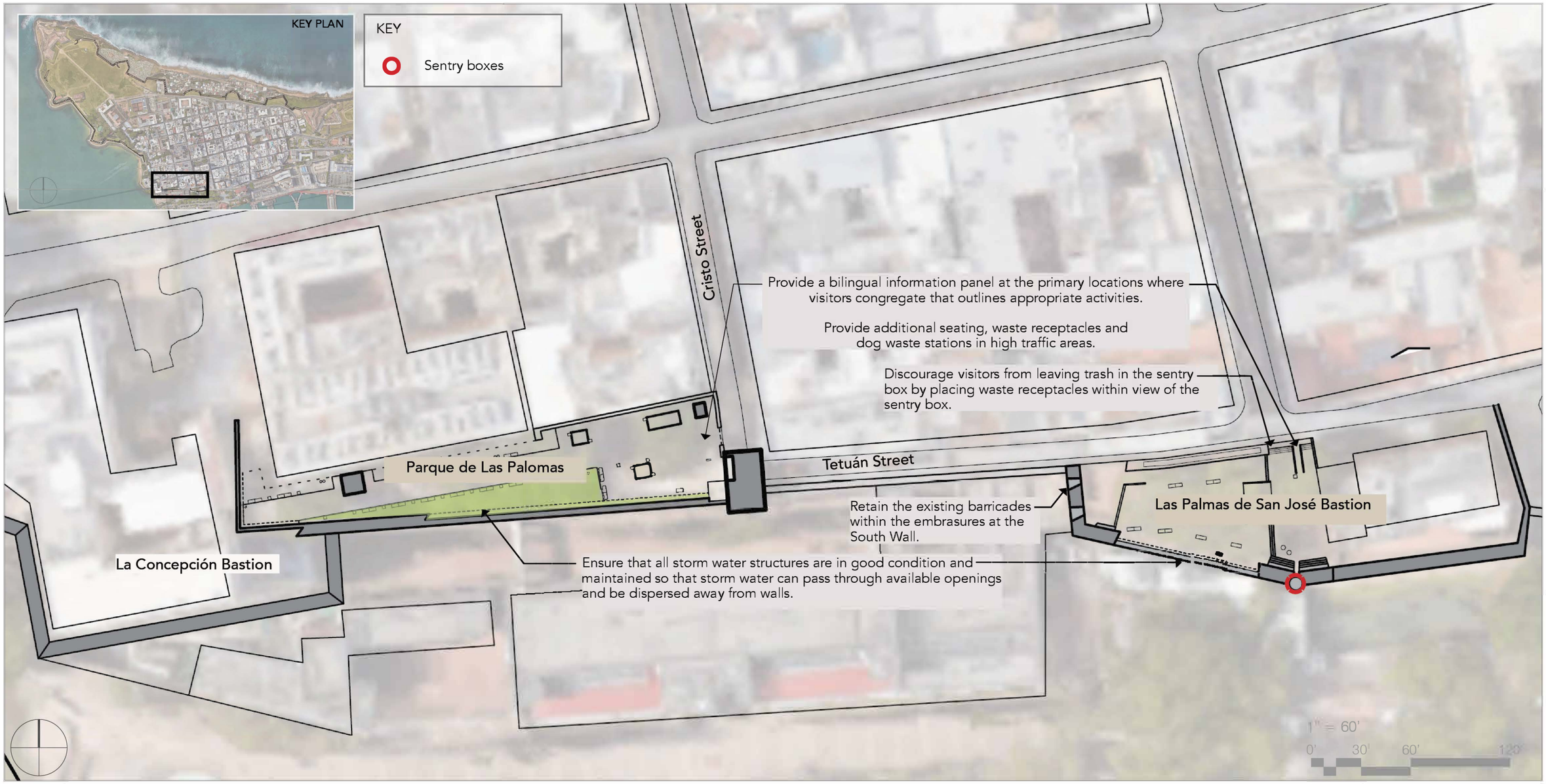
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 347.
Character Area 2 - North Wall Associated with El Morro Esplanade Character Area Treatment Plan



San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 348.
Character Area 3
West Wall Character Area
Treatment Plan



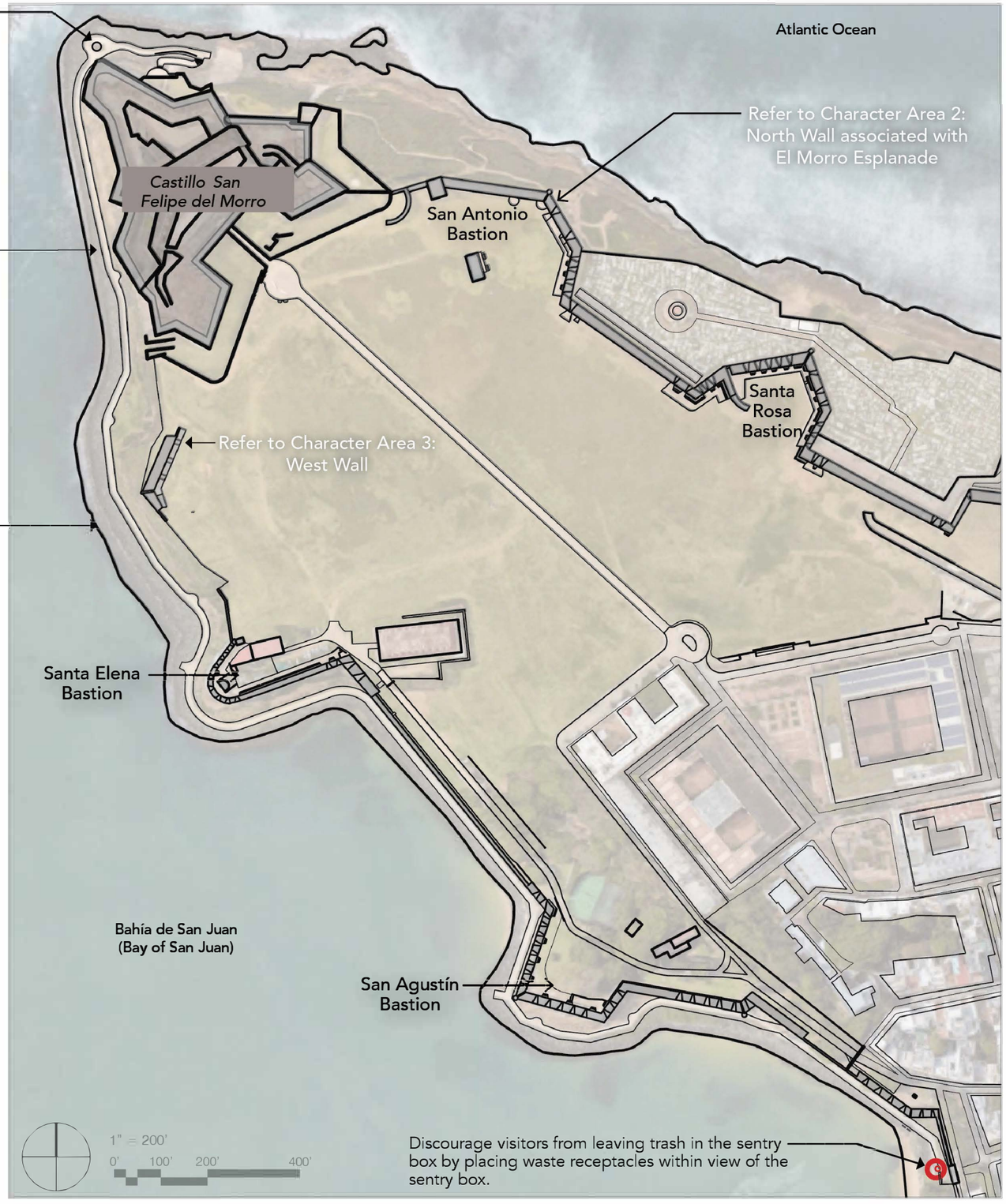
San Juan City Wall
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 349.
Character Area 4 - South Wall Character Area Treatment Plan

Replace the missing cables at the plaza northwest of El Morro along El Paseo del Morro.

Avoid adding additional lighting along El Paseo del Morro and along the shoreline. Ensure that existing lighting is adequate but minimal so as not to spill over into natural areas, negatively affecting local flora and fauna. If lighting is necessary for wayfinding, consider low level lighting that highlights pathways without spillover or light trespass. Work with local environmental groups to establish guidance on lighting and light pollution at San Juan National Historic Site.

Continue the use of rip rap or revetments to protect the shoreline against erosion by wave action, storm surge and currents. As rip rap is replaced or revetments are repaired, ensure the material is consistent in terms of color and size with that present.



KEY

Sentry boxes



San Juan City Walls
Cultural Landscape Report
San Juan, Puerto Rico

FIGURE 350.
Character Area 5 - El Paseo del Morro Treatment Plan

Implementation Projects

This section provides guidelines for implementing several of the recommendations conveyed above. The guidelines are organized into a series of prioritized implementation projects, each presenting a goal or vision for treatment and laying out a process for achieving it. The individual projects indicated below are intended to support the park's ability to secure funding and are presented in a format that is consistent with National Park Service Project Management Information System (PMIS) Facility Management Software System (FMSS) forms. Each project is presented as a series of sections: 1) project description; 2) location; 3) considerations; 4) additional studies recommended; 5) related implementation projects; and 6) implementation process. These projects are subject to review under Federal Section 106 and National Environmental Policy Act (NEPA) compliance. Most depend on the completion of one or more park- or area-wide studies or plans. The breakdown of tasks for each project does not include project management, compliance-related reviews, and other procedures typically undertaken by National Park Service personnel as part of the planning, design, and construction phases of a project.

The following implementation projects are described below:

1. Prepare a materials conservation plan

2. Prepare a stormwater management plan

3. Conduct a geotechnical evaluation of soils, cliffs, and slopes

4. Address stormwater management, soil compaction, and erosion control needs

5. Enhance interpretation

Prepare a materials conservation plan

Project Description. The masonry of the walls and associated features of the Historic City Wall require regular maintenance and specialized repairs to ensure preservation. The techniques used to care for the historic walls and associated features need to follow appropriate guidelines to avoid causing additional problems requiring future remediation. The CLR treatment plan identifies the need for the park to prepare a materials conservation plan that documents appropriate repair and maintenance of historic masonry and metal buildings, walls, monuments, markers, and tablets.

Guidelines to support the plan are provided in the narrative below.

A Secretary of the Interior qualified historical architect and/or a qualified conservator should guide the assessment of features and implementation of preservation, repair, and maintenance treatments.

Location. The materials conservation plan should address the walls and all associated features within the San Juan Historic City Wall cultural landscape.

Considerations. The historic city wall and associated features are affected by erosion, stormwater, visitor activities, vehicles, and environmental factors such as wind-driven rain and salt spray, all of which contribute to deterioration of the historic fabric. The park currently implements cyclical maintenance and repair measures at selected locations on an as-needed basis. For example, when graffiti is reported, park staff follow preservation guidance to remove markings carefully and as promptly as possible.

Other types of needed repair and conservation require careful planning and support. Where mortar is deteriorated or missing in joints, the parge coat is missing from areas of the wall, or masonry units are damaged, the park follows documentation and protocols identified in two studies completed in 1999 to address repair and conservation needs: *Report on the Conservation of the Masonry Fortification Walls, San Juan, Puerto Rico* , and *Recommendations of the Expert Committee Regarding the San Juan Fortifications, San Juan, Puerto Rico* .[302] The National Park Service undertook these studies to determine how to protect and preserve the North Wall between El Morro and San Cristobal, which had been damaged by exposure to wind and water, and the presence of vegetation.

Mortars and Renders. The historic appearance of the wall in the early nineteenth century is described in an 1839 document entitled, "Memoirs by Pedro Tomas de Cordoba," which is cited in both the 1991 Historic Structure Report and the 1999 *Report on the Conservation of the Masonry Fortification Walls*. The document describes a nine-year effort to clean and reface the fortifications with a "white beige stucco."[303] The 1999 *Report on the Conservation of the Masonry Fortification Walls* notes that archival documentation indicates that stucco and plaster work, as well as repointing of the masonry, were carried out by the Spanish at several intervals in the late eighteenth and early nineteenth century as part of ongoing maintenance, and that the practice of maintaining the stucco surface was discontinued in the latter part of the nineteenth century and not carried out by US Army in the early twentieth century, resulting in extensive deterioration and partial collapse of the historic city walls by the 1920s.[304] The 1999 conservation report also notes that the last major rebuilding and stabilization effort prior to that date was

302. *Report on the Conservation of the Masonry Fortification Walls, San Juan, Puerto Rico*, 7 to 11 June 1999; *Recommendations of the Expert Committee Regarding the San Juan Fortifications, San Juan, Puerto Rico*, 7–11 June 1999.

303. *Report on the Conservation of the Masonry Fortification Walls, San Juan, Puerto Rico*, 1.

304. Ibid., 1–2.

conducted in the 1930s, and concludes that recommended maintenance of the stucco and the walls is ". . . a return to the historic Spanish tradition with which the forts were built and preserved until the late nineteenth century."[305]

The *Report on the Conservation of the Masonry Fortification Walls* states that stucco was originally applied to the exterior walls by the Spanish as a protective coating that shed rain water from the wall surfaces and reduced penetration of moisture into the wall. The report notes that over time, stucco on the top horizontal surfaces of the wall is lost through erosion via rainfall, and once lost, the wall itself is vulnerable to water penetration and movement that contributes to deterioration of the mortar and stone masonry, as well as the stucco on the vertical surfaces of the wall. (This pattern of deterioration is consistent with that observed in other older masonry wall structures in areas of high exposure to wind and rain.)

In the report entitled, *Recommendations of the Expert Committee Regarding the San Juan Fortifications, San Juan, Puerto Rico*, the authors provide guidance for measures to address deterioration of the historic walls, together with recommendations for further materials studies and trial repairs.[306] Recommendations were prioritized in several categories, including structural stability and drainage; material loss, vegetation, and previous repair; areas to receive protective renders; and other issues such decorative features requiring specialized conservation treatments. With respect to protective renders, the report included the following guidance:

- Water shedding surfaces . . . should be protected with appropriate renders.
- Vertical areas with significant loss and active decay . . . should be deep pointed and then protected with appropriate renders. In the case of patching adjacent to historic render material, special care should be taken to ensure stability at the interface of new and old material through appropriate undercutting of surviving render material.
- Tops of all 18th century sentry boxes . . . should be rendered with appropriate materials. In addition, the metal bars holding the finishing elements should be replaced with non-metallic material.[307]

The report also included recommendations for mortar and render materials to be used in maintenance and repair of the wall, as follows:

- For water shedding surfaces: mortars and renders composed of moderately hydraulic lime and sand (2 coats), or lime putty and reactive brick dust, or natural pozzolana and sand (2 coats).
- For vertical surfaces: mortars similar to those used for water shedding surfaces; and renders consisting of a base coat of lime putty and reactive brick dust, or natural pozzolana and sand, with a finish coat of lime putty and sand (preferred), or of the same composition as the base coat. The report notes that the finish coat should be ". . . burnished with a trowel to provide a smooth surface similar to surviving historic examples of this type."[308]

In terms of color and appearance of mortars and renders used in maintenance and repairs, the 1999 recommendations report states that

> . . . every attempt should be made to harmonize the color of mortar and render patches with those of surviving fabric. If possible, the color of renders and mortars should be achieved through the choice of appropriately colored aggregates (and if necessary a small amount of mineral pigment).[309]

305. Ibid., 2.
306. *Recommendations of the Expert Committee Regarding the San Juan Fortifications, San Juan, Puerto Rico*, 7–11 June 1999.
307. Ibid., 3–4.
308. Ibid., 4–5. The report also provide specific guidance for sands to be used in mortars and renders.
309. Ibid., 5.

In addition, the 1999 recommendations report suggested further materials studies, which are described below.

Conservation Approach. Understanding that the park follows the guidance afforded in the *Recommendations of the Expert Committee Regarding the San Juan Fortifications* in its current repair and maintenance program, preparation of a materials conservation plan is recommended to collect information about prior repairs (including materials and methods, scope and extent of work, dates work completed, and observations after completion); record best practices, materials, and protocols currently used by the park; update best practices (as needed) and provide recommendations for continued maintenance and repair; and document ongoing and future work. The conservation plan should document materials studies and repairs previously completed, as well as recommendations for additional studies to be completed. As studies are conducted and maintenance work implemented, these completed efforts should be documented and the conservation plan updated as appropriate.

The recommendations developed in 1999 discuss measures to patch existing render on the historic wall surfaces. Depending on current existing conditions, work completed since that date, and further review and evaluation of available materials studies completed since the 1999 report, recommendations for further study can be confirmed and any refinements to current protocols made as needed. Structural repairs and repointing are necessary to the stabilization of the wall, and consideration can be given to several approaches regarding the render, including no application of render; application of render on only the top (horizontal) surfaces of the wall; or application of render on all surfaces of the wall. Further study and discussion with the park is required to confirm the best approach to these repairs, which can be determined in coordination with development of a conservation plan for the historic wall. An important consideration in developing the conservation plan is prioritization and phasing of recommended work as needed, given that park resources are limited to address the extensive areas of masonry to be repaired and maintained.

Best management practices should be identified and documented for maintenance processes involving the masonry and other materials and features associated with the wall, incorporating conservation best practices. Best management practices should confirm/establish protocols for care of the walls and related features, surveying and documenting existing conditions, reporting any problems, and maintenance and repair. Development of the best management practices should take into consideration information gathered in the previous studies noted above, and available based on the experience of others conducting similar efforts. Guidance is afforded by several publications by the NPS and others, including:

- National Park Service preservation briefs, www.nps.gov/tps/how-to-preserve/briefs.htm.
- National Park Service National Center for Preservation Technology and Training (NCPTT), www.ncptt.nps.gov.
- Other sources of information on current preservation technology, including studies of stone conservation in similar structures and environments, such as publications of the Association for Preservation Technology International, Getty Conservation Institute, and others.

Additional studies recommended

The 1999 *Recommendations of the Expert Committee Regarding the San Juan Fortifications* suggests that additional studies be conducted, including analysis of mortar and renders.[310] Mortar and render types recommended for study include ". . . a) white durable render with yellowish/ reddish finish; b) lime-based mortars

310 . A render is a coating of plaster or stucco applied to a brick or stone surface.

with brick/ceramic inclusions; c) 18th and 19th century historic mortars; and d) Bedding and pointing mortars from the 17th century section of wall."[311]

The *Recommendations of the Expert Committee Regarding the San Juan Fortifications* also suggests that laboratory and field testing and trials of repair materials be conducted, including evaluation of field trials after a period of exposure to environmental conditions; documentation of all testing, trials, and conservation treatments; education of the public and decision-makers to understand that maintenance and conservation treatments are an ongoing process; training of craftspeople in the use of traditional materials and technologies; and establishment of procedures for regular monitoring and maintenance. The recommendations also note the importance of minimal intervention, and the need to develop plans for "natural disaster mitigation and recovery in the case of events such as earthquakes and hurricanes."[312]

With respect to further research, the 1999 recommendations suggest that consideration be given to the following additional studies:

> 1) Measurement and monitoring of representative areas of the fortification system to determine rates and causes of decay.
>
> 2) The development of a permanent trial site (with minimal visual intrusion) where the performance of proposed conservation treatments and materials can be monitored for extensive periods.
>
> 3) Comparative studies of the materials and technologies utilized at similar fortified sites to determine potential relationships among the sites.[313]

Trial repairs are important to evaluate repair and maintenance protocols in terms of effectiveness and results, as well as to establish a basis for ongoing and future work. For renders in particular, trial repairs would provide an opportunity to refine the mixture, installation technique, color, and finish to best match the historic appearance.

Related implementation projects

- Prepare a stormwater and erosion control management plan
- Address stormwater management, soil compaction, and erosion control needs
- Conduct a geotechnical evaluation of soils, cliffs, and slopes

Implementation process

- Undertake additional studies in support of the plan. Studies may include collection of information about prior repairs to each structure or feature; materials analysis to characterize historic materials and past repairs; and development of mapping document, as further discussed below.
- Conduct a thorough condition assessment of each feature to serve as a baseline for treatment protocols and a record of treatment.
- Document and record the history of each structure, as well as the history as known of past repair, maintenance, and conservation work performed. Establish a comprehensive computerized database for the maintenance records, including GPS identification for each resource, in coordination with NPS databases used by park facilities. Retain documentation in an accessible location.
- Review and evaluate the efficacy of current practices used to treat the structures associated with this project.

311. Ibid., 3–4. The 1999 *Recommendations* report includes specific guidance on the types of analysis to be performed, including evaluation of composition, the presence of salts, and the nature of finishes and coloring agents.
312. Ibid., 6.
313. Ibid., 6–7.

- Develop a conservation plan that identifies appropriate repair and maintenance protocols for each of the masonry and metal features identified as part of this project. Address procedures for addressing any current repair needs as well as future cyclical maintenance. Consider the potential for environmental processes, such as acid rain, airborne pollutants, and animal activity, to lead to condition issues in the future and anticipate the types of treatments and preventive actions that might be required. Also address problems resulting from cultural activities such as erosion resulting from stormwater-management systems, and damage caused by mowers, weed trimmers, and chemical treatments if used for grounds maintenance.

- Ensure that all features indicated as the focus of this project are documented using GPS and photographed as a record of their current condition prior to implementation of any preservation, repair, or maintenance measures.

- Implement strategies identified in the materials conservation plan.

- Record all treatments such that they can be easily accessed by future researchers and park staff.

- Discourage visitors from climbing on historic structures.

- Monitor structures for damage related to vandalism, and take preventive action if needed (in coordination with related efforts park-wide).

- Monitor monuments for degradation from environmental effects such as airborne pollutants and erosion.

Materials Conservation Guidelines

General Guidelines

- Repair and maintenance measures should correct any immediate problems while also working to eliminate or reduce the cause of the deterioration.

- Repair work should also not accelerate deterioration or cause more problems in the future.

- Approach all repair and maintenance efforts using a conservative and adaptive approach, applying the least intrusive methods and using the least amount of force, as aggressive repairs may permanently alter the historic fabric.

- Specific treatments should always be tested on inconspicuous small areas of markers prior to full scale implementation.

- Ideally, repairs and treatments will be reversible.

- Conservation methods should use compatible materials, and the treatments should be re-treatable to the greatest extent possible.

- Cleaning and other treatments should be undertaken using the gentlest means possible.

- The conservation of historic buildings and structures should comply with the Secretary of the Interior's Standards for Preservation and the American Institute of Conservation's *Code of Ethics and Guidelines for Practice*.

- Repairs to historic features should only be performed by those with proven experience in the preservation of historic materials. All work should be documented, evaluated, and considered within a framework of an adaptive strategy.

- Repair and conservation work should be assessed for its potential to affect archeological resources, and archeological investigations conducted if necessary.

Prepare a stormwater-management and erosion-control plan

Project Description. One of the issues of concern for the San Juan Historic City Wall cultural landscape is stormwater management and erosion control. The steep slopes of the promontory and the impact of slopes draining towards the walls, particularly in the North Walls East and West Walls character areas are subject to volumes of overland flow, and associated erosion and potentially undercutting of the walls themselves.

Specific locations subject to erosion need to be addressed comprehensively through the preparation of a stormwater-management and erosion-control plan. Such a plan will be based on evaluation of existing drainage patterns and stormwater-management systems to determine their integrity and ability to collect and convey stormwater while protecting against erosion and damage to structures. The best tool for evaluating existing drainage patterns is a topographic survey. The entire project area should be surveyed to develop a base map of topographic conditions with one-foot contour intervals, and the locations of all existing stormwater utility structures, including but not limited to drains, culverts, and pipes, as well as wall and stair heights as spot elevations.

The topographic survey can be used by a landscape architect and/or civil engineer to calculate the quantities of runoff anticipated during storms of various sizes, the direction of stormwater flow, the ability of turf and other surface materials to resist scouring, and of stormwater-management structures necessary to handle the flow and disperse the water safely without damage.

Location. The stormwater-management and erosion-control plan should address the San Juan Historic City Wall cultural landscape as a whole.

Considerations. Erosion problems, compaction, and settlement of soil is in evidence in association with steeper slopes and unpaved areas that experience heavy foot traffic and vehicular use. These conditions are exacerbated by drainage problems. To address these issues, the park will likely need to both correct the drainage issues and repair evidence of compaction and erosion *(see the Implementation Project: Address Stormwater Management, Soil Compaction, and Erosion Control Needs below)*.

Although attempts to address drainage problems along the West Walls have already been made, the presence of sandbags within San Agustín Bastion suggests that the problem has not entirely been resolved. This may relate to the need for a comprehensive topographic survey and stormwater-management plan.

It may be necessary to regrade areas that are steeply sloped, have experienced slumping, compaction, or have lost soil in order to reestablish the original contour, and direct flow toward systems designed to handle the volume and speed of the stormwater.

Any soil disturbance related to grading will require the oversight and involvement of an archeologist.

A geotechnical evaluation will also be needed to determine the best way to protect the soil from further compaction and erosion *(see the Implementation Project: Conduct a geotechnical evaluation of soils, cliffs, and slopes below)*.

Additional studies recommended

- Topographic and stormwater utility structures survey
- Evaluation of existing stormwater-management systems
- Geotechnical evaluation of soils

Related implementation projects

- Address stormwater-management, soil compaction, and erosion-control needs
- Conduct a geotechnical evaluation of soils, cliffs, and slopes

Implementation process

- Undertake additional studies.
- Utilize the information to develop a comprehensive stormwater-management and erosion-control plan that addresses drainage as well as erosion control measures taking into consideration subsidence and slumping, methods for reestablishing historic grades, protection of soils against further erosion, appropriate land cover, and maintenance protocols.
- Enlist a qualified archeologist to evaluate the potential for the plan to lead to ground-disturbing activities and determine a mitigation strategy related to the implementation of stormwater-management and erosion-control measures.
- Implement strategies identified in the plan.
- Record all treatments such that they can be easily accessed by future researchers and park staff.

Conduct a geotechnical evaluation of soils, cliffs, and slopes

Project Description. The success of future stormwater management and visitor and maintenance access improvements within the San Juan Historic City Wall cultural landscape will depend greatly on ensuring that the system is designed appropriately including the way in which soils perform. Understanding the physical properties of the soil and rock that underlie the park is part of this design process. The technical evaluation that leads to an understanding of the physical properties of a site's soils and rock is a geotechnical investigation. As part of the investigate, the geotechnical engineer can identify potential construction problems and consider the potential of subsurface materials to support current or proposed activities.

Geotechnical evaluations consist of a surface evaluation, review of maps, aerial photographs, and/or geophysical surveys, followed by soil sampling involving test borings.

The goal of the geotechnical evaluations would be to consider control of stormwater and avoidance of scouring, the most appropriate approach for addressing soil compaction, and the most appropriate solution for stabilizing heavily used turf areas, social trails, and maintenance vehicle access roads. The soils associated with the steeper cliff sections south of El Morro and at the east end of the North Walls are also recommended for evaluation in order to best treat the slopes and address the potential for soil slumping, loss, or failure.

The geotechnical evaluation would be useful conducted in coordination with the preparation of the stormwater-management and soil erosion-control plan described above.

Location. The site assessment portion of the geotechnical evaluation would occur over the entire site, but soil borings would only likely be needed in a few specific locations.

Considerations. The geotechnical evaluation is considered integrally tied to the preparation of the stormwater-management and soil erosion-control plan and the implementation of repairs related to stormwater-management, soil-compaction, and erosion needs. The way in which these needs are addressed should address both the technical concerns of the problems, as well as respect the historic character of the San Juan Historic City Wall cultural landscape in the final appearance of the solution. Designs of proposed solutions should be based on having the least visual and physical impact on the cultural landscape.

Additional studies recommended

- Evaluation of existing stormwater-management systems

Related implementation projects

- Prepare a stormwater-management and erosion-control plan
- Address stormwater management, soil compaction, and erosion control needs

Implementation process

- Identify issues to be addressed by geotechnical evaluation through initial work on the stormwater-management and erosion-control plan.
- Engage a geotechnical engineer to perform the evaluation.
- Enlist a qualified archeologist to monitor soil borings and other subsurface investigations performed by the geotechnical engineer.
- Document the specific concerns identified in the evaluation and consider these in the development of plans and solutions.

Address stormwater-management, soil-compaction, and erosion-control needs

Project Description. Following preparation of stormwater-management and erosion-control plans and geotechnical evaluation of soils, the park should implement strategies to correct problems related to stormwater management, soil compaction, and erosion, particularly as they relate to circulation systems. There are several locations within the San Juan Historic City Wall cultural landscape where heavy foot traffic and vehicular access have contributed to soil compaction and the loss of turf grass, as well as erosion. Some of these locations have previously been treated with a system of concrete reinforcement structures. Additional soil and turf stabilization techniques are recommended for these and other problem areas.

The use of turf reinforcement mesh (Figure 351) or similar products on the social trails formed by visitor use and the informal access roads used by park staff are recommended to help to control the loss of turf and associated compaction and erosion. This type of product is recommended to be used in conjunction with aeration of the soil and the addition of fill to reestablish the original grade. Seeding, watering, and protecting the areas undergoing treatment until they are established is also recommended.

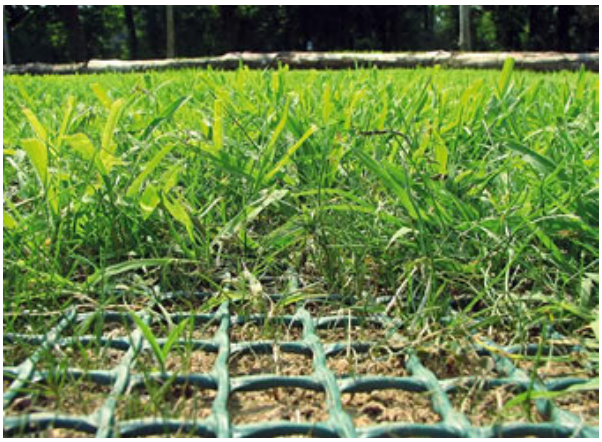


FIGURE 351. Turf reinforcement mesh to prevent soil trails development and associated erosion. (Source: Boegger, rhomboidal turf reinforcement mesh, https://www.plasticscreenmesh.com/product/turf-reinforcement-mesh.html)

Location. This implementation project specifically targets the following current (and any additional future) problem areas:

- Soil compaction and erosion along routes used by maintenance vehicles
- Erosion of the cliff face below San Fernando Bastion and at the east end of the North Walls due to the steepness of the slope
- Flooding, ponding, erosion, and siltation within San Agustín Bastion
- Soil compaction and erosion in locations where visitors congregate, such as at benches and trash receptacles
- Soil erosion within La Perla at the base of the North Wall due to the uncontrolled movement of stormwater and compaction from pedestrian access
- Erosion of the shoreline due to impacts of sea level rise and climate change
- Ponding at the intersection of the trace road leading into San Sebastián Bastion and Norzagaray Street
- Deterioration of the road trace leading into San Sebastián Bastion

- Soil compaction and erosion at the entrance to the sentry box at San Sebastián Bastion
- Soil compaction and erosion associated with social trails, such as the route followed by visitors along the curtain wall between San Sebastián and Santo Tomás bastions

Considerations. A Secretary of the Interior qualified archeologist should always monitor the installation of any techniques applied to control erosion.

Each specific location where a repair is needed should be evaluated by a historical landscape architect and engineer to address stormwater management, soil compaction, soil erosion, and the need for soil stabilization and/or turf reinforcement. The range of repair issues is broad but interconnected due to their association with the overland flow of water, topography, and compaction association with visitor and vehicular access.

A geotechnical evaluation should help guide the selection of turf mesh or other soil stabilization products for use in high traffic areas.

A topographic survey will be needed to design the solutions to stormwater management, soil compaction, and erosion control needs.

Additional Studies Recommended

- Prepare a stormwater-management and erosion-control plan
- Conduct a geotechnical evaluation of soils, cliffs, and slopes

Related Projects

- Prepare a stormwater-management and erosion-control plan

Implementation Process

- Undertake additional studies.
- Utilize the information to develop a specific treatment measure for each example of compaction and erosion
- Enlist a qualified archeologist to monitor ground-disturbing activities and to determine potential impacts of any associated proposed site improvements related to erosion control and stabilization.
- Implement the treatment measures.
- Record all treatments such that they can be easily accessed by future researchers and park staff.

Enhance Interpretation

Description. The park has identified enhanced interpretation as a goal for the San Juan Historic City Wall cultural landscape. In order to proceed with this goal, the park will need to prepare an interpretive plan that would articulate a vision for interpretation, the stories that are most appropriate to tell, and the best methods for conveying information to the public.

To protect the historic character and integrity of the cultural landscape, the CLR recommends that the park avoid installing additional wayside exhibits within the park. Instead, the park should consider a combination of personal interpretation; the provision of orientation panels at park entrance locations, such as bastions; web-based interpretation that can be accessed using a hand-held device or remotely on a computer; and potential provision of augmented reality interpretive programming. These devices should be used to tell a broad story of the historic landscape, its development by the Spanish as a colony, with military defenses built and improved over nearly 400 years to protect the community from enemy attack, transfer to the US Army after 1898; and the adaptive use of the defenses to address military engineering innovations, and later as a unit of the US national park system. Cultural landscape topics, such as the relationship between environmental conditions and cultural use, addressed in the CLR should be considered for inclusion in the interpretive programming, along with the significance of the property articulated in NRHP and NHL documentation. Finally, conveying the personal stories of individuals and groups with important associations with the property is recommended for the way in which this is likely to help visitors connect more deeply with the resources.

Location. This project would focus on the entire San Juan Historic City Wall cultural landscape.

Considerations. New interpretive materials need to be considered within a broader parkwide context of themes and messaging. The use of alternative methods that do not impact the historic landscape is recommended for consideration.

If the park decides to replace existing wayside exhibits in place, consideration should be paid to including an artistic rendering and/or historic photographs, maps, and other compelling illustrations as part of the development of enhanced interpretive programming.

Given the extent of historic features related to both the Spanish and US military occupation periods no longer extant, the CLR recommends consideration be paid to including graphics as a key tool for depicting missing conditions

Web-based interpretation should be another key tool used to enhance interpretation of the park. Historic maps, photographs, and renderings of missing conditions can all be made available through a web site or web-based interpretation accessed via a QR code or similar method. Computer programs like ArcGIS StoryMaps provide templates for an online tour that could present the site to visitors while in Old San Juan or from their home, school, or office. More than one tour could be developed, with different themes reflected in each. Place-based narratives with interactive geo-located maps, images, or videos accessed by anyone with a smart device could be included (Figure 352).

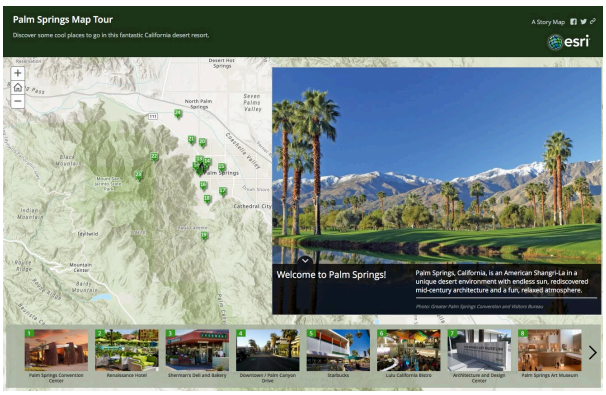


FIGURE 352. Example of a Story Map Tour. (Source: Story Maps by ESRI)

Another option for the park to consider as part of enhancing interpretation is the use of augmented reality to depict missing features and bring the historic scene to life. Augmented reality as it

relates to a site such as the San Juan Historic City Wall cultural landscape is an interactive experience that combines the actual landscape with computer-generated perceptual information. Augmented reality could be used to enhance and amplify the physical experience of travelling through the landscape via a combination of the actual landscape and computer-generated sensory inputs that might include graphics, video, and/or sound uniquely associated with the site to offer a perceptually enriched experience (Figure 353).



FIGURE 353. View of the use of a device to experience augmented reality. (Source: Redshift by Autodesk)

Augmented reality tools might include videos and GIS StoryMaps that might incorporate living history and oral history to help convey the sights and sounds of the military base to visitors.

All additional or enhanced interpretation strategies should be provided in both Spanish and English.

Additional Studies Recommended

- This project should be developed as part of the park's interpretive planning process.
- Archival research and the identification of historic graphics useful in portraying the site through time will be needed to implement this project.

Project Implementation Process

1. Assess which features should be interpreted by determining those that will deliver the most educational value to visitors.
2. Enlist an exhibit designer, in coordination with park staff, to plan the interpretive features that might include
   - Personal interpretation
   - An artist rendering or other tools to depict the scene while occupied by the Spanish and US military
   - A web-based program
   - Augmented reality accompanied by videos, living history, oral history
4. Design the program to supplement existing interpretive media and programs with new materials to enhance the depiction of the Spanish and US military periods of occupation of the San Juan Historic City Wall cultural landscape.
5. Enlist a qualified archeologist to monitor ground-disturbing activities and to determine potential impacts of any associated proposed site improvements related to interpretation.

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Glossary

Banquette (also firing step): A raised walkway, sometimes stepped, located behind the fortification parapet constructed to enable troops to fire their weapons over the wall.

Bastion (also baluarte, bulwark): A forward projecting work or structure extending from the main walls of a defensive enclosure designed to expand the lookout views and firing angles of a fortification and thus defend the adjacent perimeter together with the area in front of the ramparts.

Batter: The inclination of the face of a wall inward from the vertical to enhance structural stability.

Bombproof: A building or structure associated with a fortification designed to withstand the impact of cannon balls or shells.

Bombproof magazine: A bombproof structure designed to store ammunition.

Casemate: Chamber inside a scarp wall that can include batteries for seacoast defense.

Coping: The top course, usually sloping, of a masonry or brick wall.

Counterscarp: The outer wall of a ditch in a fortification built opposite the scarp, or inner wall of the ditch.

Counterfort: A buttress built against or integral with a wall, but on the back or thrust-receiving side.

Covered way: A corridor running along the top of a counterscarp and protected by an embankment whose outer slope forms the glacis.

Curtain wall: The main wall of a defensive work, which often extends between two bastions.

Embrasure (also battlement): An opening or cut in the parapet used to fire artillery without exposing the gun crew; normally wider at the front than at the rear.

En Barbette: Guns emplaced on a fixed, raised platform in such a way that they can fire over a parapet rather than through an embrasure.

Esplanade: A long, open, level area.

Fortification: A military structure designed for the defense of territories in warfare or to establish rule in a region during peacetime. The design of fortifications follows military engineering principles related to artillery fire and establishing obstacles and a field of fire that limit the ability of an attacking enemy to overrun the structure.

Glacis: A gently graded landform that slopes away from a fortification that establishes an open field and masks the scarp of the fort from direct fire, while also providing a clear field of fire for the defenders.

Gun emplacements: A structure designed to mount an artillery piece.

Hormigon: Concrete poured cementitious material.

Knee wall: A short wall that may be used to support another structural element.

Mamposteria: Rubble masonry or roughly coursed stone and rubble masonry using lime mortar.

Merlon: The solid part of a parapet as it extends between two embrasures.

Parapet: The earthen or masonry construction atop the wall or a bastion or curtain wall that rises above the terreplein and provides soldiers within the fortification with protection against direct fire.

Parging: A thin coat of mortar or concrete added to the surface of a wall to protect or repair its surface from moisture or the effects of air voids or to convey a relatively smooth appearance.

Paseo: A plaza or walkway for strolling.

Portal: A protected gate or opening in a fortification wall system.

Rampart: A thick wall of earth or masonry forming the main defense of a fortification, usually broad-topped and reinforced from the rear with the terreplein.

Redoubt: A temporary or supplementary fortification, square or polygonal, that does not have flanking walls.

Render: A coating of sand, lime (or cement) and water that is applied to masonry walls as a protective finish.

Revelin: A detached triangular or V-shaped outerwork constructed beyond the main curtain wall of a fortification, with two faces that form a salient angle. Revelins protect the bastions and curtain wall behind them from direct enemy artillery fire.

Runnel: A narrow channel in the ground that can be used to direct the flow of stormwater.

Salient angle: An outward projection of a bastion or other projecting work.

Sallyport: An entrance or access point to enter or exit a fortification. Sallyports are often associated with moats, and bridges that can be raised to defend against enemy entry.

Scarp: The outer slope or wall of a fortification.

Scupper: A hole at the base of a parapet wall that allows water to drain out of the structure.

Sentry box (garita): A structure providing shelter for a standing sentry.

Terreplein: A level space where a battery of guns is mounted.

Traverse: A rampart or platform that is built perpendicular to a wall and provides protection against flanking fire.

Appendix A: Inventory of Landscape Features

Appendix A – Inventory of Landscape Features

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Natural Systems and Features					
Promontory landform edged by steep slopes		Natural feature; present by circa 1539		North Walls East, North Walls Esplanade, West Walls, South Walls	Contributes to the historic setting
Lower terrace along the shoreline		Natural feature; present by circa 1539		North Walls East, North Walls Esplanade, West Walls, Paseo del Morro	Contributes to the historic setting
Responses to Natural Resources					
Construction of military defensive batteries, bastions, and walls along the edge of the promontory		Circa 1560s–1782; 1897; 1917–1918	Several walls and bastions have undergone adaptations and repair; the curtain wall between San Agustín and Santa Elena Bastions was replaced by 1939	North Walls East, North Walls Esplanade, West Walls, South Walls, Paseo del Morro	Contributes to the historic setting
Storm water management: use of drains, culverts, swales, scuppers, gutters, and paved channels in association with bastion and curtain wall design		Circa 1560s–1782; circa 1925–1939	Some storm water management systems have undergone adaptations and repair or replacement	North Walls East, North Walls Esplanade, West Walls, South Walls	Contributes to the historic setting
Use of the terrace below the North Walls to establish Old San Juan Cemetery and La Perla		19th century	Portions of these features lie within the CLR project area	North walls	Contributes to the historic setting
Storm water management: use of berms, swales, catch basins, drop inlets, and pipes		1990s–2000s	Systems associated with San Agustín and Santa Elena Bastions addressed	West Walls	Does not contribute to the historic setting

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Use of shotcrete to stabilize failing steeply-sloped hillsides		Circa 1990s		North Walls East, West Walls	Does not contribute to the historic setting
Use of the terrace below the West Walls to establish El Paseo del Morro		Circa 1995 (extended 2013–2015)		Paseo del Morro	Does not contribute to the historic setting
Use of rip rap to stabilize the shoreline adjacent to El Paseo del Morro		Circa 1999		Paseo del Morro	Does not contribute to the historic setting
Land Uses					
Cemetery		Circa 1814	Old San Juan Cemetery	North Walls Esplanade	Contributes to the historic setting
Residential		Circa late 19th century	La Perla	North Walls East	Contributes to the historic setting
Recreational		Circa 1907–1911; 1923; 1929; 1931	Paseo del Morro added circa 1995 (extended 2013–2015)	North Walls East and Esplanade, West Walls, South Walls	Contributes to the historic setting
Commemorative		1970s	La Rogative Plaza and Las Palmas Bastion	West Walls, South Walls	Does not contributes to the historic setting
Museum/ interpretive/ educational		1970s		North Walls East and Esplanade, South Walls, Paseo del Morro	Does not contribute to the historic setting
Conservation		2000s		West Walls	Does not contribute to the historic setting
Military		*Circa 1539*			*Missing*
Administrative		*Spanish and US military occupation periods*			*Missing*

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Housing		*Spanish and US military occupation periods*			*Missing*
Supply, storage		*Spanish and US military occupation periods*			*Missing*
Services		*Spanish and US military occupation periods*			*Missing*
Spatial Organization					
North Wall system		By circa 1783		North Walls East and Esplanade	Contributes to the historic setting
Community of La Perla		19th century		North Walls East	Contributes to the historic setting
Old San Juan Cemetery		19th century		North Walls Esplanade	Contributes to the historic setting
El Morro Esplanade		Circa 1539–1897		North Walls Esplanade	Contributes to the historic setting
West Wall system		Circa 16th–19th century		West Walls	Contributes to the historic setting
South Walls: Concepcion and Las Palmas Bastions		By 1783		South Walls	Contributes to the historic setting
Norzagaray Street elevated and edged by a retaining wall at San Sebastián and Santo Tomás Bastions		By circa 1950s		North Walls East	Contributes to the historic setting
La Rogativa Plaza		1971		West Walls	Does not contribute to the historic setting
Parque de las Palomas		Undetermined (post 1971)		South Walls	Does not contribute to the historic setting
Park at Las Palmas Bastion		Undetermined(post 1971)		South Walls	Does not contribute to the historic setting

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Pedestrian access structures to La Perla		Undetermined (post 1971)		North Walls East	Do not contribute to the historic setting
Paseo del Morro, including plazas, overlooks, and seating areas		Circa 1995 (extended 2013–2015)		Paseo del Morro	Does not contribute to the historic setting
Military buildings, trees, walls, fences, and recreational features located within San Agustín Bastion, Santa Elena Bastion, San Fernando Bastion, San Antonio Bastion, Santo Domingo Bastion, Santo Tomás Bastion, and San Sebastián Bastion		*1897–1971*			*Missing*
Cultural Vegetation					
Turf lawn		By early 20th century		North Walls East and Esplanade, West Walls, South Walls	Contributes to historic setting
Vegetation north of El Morro and San Sebastián Bastion		Volunteer		North Walls Esplanade	Does not contribute to historic setting
Ornamental plantings within La Rogativa Plaza		Post 1971		West Walls	Does not contribute to historic setting
Ornamental plantings within Parque de las Palomas		Post 1971	Parque de las Palomas	South Walls	Does not contribute to historic setting
Ornamental plantings within Park at Las Palmas		Post 1971	Park at Las Palmas	South Walls	Does not contribute to historic setting
Sea grape and other erosion control and screen plantings along El Paseo del Morro		1990s		Paseo del Morro	Does not contribute to historic setting
Tree plantings associated with military buildings and recreational features within bastion interiors		*U.S. military occupation period*		*North Walls East and Esplanade, West Walls*	*Missing*
Circulation					
Norzagaray Street		Early twentieth century	Elevated with retaining wall	North Walls East	Contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
			added circa 1950s		
Callé de Lucila Silva		By 1945	La Perla	North Walls East	Contributing
Callé de Bajada Matadero		By 1945		North Walls East	Contributing
Callé de Tiburcio Reyes		By 1953	La Perla	North Walls East and Esplanade	Contributing
Trace road leading into San Sebastián Bastion		By 1930s		North Walls East	Contributing
Eastern walk and stair to La Perla		Circa 1960s		North Walls East	Non-contributing
Western walk and stair to La Perla		Circa 1960s		North Walls East	Non-contributing
Cemetery Road and tunnel		By 1861	Tunnel by 1897	North Walls Esplanade	Contributing
Nature trail		Circa 1990s		North Walls Esplanade	Non-contributing
San Agustín Road		1939	Replaced Bay Road	West Walls	Contributing
Casa Rosa Road		Circa 17th century	Formalized 1930s	West Walls	Contributing
La Rogativa Plaza		1971		West Walls	Non-contributing
Caleta de San Juan		By 19th century		West Walls	Contributing
Tetuán Street		By 19th century	Park at Las Palmas	South Walls	Contributing
Cristo Street		By 19th century	Parque de las Palomas	South Walls	Contributing
Paved plaza and walks within Parque de las Palomas		Circa 1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Paved plaza and walks within the Park at Las Palmas		Circa 1970s (?)	Park at Las Palmas	South Walls	Non-contributing
Paseo del Morro		Circa 1995 (extended 2013–2015)		Paseo del Morro	Non-contributing
Callé de la Defensa		By 19th century		Paseo del Morrro	Contributing
Northern access route to El Morro		*18th century*		*North Walls East and Esplanade*	*Missing*
Communication trenches		*18th century*		*North Walls Esplanade*	*Missing*

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Network of paths accessing battery positions		*18th century*		*North Walls East and Esplanade, West Walls*	*Missing*
Counter-mining tunnels		*18th century*		*North Walls Esplanade*	*Missing*
Bay Road		*by 1929*		*West Walls*	*Missing*
Santa Elena Road		*1930s*		*North Walls Esplanade*	*Missing*
Buildings and Structures					
North Walls East	**(CRIS HS #006065)**				
Curtain wall, San Cristóbal to San Sebastián Bastion		By 1783		North Walls East	Contributing
San Sebastián Bastion		By 1783		North Walls East	Contributing
Sentry boxes (2), San Sebastián Bastion		By 1783	reconstructed 1939	North Walls East	Contributing
Curtain wall, San Sebastián Bastion to Santo Tomás Bastion		By 1783		North Walls East	Contributing
Santo Tomás Bastion		By 1783		North Walls East	Contributing
Sentry box, Santo Tomás Bastion		By 1783		North Walls East	Contributing
La Perla Gate		By 1783		North Walls East	Contributing
Curtain wall, Santo Tomás Bastion to Las Animas Bastion		By 1783		North Walls East	Contributing
Las Animas Bastion		By 1783		North Walls East	Contributing
Sentry box, Las Animas Bastion		By 1783	reconstructed 1944–1945	North Walls East	Contributing
Santo Domingo Bastion		By 1783		North Walls East	Contributing
Sentry box, Santo Domingo Bastion		By 1783		North Walls East	Contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Retaining wall along the Norzagaray Street sidewalk		Circa 1950s		North Walls East	Non-contributing
Walls edging along Bajada Matadero Street as it extends through San Tomás Bastion		Circa 1950s (?)		North Walls East	Non-contributing
North Walls Esplanade **(CRIS HS #006065)**					
Curtain wall, Santo Domingo to Santa Rosa Bastions		By 1783		North Walls Esplanade	Contributing
Santa Rosa Bastion		By 1783		North Walls Esplanade	Contributing
Storage structure, Santa Rosa Bastion		By 1783		North Walls Esplanade	Contributing
Sentry box, Santa Rosa Bastion		By 1783	reconstructed 1939	North Walls Esplanade	Contributing
Curtain wall, Santa Rosa to San Antonio Bastions		By 1783		North Walls Esplanade	Contributing
San Antonio Bastion		By 1783		North Walls Esplanade	Contributing
Storage structures, San Antonio and Santa Rosa Bastions		By 1783		North Walls Esplanade	Contributing
Sentry box, San Antonio Bastion		By 1783	reconstructed 1939	North Walls Esplanade	Contributing
San José Gate		By 1783		North Walls Esplanade	Contributing
Wooden bridge, nature trail		Circa 1990s		North Walls Esplanade	Non-contributing
Wooden overlook, nature trail		Circa 1990s		North Walls Esplanade	Non-contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
West Walls	**(CRIS HS #006068)**				
San Fernando Bastion	#091740	Circa 1750		West Walls	Contributing
Batería de San Fernando		Circa 1897		West Walls	Contributing
Santa Elena Bastion		By 1783		West Walls	Contributing
World War I-era coastal defense gun emplacement		Circa 1917		West Walls	Contributing
World War I-era bombproof magazine		Circa 1917		West Walls	Contributing
Curtain wall between Santa Elena and San Agustín Bastions		By 1783		West Walls	Contributing
San Agustín Bastion		By 1783	Replaced San Gabriel Bastion	West Walls	Contributing
Sentry box, San Agustín Bastion		By 1783	Reconstructed 1932	West Walls	Contributing
Curtain wall, San Agustín Bastion to San Juan Gate		By 1783	Reconstructed?	West Walls	Contributing
Sentry boxes (2), San Agustín curtain wall		circa 1762-1783	Reconstructed 1932, 1983	West Walls	Contributing
San Juan Gate	#091741	circa 1650	Restored 1956	West Walls	Contributing
Batería de San Fernando		Circa 1897		West Walls	Contributing
Santa Elena Bastion		By 1783		West Walls	Contributing
South Walls	**(CRIS HS #006069)**				
La Concepción Bastion		By 1783		South Walls	Contributing
Las Palmas de San José Bastion		By 1783		South Walls	Contributing
Sentry box, Las Palmas		By 1783		South Walls	Contributing
Gatehouse		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Planter		1970s (?)	Park at Las Palmas	South Walls	Non-contributing
Planters		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Perimeter wall and gate		1970s (?)	Parque de las Palomas	South Walls	Non-contributing
Guardrails at South Walls		1970s (?)	Park at Las Palmas; Parque de las Palomas	South Walls	Non-contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Paseo del Morro					
Wall and sentry box west of San Juan Gate		By 1783		Paseo del Morro	Contributing
Gate to control access to Paseo del Morro		Circa 1995		Paseo del Morro	Non-contributing
Seat walls		1990s		Paseo del Morro	Non-contributing
Guardrail at the plaza northwest of El Morro		1990s		Paseo del Morro	Non-contributing
Storm water conveyance structures		1990s–2000		Paseo del Morro	Non-contributing
Masonry wall connecting San Antonio Guardhouse and Bastion		*1913*		*North Walls Esplanade*	*Missing*
Swimming pool		*1930–1931*		*North Walls Esplanade*	*Missing*
Wall at Santa Elena Bastion		*1930s*		*West Walls*	*Missing*
Views and Vistas					
Views to the Atlantic Ocean		Circa 1539–1783		North Walls East and Esplanade	Contributes to historic setting
Views to the Bay of San Juan Bay and Bahía de San Juan		By 1783		West Walls, South Walls	Contributes to historic setting
Views of Old San Juan		18th–19th century		North Walls East and Esplanade	Contributes to historic setting
Views of La Puntilla, Paseo de la Princesa, and the city botanical garden		19th century		South Walls	Contributes to historic setting
Views to Old San Juan Cemetery		By circa 1863		North Walls East and Esplanade	Contributes to historic setting
Views of La Perla		By late 19th century		North Walls East	Contributes to historic setting
Views of Paseo del Morro		1990s		West Walls	Does not contribute to historic setting
Views to the Atlantic Ocean, Bay of San Juan, Old San Juan, and Cabras		1990s		Paseo del Morro	Does not contribute to historic setting

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Island from Paseo del Morro					
Views to the City Wall and El Morro from Paseo del Morro		Circa 1995		Paseo del Morro	Does not contribute to historic setting
Small-scale Features					
Light poles along Casa Rosa and San Agustín Roads		Early 20th century	Missing luminaires	West Walls	Contributing
Bronze plaques within Las Ánimas, Santa Rosa, and Santa Elena Bastions		Circa 1930s (?)	Copeland's Corner plaque added 1961	North Walls East and Esplanade, West Walls	Contributing
Bollards and chains limiting access to San Sebastián Bastion trace road		Post 1971	San Sebastián Bastion	North Walls East	Non-contributing
La Rogativa sculpture		1971	La Rogativa Plaza	West Walls	Non-contributing
Francisco de Miranda monument within Park at Las Palmas		Sculpted 1968, placed within the park in 1971	Refurbished 2011	South Walls	Non-contributing
Bronze sculptures of two cats		2000	Park at Las Palmas	South Walls	Non-contributing
Bronze shoe sculptures within Parque de las Palomas		Circa 2000–2004		South Walls	Non-contributing
"Comunidad La Perla" sign		Post 1970 (?)		North Walls East	Non-contributing
San Juan National Historic Site identity sign at Park at Las Palmas		Post 1971		South Walls	Non-contributing
Bronze identity plaque, Park at Las Palmas		Post 1971		South Walls	Non-contributing
Bronze identity plaque, Parque de las Palomas		Post 1971		South Walls	Non-contributing
Bronze plaque honoring Doña Felisa Rincón de Gautier		Post 1971		South Walls	Non-contributing
Orientation sign, Parque de las Palomas		Post 1971		South Walls	Non-contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Wayside exhibits		Circa 1990s–2000s	Las Animas Bastion, curtain wall between Santo Tomás and Las Animas Bastion, Parque de las Palomas, park at Las Palmas	North Walls East, South Walls, Paseo del Morro	Non-contributing
Paseo del Morro National Recreational Trail identity sign		1990s		Paseo del Morro	Non-contributing
San Juan National Historic Site identity sign at Paseo del Morro		1990s		Paseo del Morro	Non-contributing
National Recreational Trail medallion		1990s		Paseo del Morro	Non-contributing
Distance markers		1990s		Paseo del Morro	Non-contributing
Upright information panels		1990s		Paseo del Morro	Non-contributing
“Save a Gato” signs		1990s		Paseo del Morro	Non-contributing
Regulatory signs		2010s	associated with wall repair work	West Walls, South Walls, Paseo del Morro	Non-contributing
Traffic signs		Post 1971		North Walls East	Non-contributing
Backless benches		post 1961		North Walls East and Esplanade, West Walls, South Walls	Non-contributing
Benches with backs		Post 1971	Park at Las Palmas	South Walls	Undetermined
Trash receptacles		Post 1961		North Walls East and Esplanade, West Walls, South Walls, Paseo del Morro	Non-contributing
Dog-waste bag dispensers and receptacles		Post 1971		North Walls East	Non-contributing

Feature	CRIS/Building Number	Date of Origin	Alterations	Character Area	Contributing Status
Drinking fountain at La Rogativa Plaza		Post 1971		West Walls	Non-contributing
Drinking fountain at rest area plaza below El Morro		1990s		Paseo del Morro	Non-contributing
Light poles within Park at Las Palmas and Parque de las Palomas		Post 1971		South Walls	Non-contributing
Bollard lights along Paseo del Morro		1990s		Paseo del Morro	Non-contributing
Uplights		1990s		Paseo del Morro	Non-contributing
Bollard lights near El Morro		1990s		Paseo del Morro	Non-contributing
Lights in the pavement		1990s		Paseo del Morro	Non-contributing
Yard hose in concrete box		Post 1971	Parque de las Palomas	South Walls	Non-contributing
Cat feeding stations		1990s		Paseo del Morro	Non-contributing
Fire hydrants		Post 1971		North Walls East	Non-contributing
Utility boxes		1990s		North Walls East; South Walls, Paseo del Morro	Non-contributing
Fencing associated with buildings within bastions and El Morro Esplanade		*US military occupation period*		*North Walls East, North Walls Esplanade, West Walls*	*Missing*
Replica cannon sited upright flanking San Juan Gate on the west side		*US military occupation period*		*West Walls*	*Missing*
Golf course tees and flags		*US military occupation period*		*North Walls Esplanade*	*Missing*
Electrical poles and other utility features		*U.S. military occupation period*		*West Walls*	*Missing*

Appendix B: Historic City Wall Overview in Photographs


Oceanside Views
City-side Views

Oceanside Views



Figure 1. Oceanside view of far east wall near San Sebastián Bastion.



Figure 2. Oceanside view of southeast wall near San Sebastián Bastion.



Figure 3. Oceanside view of east wall near San Sebastián Bastion.



Figure 4. Oceanside view of NW wall of San Sebastián Bastion.



Figure 5. View of west wall of San Sebastián Bastion from La Perla.



Figure 6. View of wall between San Sebastián Bastion and Santo Tomás Bastion from La Perla.



Figure 7. View of east wall of Santo Tomás Bastion from La Perla.



Figure 8. View of north wall of Santo Tomás Bastion from La Perla.



Figure 9. View of NW wall of Santo Tomás Bastion from La Perla.



Figure 10. View of west wall of Santo Tomás Bastion from La Perla.



Figure 11. View of wall between Santo Tomás Bastion and Las Ánimas Bastion from La Perla.



Figure 12. View of wall between Santo Tomás Bastion and Las Ánimas Bastion from La Perla.



Figure 13. View of east wall of Las Ánimas Bastion from La Perla.



Figure 14 View of northeast wall of Las Ánimas Bastion from La Perla.



Figure 15. View of northwest wall of Las Ánimas Bastion from La Perla.



Figure 16. View of northwest wall of Las Ánimas Bastion from La Perla.



Figure 17. View of west wall of Las Ánimas Bastion from La Perla.

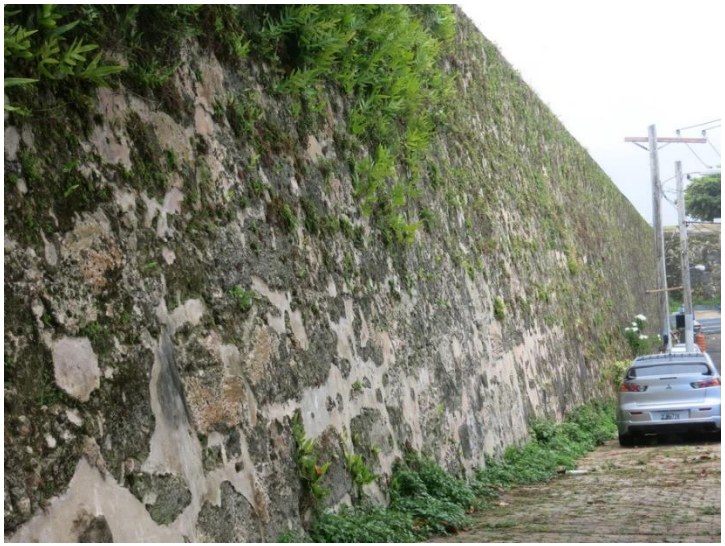


Figure 18. View of wall between Las Ánimas Bastion and Santo Domingo Bastion from La Perla.



Figure 19. View of north wall of Santo Domingo Bastion from La Perla.



Figure 20. View of west wall of Santo Domingo Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 21. View of wall between Santo Domingo Bastion and Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 22. View of east wall of Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 23. View of northeast wall of Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 24. View of northeast wall of Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 25. View of northwest wall of Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 26. View of west wall of Santa Rosa Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 27. View of wall between Santa Rosa Bastion and San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 28. View of wall between Santa Rosa Bastion and San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 29. View of east wall of San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 30. View of northeast wall of San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery.



Figure 31. View of northwest wall of San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery, looking east.



Figure 32. View of northwest wall of San Antonio Bastion from Santa Maria Magdalena da Pazzis Cemetery, looking west.



Figure 33. View of north wall of Santa Elena Bastion from Paseo del Morro.



Figure 34. View of west wall of Santa Elena Bastion from Paseo del Morro.



Figure 35. View of north wall of Santa Elena Bastion from Paseo del Morro.



Figure 36. View of southeast wall of Santa Elena Bastion from Paseo del Morro.



Figure 37. View of wall between Santa Elena Bastion and San Agustín Bastion from Paseo del Morro, looking northeast.



Figure 38. View of wall between Santa Elena Bastion and San Agustín Bastion from Paseo del Morro, looking northwest.



Figure 39. View of west wall of San Agustín Bastion from Paseo del Morro.



Figure 40. View of south wall of San Agustín Bastion from Paseo del Morro.



Figure 41. View of east wall of San Agustín Bastion from Paseo del Morro.



Figure 42. View of west wall between San Agustín Bastion and La Rogativa Plaza from Paseo del Morro.



Figure 43. View of east wall between San Agustín Bastion and La Rogativa Plaza from Paseo del Morro.



Figure 44. View of east wall between San Agustín Bastion and La Rogativa Plaza from Paseo del Morro.



Figure 45. View of wall north of San Juan Gate, from Paseo del Morro.



Figure 46. View of wall at east end of Las Palmas Bastion from Paseo del Morro.

City-side Views



Figure 47. View of far east wall near San Sebastián Bastion.



Figure 48. View of southeast wall near San Sebastián Bastion.



Figure 49. View of southeast wall near San Sebastián Bastion.



Figure 50. View of east wall of San Sebastián Bastion.



Figure 51. View of east wall of San Sebastián Bastion.



Figure 52. View of northwest wall of San Sebastián Bastion.



Figure 53. View of west wall of San Sebastián Bastion.

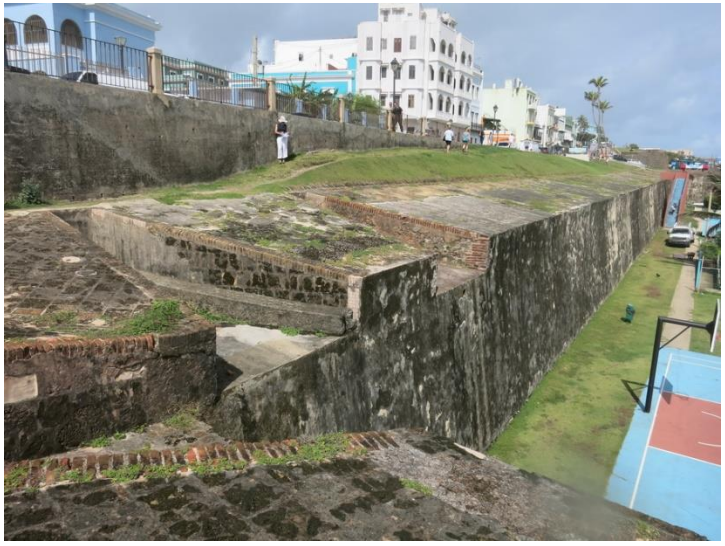


Figure 54. View of wall between San Sebastián Bastion and Santo Tomás Bastion



Figure 55. View of end of wall between San Sebastián Bastion and Santo Tomás Bastion.



Figure 56. View of east wall of Santo Tomás Bastion.



Figure 57. View of north wall of Santo Tomás Bastion.



Figure 58. View of northwest wall of Santo Tomás Bastion.



Figure 59. View of west wall of Santo Tomás Bastion.



Figure 60. View of west wall of Santo Tomás Bastion.



Figure 61. View of wall between Santo Tomás Bastion and Las Ánimas Bastion.



Figure 62. View of wall between Santo Tomás Bastion and Las Ánimas Bastion.



Figure 63. View of wall between Santo Tomás Bastion and Las Ánimas Bastion.



Figure 64. View of east wall of Las Ánimas Bastion.



Figure 65. View of northeast wall of Las Ánimas Bastion.



Figure 66. View of northwest wall of Las Ánimas Bastion.



Figure 67. View of northwest wall of Las Ánimas Bastion.



Figure 68 View of west wall of Las Ánimas Bastion.



Figure 69. View of wall between Las Ánimas Bastion and Santo Domingo Bastion.



Figure 70. View of wall between Las Ánimas Bastion and Santo Domingo Bastion.



Figure 71. View of north wall of Santo Domingo Bastion.



Figure 72. View of north wall of Santo Domingo Bastion.



Figure 73. View of west wall of Santo Domingo Bastion.



Figure 74. View from esplanade of wall between Santo Domingo Bastion and Santa Rosa Bastion.



Figure 75. View from esplanade of east wall of Santa Rosa Bastion.



Figure 76. View from esplanade of northeast wall of Santa Rosa Bastion.



Figure 77. View from esplanade of northwest wall of Santa Rosa Bastion.



Figure 78. View from esplanade of west wall of and Santa Rosa Bastion.



Figure 79. View from esplanade of wall between Santa Rosa Bastion and San Antonio Bastion.



Figure 81. View from esplanade of northeast wall of San Antonio Bastion.



Figure 80. View from esplanade of east wall of San Antonio Bastion.



Figure 82. View from esplanade of northwest wall of San Antonio Bastion.



Figure 83. View from esplanade of northwest wall of San Antonio Bastion.



Figure 84. View from esplanade of wall southeast of Castillo San Felipe del Morro, looking west.



Figure 85. View from esplanade of wall southeast of Castillo San Felipe del Morro, looking south.



Figure 86. View from esplanade of wall southeast of Castillo San Felipe del Morro, looking southeast.



Figure 87. View from esplanade of north wall of Santa Elena Bastion.



Figure 88. View from esplanade of west wall of Santa Elena Bastion.



Figure 89. View from esplanade of north wall of Santa Elena Bastion.



Figure 90. View from esplanade of southeast wall of Santa Elena Bastion.



Figure 91. View from esplanade of wall between Santa Elena Bastion and San Agustín Bastion, looking southwest.



Figure 92. View from esplanade of wall between Santa Elena Bastion and San Agustín Bastion, looking southeast.



Figure 93. View from esplanade of southeast end of wall between Santa Elena Bastion and San Agustín Bastion, looking southeast.



Figure 94. View of west wall of San Agustín Bastion.



Figure 95. View of south wall of San Agustín Bastion.



Figure 96. View of east wall of San Agustín Bastion.



Figure 97. View of west wall between San Agustín Bastion and La Rogativa Plaza.



Figure 98. View of west wall between San Agustín Bastion and La Rogativa Plaza.



Figure 99. View of east wall between San Agustín Bastion and La Rogativa Plaza.



Figure 100. View of east wall between San Agustín Bastion and La Rogativa Plaza.



Figure 101. View of east wall between San Agustín Bastion and La Rogativa Plaza.



Figure 102. View of wall north of San Juan Gate, looking west.



Figure 103. View of wall at La Concepcion Bastion.



Figure 104. View of wall at west end of Las Palmas Bastion.



Figure 105. View of wall at east end of Las Palmas Bastion.

National Park Service
U.S. Department of the Interior

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